CHAPTER ONE
INTRODUCTION

Background to the study

The university library is the hub of information provision in higher institutions of learning. It is also known as academic library because it is attached to a tertiary institution with the sole aim of supporting teaching, learning and research of the faculty, students and researchers. Academic libraries are in the forefront of providing information service to their community of users which include: students, lecturers, researchers, other staff of the faculty and community members of where the university is situated (Abubakar, 2011).Also, academic libraries are the nerve center of the university activities such as teaching, learning, research and other programmes of an institution of higher learning (Oyedokun, Oyewunmi&Akanbi, 2018). That is why it is recognized as the heart of the educational enterprise and the reservoir of knowledge communicated through information resources (Abbas, 2014).

Information resources define the strength of any library. These information resources consist of print materials such as books, periodicals, newspapers, and magazines; non-print materials such as art reproductions, films, sound and video recordings, maps, photographs, microfiches,

microfilms, CD-ROMs, computer software, online databases, and other media. The university libraries' unique mandate is to provide these resources in various formats to support academic activities for the institution and members of the academic community.

Edoka (2000) brings to light the objectives of academic libraries which include the provision of information materials required for the academic programme of the parent institution; the provision of research information resources in consonance with the needs of faculty and research students; the provision of information resources for recreation and for personal self development of users, Library cooperation with other institutions at appropriate level for improved information services and provision of specialized information services to appropriate segments of the wide community.

The academic library’s objectives outlined above imply that university libraries which are major stakeholders in the academic business of higher institutions will continue to provide information resources to meet varied and changing needs of users. However, with technological advancements and demands of the electronic environment, no university library will rely on only traditional printed information resources to perform effectively. Hence, libraries and library staff are evolving to meet user demands. Itsekor and

Ugwunna (2014) observe that digital transformation of the library profession has changed the face of the library and librarians from mere information custodian to the worker who is expected to electronically or digitally create, process, store, manipulate and disseminate huge volumes of digital information. This implies that traditional ways of providing services are transforming to more innovative and sophisticated means that require knowledge of ICT skills to effectively function in the electronic environment.

ICT skills simply means using digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks (Organization for Economic Cooperation and Development [OECD], 2013). However, in the library parlance, ICT skills mean the ability of the library staff to perform effective information task in a digital or computer-based work environment (Itsekor&Ugwunna, 2014). The European Centre for the Development of Vocational Training [CEDEFOP], (2014) defines ICT skills as those skills needed to use efficiently the elementary functions of information and communication technologies to retrieve, access, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the internet. The above definition suggests that ICT skill is the expertise of using digital technology devices to process, create, store, manage and disseminate

information especially through online channels. For the purpose of this study, ICT skills for digitization is not just the ability to use computers and related technologies to convert analog materials to digital resources through scanning but also involves the proficiency to apply editing techniques, document analysis and archival procedure to digitized resources. These skills which have been extracted from a digitization workflow are briefly explained thus:

Computerskills: this involves the competent use of computers to perform a range of functions such as word processing tasks like creating, editing, saving, copying, pasting, formatting text etc.

Scanning skills: involves the ability to use scanner to capture images, prints, photographs, book pages and similar sources and alsochoose appropriate file format for the scanned images.

Editing skills: deal with the application of image enhancement processes such as cropping, rotating, flattening, sizing, tonal color etcthrough the use of image editing software such as Gimp, Photoshop or Director.

Document analysis skills: involves the critical examination of information resources to extract appropriate search terms or keywords that would aid easy access and retrieval of the document. It includes the application of metadata to facilitate quick access and, Optical Character Recognition (OCR) to enable document search.

Archival skills:involves the maintenance, management, storage and preservation of digital files for a finite or indefinite period of time. It includes the ability to understand file types and appropriate format for storage.

The above skills imply that library staff will have to play important roles, develop ability in the creation, organization and dissemination of knowledge in a digital environment. Hence, they will require adequate knowledge of theseICT skills to cope with the ever changing digital information landscape.

Digitization is the conversion of print or analog information materials into digital or soft copy formats. Itsekor and Ugwunna (2014) state that digitization involves a process whereby library print based resources are converted into a form that can be easily accessed and used on the basis of application of information technologies. It enables analog records to be converted into a form – digitized such that computer or computers can transmit these records in a digital format that is in bytes represented by binary digits 0 and 1. Digitization is one of the strategies that libraries are adopting to increase access, usage and equally preserve their information resources for posterity. Digitization is a way of preserving library materials. Its benefits

include reduction in storage spaces, increased access and simultaneous use of digital information resources.

Digitization of information resources has witnessed an increasing awareness for advanced ICT skills. It is, therefore, an essential library operation which requires that library staff possess requisite knowledge of ICT skills to effectively take up the complex processes. That is why Rajan (2017) assert that the use of electronic information and related technologies has become indispensable in the delivery of library services. To provide innovative, value-added services and to meet the evolving needs, new areas of expertise are developing. These considerations make it clear that the library staff must adapt to the changing information environment and build skills and knowledge accordingly. Furthering this discourse, AdemodiandAdepoju (2009) agree that the issue of skill acquisition and competence in the use of ICTs is essential especially in this information age. With specific reference to the digitization of library operations, it is recognized that skilled personnel are essential for a successful digitization project.

Although digitization is an emerging library operation in developing countries, literature provides evidence of a gradual penetration of ICT deployment and digitization in many university libraries in Nigeria. For instance, Adeleke (2014) asserts that digitization is popularized among

Nigerian academic libraries because of the opportunities and benefits which it accrues to them such as making their institutional resources available thereby increasing their visibility and better performance in ongoing web ranking of world universities. However, most digitization projects in Nigerian university libraries started with theses and dissertations and, only a few libraries have embraced digitization of theses and dissertations(Baro, Godfrey &Eze, 2014). It is obvious that Nigeria is not left out in the digitization tide in Africa and the world. Though some university libraries in Nigeria are in different stages, researchers agree that most have not made significant progress in the digitization process (Adeleke, 2014; Baro, Oyeniran&Atebo, 2015).

The low progress of digitization of university libraries in Nigeria has been partly attributed to the poor ICT skills of library staff (Igwesi, 2012). Quality of digitization depends on several factors which includes skilled personnel. Studies have reported that library staff lack the requisite expertise to maneuver ICT facilities (Anyaoku, 2012; Abbas, 2014; Adeleke 2014). While digitization of information resources is important in university libraries, staff knowledge of ICT skills required for digitization are fundamentally more important.

Library staffare personnel who work in the libraryand, through the application of various operations and services provide access to information

resources in order to satisfy user needs. They are purveyors of knowledge and have been in the business of processing information to provide quick access to users. To meet users present information demands, they are striving for a more flexible and adaptive approach to their services.In this study, library staff comprises all the professional and paraprofessional staff of federal university libraries in south east Nigeria. McClesky (2003) explains that professional staff are expected to have graduate-level education, knowledge of library and information management, and specialized knowledge in the field of art; these requirements would vary based on the responsibilities of a particular position.

More recently, Rajan (2017) identify that professional librarian responsibilities include technology application leader, collection development manager, project manager, educator, guide and service provider, information manager, information analyst. The author further states that paraprofessionals are higher-level personnel who perform supportive customer service and are supervised by professionals. Their job duties require special knowledge, skills, abilities or education as well as decision-making abilities. Examples of responsibilities include reference and patron assistance, access services, cataloging or processing, collection development, supervision of clerical staff, collection maintenance, and daily operations.

Be that as it may, it is pertinent to add that library staff's knowledge of ICT skills for digitization may vary as a result of demographic differences such as status and gender. In terms of status, Ugboma and Omosor (2015) reveal that professionals use computer more than paraprofessional because computer helps them to get their work done easily and faster. Similarly, Kattimani and Naik's (2013) study found that professional librarians (deputy librarian and librarian category) showed relatively high skills in ICT related tasks compared to library assistant and others. Also, Mohamed, Haneefa and Shukoor (2010) reveal that Professional librarians are more ICT proficient in ICT skills than the junior librarians whereas the use of ICT based resources and services, library automation software and general purpose application software is high among the junior librarians than the senior library staff.

Contrary to the above findings, Ayoku (2015) discovered a no significant difference between the different library staff designations towards competence in the operation of computers, creation of files and folders, radio frequency identification, library automation software modules, Internet-related skills, Web design/Web editing, search engines and digitization of IR materials.

Females have often been cited as less competent in terms of ICT skill acquisition. According to the British Council (2012), there is a gender divide,

with women and girls less skilled in information technology than men and boys. Sanda and Kurfi (2013) reiterated that despite the much emphasis placed on the use of ICT in Nigeria, women are usually underrepresented in terms of access and use of ICTS. Also, Alakpodia (2014) identified that males have a higher level of computer use skill than females. However, studies in library and information science field (Ansari, 2013;Oyeniyi, 2013) provide contrary views stating a no significant difference in ICT skills between male and female library professionals.

ICT skills are essential tools for effective performance in a digital environment and are gaining acceptance as value added skills in the library and information science profession. However, library staff cannot adequately digitize information resources where they lack knowledge of the requisite skills. In this era of electronic resources, university libraries are working to provide information in formats that meet user preferences. Hence, to satisfy users with the growing range of digital resources in today's libraries, staff must have knowledge of the ICT skills necessary to process them.

Statement of the Problem

Digitization is reshaping the context in which information resources are being delivered. It is a means through which university libraries preserve resources, conserve space,enable wider outreach and simultaneous access to

information materials. In Nigeria, some university libraries have started digitization projects though several studies agree that the digitization process in Nigeria is still slow. (Adeleke, 2014; Baro, Godfrey &Eze, 2014).Researchers agree that the reason for theslow pace of digitization of information resources could be associated with various factors such as unwieldy methods of the conversion process, inadequate power supply, poor technological infrastructure or inability of the library staff to effectively digitize information resources (Nneji, 2018; Oni, Abu &Ekeniyere, 2018). These factors have negative implication oneffective delivery of digitalresources in Nigerian university libraries and in the South east in particular.

The slow pace of digitization in Nigerian university libraries pose challenges to access and retrieval of digital information resources. Consequently, this could delay the research process, lead to poor research output and low visibility of an institutions indigenous resources. Also, users'inability to access digitized information resourcescould affect scholarship and limit theirdependence on the university library as an information hub.Library staff are expected to be knowledgeable in theICT skills necessary to convert analog resources to digital formats to ensure that the potential of digitization is realized. Hence, there is need to determine library

staff knowledge of the ICT skills required for digitization of information resources in federal university libraries in south east Nigeria.

Purpose of Study

The purpose of this study is to determinelibrary staff knowledge of ICT skills required for digitization of information resources in federal university libraries in South East Nigeria.

The specific objectives are to find out the:

1. Library staff knowledge of computerskills required for digitization of information resources in federal university libraries in south-east Nigeria.
2. Library staff knowledge of scanning skills required for digitization of information resources in federal university libraries in south-east Nigeria.
3. Library staff knowledge of editing skills required for digitization of information resources in federal university libraries in south-east Nigeria.

4. Library staff knowledge of document analysis skills required for digitization of information resources in federal university libraries in south-east Nigeria.
5. Library staff knowledge of archival skills required for digitization of information resources in federal university libraries in south-east Nigeria.

Significance of the Study

This study will be beneficial to library staff, university management, university library administrators and Library and Information Science (LIS) educators.

This study will benefit library staff as it will identify their level of understanding of the ICT skills required for digitization of information resources. It is hoped that the findings of this study will spur library staff to improve their ICT skills capacity for digitization through training.

This study will be useful to the management of Nigerian universities as it will expose the gap in library staff's knowledge of ICT skills for digitization which is a sine qua non for improving university web ranking. It is expected that the findings of this study will motivate university management to sponsor

professional training in order to build capacity for successful digitization projects.

This research will be gainful to library administrators as it will reveal theimplications of poor digitization where staff do not have knowledge of therequired ICT skills. It is hoped that Library Administrators will realize the need to support training of staff to acquire knowledge and ICT skills foreffective digitization of information resources.

This study will be beneficial to LIS educators in Library Schools as it will uncover the extent of LIS professionals' knowledge of ICT skills for digitization.Hopefully, the study findings will galvanize LIS educators towards the review of LIS curriculum and integration of ICT pedagogy in Nigerian library schools.

This research will also add to existing literature in librarianship as it relates to library staff, academic libraries, digitization and ICT skills. The study will be a useful information resource on ICT skills and digitization in Nigerian universities.

Scope of the Study

The heterogeneity of ICT skills call for research focused on a specific library activity. In this study, library staff knowledge of ICT skills required for

digitization in Federal Universities in South East Nigeria wasinvestigated. These include computerskills(that is, the word processing tasks), scanning skills, editing skills, document analysis skills and archival skills.The study will focus only on the professional and paraprofessional library staff.

Research Questions

The following research questions were constructed to guide the study;

1. What percentage of library staff have good and poor knowledge of computerskills required for digitization of information resources in Federal University libraries in South East Nigeria?
2. What percentage of library staff have good and poorknowledge of scanning skills required for digitization of information resources in Federal University libraries in South East Nigeria?
3. What percentage of library staff have good and poorknowledge of editing skills required for digitization of information resources in Federal University libraries in South East Nigeria?
4. What percentage of library staff have good and poorknowledge of document analysis skills required for digitization of information resources in Federal University libraries in South East Nigeria?

5. What percentage of library staff have good and poorknowledge of archival skills required for digitization of information resources in Federal University libraries in South East Nigeria?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

Ho_1. There is no significant difference in the meanscores of professional and paraprofessionallibrary staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries.

$Ho_{2.}$ There is no significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries.

$Ho_{3.}$ There is no significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries.

$Ho_{4.}$ There is no significant difference in the meanscores of professional and paraprofessionallibrary staff on their knowledge of the document

analysis skills required for digitization of information resources in Federal University libraries.

$Ho_{5.}$ There is no significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries.

$Ho_{6.}$ There is no significant difference in the meanscores of male and female library staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries.

$Ho_{7.}$ There is no significant difference in the meanscores of male and female library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries.

Ho_{8}. There is no significant difference in the meanscores of male and female library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries.

$Ho_{9.}$ There is no significant difference in the meanscores of male and female library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries.

$Ho_{10.}$ There is no significant difference in the meanscores of male and female library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries

CHAPTERTWO

REVIEW OF RELATED LITERATURE

The related literature reviewed in this study is organized under the following sub headings.

Conceptual Framework

ICT skills

Digitization

Information Resources

University Libraries

Theoretical Framework

Abbots theory of System of Professions by Andrew Abbot, 1988

Dreyfus Model of Skill Acquisition by Stuart and Robert Dreyfus, 1980

Theoretical Studies

Information Resources

University Libraries

ICT skills required for digitization of information resources

Library staff knowledge of ICT skills required for digitization of information resources

Review of Related Empirical Studies

Studies on ICT skills required for digitization of information resources

Studies on library staff knowledge of ICT skills required for digitization of information resources

Summary of Literature Review

Conceptual Framework

ICT skills

ICT is an acronym for Information and Communication Technologies.Anderson and Glen (2003) define ICT as generally related to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices); software applications; and

connectivity (e.g. access to the Internet, local networking infrastructure, video-conferencing). ICT is a short term for computers, software, networks, satellites links and related systems that allow people to access, analyze, create, exchange and use data, information and knowledge (Beebe, 2004). ICT also means the range of technologies that are applied in the process of collecting, storing, retrieving and transfer of information in various forms (Olakulehin, 2009).

The Federal Ministry of Education, Nigeria (2010a) defines ICT as encompassing all equipment and tools (inclusive of traditional technologies and radio, video and television to the newer technologies of computer hardware, firmware etc) as well as the methods, practices, processes, procedures, concepts and principles that come into play in the conduct of the information and communication activities. Furthermore, Onwubiko (2011) defines ICT as any technology that is used in producing, organizing and for distributing information. It is a broad-based concept that encompasses the gathering (acquisition), organization (packaging), storage and retrieval for disseminating information that can be in textual or numeric (books and documents), pictorial and vocal forms (audio-visual) using the combination of all the above (multimedia) including computers and telecommunication facilities.

Skills are the manual and mental capabilities acquired through training and work experience, the application of knowledge gained through education or training and practical experience (Goodrich & Singer, 2009). The Council of European Professional Informatics Societies [CEPIS], (2005) defined skill as the knowledge and experience needed to perform a specific task or job, or capabilities of an individual, definable by content, to be acquired and activated through related professional training.Skills can be grouped into general and domain specific skills. Some general skills include time management, team work and leadership, motivation and others, whereas domain specific skills would be useful only for a certain job (Ezema, Ugwuanyi&Ugwu, 2014).

ICT skills are generally seen as the abilities to effectively use computers and related technologies to transmit or communicate information either for work, education and leisure.ICT skills are an integral part of an emerging concept of literacy (Irish Information Society, 2000), or form distinct sets of skills (British Educational Communications and Technology Agency [BECTA], 2002, Asha and Ramachandran 2001) or "workplace competencies" (Organization for Economic Cooperation and Development2001a [OECD], 2002). These skills are sometimes referred to as "foundation" skills because they are often not specific to any one job or task but are needed across many activities and provide the base upon which other

skills are built (Human Resources Development Canada [HRDC], 2002 & Conference Board of Canada, 2000). Lowe and MacAuley (2002) define ICT skills as the abilities that will enable the use of computers and related information technologies to meet personal, educational and labor market goals. In view of the various statements which define ICT skills, OECD (2004) notes that there is no common definition of the term.

However, the Association of College and Research Libraries(2006), succinctly defines ICT skills as "skills that enable an individual to use computers, software applications, databases and other technologies to achieve a wide variety of academic, work-related, and personal goals". This means that while ICT skills may depend on technological proficiency to a certain extent, they also require cognitive skills, such as those underlying literacy, numeracy and problem solving, which are critical for using ICT effectively (European Commissions' Digital Literacy Foundation, 2011). Arising from the above, ICT skill is a broader term which encompasses various skills. Hence, Poelmans, Truyens and Stockman (2012) observe that with the diversity of meanings and dimensions, the research domain is characterized by the scattered use of several overlapping or even conflicting notions such as: 'computer literacy', 'ICT skills', 'ICT competencies', 'computer knowledge, 'computer or web fluency'etc. This assertion has prompted arguments from

researchers in recent years for a more embracing definition of the term (Eyitayo, 2012).

However, a more lucid definition put forward by Isreal and Edesiri (2014) state that ICT skills deal with the application of ICT to specific purposes, ICT skills is not just about using software package or operating systems, neither is it concerned only with keyboarding skills and ability to copy type or follow instructions rather ICT skills is the ability to use knowledge about ICT to find, develop and present information whether it is text, image or number or all of these in an integrated task. Be that as it may, this study defines ICT skills as the proficiency to use computers, software and related technologies to perform specific tasks in order to provide information, generate knowledge and solve attendant problems.

ICT skills for digitization transcends toa gamut of specific skills that will enable library staff convert analogue information materials into digital formats. Within the context of this research, ICT skills for digitization means the capacity to use computers, software and related technologiesto convert traditional or print information resources to digital formats through a systematic process of scanning, editing, analyzing, and archiving. The model below as developed by the researcher provides a clearer understanding of the working definition for the present study.

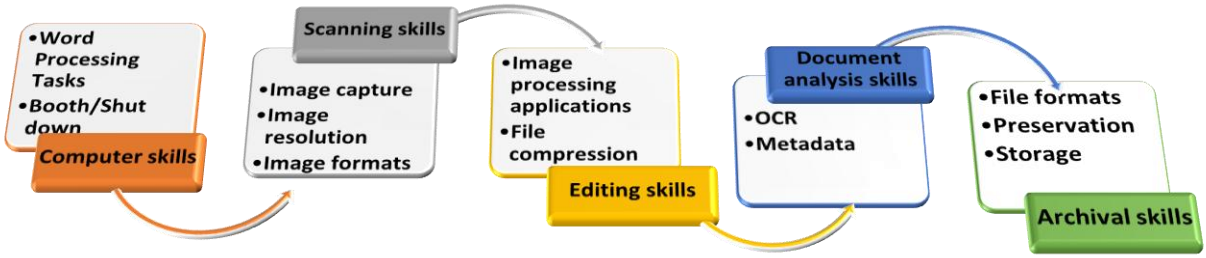

Figure 1: Model of ICT skills required for digitization of information resources

The model provides the various skills required at each stage of the digitization process. With reference to the model, knowledge of thecomputer as it relates to functions, hard ware, operating systems, word processing is required forlibrary staff to effectively carry out the scanning process, use image editing applications, analyse documents using OCR and metadata standards and provide long term preservation methods for digital materials through archival techniques. Hence there is need for library staff to have adequate knowledge of these ICT skills to enable effective digitization of information resources.

Digitization

Digitization is the process of converting, creating, and maintaining books, art works, historical documents, photos, journals, etc. in electronic representations

so they can be viewed via computer and other devices (Institute of Museum and Library Services [IMLS], 2002). The Encyclopedia of Information and Library Science (2003) defines digitization as the process of converting analog information to a digital format for storage and processing in a computer. It entails the adoption of technological innovations in the capturing, storage, organization and preservation of library information resources.

McMenemyandPoulter (2005) simply define digitization as creating a digital copy of an analogue object. The National Archives of Australia (2006) defines digitization as "a process of creating digital surrogates of analog materials from the library's collection". Cathro (2007), referred digitization as the conversion of library materials such as books, pictures, maps, music scores, manuscript collections and audio and video files into digital form. The content may be text, image, audio or a combination of these (multimedia). Digitization is a process towards building digital libraries, which involves taking traditional library materials, typically in the form of books and papers and converting them to electronic form, where they can be stored and manipulated by a computer (Fatoki, 2007).

Kannappanavar, Rajanikanta, Satish and Tandur (2010) provide a clear explanation of the term thus;

> Digitization refers to the conversion of materials that were originally created in another format into an electronic form. Conversely, this definition excludes materials that were initially created digitally, such as email communication. Technically, the process of digitization involves converting an analog image into its corresponding numeric values. The word "image" is literally true because the digital scanner creates an image of the original analog item, whether that item is a photograph, a word- processed document, or a handwritten letter. The digital image created by the scanner is stored in numeric form (p.62).

Also, digitization does not always mean scanning, digitization involves simple data conversion from catalog cards on paper to digital form or, video and audio migration to digital forms and so on (Ndum, Edem and Onukwugha (2012). The digitization process can be accomplished through a variety of existing technology, and comprises several steps. Mohammed (2013) broadly categorizes this process thus: Creation -: This involves the making of digital copies of analog objects or modification of original digital objects for purposes of dissemination; Dissemination-: Refers to the provision of mechanism by which the target population of users can gain access to the digital materials in the collection and,

Organization-: The provision of search tools and finding aids for users to access the collection of digitized or conventional objects effectively.

For the purpose of this study, digitization is converting traditional print resources to digital image using computers, scanners and related technologies,

it also involvesprocessing images,analysis of digitized resources for faster retrieval and application of preservation methods for future access and retrieval.

Libraries digitize materials because they remain convinced of the continuing value of such resources for learning, teaching, research, scholarship, documentation, and public accountability (Kenney &Rieger, 2000).Fabunmi, Paris andFabunmi (2006) add that many libraries digitize in order to preserve some materials which may be lost in the future such as old manuscripts, research projects, photo images, analogue maps, non-live musical recordings, government official gazettes and numerous other historical records. Furthermore, libraries digitize to improve access to specific collections and provide greater accessibility to invaluable materials. Digitization removes the problem of distance while providing wider access to the collection of many libraries. It enables simultaneous access to collections by multiple users and establishes sharing partnerships with other institutions to create virtual collections(Unesco, 2002). Digitization raises the profile of institutions as users worldwide utilize its collections. As a result, it opens up new avenues of access, use, research and preservation of valued information resources (Witten &Bridge, 2003).It ensures standardization and conformity amongst libraries and reduces duplication of work.

Libraries also digitize to reduce the handling and use of fragile or heavily used original material and creates a ”back up” copy for endangered material such as brittle books or documents (Unesco, 2002). It offers the opportunity of preserving the original by providing access to the digital surrogate; of separating the informational content from the degradation of the physical mediumIFLA;ICA,2002).

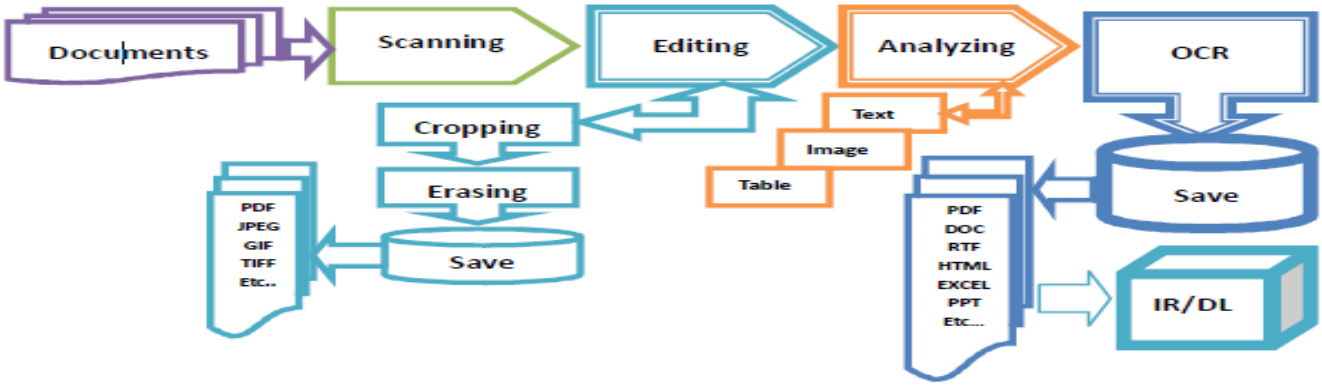

Figure 2: Digitization Workflow (Source: Bandi, Angadi&Shivarama, 2014)

Information resources

Information can be conceived as anything that adds to knowledge, ideas, skills and experiences positively or negatively that enables the receiver to take decisions or react to situations immediately or later (Mohammed, 2011). Also, Bitagi (2013) defines information as news that comes to the receiver for the first time which enables the receiver to take action according to expectations.Hjorland (2003) views information as interpreted data.

The term resource means a source of supply, usually in large quantity. A person is said to be ‘resourceful’ when he or she is capable of handling difficult situations. Generally, resources are aids to the researcher. They are those materials, strategies, manipulations, apparatuses or consultations that help the researcher to enhance research and development (Chima&Nwokocha, 2013). This is why Ossai (2010) viewsthat information resources include the procedures, equipment, facilities, software and data that are designed, built, operated and maintained to collect, record, process, and store information. More recently, Bitagi and Garba (2014) opine that Information resources constitute a range of materials and equipment gathered by the library in order to meet the information needs of both intended and anticipated users.Information resources include all forms of information carriers that can be used to promote and encourage effective research activities and developmental projects (Chima&Nwokocha. 2013).

University Libraries

University libraries are located in a university environment to support the academic activities of their parent institution. University libraries are types of academic library in that they support teaching, learning and research of their parent institution and wider community. University libraries are established

alongside the university and form a vital part of the educational system. That is why they have long been recognized as the hearts or nerve centers of their universities. In order to fulfill their academic mandate of teaching, learning, research, and cultural development (Olajide&Adio, 2017). University libraries house various collections in different formats to meet the needs of users. These collections include books, journals, electronic resources, periodicals, audio-visual collections, theses and dissertations and other forms of services.

The establishment of university libraries in Nigeria can be traced to pre-independence time when the University of Ibadan and its library were established in 1948 (Ogunsola, 2004). However, there has been an unprecedented growth of university libraries with the establishment of various public and private universities in Nigeria. As stated by Ogunsola (2004), university libraries, being integral academic parts of the universities, generally emerge simultaneously with their parent institutions. Hence there are as many university libraries as there are universities. These libraries continue to strive to ensure that the mandate upon which they are established are realized.

University libraries in Nigeria previously faced challenges of meeting the changing needs of users in the changing information environment. According to Chiou, Perng, Wang and Tsa(2008), for more than a decade, "university libraries have been under the pressure to change its way of operation and

management due to the tight budget and the appearance of online resources". However, with demands for faster delivery of information and proliferation ofinformation and communication technologies, Nigerian university libraries have transformed to meet changing information needs. Online catalogues provide additional searching possibilities(Ogunsola, 2004), electronic resources coupled with e-llibrary facilities and internet have been established to complement traditional print,digitization is gaining grounds in many libraries, institutional repositories have been developed to enhance visibility of indigenous resources. It is no longer strange that information users are doing their researches and other academic work in a hybrid library environment.

Theoretical Framework

Two streams of theories were used to frame this study. These are the Abbots theory of the System of professions and Dreyfus Model of Skill Acquisition.

The theory of system of professions

Theory of system of professions was propounded by Andrew Abbot in 1998. Abbot proposes that the environment in which all professionals work is continually changing as new professional groups emerge and new technologies are invented. Abbott (1988, 1991) states that professions that handle related

areas of expertise will take advantage of new opportunities to advance their status, whether by adding skills into existing portfolios or by forming new levels of licensure, standards, or international oversight.

Like Systems theory, the Abbots system of professions is vulnerable to disturbances that may be initiated within the system or externally from the system. External disturbances are more likely to influence the development of new profession. (For instance, the emergence of ICT has brought about digitization, digital libraries, e-library services and digital librarians). Disturbances take place within three crucial contexts.

The context of larger social and cultural forces: The most prominent social force affecting librarianship now is technological change which has impacted on libraries thereby making traditional work easier to do. A major cultural force is internal intellectual change that is, the production of new forms of knowledge that enables new forms of storage and retrieval of information. For instance digitization and digital repositories are new forms of storage and retrieval of information.

The context of other environing professions: Digital technology has been rewriting professional roles for many years. Hence, competing groups, such as technology managers, may attempt to take over new areas of responsibility, in

essence by offering a better treatment than their competitors.Abbot (1988) argues that professions establish jurisdiction over particular tasks. This means that library professionals need to retain control over the roles they are traditionally known for such as providing access to information through various means.

The context of other ways of providing expertise: The major issues in the library profession involves what is needed to compete and to thrive as a profession in a time when information appears to be ever more readily accessible to information users and when other groups may be seeking to play roles that librarians have traditionally played. This means that to be able to have jurisdiction over the library profession, librarians will have to depend on abstract knowledge which is a set of skills that is controlled by the profession and applied to practical problems. New types of abstract knowledge, such as the ability to understand how people use technology and information resources, or how to structure metadata for a digital future, are potential sources of new professional power (Abbott, 1988).

The theory relates to the present study because it views that external disturbances are likely to influence the development of new professional practices. Digitization and provision of digital resources is a new professional practice brought about by the emergence of ICT. As a profession that handles

related area of practice like cataloguing and classification, library staff are expected to take advantage of the opportunities provided by ICT to advance their status through acquisition and application of knowledge and skills for metadata which increases access to digital resources. In so doing, they will continually retain control over their professional tasks. Thus, the theory provides a platform to view the work of the library profession and ability of the library staff to apply knowledge of new skills (such as metadata) to remain at the apex of information provision in a time when other professions are competing to seize professional library tasks.

Dreyfus Model of Skill Acquisition

The Dreyfus model of skill acquisition is a model of how learners acquire skills through formal instruction and practicing. First proposed in 1980 by Stuart and Hubert Dreyfus, the model postulates that, when individuals acquire a skill through external instruction, they normally pass through five stages namely Novice, Advanced Beginner, Competent, Proficient, and Expert. According to Wilkesmann and Wilkesmann(2011), novices conform to rules at the initial stage. They have more or less "textbook knowledge" without connecting this knowledge directly with practice. At the expert stage, persons use an intuitive mode of reasoning because they have authoritative knowledge across their area of practice.

In applying this model to Librarianship, Hall-Ellis and Grealy (2013) view that the graduate of Library and Information Science who is a novice individual becomes a member of the community of practice and assumes personal responsibility for learning and mastering technical skills and competencies through experience, mentoring, professional development, and continued actions (or tasks) comprising activities situated in a library or information environment. These activities have operational aspects that are determined by the conditions under which they are carried out.(For instance, digitization is a library activity that has various operational aspects and its success or failure is determined by library staff's application of relevant knowledge and skills). It is recognized that routine tasks for librarians are the unconscious abilities that emerge as a result of practice and experience. Hall-Ellis and Grealy (2013) considered this as part of the beginner and advanced-beginner stages of the Dreyfus Model of Skill Acquisition. They alsoview that as knowledgeworkers in a profession driven by technological change, librarians possess education that equips them with the core competencies, and technical skills for a changing work environment. Providing opportunities for professional development, mentoring, and coaching empowersevery staff member to prepare for movement up organizational career ladders.

This implies that librarians possess tacit knowledge drawn from the library school experience as they begin professional library practice just like digitization. However, as they grow in practice, they become grounded in their knowledge of library operations. Attending professional trainings and workshops helps to improve their knowledge and skills of library operations. As they apply knowledge to professional work, they grow in professional practice and become experts in their field.

The theory is related to the present study because it suggests that the value of a person is directly measurable in terms of how that individual leverages organizational knowledge and contributes to the organization's competitive edge (Hall-Ellis &Grealy, 2013). Since the present study determines library staff knowledge of the ICT skills required for digitization, the theory provides a basis to understand how librarians use knowledge to deliver services in the library environment and gain mastery over technical skills in the course of applying their knowledge.

Theoretical Studies

Information Resources

Information resources define the strength of any library be it academic, public or special. They serve as conduits through which the library transmits

knowledge to the information user. Hence, its importance in the learning process cannot be under estimated. University libraries house information resources in various formats to serve the ever increasing and changing needs of users.Oriogu, Chukwuemeka&Oriogu-Ogbuiyi (2018) listed information resources that are housed by university libraries to include CD-ROM Databases, Online Public Access Catalogue (OPAC), Library Catalogue, Electronic Databases, E-books, Bulletins/Newsletters, Theses/Dissertation, Reference Sources, EJournals,Journals, Internet, Newspapers/Magazines andTextbooks.However, it is pertinent to add that information resources consists of print and non-print resources.

Yahaya (2018) identifies the following print information resources: textbooks, Research Reports, Thesis & Dissertations; Newspapers, dictionaries and encyclopedias, Periodicals (e.g. Journals and Magazines) maps, Atlas and topographical maps, Newsletters / Bulletins and Pamphlets. Government Publications (e.g. Government Acts, Bills, Gazettes, Proclamations, Statues, Policies etc.). Card catalogues, print Statutes and Statutory Instruments (Acts, Laws, Bye-Laws, Rules and Regulations) etc. Also, Ilo and Yusuf (2015) listed the following information resources as part of the collections of the Covenant university library: materials on accounting,

banking and finance, business studies, economics, languages, sociology, Science and Technology as well as leadership and spirituality.

The Non-print resources are categorized into the following formats:

Audio: These are information resources that appeal to the sense of hearing and touch, can only be listened to but cannot be viewed or read (Chima&Nwokocha, 2013). Example include audio tapes or cassettes, records and record players, audio discs, radio, language laboratories and other sound recordings.

Visual: These resources appeal to the sense of sight and touch and can only be viewed. Example include art reproductions, maps, photographs, globes, realia, Microfiche, microfilms, transparencies.

Audio-Visual: These resources appeal to the sense of sight, hearing and touch. These resources combine both the audio and visual effects in transmitting information. Examples are television, motion pictures (sound film), films and video tapes and disks, VCD, DVD.

Electronic resources (ER): It is recognized that there are various terms for electronic resources. According to Deng (2010), electronic resources may be referred to as electronic information resources (EIR), electronic library resources, digital resources, digital materials, soft library resources and E-library resources. Emiri (2015), assert that digital resources are those

information resources that can only be accessed by the use of computers and other ICT devices. These materials may require the use of a peripheral device directly connected to a computer, for example, CDROM drive or a connection to computer network, for example, the Internet. Case, MacKinnon and Dyer (2004), assert that ER are information sources that are available and can be accessed electronically through such computer networked facilities as online library catalogues, the internet and the World Wide Web (WWW), CD-ROM databases, etc. according to the Anglo American Cataloguing Rule2 [AACR2], Electronic resources are materials consisting of data and/or computer program(s) encoded for reading and manipulation by a computer by the use of a peripheral device directly connected to the computer or remotely via a network such as the Internet (as cited by Reitz, 2005, p. 244). On the other hand, Vincent, Victoria & Scholastic (2009) define electronic resources as computer network facilities such as online library catalogues and the information resources that are available and accessible electronically through internet, the World Wide Web, digital libraries and archives, government portals and website including CD-Rom databases and online academic databases which include Medline or commercial databases such as LEXIS and NEXIS.

In this regard, Electronic resourcesare type of non-print resources and refer to those materials that require computer access, whether through a personal computer, mainframe, or handheld mobile device. They may either be accessed remotely via the Internet or locally.Examples are: E-journals, E-books, Full-text (aggregated) databases, Indexing and abstracting databases, Reference databases (biographies, dictionaries, directories, Encyclopaedias, etc.), Numeric and statistical databases E-images, E-audio/visual resources (Johnson et al, 2012).

In 2005, Reitz categorized electronic resources to include software applications, electronic texts, bibliographic databases, institutional repositories, Web sites, e-books, collections of e-journals, etc. In later years,Unegbu, Anaduaka, Nkamnebe and Orakpor(2014) outlined categories of electronic resources to include federated search such as Webfeat, EBSCOhost; Integrated Search: examples include SweetsWise, Swish-e. Virtual reference, such as knowledge based online charts, text messaging and co-browsing. Web services in the area of virtual or digital reference which include Ref Desk, Digital Repository such as Dspace, Databases for instance JSTOR , PubMed:, HINARI, Digital Libraries, Virtual libraries.Also, Emiri (2015) adds that digital/electronic resources include Compact Disc Read Only Memory (CD-ROM), Internet, Online Public Access

Catalogues (OPAC), electronic books, electronic journals and electronic index.The electronic resources can either be subscribed to ordigitized in-house.

Electronic information resources have changed the way and manner in which information is sought and retrieved. According to Ani and Edem (2012), theemergence of electronic resourceshas tremendously transformed the handling and management of information in Nigerian academic environments and university libraries in particular. That is why Tekale and Dalve (2012) outline its advantages to include: availability at any time of the day; hyperlinks to other resources; huge information reservoirs; quick information; various search options; easy citations; ease in uploading and updating; ease in storage and dissemination; flexibility; time, space and cost are not major hurdles; ease of archiving are also importance of information resources. Olaniyi and Oyewole (2018) caps it by stating; the fact that EIRs can be downloaded on smart devices like Android phones in different formats like PDF (portable document format), PowerPoint and the likes makes it very easy to move with information. This suggests that electronic information resources have the advantage of anytime, anywhere access and is compatible with mobile devices.

University Libraries

University libraries are established with a mandate to support teaching, learning and research of their parent institutions and the wider community. These libraries work to provide information and promote acquisition of knowledge through their collections and services. Nkamnebe, Udem and Nkamnebe (2014) provide that the objective of the university library is to support the academic programmes of the university by providing relevant information so as to respond to the ever-increasing information demands of the users who comprise the students and the academic staff of the university. The authors further state that university libraries should aim to advance the functions of their universities. Olajide and Adio (2017) include that university libraries exist to enhance the acquisition of knowledgeby their clientele through the provision of reading materials - book and non-book for thepurposes of teaching, learning and research.

Furthermore, Oyewusi and Oyeboade (2009) evince that the major aim of a university library is to support teaching, learning and research, in ways consistence with, and supportive of, the institution's mission and goals. In addition, library resources and services should be sufficient in quality, depth, diversity, and currency to support the institution curriculum. As a result of this, university libraries are often considered as the most important resource center

of an academic institution. Ijirigho (2009) views that the university library exists in an academic context, and its role is developing collections that are well organized and serve as academic support for teaching, learning, and research by faculty and students.According to Mallaiah, Kumbar and Mudhol (2008), a university library occupies the central and primary place in teaching and research, therefore, it has to meet the diverse and growing needs of educational programme at the undergraduate, post–graduate and research levels.

Earlier studies have also identified the roles and functions of university libraries. For instance, Nkamnebe, Udem and Nkamnebe (2014) citing Roseroka (2004) aver that university libraries derive their mission from that of the parent organization, the university… The vision, mission, and strategies which are selected by universities as guide for meeting the core functions of teaching, learning, research and providing community service form the foundation on which the role of the university library is based.That is to say, university libraries should reflect the character of their schools. In furthering this discourse, kumar (2006) and Reitz (2004) as cited by Nkamnebe, Udem and Nkamnebe (2014) revealed that a university library is part of a university set up which exists to serve the objectives of its parent organization. A university library has a function, and this is to “meet the information, research,

and curriculum needs of its students, faculty and staff". Every library programme must support university's total programme. Also, Ijirigho (2009) in citing Rader (2001) add that university libraries support teaching, learning and research by building collections, providing electronic information access, and offering proactive library services and integrated information skills instruction. While Ijirigho (2009) citing Roseroka (1999) states that the university library's role includes enhancing the quality of teaching and supporting research by providing access to the world's thoughts through acquisition of books and journals broadly based on requirements of faculty.

Arising from the above assertions, the place of university library in supporting teaching, learning and research of the parent institution and also the wider community cannot be overemphasized. University libraries are the fulcrum of academic activities, the hub of information provision and the intellectual cum knowledge warehouse of institutions where they reside. University libraries have continued to evolve to meet changing demands. New library operations and emerging services are constantly springing up to align with prevailing information needs of users. That is why the roles and functions of the university library are constantly changing and moving beyond library walls.

ICT Skills Required forDigitization of Information Resources

Literature search on library staff knowledge of ICT skills required for digitization produced a plethora of studies on ICT skills required of a digital librarian and the skills required to manage digital library or the electronic environment. These studies were considered in the present review as ‘digitization’, ‘digital libraries’, ‘digital librarian’ and the ‘digital or electronic environment’ often come into focusin studies regarding any one of these terms. Hence, brief definition of these terms are provided to avoid any form of ambiguity.

Digital library is an organized and focused collection of digital objects, including text, images, video and audio, with the methods of access and retrieval and for the selection, creation, organization, maintenance and sharing of collection (Smith, 2000). Digital librarian is a type of specialist librarian who has to manage and organize the digital library, handle the specialized tasks of massive digitization, storage, access, digital knowledge mining, digital reference services, electronic information services, search co-ordination and manage the archive and its access (Screenivasulu, 2000). The digital environment includes all of the resources (human and material) and scenario that characterizes the digital/electronic information management,

communication as well as information delivery services especially as found dominant in the 21st century (Fadehan and Ali, 2010).

From the foregoing, digitization is recognized as important aspect of developing digital libraries. Be that as it may, literature on ICT skills required for digitization is reviewed thus:

Computer Skills

Computer skills are the abilities of the library staff to use computers efficiently and effectively for library operations to provide services. Computer skill is the basic foundation of every digitization project in that digitization hinges on computers and related technologies. Computers are used to launch the scanner software, edit images with the help of image enhancement software, analyze and sift documents through Optical Character Recognition (OCR) programs and metadata. Furthermore, digitized resources are displayed,uploaded, downloaded and retrieved through computers. Hence, the ability to use computer is a basic skill for digitization.

University of Tennessee (2016) include that library staff should understand basic computer hardware components and terminology, understand the concepts and basic functions of a common computer operating system, start up, log on, and shut down a computer system properly, use a mouse pointing

device and keyboard. Narasappa and Kumar (2016) emphasize that professional librarians need to be fluent in web site design skills, word processing skills, Spread sheet skills, Video conferencing, Computer security skills, E-mail management skills, Scanner knowledge, Electronic presentation skills, Database skills, Knowledge about basic computer operations, Management of network, networking architecture, Knowledge of file, folder structure, file management, printing setup, printing with standalone and networked environment, Knowledge of computer network, Internet skills - searching techniques tools, URL and URL format, Use of various browsers including internet explorer, Mozilla Firefox, Open Netscape, Internet architecture, features, facilities etc, Search engines like Yahoo, Google, AltaVista. Lycos, etc. Librarians should also have knowledge on network, software, hardware. Be that as it may, it is evident that the ability to use computers is a basic skill for digitization of information resources.

Nkamnebe, Okeke, Udem and Nkamnebe (2015) view that librarians should be competent in operations relating to basic computing, file management and information storage, word processing, electronic mail, internet and World Wide Web (WWW), database creation and management, creation of multimedia presentation using Microsoft Power Point, information searching and retrieval, use of OPAC, library automation, systems

troubleshooting and maintenance, security issues relating the Internet, Library 2.0 and social media. The authors add that efficiency, versatility, and competency in these skills, is fundamental to the continued relevance and significance of the information professionals and the library in the university environment in this 21st Century.

Raju (2014) notes that generic skills are increasingly being emphasized as priority skills requirements. These generic skills include computer literacy skills among others. Eyitayo (2012) identify six skills which were summarized as the ability to independently operate personal computer systems, use software for preparing and presenting work, use internet and its various features, access and use information from www, use an e-learning platform and perform data analysis with a computer package.

Earlier studies on computer skills have also been considered relevant to the present study. For instance, Ugwuanyi (2009) includes that, library staff should know various computer operations such as turning on the computer, opening a folder, copying a file from one disc to another, scanning. He/she should also master the use of application software such as creating a new word processor document, print out a document and operate in a networked environment. Orme (2008) states that a mixture of discipline specific knowledge (also referred to as professional knowledge), generic skills and

personal competencies are required of LIS professionals in a digitally oriented LIS environment.

Along the same lines, Mazumdar (2007) lists skills required to use computers as skills for using software application programs for example word processing tools, graphic design tools, presentation software, web page development, scanning techniques, database creation and maintenance, software installation skills and knowledge of hardware basics and troubleshooting.He further added that skill of computer operation, application of bar code technology, creation of database and its updating, designing and updating of web pages etc are required for the librarians. Nath, Bahl and Kumar (2007) are of the opinion that library staff should be able to make use of the extended capabilities of an application: to create charts, import graphics, and attach files, and so forth. They should know what is attached to their CPU, and how it is attached, and they should be able to perform basic troubleshooting functions: power source, monitor adjustments, reboots, printer response, and how to write down error messages. All librarians should be familiar with installing, configuring, and using a browser, all staff should be familiar with whichever version of Windows is run within the organization, how tonavigate through Windows (with and without a mouse), and how to manage files associated with Windows.

California Library Association [CLA](2005) identifiedthe following skills in using computer. For Hardwareparts of the computer the skills are as follows:Identify Computer, Monitor and drives (floppy drive, CD drive, USB port); Start-up a workstation (power buttons, logins passwords); Shut-down a workstation (power buttons, sequence, what equipment needs to be shut down or left on); Use the mouse (left-click, right-click, double-click, drag); keyboard (function keys and necessary shortcuts), and other peripheral devices attached to your computer (like a monitor, scanner, or speakers).

For Printers - Start-up and shut-down the printer (power buttons, sequence); Load paper and cartridges; Clear a paper jam; Photocopiers, telephones, fax machines; Operate and perform basic troubleshooting for these machines.Software – Word Processing which include: Create, format, save, open, and print a document; Change font style and size, cut and paste, bold, italicize, underline, and center text; Understand print preview; Web Browsers; Understand web browser functions such as back, forward, home, print, and print preview; Understand URLs; E-mail - Compose, address, send, receive, open, reply, forward, delete; Send and receive attachments; Re-send bounced messages; File messages in a folder system.Operating System - Find and launch applications from the desktop or menu; Toggle between different windows using the taskbar; Resize, minimize, and maximizewindows.Files and

Folders - Understand the differences between files and folders; Make a new folder, delete a folder; Copy and paste, drag and drop within files and wholefiles/folders; Open, save, or delete files or folders; Store/back-up files on floppy disks, CDs, flash drives, and similar removable media; Knowledge of file extensions and how they are used by the computer.

Security - Know what security software is used on staff and public computers andhow it protects the computers; Identify spam; Be aware of the potential security and privacy threats while using emailand the Internet (including cookies, downloading malicious files,unsecured communications, viruses, e-mail hoaxes, spyware, adware,and phishing).Troubleshooting - End non-responsive programs; Reboot the workstation; Understand cables, power cords, and switches on all equipment; know where to get help or technical support.

Several authors in the twentieth centuryalso listed computer skills required of librarians which the present study could not overlook. Some of these authors include Morgan (1996) who opine that the academic librarian of this decade has to possess a portfolio of technology related skills in order to complement and support the navigational skills. Such skills help library staff to manage the information more widely and, in turn, transfer these skills to the users as appropriate. These skills include: word processing, desktop

publishing, use of bibliographic software packages, spreadsheets, graphics, packages, bulletin-board, familiarity with data and file manipulation, maintaining WWW files, familiarity with local automated systems, IT troubleshooting, and familiarity with different operating systems. Also, Zhou(1996) listed general knowledge of library automation, online database searching, microcomputer applications, mainframe computer applications, CD-ROM products, computer languages or programming, computer hardware, and possession of a degree in computer science.

From the above submissions, library staffare expected to change and adapt to the new electronic information environment, learn and be aware of new technologies.Knowledge of the operations of a computer is critical to the success of any digitization project. Borrowing from the words of Massey-Burzio(1991), librarians should becomputer literate and be able to use systems in their working areas. Such asunderstanding operating systems, databases (in order to understand how databases arecomposed) and entering records in Online Public Access Catalogue (OPAC) (to betterunderstand its capabilities). They should also have a basic understanding of how theuse of computers is important, this will help them in understanding how computerswork. This understanding will help librarians to cooperate with systems staff,evaluate programs, and choose different technological solutions to solve

differentinformation problems. They should be able to continue learning and developing their knowledge and skills.

From the foregoing, scholars agree on common grounds that library staff are required to have the technological knowhow in computer operations and related technologies.

Scanning Skills

Scanning is the conversion of paper document into an electronic representation of that document (PDF, JPEG, or TIFF formats).Information resources go through the conversion process from analogue to digital images and this can also be called digital capture. The ability to use the scanner effectively for image capture of resources such as photographs, pages of books and similar sources is a fundamental skill for digitization. Scanning skill is required to scan information resources, produce high image quality, set proper image resolution and chooseappropriate file formats and file destination.

Digital cameras and scanners may both be used to capture an image. Various activities take place during scanning such as launching the scanner software from the computer, adjusting resolution, tonal range and selecting the output format and destination folder for scanned files. These activities require skills to produce quality digital copies.Screenivasulus, (2000) provides that the

skills required for digitization include the competency to digitize print collections and manage compact disc-Read Only Memory (CD- ROM) designand development of database and conversion of print media into digital media; content conversion, downloading techniques, web publishing, archiving, preservation and storage, image processing.

Furthermore, the Canadian Heritage Information Network [CHIN], (2000)provide the following skills requirements for digitization: experience with image scanning, technical expertise in operating digitization hardware and software; processing and quality control; monitoring digitization procedures and performing quality reviews. Also, the United Nations Development Project [UNDP], (2003) lists the following as important to any digitization project: Understanding of scanning techniques and methods; administration skills and computer skills. Koelling, (2004) identifies skills required for digital imaging [scanning] projects to include: technical ability to operate computers and scanners, skills for proper handling of original source materials and an interest in knowledge of the collections digitized. Furthermore, the author emphasized that digital imaging projects require not just knowledge of digitization but the ability to identify conditions, problems in the originals, a basic understanding of the techniques used to create the originals being digitized (e.g an understanding of the photographic techniques), knowledge of historical

significance of the originals, cataloguing skills, database design and management skills, web design skills and possibly graphic design skills as well.

Raju (2014) points that to enable digital capture, curation, preservation and sharing of knowledge, the academic library in the digital era needs to reflect a service environment that embraces digitization, electronic publishing, Web 2.0, Web 3.0, Library 2.0, Library 3.0, social media, open access and a host of other fast evolving ICTs. In all, scanning skills are needed to ensure that conversion is done with utmost efficiency and specificity.

Editing Skills

When materials have been scanned, a variety of image enhancing processes follow. Image enhancement features increase the quality of the scanned documents.These includecropping, rotating, flattening, sizing, tonal color and touch up or cleaning which can be achieved using image editing software such as Gimp, Photoshop or Director. Image files can also be compressed to increase storage space, book marked for easy accessibility and digitally signed to create a mark of ownership. Editing skill is required to produce clear and quality images for web delivery or offline access.

When the image is in a digital version, it can be manipulated. This means that the image can be stored and retrieved to and from a digital storage, edited in software programs and compressed for web broadcast. According to Sankar, Ambati,Pratha and Jawahar (2006), the raw images generated from scanning need to be processed for improving the quality. The scanned image needs to be cropped to remove the background. The textual content of a page generally contains a number of artifacts in the form of dots and blotches on the page due to aging of the paper or moth bite, tear or cut in the page, and eroded or incomplete characters.

Various image processing operations such as cropping, de-skewing, de-noising, smoothing are performed to rid the images of such blemishes. These can only be made possible through the use of image editing software such as Photoshop, Gimp or Director. However, the process of image enhancement requires special skills and is time consuming (Ashraf, Sharma and Anand, 2010). Skills required for editing include among others: excellent IT skills on PC and Mac, skilled in image-manipulation and image-management software, be familiar with other design software, have good maths skills and understand geometric ratios, have a keen interest in photography and a strong visual awareness, have good colour vision, and the ability to assess accurately the colour, density and contrast level of images, be able to work methodically

under pressure without compromising quality, pay close attention to detail ("Digital Imaging Specialist", n.d.). Other skills as listed by UNDP (2003) include web design and development skills, Artistic/graphic design skills.

Document Analysis Skill

The essence of any digitization project is for wider reach, faster delivery and simultaneous access. Edited documents are processed to facilitate quick access through metadata. To describe digital images there is a need for metadata that is structured data about data. According to Cornell University Library (2003), metadata creation is the addition of text that helps describe, track, organize, or maintain an image. Besser (2003) avers that metadata constitutes the documentation of all aspects of digital files essential to their persistence and usefulness and should be inextricably linked to each digital image.

The use of metadata is closely related to rules for the description and cataloguing of printed publications, archival records, and artifacts (Unesco, 2002). Common metadata can include title, author(s), subject(s), publishing date, publisher, number of pages, language(s) used, ISSN/ISBN, page size, and so on. Metadata description is an important part of digitization. Their function is to provide users with a standardized means for intellectual access to digitized materials.

Document analysis also involves the use of application of Optical Character Recognition (OCR). Searching through documents can be enabled through OCR. OCR (Optical Character Recognition) a software technology that converts scanned text to machine-readable text that can be searched or indexed(Cornell University Library, 2003). The purpose of the whole OCR process is to recognize the letters, words,and symbols printed on a page.OCR systems usually first receive a page image as input, then they segment out characters,and finally they recognize these characters. Additionally, OCR systems may use spellcheckersor other lexical analyzers that make use of context information to correctrecognition errors and resolve ambiguities in the generated text. The output of the OCRprocess is a text file, corresponding to the printed text in the image file. OCR can be applied during the scanning process or after scanning with the use of OCR software. The extracted text is used to index the pages and books, to enable search and retrieval for the end users (Sankar; Ambati; Pratha&Jawahar, 2006).

Document analysis entails all the processes geared towards facilitating the access and retrieval of digitized information resources. Hence, knowledge and skills in this area is very imperative for successful digitization projects.

A digitized product that is to be put up on the Web needs information that makes it possible to be located that is why Tenant (1999) identify

discipline specific skills for digitization namely imaging technologies, optical character recognition (OCR), markup languages, including HTML, SGML, and XML, cataloging and metadata, indexing and database technology, user interface design, programming, Web technology and project management. Also the Canadian Heritage Information Network (CHIN, 2000) lists the following skills: Cataloguing and documenting digital objects; Familiarity with requirements for reproducing cultural materials; Preparation of detailed instructions for digitization — whether the work is done in-house or contracted out; Preparing objects for digitization; Preservation, archiving and disposal of digital objects.Kwasik (2002) indicates skills such as knowledge of metadata standards, markup languages, experience in cataloguing electronic publications and Web design.UNDP (2003) includes Knowledge of cataloging, registration methods, or metadata schema.

Sommerlad, Child, Ramsden and Kelleher (2004) list the core capabilities and skills for the future librarian especially in the digital environment as: advanced skills in information location and retrieval; familiarity with databases of different types; local ICT problem-solving, troubleshooting; 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); create links between the information service and related delivery and support systems,designing databases for identifying, collecting, organizing and disseminating relevant documents.

Sharma (2005)identifies technical knowledge required by LIS professionals to include: operating systems - Windows, UNIX, LINUX, word processing, graphics, spread sheet and presentations, Database Management Systems including the skills in Bibliographic Database Management Systems, general purpose programming, networking, web page development and content management, information retrieval software for online, CD-ROM and internet, library software packages, acquaintances with digital library tools. Feng (2005)portrays the image of a new generation librarian; librarian 2.0 as an information enabler and knowledge creator with fluency in web languages such as HTML, Flash and XAML, teaching ability, e-learning experience, ability to apply web 2.0, a driver for competitive intelligence, ability to understand the regulatory conditions of the market.

Choi & Rasmussen (2006) identify technical skills to include the "Systems" aspect of digital projects including Digital Library (DL) architecture and software, technical and quality standards and markup languages.Howard

(2009) adds that identifying user needs and metadata are skills required of the digital librarian whereas Aharony (2009) maintains that librarian 2.0 connects users to experts and community of practice, develops social networks, encourages the development of content and metadata and uses blogs and wikis for the end users' benefit. Along the same lines, Ezeani and Ezema (2009) assert that the required competencies for the digitization process include technical skills in metadata, checking and verifying of digitized resources for quality control and selection of hard and software. Also, Choi & Rasmussen (2009) indicate that skills of digital library involve knowledge and experience with metadata, and the creation and management of digital information. Also, technological knowledge and management are required qualifications. These include current trends, practices, standards, technology in digital library practice, HTML coding, general computer skills and computer literacy, knowledge and an understanding of information technology, and markup languages such as SGML, XML, and Web development and design.

Furthermore, CARL (2010) indicate technological skills which include: Electronic resources management that is, knowledge of how digital resources are acquired, managed and accessed. Institutional repositories that is, understanding the basic structure, content and use of campus institutional

repositories. Database management that is, understanding how databases are designed and structured for convenient data and/or information retrieval.

Nonthacumjane(2010) notes that the principal areas of discipline knowledge required included an understanding of metadata, database development, database management systems and user needs. Communication, critical thinking, information literacy and teamwork were found to be the generic skills needed by information professionals in a digital library environment. Riley-Huff and Rholes (2011) add that modern libraries require those in technology-related roles to have broad or specialized competencies in areas such as web development, database design, and management paired with a good working knowledge of classification formats such as XML, MARC, EAD, RDF and Dublin Core. Chakraborty (2013) notes that the LIS Professionals need to respond to the changes and acquire skills in locating, organizing, manipulating, filtering and presenting Information. The LIS Professionals need to constantly upgrade competencies and knowledge, learn about using new technology and employ new techniques. The author further suggests that LIS Schools should re-orient the course content which must be suitable to present LIS professions need.

Boydston and Leysen (2014) identified the following as specific skills for the cataloguer librarians: data management skills, ability to work with

large data sets, metadata management and record loading, ability to work with interoperable systems, web scale discovery tools, digital repositories and resources, knowledge of markup languages such as XML, SQL or Perl scripting, knowledge of and flexibility with metadata schemas, developing cross walks, digitization standards, and preservation metadata.Adeleke (2014) indicates that the professional skills required to implement digitization projects include communication, management, technical, copyright issues and collection and metadata management skills.

Wada (2015) citing Koganuramath and Angadi (2014), views that computer skills of a competent librarian falls within certain ranges of Information and Communication Technology and may even go beyond due to rapid changes in ICT trends, metadata standards, web technology, search technology, digital information resources, subject gateways, information portals and Vortals, E-learning (online learning), online information services, digital rights management, Wi-Fi and Radio Frequency Identification (RFID) technology. Also, Boumarafi (2015) caps it by saying that the 21st century information professionals are expected not only to possess the generic IT skills but also to be able to use advanced technology such as digital and metadata and web design technology with fluency in web languages and related skills.

Archival Skills

This entailspreservation of digital records to ensure their longevity and easy access on demand. When resources have been digitized and processed, they are stored for long term preservation, web broadcast and offline access. Digital files can be stored in the computer hardware or other physical/external storage devices such as CD-ROMs, DVD-ROMs, Flash drives (also known as memory sticks), portable hard drives (external drives) and memory cards. In this study, archival skill is the ability to manage, maintain, store and preserve digital files for a finite or indefinite period of time. It involves ability to understand file types and appropriate format for storage.

These activities which take place in the archival process for digitized resources are for the purposes of digital preservation. According to the Digital Repository of Ireland (2013), digital preservation means representing all activities necessary to ensure that digital objects and data can be found, accessed and deployed beyond the limits of technological obsolescence, media failure or creator dependency. That is why UNDP (2003) lists familiarity with conservation methods as skill required in the digital environment. Pearce-Moses and Davis (2006) view that to preserve and archive information materials means more than technical skills; to use computers effectively, librarians and archivists must have the theoretical knowledge of the principles of description and access to ensure that they develop systems that achieve

those ends. At the same time, they also need to know enough about technology to find innovative ways to use technology to achieve the goals without merely recreating manual processes.

Furthermore, Igun (2006) identifies skills of the digital librarian to include selection, acquisition, preservation, organization and management of digital collection, Design of technical architecture of digital library; Protection of digital intellectual property etc.while Choi and Rasmussen (2006) add skills such as identifying user needs, digital archiving and preservation, and cataloguing and classification and the ability to handle legal issues. To cap it all, Luce (2008) goes on to emphasize that this knowledge preservation necessitates ensuring the quality, integrity, and curation of digital research information; sustaining today's evolving digital service environments; bridging and connecting different worlds, disciplines and paradigms for knowing and understanding and archiving research data in a data world.

Literature so far reviewed provided various ICT knowledge and skills required for the digital librarian, digital libraries or emerging electronic environment. These studies were considered relevant in that they are related to the topic under study.

Library Staff Knowledge of ICT Skills Required for Digitization

Ani, Etseye and Esin (2005) state that presently, there is a low level of ICT knowledge and skills among librarians in the country as most librarians have little or no skills to work with computers and the internet**.** Also,Okiy (2005) identifies poor level of computer literacy among staff and users of Nigerian university libraries as one of the major drawback of benefiting effectively from library services that utilize ICT facilities. In a similar vein, Ashcroft and Watts (2005) notes that most libraries lack strategic approach to electronic information development at national level, have too few technologically-literate staff in libraries, and a lack of skilled staff to manage ICTs. In a similar vein, Igben& Akobo (2007) states that inadequate number of staff with ICT skills ranks among the factors militating against ICT development in the libraries and this shows that the computer literacy of staff may not be ideal.

Poor ICT skills of library staff is often cited by many as impediment to effective library services. This may be attributed to the poor educational and technological environment in Nigeria. As far back as 2006, Igunnotes that illiteracy is still high in Nigeria and ICT literacy is very low and as a result, the 21st century library is a library with a combination of digital and traditional library. Yet, almost a decade later, Umeji, Ejedafiru and Oghenetega (2013) observe that librarians didn't have information/ICT literacy/skills because of

major challenges facing them such as funds, time and environment of the system.

However, it is observed that 21st century library staff are becoming technology conscious but are often limited by the environment in which they find themselves. Akintunde (2006) buttresses this where he states that some younger librarians are ready to explore and exploit ICT if given the opportunity and facilities, [yet] there is still some phobia of ICT by many librarians. Emmanuel and Sife (2008) corroborates this assertion in stating that many libraries have inadequate qualified ICT personnel with most traditional librarians having low ICT skills and sometimes technology phobia.

In some other parts of the world, literary evidence reveals that university libraries are constantly bedeviled by library staff inadequate knowledge of ICT skills let alone those required for digitization. For instance, Adeya (2002) notes inadequate human capacity as a major impediment to ICT use in Botswana. Manda (2008) reports that a major challenge for Tanzanian libraries is the lack of a pool of expertise with formal training in computers and ICT related fields. Siddike *(*2010*)* view that the levels ofICT hardware, networks such as LAN or WAN, literacy in library professionals in Bangladesh internet searching, digital resources and image were not satisfactory.Similarly, Haliso (2011) citing Waiganjo (2006) states that academic libraries in Kenya suffer lack of ICT

qualified librarians while Farahi, Tajafari and Tahamtan (2011) identify low to moderate level of ICT literacy in the LIS professionals serving in medical colleges, dental colleges and pharmacy colleges in Iran.

Also, Satpathy and Maharana (2011) express low ICT skills level of staff in India while recommending that all staff providing direct or indirect assistance to library users need increased technical skills. They need to acquire continuous knowledge and skills on the fast changing Information Communication Technology to provide better library services to users. Conversely, Kumar (2013), reveals that LIS professionals in the engineering institutions of Andhra Pradesh State, India, had satisfactory level of ICT literacy. More so, Ansari (2013) add that majority of the LIS professionals in the universities of Karachi, Pakistan had moderate level of ICT literacy.

Conversely, Ugwuanyi and Ezeani (2010) assert that, in transiting from conventional to digital libraries, both library staff and users need some degree of computer literacy/ICT skills, which is apparently lacking in Nigeria. Ayoku, and Okafor (2015) also mention that library professionals in university libraries of Nigeria lack sufficient ICT competencies. This is evidenced in the slow progress of digitization in Nigerian university libraries as indicated by several authors (Nneji, 2018; Oni, Abu &Ekeniyere, 2018).

The above statements continue to evidence an unpalatable level of library staffs' knowledge of ICT skills in Nigerialet alone the techniques of managing digitization.The electronic environment is a reality in that many university libraries have incorporated ICT resources and services to serve present day patrons. With the constantly escalating paradigm in library operations, it is adjudged that acquisition of knowledge and skills in critical areas such as digitization is of vital importance.

Empirical Studies

Studies on ICT SkillsRequired for Digitization

Ezema, Ugwuanyi and Ugwu (2014) conducted a study to examine skills requirement of librarians for the emerging digital library system in the University of Nigeria Nsukka. A case study design was adopted for the study while questionnaire was used to collect data which showed that the most important ICT skills for librarians are electronic resources management skills with a mean of 3.1 and network skills with a mean of 3.0. Other skills that were ranked high include hardware and networking skills which ranked 3rd and 4th respectively with a mean of 2.8 each. However, most critical interpersonal skill librarians require is adaptability flexibility and eagerness for new knowledge. Other important interpersonal skills are negotiation and decision making skills.

The study relates to the present one in that it examined some ICT skills required of librarians. However, it differs since it explored broader aspects such as technological and leadership skills which are outside this study's scope.

Shongwe and Ochola (2012) studied the IT factor in LIS jobs to ascertain the IT skills requirements category on the South African LIS job market. A longitudinal, qualitative approach was used to collect and analyze data. Findings revealed that the library category advertised the highest number of jobs (229), followed by the information category (100 adverts), and the knowledge management (46), records management and archives (48), and academic (13) categories. While all the jobs in the library category required basic computer (MS Office) and internet skills, and knowledge of institutional repositories, digitization, networked electronic information services, and library systems (OPAC, ALEPH, INNOPAC, MARC21, OCLC, etc.), others required IT skills in web development, networking, database development and maintenance, and multimedia (podcasting and webcasting), among others.

This study contributes to the present research in terms of ICT skills requirement of LIS professionals. However, the scope differs from the present one in that it focused on general ICT skills required in LIS job adverts in South

Africa whereas the current study is focused on library staff knowledge of the ICT skills required for digitization in the actual library work place.

Baruah and Hangsing (2012) carried out a study on library and information science professionals in India. One of the objectives was to analyze the skills and knowledge requirements that are expected from the Library and Information Science professionals employed in various libraries. Survey method using a web-based questionnaire was designed to collect data from 103 LIS professionals. Findings revealed that the skills which respondents accorded as "highly required" are special skills directly related with library and information science and pertaining to information technology such as online searching (83%), internet/digital systems (83%), Database management (84%), knowledge of e-resources, markup language and Dublin core (85%) etc. Also, 60% of the respondents felt that "digitizing/scanning of printed resources" are "very important", related competency like "photo editing/digital imaging software" is accorded with 41% of "not very important". This contradiction could be the result of insufficient knowledge about the digitization technology. The study found a limited knowledge on editing/digital imaging software and a gap between the competencies required on the job market and the course structure.

The study is related to the present one since it reflects knowledge of someICT skills required for digitization of information resources but differs in scope because it investigates expected skills set required for library and information science profession.

Mahmood and Khan (2007) conducted a needs assessment on ICT skills required of LIS professionals in Pakistan. The population of study was 200 professionals working in all types of libraries and organizations. Survey method using a questionnaire was employed to collect data. Findings of the study showed the list of needed competences which ranked between 75 to 100% were networking (LAN/WAN), administration of DBMS (Database Management Systems) (e.g. MySQL (My Structured Query Language), SQL Server; bibliographic formats (e.g. MARC, z39.5 (Constant); Metadata, data analysis, digital librarians (Designing and maintaining); citation software (Procite etc.). The paper recommends an ICT-focused continuing professional education strategy.

The study is related to the present one in that it uncovered some needed competences for digitization but differs in scope since it assessed ICT skills needs of LIS professionals in Pakistan. However, the concern of the present study is to determine library staff knowledge of ICT skills required for digitization in South East Nigeria.

From literature so far reviewed, studies on ICT skills required for digitization of information resources appear scare hence the study considered other related areas such as lCT skills of digital librarian and digital libraries which are extensions of library digitization.

Studies on Library Staff Knowledge of ICT Skills Required for Digitization

Knowledge of Computer Skills Required for Digitization

Ahmed and Rehmah (2016) studied level of ICT competencies of librarians in Khyber Pakhtunkhwa, Pakistan. Descriptive survey research method was used for conducting this study. The population for this study comprised of 105 library professionals working in the 14 public sector universities in Khyber Pakhtunkhwa, Pakistan. Results of the study showed that majority of the professional librarians possessed good level of knowledge of MSWord, MS Excel, MS PowerPoint, and Library electronic tools e.g., Electronic DDC and Library of Congress Subject Heading (LCSH), etc., whereas their knowledge of MS Access was fair, and they had limited knowledge of software such as Photoshop, CorelDRAW and other general purpose application soft wares. Also study revealed that maximum number of professional librarians possessed limited knowledge of Greenstone, DSpace

and E print while they possessed no knowledge of Fedora or any other digital library and institutional repository software.

The study is relevant to the present research since it revealed the knowledge of ICT skills by librarians in Pakistan. However, it differs from the present study in that it focused on training needs for updating competencies among library professionals and explored various approaches utilized by the professionals for acquiring ICT skills.

Ayoku and Okafor (2015) studied the ICT skills acquisition and competences of librarians in some university libraries in Nigeria. The purpose of this paper was to ascertain the extent of ICT skills acquired by librarians. The paper used the survey approach. With regard to formatting operations in word processing, findings revealed that many of the respondents can "set bold" 61(80.3%), do "underline" 61(80.3%), do "line-spacing" 63(82.9%), set "page number" 49(64.5%),"insert image" 45(59.2%), set "alignment" 43(56.6%), do "columns" 42(55.3%) and do "headers & footers" 39(5 1.3%). However, only a few can "hang paragraphs" 32(42.1 %), do "bookmark" 28(36.8%), do "referencing" 24(32%), do "footnote. The paper concludes that many librarians in Nigeria are lacking IT skills.

In relation to the current study, the paper provides insight on computer skills of librarians in some Nigerian universities. However, it differs because

the paper did not focus on library staff knowledge of these skills for digitization of information resources.

Shidi and Nwachukwu (2015) investigated ICT skills acquired by staff of academic libraries in Benue state. One of the objectives of the study was to ascertain digital library skills possessed by staff of academic libraries in Benue state. The descriptive survey design was used while population of two hundred and forty eight library staff (professional and paraprofessional) of the eight tertiary institutions in the state was studied using structured questionnaire. The study indicated staff possessed a large extent of the skills on typesetting using word processing (Mean = 3.02), saving data in my documents or desktop (Mean = 3.00) better than the others skills. Also, retrieving informationsaved in computer and secondary storage device (Mean = 2.83) andsaving/storing data on storage device such as CD-ROM,flash drive (Mean = 2.69). The study concludes that staff of academic libraries in Benue State possess ICT skills but largely at an average level.

This study is related because it provides empirical support for the present research in terms of ICT skills. However, it differs in that it investigated the extent of digital library skills possessed by library staff in Benue state whereas the present study is concerned with the knowledge library

staff knowledge has onICT skills required for digitization in South east, Nigeria.

Nkamnebe, Okeke, Udem and Nkamnebe (2015) investigated the extent of ICT skills possessed by librarians in universities in Anambra state, Nigeria. A descriptive survey was employed while thirty three professional librarians were used for the study. Findings show that librarians in the universities in Anambra State are weakly skilled in ICTs hence their overall average percentage score in ICT skills was 58.3%, Basic Computing 83%, File Management 71%, Word Processing, 76%, E-mail operations 54%, Automated Cataloguing and Classification/use of OPAC 42%, use of Library Automation Software 56%, use of the Internet/WWW 61%, Information Search and Retrieval 62%, Presentation using Microsoft Power Point, 40%, Database Creation/Management 38%. Average percentage scores showed that librarians are highly-skilled in Basic Computing, Word Processing, and File Management and are moderately-skilled in Information Search and Retrieval, Internet and World Wide Web. They are not skilled in Automated Cataloguing and Classification/use of OPAC, presentation using Microsoft Power Point, Database Creation/Management.

The findings reveal that librarians were highly skilled in basic computer and word processing and weakly skilled in use of automated cataloguing and

classification/OPAC, power point presentation and database management. The findings suggest that librarians in Anambra state were weakly skilled in ICTs. The study was carried out in one of the researchers focus areas and so provides empirical support for the present research. However, the study did not cover knowledge of librarians for ICT skills required for digitization which is the concern of the present study.

Batool and Ameen (2010) investigated the type and level of technological skills possessed by university librarians. Eight librarians from the Faculty of Economics and Management, University of the Punjab were studied to identify their core technological expertise in the following categories: computer hardware, word processing, Internet, troubleshooting and Integrated Library Software. The findings reveal that respondents only selected proficiency in computer hardware and word processing. Though the study's focus was a departmental library, it relates to the present one because it demonstrates the level of technological skills of librarians. However it differs in scope in that the present study emphasizes library staff knowledge of the skills required for digitization were not captured in the study.

Umeji, Ejedafiru and Oghenetega (2013) studied ICT literacy skills among librarians in Madonna University to find out the skills and knowledge possessed by staff in the use of digital library. The population consisted of the

entire librarians (11) in Madonna University Library Okija Campus whereas questionnaires and interview were instruments for data collection. The authors found that 3 (27.27%) of librarians have moderate and low levels of information/ ICT literacy/skills. while 2(18.15%) had very high levels and 1(18.1%) had very low levels. This showed that librarians in Madonna universitywere very poor in areas of information /ICT literacy skills and this had affected the type of services given to patrons over the years. The study recommends training of librarians in ICT among others.

The study relates to the present research because it sought to find out ICT skills and knowledge of librarians. However, it differs because the study is concerned with ICT literacy skills foruse of digital library whereas the present one is concerned withknowledge of ICT skills required for the purpose of digitization of information resources.

Ngorngor (2012) studied the information and communication technology literacy skills level of staff of National library of Nigeria. One of the objectives was to determine the level of digital technology skills possessed by staff of National library of Nigeria. The design of the study was a descriptive survey while the population was a sample size of one hundred and sixty one. Data was collected using structured questionnaire. Findings show that staff of National Library of National possess some high level of digital technology skillsin

booting the computer (3.56), using Microsoft word (3.33), creating files (3.20), opening a file (3.11), deleting files (3.03), cut & paste (2.88), copying data from other files (2.74), While majority of the staff possess low level in using the computer keyboard (2.45), creating personal database (2.31) creating tables (2.26), adjust monitors (2.14) Spread sheet (2.04), power point presentation (1.94), use of Corel draw (1.84), recovering items from recycle bin (1.74), using Adobe reader X (1.72), anti-virus control (1.67), scanning of flash before use (1.65) and graphic presentation (1.63). Further findings reveal that staff have low level of skills in using scanners (2.48), printers (2.19), use of magnetic tapes and CD-ROM (1.75).

The study explored computer literacy skills which is part of the present study but differs in scope because it focused on staff working in the National Library and was not concerned with knowledge of library staff on ICT skills for digitization.

Thanuskodi (2011) interviewed library professionals of fifteen engineering college libraries of Tamil Nadu, India. The analytical study was carried out to determine their ICT literacy. A structured questionnaire was designed and interview method was adopted as tools for data collection. The study indicated that 95.12 percent of professionals have knowledge in computer fundamentals, 81.07 percent in Internet, 42.68 percent in multimedia

and only a very few professionals 29.26 percent have knowledge in computer programming. The study indicated that most of the professionals have knowledge in computer fundamentals, Internet, and only a very few professionals have knowledge in computer programming. The findings of the study revealed that the library professionals of engineering colleges are highly skilled. The study is relevant to the present one since it focused on librarians' knowledge in ICT in higher educational institutions. It differs in scope in that it focused on college librarians whereas the present study focuses on university library staff.

Choudhury and Sethi (2009) studied the information literacy skills of library professionals working in three major Universities of Orissa. Survey using structured questionnaire and interviews points that most of the library professionals are computer literate, having undergone computer courses like PGDCA, DCA and other short-term courses. They are also aware of the use of E-resources, evaluation of web resources, IPR, web OPAC, search engines etc. This study reports the computer literacy level of library professionals in universities and so was considered relevant to the present research. The study differs in scope in that it focused on information literacy skills of library professionals in Orissa whereas the present study is focused onlibrary staff knowledge of ICT skills required for digitization in South East Nigeria.

Ademodi and Adepoju (2009) conducted a survey to ascertain whether academic librarians in Ondo and Ekiti states possess computer skills and competencies in the use of computer. The study population consisted of twenty four academic librarians from six academic libraries in the two states. Questionnaire and oral interview were data collection instruments. Findings revealed 21 (87.5%) of the respondents had computer literacy skills whereas 3 (12.5%) were not computer literate. To understand whether the librarians were literate enough to use computers, 4(13.3%) affirmed that they used the computer for library routine, 12(40%) used computers for administrative purposes whereas 14(46%) used computers for internet browsing. The study revealed that majority of the respondents had computer literacy skills and is related in to the present one since it examined computer literacy skills of librarians in academic libraries in Nigeria. It differs in that it focused only on academic librarians which from south west Nigeria which is outside the scope of the present study.

Safahieh and Asemi (2008) studied computer literacy skills of librarians in one of Iranian universities to assess the levels of computer skills and computer use experience of librarians. The study population was 41 and questionnaire was used to collect data on computing skills of librarians and their use of Microsoft word, excel, access, power point, library software.

Findings revealed that majority of the respondents 28(68.3%) considered their level of computing skills as “Fair” or lower. Only 13 (31.7%) of the respondents perceived their level of computing skills as “good”. Furthermore, results revealed that library software which is an application software installed for circulation and search of libraries’ materials, was the most used (mean = 4.12) software, followed by word processor (mean = 3.29). In contrast, the less used (mean = 1.56) software was database management software. Findings revealed that majority of the respondents considered their level of computing skills as “Fair” or lower. Less than half of the respondents perceived their level of computing skills as “good”. Further findings revealed that library software is the most common used software among librarians.

This study relates in content because it focused on computer literacy skills of librarians which is a basic ICT skill for digitization but differs in scope because the study focused on librarians in Iranian universities.

Nath, Bahl and Kumar (2007) studied the information and communication technology knowledge and skills of librarians. One of the objectives was to assess librarians level of knowledge and skills. The research design was survey method whereas questionnaire was used to collect data. From analysis of data, Findings reveal that majority of the librarians could copy, save and name a file from a drive (20 or 95.23%). Also, all of the

librarians (21 or 100%) were able to use a mouse; double click and drag; identify icons; select open icon; maximize and minimize; name, re-name; exit from application and use scroll bars. While 19 (90.47%) could work with more than one application and 18 (85.71%) could use shortcut and function keys. Furthermore, all of the librarians (21 or 100%) could open file; copy, move text; save a file; close afile; use save as while 20 (95.23%) could create a file; change font size; change font style; 19 (90.46%) could change line spacing; use spell checker.

The study revealed that librarians performed well in computer applications such as file management, databases, windows and keyboard, word processing, email and Internet than in other applications like spreadsheets, presentations, set-up, maintenance and troubleshooting.

The study relates in content since it established knowledge and skills level of librarians which syncs with the present study but differs in scope because it investigates the extent of adoption of ICT in libraries whereas the present study investigates the knowledge of library staff on ICT skills required for digitization.

Hoskins (2005) investigated the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal. A study population of 43 subject librarians, in the university libraries of the Universities of Durban-

Westville, Natal and Zululand were surveyed by means of a mailed questionnaire to establish the level of ICT knowledge and skill amongst the subject librarians. Results of the findings revealed a low level of ICT knowledge and skill amongst subject librarians and a general lack of formal training for ICTs amongst the subject librarians.

The study is relevant to the present research because it deals with knowledge and skills of librarians and so provides an empirical backing for the present study. However, it differs in that it did not identify skills required for digitization but rather focused on how subject librarians use ICTs, their challenges and training needswhich is outside the scope of the present study.

Knowledge of Scanning Skills Required for Digitization

Alhaji (2007) carried out a study on status of digitization in 30 Nigerian university libraries. The objective was to examine the status, progress, prospects and challenges to digitize library materials. Three complementary methods were used for collecting primary data: questionnaire, interview and direct observation of the selected universities. Findings revealed that 70% had no prior experience or knowledge of digitization, 20 %, moderate, while the remaining 10% had full knowledge of digitization. The study also found that Nigerian universities are lagging behind in the pace of digitization because the average Nigerian university libraries have not yet embraced the idea of the

electronic library in the digital age. Also, observations revealed a lack of digital library equipment and skills. The paper recommended staff training and funds among others for a viable digitization project.

This study relates with the present one in that it examined digitization in Nigerian university libraries. It differs from the current study since it focused on the status of digitization and not on library staff knowledge of skills for digitization.

Ansari (2013) investigated the proficiency level of ICT for library professionals. The aim was to find out their software development, system analysis and design skills. The targeted population was fifty three library and information professionals working at university libraries in Karachi, Pakistan. A questionnaire was designed to collect data. It specifically focused on the use of hardware, system maintenance, software development, web design, system analysis and design, networking, digitization and imaging technique, and web-based functions. Findings revealed that most respondents are very high or high in their proficiency of using various types of hardware listed that is: laptops (mean=2.6222), multimedia (mean=2.679), digital cameras (mean=2.528), OCR devices (mean=3.283), printers (mean=2.018), scanners (mean=2.509) and barcode readers (mean=3.059). Also, respondents assessed themselves high in Word processing skills. Their mean values are 1.962 (Printing

documents), 1.943 (Formatting documents), 1.905 (Creating documents), and 1.754 (Saving documents) respectively. The findings of this study reveal that respondents are highly proficient in all web-based functions but had low proficiency for image digitization.

This study relates in content to the present one because it investigated ICT proficiency level of librarians for digitization and imaging technique. It differs in scope in that it also addressedlibrary professionals' use of ICT facilities (hardware, software etc) as opposed to the knowledge library staff has on ICT skills required for digitization.

Igbal and Khan (2017) examined ICT skills of university librarians in a developing country. The purpose of the study was to investigate the awareness level of librarians about various ICT applications in University of the Punjab (PU), Pakistan and to examine the constraints and issues they are facing in acquisition of modern ICT skills. A questionnaire was developed and administered to eighty professional librarians having graduate and postgraduate qualification. Findings revealed that most of the librarians are computer literate, having good knowledge of library automation and digitization 25(37.3%). The knowledge of web based services such as e-mail, search engine, chatting, e-resources search, knowledge of OPAC/Web OPAC, etc by professionals is quite encouraging 39(58.2%) . However, majority of

them have less knowledge of programming languages 44(65.7%), whereas, HTML (Hyper Text Markup Language) is comparatively more popular programming language.

Whereas the study investigated the knowledge of library professionals in ICT applications which makes it a worthy resource for the present study, it did not identify the knowledge of library staff for ICT skills required for digitization.

Oyedokun, Oyewumi, Akanbi and Laaro (2018) carried out a study to assess ICT competence of library staff in selected universities in Kwara state. One of the objectives was to examine the levels of ICT competencies of library staff. The study adopted a descriptive survey design using the questionnaire as data collection instrument. The population of the study comprises of 109 library staff of selected university libraries in Kwara state. The study demonstrated high level of ICT competency in basic skills such as word processing 74(67.9%), electronic presentation 63(57.8%) as well as digitization of library information resource through scanning and uploading 52(47.7%). They were also found to be proficient in intermediate ICT skills such as use of internet 74(67.9%), library management software 56(51.4%) and database management 63(57.8%).

The study assessed ICT skills of library staff and therefore syncs with the present one. However, while the study explored ICT competencies needed to perform optimally in the library profession, it did not identify the knowledge of staff on specific skills required for digitization of information resources.

Knowledge of Editing Skills for Digitization

Igwesi (2010) investigated the status of digitization in federal university libraries in south east zone of Nigeria. One of the study objectives was to find out the extent of digitization skills library staff possess. Population was a sample of sixty library staff involved in digitization. The research design adopted was a descriptive survey using questionnaire and checklist as data collection instruments

Findings reveal that the skills possessed include internet surfing skill (3.38), scanning skills (3.20), book-marking skills (2.70), cataloguing of digital resources (2.64), signing of digital signature (2.60) and web-linking (2.53). The result also shows that the library staff lack skills on database management (2.39), creation and management of library website (2.31), web publishing and trouble shooting (2.20), and metadata creation of library resources (2.06).

This study presents some ICT skills for digitization which makes it a relevant resource for the present one.However, the study was not focused on library staffs' knowledge of the ICT skills required for digitization rather the study considered areas such as facilities and problems of digitization which are outside the scope of the present study.

Mahatan (2016) carried out a pilot study to investigate ICT skills among LIS professionals in Assam. One of the objectives was to know the awareness of ICT based application, library automation software, digital library software and cloud libraries. Questionnaire was used as data collection instrument while the population comprised of thirty six professionals in Assam. Findings reveal that professionals in Assam are aware of ICT based applications such as Windows Operating System (97.20), MS Office (97.20) and Photoshop (69.40) which is an image editing software.

The study provides evidence of librarian's knowledge of ICT based applications and so relates to the present study. However, while the study explored skills for managing e-resources, it did not capture librarians

knowledge of skills required for digitization which differs it from the present study.

Knowledge of Document Analysis Skills for Digitization

Babu, Vinayagamoorthy and Gopalakrishnan (2007) studied ICT skills among librarians in Engineering educational institutions in Tamil Nadu to assess the level/extent of different types of ICT skills knowledge by the librarians. The study population consisted of 171 library professionals. The survey research used questionnaire as data collection instrument. Findings revealed that majority of the library professionals were conversant with DOS and Windows. Only few professionals have skills in the UNIX and LINUX. Further findings show that creating a catalogue and metadata are the prime choices of the respondents, OCR, user interface design and image technology.

The study is related to the present one since it assessed the level of librarians' knowledge of ICT skills. However, it differs because it presented broader range of skills which are not within the scope of the present study.

Abubakar (2010) investigated Information and Communication Technology (ICT) knowledge and skills amongst the students of library and information science in Umaru Musa Yar'adua University, Katsina. Survey technique was adopted for the study and questionnaire was used for data collection. Population comprised of twenty lecturers and ninety students of LIS

department. The results of the study showed that a significant proportion of students of the department did not have knowledge and skills on search engines, computer applications, using and cataloguing e-resources as well as media resources.

The study investigated ICT knowledge and skills in a Nigerian university bringing to light the state of ICT knowledge and skills of potential librarians especially as it relates to skills for metadata. However, it differs in scope because the study was not specific on digitization but focused on LIS educators and students.

Anyaoku (2012) studied the computer skill set of librarians in Nigeria to examine the present level of ICT literacy of librarians in Nigeria. A questionnaire was used to collect data from one hundred and eighty four respondents. Results of the findings show that a large majority rated themselves as having some skills in basic computing,had some internet information retrieval skills; 138 (79.9%) rated themselves in use of presentation software. More than half of the respondents 118(68.1%) had Web 2.0 skills. Results also indicated that respondents rated their skills low in some areas of ICT use while majority 122 (69.9%) had no technical skills in repair and maintenance of equipment. More than half of the respondents had no digitization skills and 91 (51.8%) had no web page development skills. The

study recommends that librarians in Nigeria should be equipped with the necessary skills to enable them function effectively in the present age.

This study relates to the present one since it examined the level of computer skills of librarians in Nigeria. However, while the study found a lack of digitization skills of respondents, it did not identify these skills components and also did not capture library staff knowledge of the skills.

Abbas (2014) investigated ICT skills of academic librarians in the eleven institutions of higher learning in Nigeria. A cross-sectional survey method was applied using homogenous purposive sampling technique to draw the sample of forty four academic librarians.The findings uncovered that majority of the respondents (42.5) had their ICT knowledge as 'Some What Knowledgeable' that is peripheral, while (20%) claimed to be 'Knowledgeable'. It was uncovered that (12.5%) of the respondents were Not Knowledgeable, while (25%) were Neutral. The findings uncovered that majority of the respondents had their ICT knowledge as 'Some What Knowledgeable' that is peripheral, while few claimed to be 'Knowledgeable'. The findings indicate that librarians lack the requisite expertise to maneuver ICT facilities thus buttressing skills inadequacies of the librarians in many critical areas for their survival and efficiency.

The study is related to the present study in that it focused on ICT knowledge and skills of academic librarians in institutions of higher learning in Nigeria. It also differs from the current research in that it did not indicate the specific areas of library staff ICT knowledge for digitization.

Adeleke (2014) examined digitization capacity of academic librarians in Nigeria. The target population was seventy six librarians selected from eleven private and public universities with minimum ICT infrastructure required for digitization. One of the aims of the study was to explore librarians' capability with digitization skills set. The study revealed that librarians attached more importance to communication skills (mean=2.0721; SD=0.64303), copyright skills (mean=2.0405; SD=0.76640). The mean scores for each of the digitization skills showed technical skills (mean=4.4243; SD= 2.96146), Abilities to deploy and manage digitization software (mean= 4.5467; SD=3.23533), Abilities to implement interoperability standards and protocols (mean=4.4400; SD= 3.14617), Abilities to customize digital content web pages (layout, design) (mean=4.2105; SD= 3.07383), Abilities to plan and develop digital collection (mean=4.5658; SD= 3.19306), Abilities to select and use meta-data sets (Dublin core, MARC, METS, LOM, PREMIS, etc (mean=4.3553 ; SD=3.05376). Further findings revealed that respondents score on digitization skills were below average. Also, majority of the librarians

had no formal professional training in digitization which implied that they possessed limited capabilities for implementing digitization projects.

The study relates in content with the present one in that it examined digitization capacity of academic librarians but differs in that it did not ascertain whether library staff had knowledge of these skills. Also, it focused only onacademic librarians in private and public universities whereas the present study focuses on professional and paraprofessional library staff of federal universities in South East Nigeria.

Knowledge of Archival Skills for Digitization

Masenya&Ngulube (2019) carried out a study to investigate digital preservation practices in academic libraries in South Africa in order to suggest solutions for effective digital preservation. The survey research method was used for data collection. Twenty-seven academic institutions in South Africa were surveyed. Data were analyzed using frequencies, percentages and cross tabulation. Findings revealed that academic libraries experienced difficulties in preserving and sustaining their digital resources as a result of inadequate staff with expertise in digitizing resources and a knowledge and understanding of intellectual property rights and copyright issues as major challenges inhibiting the effective preservation of digital resources.

The study addressed digital preservation within academic libraries which makes it a relevant resource for the present study. However, it differs in that it did not explore digitization but rather considered the factors that militate against effective preservation of electronic information resources.

Ntoka& Adamou (2017) investigated the impact of digital technologies on academic libraries in Greece to find out how librarians interact with digital technologies. The population of study comprised of fifty five librarians from two academic libraries. Observation, interviews and focus group discussions were used as data collection instruments. Result of the analysis show that many of the librarians do not have knowledge about digital materials preservation.

This study is related in that it sought to understand librarians' knowledge of digital resources which is an aspect of this study but differs since it investigates experiences of librarians in the complicated usage of digital materials and not their knowledge of the skills required to digitize information materials.

Karishe and Dulle (2016) investigated the skills and strategies being used by the University of KwaZulu-Natal libraries in preserving electronic information resources (EIRs) to ensure their long term availability and access. The study employed questionnaire as data collection instrument on a

population of one hundred and eighteen (118) staff. The analysis of the results reveal that there is intermediate level of ICT knowledge and skills regarding preservation of electronic information resources amongst librarians. The results also reveal that the respondents need training in migration, metadata and emulation techniques.

The study is related to the present one in that it investigated knowledge and skills of librarians in preservation of electronic information resources. However, it also explored strategies for preserving digital resources which is outside the scope of the present study.

Seena and Sudhier (2014) studied ICT skills among library professionals in the Kerala University Library system. One of the objectives was to assess the level/extent of different types of ICT skills possessed by the library professionals in Kerala University libraries Thiruvananthapuram. The study is based on a questionnaire survey of one hundred and two library professionals employed in the central and departmental libraries. Findings of the study indicate that most of the professionals have more skill in Dspace software and development of institutional repositories (40.20%). The skills are below average level in the use of other digital library software such as Greenstone (36.27%), E-Print (37.25%) and Fedora (46.08%). About (32%) of the

professionals indicated that they are poor in the use of Greenstone digital library software.

The study relates with the present one in content because it investigates ICT skills of library professionals. However, the study did not identify knowledge of skills for digitization which is the pursuit of the present study.

Sankari and Chinnasamy (2014) studied ICT skills among librarians in Engineering Colleges in Salem and Namakkal Districts to find out their skills in use of application software packages, programming languages, technical skills, managerial skills and other ICT related activities. A structured questionnaire and interview method was adopted to collect data from the librarians of the thirty nine engineering colleges. Findings reveal thatlibrarians' are above average in the use of OPAC / WEB OPAC (48.71 %) followed by library websites (38.46%) and online journals (30.76 %). The librarians have average skill in use of almost all the e-resources.Below average skills are shown for online indexing and development of institutional repository 13(33.33%). The paper concludes a low level of technology skill development among the professionals.

The study is related in content since it focused on skills for managing electronic resources which is an aspect of the current research but differs in

scope because it presented broader skills of librarians in engineering colleges as against library staff knowledge of the skills required for digitization.

Reddy (2014) studied ICT skills of library professionals to find out their application of ICT skills in modern library environment. The population used for the study was seventy five library professionals of Warangal District Engineering College. A structured questionnaire was used to elicit data from the respondents. Analysis of the result reveals that majority of the professionals have knowledge in computer fundamentals and digital library /Institutional repository. Also, it was found that the professionals have average skill in managing e-resources.

The study corresponds with the present one in that it examines ICT skills of library professionals. Though the study investigated the participation of library professionals in various ICT related activities, it did not capture knowledge of the ICT skills library staff has for digitization of information resources which differs it from the current study.

Ezema, Ugwuanyi and Ugwu (2014) conducted a study to examine skills requirements of librarians for the emerging digital library system in University of Nigeria Nsukka. A total of 50 librarians from NnamdiAzikiwe Library University of Nigeria were used for the study. A case study research design was adopted for this study using questionnaire as data collection instrument.

The study finding revealed that librarians were not skilled in digital curation which entails understanding the practices of selection, preservation and description of digital collections (Mean = 2.5; SD = 1.3).

This study sought librarians' skills in information technology in one of the researchers study areas and is therefore related to the present one. However, it did not examine their knowledge on skills for digitization which is the focus for this research.

Susan and Baby (2012) studied technological skills for academic librarians in Kerala, India. The aim of the study was to analyze the skills and awareness of library professionals in an electronic environment. The study was based on a questionnaire survey of one hundred and eighty five library professionals. Findings revealed that majority (88.6%) of the library professionals were skilled in Windows Operating system. The skills of library professionals showed that 22.7% were skilled in IR (Institutional Repositories) based activities. Also, 16.7% professionals had skills in creating an HTML / XML document while least number of professionals were skilled in Programming languages (13.5). Further analysis showed that 51.4% of the professionals had knowledge of DSpace as digital library software whereas Greenstone is known to 34.1% of professionals, 11.4% had knowledge of Eprints while 10.8% were aware of Fedora.

The study relates to the present research in that it addresses technological skills of librarians working in higher institutions. Whereas the study focused on knowledge of library professionals on digital library software, it did not capture their knowledge of the ICT skills required for digitization which differs it from the current study.

Okpokwasili and Uwuma (2010) surveyed staff of academic libraries in Rivers State to find out their awareness of book preservation techniques. A total of four hundred library staff was randomly sampled whereas questionnaire was the instrument used for data collection. Finding reveals that there is little or no awareness of respondents of the principles underlying book preservation methods from the grand mean of 2.38 (SD = 125)which is lower than 2. 43.However, the calculated value of 2.14 is greater than the critical value of 1.65 at 398 degrees of freedom and 0.05 level, significance.This shows there was a significant difference in the level of awareness of the basic principles underlining library book preservation techniques between Professional and Non-Professional library staff in the Institutions under study in Rivers state.

The study reveals awareness of library staff on preservation techniques for information resources and so makes it a relevant resource for the current study. However, it focused on traditional preservation methods whereas the

current study focuses on library staff knowledge of the ICT skills required for preservation of digital information resources.

Summary of Related Literature Review

The chapter reviewed the concept of ICT skills, digitization and information resources. ICT skills was variously defined however, the study provided a working definition that ICT skill is the proficiency to use computers, software and related technologies to perform specific tasks in order to provide information, generate knowledge and solve attendant problems. Types of information resources were briefly discussed to give a clearer understanding of the topic. Two streams of theories namely; Abbots system of professions and Dreyfus Model of Skill Acquisition were the theoretical foundations upon which the study is built. The relevance of these theories to the study were equally explained.

Majority of the literature reviewed addressed ICT skills librarians possess for the digital library and electronic environment. However, little research has been carried out on librarians' knowledge of ICT applications in library operations. While focus was mainly on professional librarians, none of these studies addressed library staff knowledge of the ICT skills required for digitization of information resources in federal university libraries in South East Nigeria. The present study seeks to fill this gap.

CHAPTER THREE

METHOD

This chapter discusses the detailed method that were adopted for the study under the following subheadings:- design of the study, area of the study, population, sample and sampling technique, validation of instrument, reliability of instrument, method of data collection and method of data analysis.

Design of the Study

The research designthat was employed for this study is a descriptive survey. It is a research design that ascertains respondents' perspectives, attitudes, competences, views and experiences about particular phenomena under investigation (Abbott &Mckinny, 2013). Descriptive survey is suitable

for this study considering that the research sought opinion of library staff on their knowledge of ICT skills required for digitization of information resources.

Area of the Study

Nigeria has six geopolitical zones which include North Central, North East, North West, South East, South South, South West. The area of this study is the five states in the South-East geopolitical zone, Nigeria. The South East zone shares boundaries with South-South and North-Central. The five states which make up the South east zone are: Abia, Anambra, Ebonyi, Enugu and Imo.These five states are homeland 100 gbo tribe of Nigeria. The Igbo are the second largest population living in southern Nigeria. They are socially and culturally diverse, consisting of many subgroups. Although they live in scattered groups of villages, they all speak one language. The states exhibit homogenous socio-economic and linguistic characteristics and fall within the same agro climatic and other geographic conditions (Ajaeroh&Madu, 2014).They are predominantly agricultural with yam tubers, cassava, palm produce and rice being their main produce. The zone largely lies within the rain forest belt of Nigeria which is known for its high temperatures and humidity, with substantial amount of rainfall during rainy seasons (Chigbu&Onukaogu, 2012).

South east zone was chosen for this study because studies have reported a gradual penetration of ICT deployment and digitization in many university libraries in South east (Baro, Godfrey &Eze, 2014;Bozimo, 2006; Ezeani&Ezema, 2011, Itsekor&Ugwunna, 2014; Okocha, 2009). Also, it has been reported that librarians in federal university libraries in South East Nigeria use ICT-based resources to a high extent (Nwabueze&Ibeh, 2015). As per type of university, federal university libraries werechosen because previous studies have shown that the state and private university libraries are poorly funded while the federal university libraries are better funded than the state and private university libraries (Obiozor-Ekeze, 2015). Hence, digitization projects are more pronounced in the federal university libraries.

Population of the Study

The population of this study consists of 353professional and paraprofessional library staff in the federal universities in south- east zone, Nigeria. Data on the number of library staff were obtained from staff nominal roll in the various university libraries. The staff includes professional librarians (academic librarians) and paraprofessional librarians (non-academic librarians) in the federal university libraries in South East, Nigeria. The distribution of staff is attached as Appendix D, page 189.

Sample and Sampling Technique

There was no sampling because the population was small hence all the professional and paraprofessionals in the five federal universities totaling 353 library staff were used for the study.

Instrument for Data Collection

The data collection instrument that was used for this research was a test on knowledge of ICT skills titled "Knowledge of ICT Skills for Digitization Test" (KICTDiT). The test was designed by the researcher based on review of related and relevant literature, opinion from experts and experience gathered in course of training. The instrument was divided into two sections: A and B. Section A elicited the demographic characteristics of respondents while Section B consisted of a total of 50 knowledge based test each with four options lettered A to D. The instrument was designed to establish library staff knowledge of ICT skills for digitization of information resources. The items in Section B were grouped into five clusters: (see Appendix A, page 169).

Cluster One – Test on library staff knowledge of Computer skills for digitization

Cluster Two – Test on library staff knowledge of scanning skills for digitizationCluster Three – Test on library staff knowledge of editing skills for digitizationCluster Four – Test on library staff knowledge of document analysisskills

Cluster Five – Test on library staff knowledge of archival skills for digitization

Validation of the Instrument

The instrument was given both face and content validation by the supervisor and three (3) experts made up of: two senior academic staff from the Department of Library and Information Science, NnamdiAzikiwe University Awka, who are well versed in the topic under study to validate theappropriateness of the research design so that what it is intended to measure is achieved. And also, a senior academic staff in Measurement and Evaluation Unit in the Department of Educational Foundations, NnamdiAzikiwe University Awka to validate the content, coverage, language and clarity of the research design.

The copies of the test instrument, title of the dissertation, purpose of the study, research questions and the hypotheses were given to the experts to guide them in the validation. They were requested to validate the instrument in terms of coverage, relevance, language, clarity, adequacy and comprehensiveness of the questionnaire items. Their expert observations, comments, corrections and suggestions were used to modify the instrument before producing the final version. Their comments are attached in Appendix B, page 178.

Reliability of the Instrument

The instrument was administered to twenty library staff who are professionals and paraprofessionals of the University of Port Harcourt whichare not part of the study. Data collected were analyzed using the Kuder-Richardson Formula 20, (KR-20). It is a measure of reliability for a test with binary variables (i.e. answers that are right or wrong). Kuder-Richardson formular 20 (KR-20) is suitable for this study because the items in the test are multiple choice questions where each question has only one answer that is correct.

Specifically, the five sub-sections of the Test of ICT skills were computed using Kuder-Richardson formular 20 (KR-20) and the results produced reliability co-efficient of 0.96 for knowledge of Computer Skills, 0.98 for knowledge of Scanning Skills, 0.95 for knowledge of Editing Skills, 0.96 for knowledge of Document Analysis Skills and 0.99 for knowledge of Archival Skills. The overall coefficient of the instrument yielded 0.96. This shows adequate internal consistency with Kuder-Richardson formular 20 (KR-20).Attached as Appendix C, page 182.

Method of Data Collection

The test was administered to respondents in their respective libraries with the help of research assistants who are library staff in the five federal

universities under study. Through the help of the researcher's university librarian, permission was obtained from university librarians in other university libraries under study to grant library staff (professional and paraprofessional staff) time out of their work schedule to take the test. Library staff were assured of confidentiality which motivated them to write the test without bias since it was purely for research purposes. The test was conducted after semester examinations when academic activities had ended and library was less busy. This provided room for staff to take the test in the main reading hall.Research assistants were on ground to retrieve the completed tests which lasted for forty five minutes.

Method of Data Analysis

Completed tests were analyzed using descriptive and inferential statistics. Percentages wereemployed to provide answers to the research questions while z-test statistical analysis were used to test the hypotheses at 0.05 level of significance. Analysis were carried out using the Statistical Package for Social Sciences (SPSS).

Each cluster in the test instrument had a total of ten items. Each of the items were awarded 2 marks. This means that the 50 items will result to 100%

if answered correctly. However, any test item with wrong answer attracted zero (0) mark.

Cluster one – 10 items x 2 marks each = 20

Cluster two – 10 items x 2 marks each = 20

Cluster three – 10 items x 2 marks each = 20

Cluster four – 10 items x 2 marks each = 20

Cluster five – 10 items x 2 marks each = 20

Total marks = 100

Decision rule: For each of the clusters,percentage of library staff that fall within the range of scores 11 - 20 were regarded as having good knowledge whilepercentage of staff that fall within the range of scores 0 – 10 were regarded as having poor knowledge. .

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

In this chapter, the data collected from the field for this study were analysed and the summaries were presented in tables to highlight the findings. The presentation was sequentially done starting with the answers to the research questions and then the testing of hypotheses.

A total of 353 copies of Knowledge of ICT skills for Digitization Test were distributed to respondents, Out of this number, 287 were returned and found usable for the study thus representing 81% return rate.

Research Question 1

What percentage of library staff have good and poor knowledge of computer skills required for digitization of information resources in Federal University libraries in South East Nigeria?

Table 1: Range of scores of library staff on their knowledge of the computer skills required for digitization of information resources

Range of scores	N	%	Remarks
11 – 20	204	71.1	Good Knowledge
0 – 10	83	28.9	Poor Knowledge

Table 1 shows that 204(71.1%) of the library staff with the scores ranging from 11 to 20 have good knowledge of the computer skills while 83(28.9%) library staff whose scores range from 0 to 10 have poor knowledge of the

computer skills required for digitization of information resources. This shows that great percentage of the library staff have good knowledge of computer skills required for digitization of information resources in federal university libraries in south east Nigeria.

Research Question 2

What percentage of library staff have good and poor knowledge of scanning skills required for digitization of information resources in Federal University libraries in South East Nigeria?

Table 2: Range of scores of library staff on their knowledge of the scanning skills required for digitization of information resources

Range of scores	N	%	Remarks
11 – 20	137	47.7	Good Knowledge
0 – 10	150	52.3	Poor Knowledge

Table 2 indicates that 137(47.7%) of the library staff with the scores ranging from 11 to 20 have good knowledge of the scanning skills while 150(52.3%) library staff whose scores range from 0 to 10 have poor knowledge of the scanning skills . Hence it can be inferred that great percentage of library staff have poor knowledge of the scanning skills required for digitization of information resources in federal university libraries in south east Nigeria.

Research Question 3

What percentage of library staff have good and poor knowledge of editing skills required for digitization of information resources in Federal University libraries in South East Nigeria?

Table 3: Range of scores of library staff on their knowledge of the editing skills required for digitization of information resources

Range of scores	N	%	Remarks
11 – 20	81	28.2	Good Knowledge
0 – 10	206	71.8	Poor Knowledge

In table 3, it was observed that 81(28.2%) of the library staff with the scores ranging from 11 to 20 have good knowledge of the editing skills while 206(71.8%) library staff whose scores range from 0 to 10 have poor knowledge of the editing skills. This provides that greater percentage of library staff have poor knowledge of editing skills required for digitization of information resources in federal university libraries in south east Nigeria.

Research Question 4

What percentage of library staff have good and poor knowledge of document analysis skills required for digitization of information resources in Federal University libraries in South East Nigeria?

Table 4: Range of scores of library staff on their knowledge of the document analysis skills required for digitization of information resources

Range of scores	N	%	Remarks
11 – 20	54	18.8	Good Knowledge
0 – 10	233	81.2	Poor Knowledge

Table 4 indicates that 54(18.8%) of the library staff with the scores ranging from 11 to 20 have good knowledge of the document analysis skills

while 233(81.2%) library staff whose scores range from 0 to 10 have poor knowledge of the document analysis skills. This reveals that greater percentage of library staff have poor knowledge of document analysis skills required for digitization of information resources in federal university libraries in south east Nigeria.

Research Question 5

What percentage of library staff have good and poor knowledge of archival skills required for digitization of information resources in Federal University libraries in South East Nigeria?

Table 5: Range of scores of library staff on their knowledge of the archival skills required for digitization of information resources

Range of scores	N	%	Remarks
11 – 20	117	40.8	Good Knowledge
0 – 10	170	59.2	Poor Knowledge

Table 5 reveals that 117(40.8%) of the library staff with the scores ranging from 11 to 20 have good knowledge of the archival skills while 170(59.2%) library staff whose scores range from 0 to 10 have poor knowledge of the archival skills. Considering the above, it can be inferred that great percentage of library staff have poor knowledge of the archival skills required for digitization of information resources in federal university libraries in south east Nigeria.

Testing the Null Hypotheses

Null Hypothesis 1

There is no significant difference in the meanscoresof professional and paraprofessional library staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries.

Table 6 t-test on the mean scoresof professional and paraprofessional library staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{X}$	sd	df	Cal.t	P. Value	Decision
Professional	110	13.58	3.70				
				285	3.19	0.002	S
Paraprofessional	177	12.16	3.66				

Table 6 shows that at 0.05 level of significance and 285df the calculated t is 3.19 with calculated p.value 0.002 which is less than the critical p.value 0.05. This signifies that there is significant difference in the mean scores of professional and para-professional library staff on their knowledge of computer skills required for digitization of information resources in federal universities in South East Nigeria. Hence, the null hypothesis was rejected

Null Hypothesis 2

There is no significant difference in the meanscoresof professional and paraprofessional library staff on their knowledge of the scanning skills

required for digitization of information resources in Federal University libraries.

Table 7 t-test on the mean scoresof professional and paraprofessional library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{x}$	sd	df	Cal.t	P. Value	Decision
Professional	110	10.53	3.90				
				285	1.29	0.197	NS
Paraprofessional	177	10.00	2.98				

In table 7, it was observed that at 0.05 level of significance and 285df the calculated t is 1.29 with calculated p.value 0.197 which is greater than the critical p.value 0.05, thenull hypothesis is therefore not rejected. Accordingly, the null hypothesis that there is no significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries was accepted.

Null Hypothesis 3

There is no significant difference in the meanscoresof professional and paraprofessional of library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries in South East Nigeria.

Table 8: **t-test on the mean scoresof professional and paraprofessional of library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries**

Source of variation	N	$\bar{X}$	sd	df	Cal.t	P. Value	Decision
Professional	110	8.68	3.75				
				285	1.46	0.146	NS
Paraprofessional	177	8.06	3.50				

Table 8 reveals that at 0.05 level of significance and 285df the calculated t is 1.46 with calculated p.value 0.146 which is greater than the critical p.value 0.05, the null hypothesis is therefore not rejected. This is an indication that, there is no significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries. Hence, this study upholds and accepts the null hypothesis.

Null Hypothesis 4

There is no significant difference in the meanscoresof professional and paraprofessional library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries

Table 9: t-test on the mean scores of professional and paraprofessional of library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{X}$	sd	df	Cal.t	P. Value	Decision

Professional	110	8.29	4.28			
				285	3.32	0.001	S
Paraprofessional	177	6.68	3.82			

Table 9 indicates that at 0.05 level of significance and 285df the calculated t is 3.32 with calculated p.value 0.001 which is less than the critical p.value 0.05, thenull hypothesis is rejected. Then, there is significant difference in the meanscoresof professional and paraprofessional of library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries.

Null Hypothesis 5

There is no significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries.

Table 10 t-test on the mean score of professional and paraprofessional of library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{x}$	sd	df	Cal.t	P. Value	Decision
Professional	110	11.58	5.13				
				285	3.46	0.001	S
Paraprofessional	177	9.62	4.38				

Table 10 shows that at 0.05 level of significance and 285df the calculated t is 3.46 with calculated p.value 0.001 which is less than the critical p.value 0.05.This invariably shows there is significant difference in the

meanscores of professional and paraprofessional library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries.Based on the above, the null hypothesis is therefore rejected.

Null Hypothesis 6

There is no significant difference in the meanscoresof male and female library staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries.

Table 11 t-test on the mean scoresof male and femaleof library staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{X}$	sd	df	Cal.t	P. Value	Decision
Male	103	13.48	3.29				
				285	2.65	0.009	S
Female	184	12.27	3.90				

Table 11 indicates that at 0.05 level of significance and 285df, the calculated t is 2.65. Then the calculated p. value 0.009 is less than the critical p.value 0.05. The null hypothesis is rejected. This shows that there is significant difference in the meanscoresof male and female library staff on their knowledge of the computer skills required for digitization of information resources in Federal University libraries.

Null Hypothesis 7

There is no significant difference in the meanscores of male and female library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries.

Table 12 t-test on the mean scores of male and femaleof library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{x}$	sd	df	Cal.t	P. Value	Decision
Male	103	11.09	2.93				
				285	3.39	0.001	S
Female	184	9.71	3.50				

In table 12, it was observed that at 0.05 level of significance and 285df the calculated t is 3.39 with calculated p.value 0.001 which is less than the critical p.value 0.05. This invalidates the null hypothesis that there is no significant difference in the meanscores of male and female of library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries.As a result the null hypothesis is rejected

Null Hypothesis 8

There is no significant difference in the meanscores of male and female library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries.

Table 13 t-test on the mean scoresof male and femaleof library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{x}$	sd	df	Cal.t	P. Value	Decision
Male	103	8.57	3.14				
				285	1.00	0.319	NS
Female	184	8.13	3.84				

Table 13 shows that at 0.05 level of significance and 285df the calculated t is 1.00 with calculated p. value 0.319 which is greater than the critical p.value 0.05, the null hypothesis is therefore not rejected. This provides evidence that, there is no significant difference in the meanscores of male and female library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries.

Null Hypothesis 9

There is no significant difference in the meanscore of male and female library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries.

Table 14 t-test on the mean score of male and femaleof library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{X}$	sd	df	Cal.t	P. Value	Decision
Male	103	8.00	4.13				
				285	2.21	0.028	S
Female	184	6.90	3.99				

Table 14 indicates that at 0.05 level of significance and 285df the calculated t is 2.21 with calculated p.value 0.028 which is less than the critical p.value 0.05, thenull hypothesis is therefore rejected. Hence, there is significant difference in the meanscoreof male and female of library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries.

Null Hypothesis 10

There is no significant difference in the meanscore of male and female library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries.

Table 15: t-test on the mean score of male and female library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries

Source of variation	N	$\bar{X}$	s	df	Cal.t	P. Value	Decision
Male	103	10.84	4.41				
				285	1.24	0.217	NS
Female	184	10.11	4.96				

Table 15 reveals that at 0.05 level of significance and 285df the calculated t is 1.24 with calculated p.value 0.217 which is greater than the critical p.value 0.05. As a result, thenull hypothesis is not rejected. This credits the above statement that, there is no significant difference in the meanscore of male and female library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries.

Summary of the Findings

From the analysis the following were made:

1. Greater percentage of the library staff have good knowledge of the computer skills required for digitization of information resources. However, there is significant difference in the meanscoreof professional and paraprofessional library staff on their knowledge of the computer skills required for digitization of information resources. Also, there is significant difference in the meanscoreof male and female library staff on their knowledge of the computer skills required for digitization of information resources.

2. Less than a fraction of the library staff have good knowledge of the scanning skills required for digitization of information resources. However, there is no significant difference in the meanscore of professional and paraprofessional library staff on their knowledge of the scanning skills required for digitizationand, there is significant difference in the meanscoreof male and female library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University libraries.
3. Few percentage of the library staff have good knowledge of the editing skills required for digitization of information resources. Never the less, there is no significant difference in the meanscoreof professional and paraprofessional library staff on their knowledge of the editing skills required for digitization. Also, there is no significant difference in the meanscore of male and female library staff on their knowledge of the editing skills required for digitization of information resourcesin Federal University libraries.
4. Very few percentage of library staff have good knowledge of the document analysis skills required for digitization of information resources. Despite their poor knowledge in this area, there is significant difference in the meanscoresof professional and paraprofessional library

staff on their knowledge of the document analysis skills required for digitization. Similarly, there is significant difference in the meanscores of male and female library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries.

5. Fewer percentage of thelibrary staff have good knowledge of the archival skills required for digitization of information resources.However, there is significant difference in the meanscore of professional and paraprofessional library staff on their knowledge of the archival skills required for digitization. On the other hand, there is no significant difference in the meanscore of male and female library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries in South East, Nigeria.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter is presented in the following order:

- Discussion of the Findings
- Conclusions
- Implications of the Study
- Recommendations
- Limitations of the Study
- Suggestions for Further Reading.

Library staff knowledge of the computer skills required for digitization of information resources.

This study revealed that great percentage of library staff in federal universities in South East Nigeria had good knowledge of computer skills for digitization of information resources. The finding is in line with Oyedokun, Oyewunmi, Akanbi and Laaro (2018) who found that library staff demonstrated a high level of competency in basic skills such as word processing. Also, the finding corroborates that of Ayoku and Okafor (2015) who found that more than half of the librarians can perform word processing tasks, and Anyoku (2012) who discovered that a large majority of librarians rated themselves as having some knowledge and skills in basic computing which is the use of word processing software. The findings of the current study could be attributed to the increased

awareness and deployment of ICT related operations in many university libraries in the south east.

However, the finding differs from Ayoku and Okafor (2015), Etseye and Esin (2005), Okiy (2005), Umeji, Ejedafiru and Oghenetega (2013), who identified poor level of computer skills among staff of Nigerian university libraries. While ICT is impacting library operations, the environment in which library staff work is gradually changing. There is ICT consciousness in most university libraries and this could be responsible for improved knowledge of computer skills by library staff.

The finding that there is significant difference in the meanpercentage of professional and paraprofessional library staff on their knowledge of the computer skills required for digitization of information resources in Federal University librariescorroborates that of Mohamed, Haneefa and Shukoor who (2010) revealed that Professional librarians are more ICT proficient in ICT skills than the junior librarians. This is in line with the finding of Kattimani and Naik (2013) that deputy librarian and librarian category showed relatively high skills in ICT related tasks compared to others. The reason may be due to the nature of the LIS professional's work and academic engagement which create avenues to work with computers and improve their word processing skills.

However, the study differs from the finding of Ayoku (2015) who discovered a no significant difference between the different designations towards competence in the operation of computers, creation of files and folders, radio frequency identification, library automation software modules, Internet-related skills, Web design/Web editing, search engines and digitization of IR materials.

Again, the revelation of the study that there is significant difference in the meanpercentage of male and female library staff on their knowledge of the computer skills required for digitization of information resources in Federal University librariesimplies that male library staff had more knowledge of computer skills for digitization. This supports the finding of Alakpodia (2014) who identified that males possess a higher level of computer use skill than females. It appears that the male gender is highly technocentric which may be responsible for their predisposition to computers. Hence, they seem to be better at technical tasks such as system analysts and IT specialists in libraries. However, the finding is at variance with Ansari (2013) and Oyeniyi (2013) who found a no significant difference in ICT skills between male and female library professionals.

Library staff knowledge of scanning skills for digitization of information resources.

The study discovered that almost a fraction of the library staff hadpoor knowledge of scanning skills. The study is in tandem with the findings of Ngorngor (2012) and Shidi and Nwachukwu (2015) who found that library staff did not possess skills in using scanners.

However, the findings of the study did not agree with Igwesi (2010) that library staff in federal universities in south east possess scanning skills and, Oyedokun, Oyewumi, Akanbi and Laaro (2018) who discovered that library staff had skills in digitization of library information resource through scanning and uploading. Whereas digitization is being popularized among academic libraries (Adeleke, 2014), it is observed that knowledge of the skills required for conversion of materials from analogue to digital is still low among library staff. This could be attributed to the fact that scanning machine may not be placed in all units of the library and as such staff may not have opportunity of using the scanner machine.

Another finding that there is no significant difference in the meanpercentage of professional and paraprofessional library staff on their knowledge of the scanning skills required for digitization of information resources in Federal University librariesdisagrees with the findings of Ansari

(2013) which revealed that most professionals had high proficiency in using various types of hardware such as OCR devices, printers, scanners, barcode readers.

Library staff knowledge of editing skills for digitization of information resources.

The study revealed thata greater percentage of library staff had poor knowledge of editing skills required for digitization of information resources. This finding corroborates with that of Baruah and Hangsing (2012) who found a limited knowledge and skill of librarians on editing/digital imaging software. It also agrees with Ansari (2013) and Adeleke (2014) who revealed that respondents had low proficiency for image digitization. Furthermore, the finding is in line with Ahmed and Rehmah (2016) who indicated that library professionals in Khyber, Pakistan had limited knowledge of software such as Photoshop, CorelDRAW and other general purpose application software.

Library staff's poor knowledge of editing skills may be due to lack of training and awareness of editing tools. Adeleke (2014), supports this assertion in his finding that majority of the librarians had no formal professional training in digitization which implied that they possessed limited capabilities for implementing digitization projects. It is worthy to note that digitization is complex and requires a combination of knowledge and skills. As a result

library staff need to know various editing tools and equally be skilled to adequately take up digitization tasks.

Another finding is that there is no significant difference in the meanpercentage of professional and paraprofessionallibrary staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries. This agrees with the finding of Alhaji (2007) which revealed that majority of library professionals had no prior experience or knowledge of digitization and that of Abbas (2014) which indicate that librarians lack the requisite expertise to maneuver ICT facilities thus buttressing skills inadequacies of the librarians in many critical areas for their survival and efficiency. However, this finding differs from Mahanta (2016) who revealed that professionals in Assam are aware of ICT based applications such as Windows Operating System, MS Office, and Photoshop which is an image editing software.

Further finding from the study reveals that there is no significant difference in the meanpercentage of male and female library staff on their knowledge of the editing skills required for digitization of information resources in Federal University libraries. This could be as a result of library staff's lack of awareness of image editing software used for digitization.

Library staff knowledge of document analysis skills for digitization of information resources.

Findings from the study show that greater percentage of the library staff have poor knowledge of document analysis skills required for digitization of information resources. This finding tallies with that of Igwesi (2010) who revealed that the library staff do not have all the skills necessary for digitization. It also corroborates that ofAdeleke (2014) who indicated that librarians had below average in metadata creation skills and, Ahmed and Rehmah's (2016) study which revealed that maximum number of professional librarians possessed limited knowledge of Greenstone, DSpace, E print and, no knowledge of Fedora or any other digital library and institutional repository software.

Metadata creation is related to cataloguing of print materials hence, it is an intellectual activity that requires expertise of library staff to extract information (keywords) that will aid easy access to digitized materials on the web. Library staff require knowledge of critical skills to retain jurisdiction over professional tasks. However, the poor knowledge of document analysis skill which the current study evidenced could be attributed to negative perceptions of staff on the difficult nature of metadata creation and lack of interest towards cataloguing. This is why Riley-Huff and Rholes (2011) assert that modern

libraries require those in technology-related roles to have broad or specialized competencies in areas such as web development, database design, and management paired with a good working knowledge of classification formats such as XML, MARC, EAD, RDF and Dublin Core.

Another finding from the study indicate there is significant difference in the meanscoreof professional and paraprofessional library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries.Despite that professionals scored higher than paraprofessionals, majority of the library staff had poor knowledge of document analysis skills. It seems that skills inadequacies in this area may be attributed to lack of understanding of the descriptive processes of assigning metadata and phobia in the use of markup languages. However the finding validates that of Igwesi (2010) that library staff lack the skills on database management, creation and management of library website and metadata creation of library resources.

The study also revealed that there is significant difference in the meanpercentage of male and female library staff on their knowledge of the document analysis skills required for digitization of information resources in Federal University libraries in South East Nigeria.The reason may not be far from what has been earlier stated as it could still revolve round a perceived

complex nature of metadata descriptions and mark up languages. Thus, males are likely to grapple with metadata and query languages than females.

Library staff knowledge of archival skills for digitization of information resources.

Findings of the study reveal that greater percentage of the library staff have poor knowledge of the archival skills required for digitization. This finding corroborates that of Ezema, Ugwuanyi and Ugwu (2014) that librarians were not skilled in digital curation which entails understanding the practices of selection, preservation and description of digital collections. This finding also agrees with Ntoka& Adamou (2017) that many of the librarians do not have knowledge about digital materials preservation. The reason for this may be attributed to lack of awareness of the intricate processes associated with preservation of digital materials.

The study also evidenced a significant difference in the meanscores of professional and paraprofessional library staff on their knowledge of the archival skills required for digitization of information resources in Federal University libraries. This corroborates the findings of Reddy (2014) that the professionals have average skill in managing e-resources. Acquisition of knowledge in this area by the professional library staff could be attributed to the roles they have traditionally played which involves processing and preserving information for posterity. However, the study found a no significant

difference in the meanscores of male and femalelibrary staff on their knowledge of the archival skills required for digitization of information resources.

Arising from the above, it is essential that library staff acquire knowledge of the skills for managing digital resources irrespective of status or gender. This has become imperative in the current electronic landscape where library's traditional roles are being hijacked by external influences. Consequently, library staff need to be knowledgeable in skills required in critical areas of digitization such as editing and metadata. This brings to the fore Abbots theory of professions which states that the major issues in the library profession involves what is needed to compete and to thrive as a profession in a time when information appears to be ever more readily accessible to information users and when other groups may be seeking to play roles that librarians have traditionally played (Abbot, 1988).

Furthermore, the Dreyfus Model of Skill Acquisition as applied in this study has shown that library staff need to continually improve their knowledge and skills through constant practice in technical areas such as metadata. In so doing, they are well grounded and become experts in metadata which is a very critical area in librarianship. Finally, the onus lies with library staff to acquire

basic knowledge of ICT skills for digitization to remain vital and indispensable.

Conclusion

While the present study has shown the ICT skills required for digitization, it provides evidence that library staff do not have knowledge of all the ICT skills required for digitization of information resources. A greater percentage of the library staff in Federal University libraries in South East Nigeria have good knowledge of computer skills for digitization. On the other hand, alargepercentage of the staff had poor knowledge of the other ICT skills required for digitization. Despite the poor knowledge of library staff in certain ICT skill areas, professionals differed significantly from paraprofessionals in knowledge of computer, document analysis and archival skills whereas male library staff differed significantly from females in knowledge of computer, scanning and document analysis skills.

Implications of the Study

The result of the findings has implications on the library staff, university management, library administrators and LIS educators.

The findings reveal that a great percentage of the library staff have good knowledge of computerskills required for digitization. This implies that library staff's knowledge of computerskills will provide a strong footing for further training on digitization so that they can acquire other relevant skills to remain vital in digital information provision and also, retain jurisdiction over roles they have traditionally played.

The study uncover that great percentage of the library staff have poor knowledge of scanning, editing, document analysis and archival skills for digitization of information resources. The poor knowledge of library staff in certain critical ICT skills may result in creation of digital resources that remain invisible due to inadequate processes and poor metadata descriptions. Consequently, university indigenous resources may remain invisible where management fails to sponsor training of library staff for acquisition of knowledge and skills for digitization.

Digitization is a library's means of responding to faster delivery of information. However, the findings of the study reveal that a great percentage of the library staff are not knowledgeable in skills required for digitization. Staff are the major players in university library digitization. This has implications on the university library in provision of digital resources that meet current and changing needs of users. Where staff do not have the relevant

knowledge and skills required for digitizing information resources, the university library's objective of supporting teaching, learning and research would likely not be actualized.

The findings of the study provides empirical data on library staff knowledge of ICT skills for digitization. This information is essential given that Library and Information Science Educators are responsible for academic instruction and curriculum development. The findings of the study points to the need for a review of the LIS curriculum to close the gap between competences required in the job market and courses taught in library schools.

Recommendations

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

1. There is need for training and retraining of library staff to acquire the requisite knowledge and skills for implementing digitization projects. This can be done through in house trainings, workshops, seminars and conferences. In-house training facilitated by staff who have previously attended conferences and workshops can be organized to overcome the challenges posed by poor funds. Training will strengthen the skills library staff possess, improve their abilities for managing digital

resources and close the skills gap between professionals and paraprofessionals.

2. Digitization thrives in an electronic environment. The University management should provide robust technological infrastructure (electricity, computers, scanners, software, related technologies) and enabling environment for library staff to sustain the knowledge and skills acquired from training. This is very crucial because staff are often challenged when they attend trainings and return to an environment which does not provide the platform to express the knowledge and skills they have acquired.
3. Digitization is a product of the electronic environment and requires commitment and passion on the part of library managers to ensure success. It is man that moves technology hence library managers should play a leading role in this project by initiating implementation through advocacy. Furthermore, library managers should seek collaboration with staff of other university libraries who are already successful in the digitization project to assist in terms of knowledge and skill transfer.
4. Library is a system and responds to the changes in the environment. The electronic environment affects library's operations and services as well as knowledge and skills needed to meet current information needs of

patrons. While this study revealed library staff poor knowledge of the ICT skills required for digitization, it strongly recommends a proper review of the LIS curriculum to one that can withstand the demands of the electronic environment. The National Association of Library and Information Science Educators should develop ICT related courses which align with realities of the present day. Such courses can include "Introduction to Digitization," "Digital Imaging Techniques", "Metadata" and other ICT skills for emerging library operations.

Limitations of the study

The researcher encountered the following limitations in the course of the study

1. The study was limited to only the five federal university libraries in South east Nigeria. Data analyzed was collected within a specific timeframe. Library staff knowledge of ICT skills for digitization may change.

2. Some of the library staff did not attempt all their questions in the test. This attracted zero mark for the unanswered questions and may have contributed to their low score in some ICT skill areas.

Suggestions for Further Research

The findings of this study have initiated some thoughts for further research as suggested below:

1. Survey of library staff in federal universities in other geopolitical zones to ascertain their knowledge of ICT skills for digitization of information resources.

2. A case study in the federal universities in southeast Nigeria using other methods (observation) to ascertain knowledge and ICT skills of library staff for digitization of information resources.

3. A detailed analysis of the factors that affect ICT skills acquisition of library staff for digitization of information resources in federal university libraries in South East Nigeria.

4. Image Enhancement Processes: examining the skills capacity of library staff for successful digitization.

5. Librarians and Metadata: retaining our professional role in a digital environment.

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Appendix A

Department of Library and Information
Science,
NnamdiAzikiwe University
PMB 5025, Awka.
Date ……..

Dear Respondent,

REQUEST FOR COMPLETION OF TEST ON LIBRARY STAFF KNOWLEDGE OF ICT SKILLS FOR DIGITIZATION OF INFORMATION RESOURCES IN FEDERAL UNIVERSITIES IN SOUTH EAST NIGERIA.

I am a postgraduate student of the above named institution conducting a research on "Library Staff knowledge of ICT Skills for Digitization of Information Resources in Federal Universities in South East Nigeria".

Please kindly complete the attached Test to the best of your knowledge. I assure you that the information provided will be strictly used for academic exercise.

Thank you for your anticipated co-operation.

Yours truly,

Emezie, Nkeiru .A.
(Researcher)

KNOWLEDGE OF ICT SKILLS FOR DIGITIZATION TEST" (KICTDiT)

PLEASE READ CAREFULLY AND TICK ( ) ON THE RIGHT OPTION

SECTION A: DEMOGRAPHIC PROFILE

Name of institution……

Name of Unit in the Library …….

Gender: (A) Male ☐ (B) Female ☐

Status**:** **(**A) University Librarian ☐ (B) Deputy Librarian ☐ (C) Senior Librarian ☐

(D) Librarian I ☐ (E) Librarian II ☐ (F) Assistant Librarian ☐ (G) Graduate Assistant ☐ (H) Library Officers cadre ☐ (I) Supervisor ☐ (J) Library Assistant ☐

(K) Others please specify ……..

SECTION B: TEST ON KNOWLEDGE OF ICT SKILLS FOR DIGITIZATION

Test of Computer skills

1. Tick the functions that would enable you start a desktop computer.
   A. Pressing CTRL+ALT+DEL
   B. Using the mouse to select /start/
   C. Pressing the power buttons on both the CPU and monitor
   D. Double clicking the internet explorer icon

2. To be able to input information in the computer, you would use the…
   A. Decoder
   B. Keyboard
   C. Printer
   D. Hard disk.

3. Which side of the mouse would you click more often while operating a computer?
   A. The left click
   B. The Central ball
   C. The right click
   D. None of the above

4. In the Microsoft Word environment, the menu you would select to “save” or “save as” is
   A. Insert menu
   B. File menu
   C. Tools menu
   D. Edit menu

5. To use a shortcut to copy selected text and paste it in a document, you would click
   A. Ctrl + C, Ctrl + V
   B. Ctrl + C, Ctrl + P
   C. Ctrl + S, Ctrl + S
   D. Shift + C, Alt + P

6. The following functions will enable you save a document on your computer
   A. Go to File/Windows -> save as -> insert folder-> type file name -> save
   B. Go to File/Windows -> save -> destination -> type file name -> save.
   C. Go to File/Windows -> save as PDF -> destination ->file name -> save
   D. Go to File/Windows -> save new -> destination -> file name -> save

7. In saving to an external memory device (e.g Flash), you would first of all
   A. Insert the computer into the device
   B. Insert the device into the HDD port
   C. Insert the device into USB port
   D. Insert device into UCB port

8. To quickly minimize or maximize a program on your computer, you would
   A. Right click on the mouse
   B. Go to /file/ select minimize or maximize
   C. Go to top right corner, click on /dash/ or /square/
   D. This function cannot be done

9. To shut down a desktop computer after working, you would
   A. Right click on the mouse and shut down
   B. Go to start menu, click on shut down
   C. Go to my network places, right click and select shut down
   D. Just switch off the main socket.

10. One of these is not used in a Microsoft Office suite.
   A. Excel
   B. WordPerfect
   C. Spreadsheet
   D. PowerPoint.

Test of Scanning skills

11. The first thing you would do before you start the scanning process is to
   A. Preview the scan
   B. Press the scan button on the scanner
   C. Connect the scanner to your PC
   D. Scan the image

12. When using the scanner, you would place the document to be scanned
   A. Upright on the scanner bed
   B. Face down on the scanner bed
   C. Down right on the scanner bed
   D. Face up on the scanner bed

13. You are able to make scanned records machine readable and searchable using
   A. Formatting technique
   B. Optical Character Recognition
   C. Compression technique
   D. Barcode reader

14. You would make use of the following settings during the scanning process
   A. Specification, Segmentation, Transformation settings
   B. Image Resolution settings, Color format, File types
   C. Computer resolution, Desktop appearance, Font types
   D. Image Compression, MS Outlook, Image Resolution

15. To save scanned materials, you would use all these file formats except
   A. TIFF
   B. JPEG
   C. DOC

D. PDF

16. The following are used for saving scanned documents except…
    A. A network shared folder, Memory stick
    B. Flash drives, CD-ROM,
    C. Computer Chips, CMOS
    D. Computer Hard Disk, External Drive

17. If you have a system with multiple scanners, you would use …… to specify the particular scanner to work with
    A. Rescan
    B. Scanner ware
    C. Scanner Setup
    D. Scanner route

18. When you are using the resolution feature in scanning, you are adjusting
    A. The quality of the image
    B. The clarity of the image
    C. The color and contrast of the image
    D. The size of the image in pixels

19. The following items are used in scanning except
    A. Computer
    B. Papers
    C. External storage
    D. Decoder

20. To achieve quality scanning of bound materials on a flatbed scanner, you will
    A. Scan the materials in their bound state
    B. Unbound the materials and scan each page
    C. Scan the preliminary pages only
    D. Scan the front and back pages only

Test of Editing Skills

21. The following applications can be used for image processing except…
    A. Office Draw
    B. GIMP
    C. Photoshop
    D. Director

22. To take out unwanted background areas, you would use
    A. Clipping

B. Framing
C. Cropping
D. None of the above

23. Before you start processing images, the first step is
A. Image restoration
B. Image enhancement
C. Image acquisition
D. Segmentation

24. You would use the "transform tools" feature for
A. Scaling
B. Cropping
C. Hueing
D. Rotating

25. You would use the following functions to import an image file to an editing platform
A. File -> Open -> Select file Location -> Open
B. File -> New -> Select file location -> Open
C. File -> Create -> Select file Location -> Open
D. None of the above

26. These operations are used for image processing except
A. Editing
B. Scaling
C. bleeding
D. bit-depth adjustment

27. To crop an image, you would click on:
A. Transform tools – Layers- Crop
B. Tools – transform tools - Crop
C. Tools – Layers –crop
D. Layers – transform tools – crop

28. The tool you will use to clean up page background is…
A. Healing Tool
B. Paint brush tool
C. Eraser tool
D. Airbrush tool

29. To save an edited image under a different file name, you will
A. Select the file menu and choose save as
B. When you choose save, the file will automatically be saved
C. Select the file menu and choose save

D. None of the above

30. To save an edited image in various file formats, you will
    A. Select the file menu and choose save
    B. Select the file menu and choose file as
    C. Select the file menu and choose import as
    D. Select the file menu and choose format as

Test of Document Analysis skills

31. The following schemas are used for metadata except …
    A. Dublin core
    B. Machine Readable Catalogue
    C. Library of Congress Subject Classification Scheme/AACR
    D. Metadata Cataloguing Description Ratio

32. The following are markup languages used in metadata except…
    A. Standard Generalized Markup Language (SGML)
    B. Adobe Resource Description
    C. Hyper Text Markup Language,
    D. My Structured Query Language (MYSQL)

33. In entering data in a metadata field, the resource is linked by default in the …
    A. Author element
    B. Description element
    C. URI element
    D. Contributor element

34. While using metadata, one of these elements contain an odd descriptor
    A. Title, Subject, Issue date, Creation date and time, Citation
    B. Title, Subject, Author, Last modification date and time, number of pages
    C. Title, Subject, Number of pages, Caste, Abstract, Description
    D. Title, Subject, Author, Description, Version, Publisher Link

35. While assigning metadata, you would do the following in the Abstract column:
    A. Cut and paste the Abstract
    B. Copy and paste the Abstract
    C. Link the abstract
    D. Move the abstract

36. The Citation element in metadata field is used for…
    A. Institution details
    B. Bibliographic details

C. Cataloguers detail
D. Author biography details

37. In the “Item type” element, you would
A. Type the title of the resource
B. Indicate the type of resource
C. Show the title of the resource
D. None of the above

38. One of these statements is not true about OCR
A. No OCR program is 100% accurate
B. Different OCR programs have different capabilities
C. OCR programs are not compatible with scanners
D. OCR converts scanned documents into editable and searchable data

39. The meaning of OCR is
A. Optical Character Recognition
B. Optional Cataloguing Rule
C. Operational Character Recognition
D. Optical Cataloguing Rule

40. While using metadata ‘dc’ in dc type, dc creator, dc description stands for
A. Descriptor Category
B. Dublin Core
C. Digital Catalogue
D. Digital Card

Test of Archival skills (File Management)

41. The file extension you would use for a picture file is
A. .exe
B. .jpg
C. .doc
D. .txt

42. You would use a folder to store
A. Files and folders
B. Files only
C. Plain sheets
D. None of these

43. The name you would assign a document is called
A. Program
B. File name

C. Record
D. Data

44. All these are examples of file naming conventions except
    A. Underscores
    B. Dashes
    C. Numbering system
    D. Tethering

45. You would employ the following functions to save a file to an external Hard Disk
    A. Select file->left click-> cut-> paste->open Hard disk
    B. Select file-> right click-> open Hard disk->cut
    C. Select file->left click ->move->paste->Open Hard disk
    D. Select file->right click-> copy->Open Hard disk->Paste

46. You will use ---------- to store all deleted files by default
    A. Tool bar
    B. Recycle Bin
    C. Tool bar
    D. My Computer

47. You will use Acrobat software to open
    A. .gif
    B. .png
    C. .pdf
    D. .jpg

48. In saving archival images, you are likely to use
    A. JPEG
    B. TIFF
    C. PNG
    D. PDF

49. You would use a zip folder to store
    A. Only MS word files
    B. Compressed files
    C. pdf files
    D. Scanned files

50. The following external storage devices are used to store files except
    A. Decoder
    B. Flash Drive
    C. Cloud
    D. Hard Disk drive

Thank you for your time.

Appendix B

Department of Library and Information Science,
NnamdiAzikiwe University
PMB 5025, Awka
Date …….

To:……

……

……

Sir/Madam

REQUEST FOR VALIDATION OF QUESTIONNAIRE

I am a postgraduate student of the above named department. I am carrying out a research on ICT Skills Possessed by Library Staff for Digitization of Information Resources in Federal Universities in South East Nigeria.

Attached to this letter is the research instrument for the study, alongside with the purpose of study, research questions and hypotheses. Please kindly verify the validity of the instrument with respect to:

- The language and clarity of the questionnaire items
- The possibility of the instrument to collect the exact data required from the respondents
- The extent to which the questionnaire items cover the subject matter

You are most welcome to make corrections, adjustment and suggestions on the research. I will gladly appreciate any corrections made on the questionnaire.

Thank you for your anticipated co-operation.

Yours faithfully

Emezie, NkeiruAmauche

(*Postgraduate student*)

APPENDIX

Validation of instrument on the Topic:

ICT SKILLS POSSESSED BY LIBRARY STAFF FOR DIGITIZATION OF INFORMATION RESOURCES IN FEDERAL UNIVERSITIES IN SOUTH EAST NIGERIA.

This is to certify that I Prof. Ugwu Ogo

Validated the above mentioned instrument and made corrections/recommendations on the following areas:

It will be better to change the term (Process) to acquired as you are using an achievement test instrument

APPENDIX

Validation of instrument on the Topic:

I.C.T Skills Possessed by Library Staff for Digitization of Information Resources in Federal Universities in South East Nigeria

This is to certify that I Dr. C. S. Anachebe

Validated the above mentioned instrument and made corrections/recommendations on the following areas:

① Items 10, 11, 17, 20, 30, 31, 34, 39 and 45 should be recast to have only one specific acceptable answer

②

APPENDIX

Validation of instrument on the Topic:

I.C.T Skills Possessed by Library Staff for Digitization of Information Resources in Federal Universities in South East Nigeria

This is to certify that I Dr. E.S. Anachebe

Validated the above mentioned instrument and made corrections/recommendations on the following areas:

① Items 10, 11, 17, 20, 30, 31, 34, 39 and 45 should be recast to have only one specific acceptable answer

②

Appendix C

Summary of Reliability Analysis Using Kr20

S/N	**SCALE**	**Reliability Coefficient**
1	**Computer Skills**	.96
2	**Scanning Skills**	.98
3	**Editing Skills**	.95
4	**Document Analysis**	.96
5	**Archiving Analysis**	.99
	OVERALL	**.96**

Formula= $$Kr20 = \frac{N}{N-1}\left(\frac{V - \sum pq}{V}\right)$$

Where: N = sample size for the test,

- V = variance for the test,
- p = proportion of people passing the item,
- q = proportion of people failing the item.
- Σ = sum up (add up). In other words, multiple each question's p by q, and then add them all up.

Determining the Variance (*V*)

Respondents	COMPUTER SKILLS	SCANNING SKILLS	EDITING SKILLS	DOCUMENT ANALYSIS SKILLS	ARCHIVAL SKILLS	TOTAL SCORE
1.	20	12	10	10	18	70
2.	16	8	10	6	10	50
3.	16	14	6	4	16	56
4.	12	12	12	12	12	60
5.	18	18	10	10	14	70
6.	16	16	10	14	16	72
7.	18	6	12	10	18	64
8.	18	10	12	12	18	70
9.	16	18	12	6	18	70
10.	8	10	10	0	0	28
11.	8	6	14	2	18	48
12.	12	6	6	2	6	32
13.	8	10	8	6	8	40
14.	20	14	4	0	6	44
15.	14	4	0	0	0	18
16.	6	0	0	0	6	12

17.	12	2	0	2	10	26
TOTAL SCORES	**238/17** **Mean = 14.00** **Variance = 20.00**	**166/17** **Mean = 9.76** **Variance=28.44**	**136/17** **Mean=8.00** **Variance=21.00**	**96/17** **Mean=5.65** **Variance=23.62**	**194/17** **Mean=11.41** **Variance=39.38**	**830**

Determining the *pq*

COMPUTER SKILLS

ITEM NUMBER	**NO. Answered Item Correctly**	**NO. that answered incorrectly**	**Proportion that answered item correctly (*p*)**	**Proportion that answered item incorrectly (*q*)**	***p x q***
1.	12	5	.71	.29	.21
2.	17	-	1	0	0
3.	12	5	.71	.29	.21
4.	13	4	.76	.24	.18
5.	10	7	.59	.41	.24
6.	7	10	.41	.59	.24
7.	14	3	.82	.17	.14
8.	12	5	.71	.29	.21
9.	16	1	.74	.06	.04
10.	6	11	.35	.65	.23
					$\sum$1.70

SCANNING SKILLS

ITEM NUMBER	**NO. Answered Item Correctly**	**NO. that answered incorrectly**	**Proportion that answered item correctly (*p*)**	**Proportion that answered item incorrectly (*q*)**	***p x q***
11.	13	4	.76	.24	.18
12.	14	3	.82	.18	.15
13.	4	13	.24	.76	.18
14.	6	11	.35	.65	.23
15.	4	13	.24	.76	.18
16.	8	9	.47	.53	.25
17.	10	7	.59	.41	.24
18.	2	15	.12	.88	.11
19.	10	7	.59	.41	.24
20.	13	4	.76	.24	.18
					$\sum$1.94

EDITING SKILLS

ITEM NUMBER	NO. Answered Item Correctly	NO. that answered incorrectly	Proportion that answered item correctly (*p)*	Proportion that answered item incorrectly (*q)*	*p x q*
21.	3	14	.18	.82	.15
22.	13	4	.76	.24	.18
23.	4	13	.24	.76	.18
24.	7	10	.41	.59	.24
25.	9	8	.53	.47	.25
26.	4	13	.24	.76	.18
27.	6	11	.35	.65	.23
28.	10	7	.59	.41	.24
29.	10	7	.59	.41	.24
30.	1	16	.06	.94	.06
					$\sum$1.95

DOCUMENT ANALYSIS

ITEM NUMBER	NO. Answered Item Correctly	NO. that answered incorrectly	Proportion that answered item correctly (*p)*	Proportion that answered item incorrectly (*q)*	*p x q*
31.	1	16	.06	.94	.06
32.	4	13	.24	.76	.18
33.	4	13	.24	.76	.18
34.	6	11	.35	.65	.23
35.	5	12	.29	.71	.21
36.	7	10	.41	.59	.24
37.	6	11	.35	.65	.23
38.	4	13	.24	.76	.18
39.	7	10	.41	.59	.24

40.	4	13	.24	.76	.18
					∑1.93

ARCHIVAL SKILLS

ITEM NUMBER	NO. Answered Item Correctly	NO. that answered incorrectly	Proportion that answered item correctly (*p*)	Proportion that answered item incorrectly (*q*)	*p x q*
41.	12	5	.71	.29	.21
42.	6	11	.35	.65	.23
43.	14	3	.82	.18	.15
44.	5	12	.29	.71	.21
45.	12	5	.71	.29	.21
46.	14	3	.82	.18	.15
47.	11	6	.65	.35	.23
48.	4	13	.24	.76	.18
49.	8	9	.47	.53	.25
50.	14	3	.82	.18	.15
					∑1.97

Formula= $$Kr20 = \frac{N}{N-1}\left(\frac{V - \sum pq}{V}\right)$$

Computer Skills

$$\frac{17}{17-1}\left(\frac{20.00 - 1.70}{20.00}\right)$$

$$1.06\left(\frac{18.3}{20.00}\right)$$

1.06 × .91

Kr20 = .96

Scanning Skills

$$\frac{17}{17-1}\left(\frac{28.44-1.94}{28.44}\right)$$

$$1.06\left(\frac{26.5}{28.44}\right)$$

1.06×.93

Kr20= .98

Editing Skills

$$\frac{17}{17-1}\left(\frac{21.00-1.95}{21.00}\right)$$

$$1.06\left(\frac{19.05}{21.00}\right)$$

1.06×.90

Kr20= .95

Document Analysis

$$\frac{17}{17-1}\left(\frac{23.62-1.93}{23.62}\right)$$

$$1.06\left(\frac{21.69}{23.62}\right)$$

1.06 × .91

Kr20= .96

Archiving Analysis

$$\frac{17}{17-1}\left(\frac{39.38-1.97}{39.38}\right)$$

$$1.06\left(\frac{37.41}{39.38}\right)$$

1.06×.94

Kr20= .99

Appendix D

DISTRIBUTION OF THE POPULATION OF LIBRARY STAFF BY INSTITUTION

S/N	Name of institution	State	Total
1.	MichealOkpara University of Agriculture, Umudike	Abia	**62**
2.	NnamdiAzikiwe University, Awka	Anambara	**61**
3.	University of Nigeria, Nsukka	Enugu	**82**
4.	Federal University, Ndufu-Alike, Ikwo	Ebonyi	**31**
5.	Federal University of Technology, Owerri	Imo	**117**
	Total		**353**

Appendix E

Output of Analysis

Frequency Table

Statistics

		GENDER	STATUS	COMPUTER SKILL	SCANNINGS KILL	EDITING SKILL	DOCUMENTANALYSISSKILL	ARCHIVAL SKILL
N	Valid	287	287	287	287	287	287	287
	Missing	0	0	0	0	0	0	0

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	103	35.9	35.9	35.9
	FEMALE	184	64.1	64.1	100.0
	Total	287	100.0	100.0	

STATUS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PROFESSIONAL	110	38.3	38.3	38.3
	PARAPROFESSIONAL	177	61.7	61.7	100.0
	Total	287	100.0	100.0	

COMPUTERSKILL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	.7	.7	.7
	4.00	5	1.7	1.7	2.4
	6.00	18	6.3	6.3	8.7
	8.00	27	9.4	9.4	18.1
	10.00	31	10.8	10.8	28.9
	12.00	53	18.5	18.5	47.4
	14.00	70	24.4	24.4	71.8
	16.00	51	17.8	17.8	89.5
	18.00	22	7.7	7.7	97.2
	20.00	8	2.8	2.8	100.0
	Total	287	100.0	100.0	

SCANNINGSKILL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	4	1.4	1.4	1.4
	2.00	3	1.0	1.0	2.4
	4.00	15	5.2	5.2	7.7
	6.00	27	9.4	9.4	17.1
	8.00	42	14.6	14.6	31.7
	10.00	59	20.6	20.6	52.3
	12.00	89	31.0	31.0	83.3
	14.00	37	12.9	12.9	96.2
	16.00	6	2.1	2.1	98.3
	18.00	4	1.4	1.4	99.7
	20.00	1	.3	.3	100.0
	Total	287	100.0	100.0	

EDITINGSKILL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	12	4.2	4.2	4.2
	1.00	1	.3	.3	4.5
	2.00	9	3.1	3.1	7.7
	4.00	28	9.8	9.8	17.4
	6.00	53	18.5	18.5	35.9
	8.00	58	20.2	20.2	56.1
	10.00	45	15.7	15.7	71.8
	12.00	61	21.3	21.3	93.0
	14.00	18	6.3	6.3	99.3
	16.00	2	.7	.7	100.0
	Total	287	100.0	100.0	

DOCUMENTANALYSISSKILLS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	27	9.4	9.4	9.4
	2.00	24	8.4	8.4	17.8
	4.00	26	9.1	9.1	26.8
	6.00	52	18.1	18.1	44.9
	8.00	58	20.2	20.2	65.2
	10.00	46	16.0	16.0	81.2
	12.00	30	10.5	10.5	91.6
	14.00	19	6.6	6.6	98.3
	16.00	5	1.7	1.7	100.0
	Total	287	100.0	100.0	

ARCHIVAL SKILLS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	6	2.1	2.1	2.1
	2.00	10	3.5	3.5	5.6
	4.00	16	5.6	5.6	11.1
	6.00	45	15.7	15.7	26.8

8.00	48	16.7	16.7	43.6
10.00	45	15.7	15.7	59.2
12.00	21	7.3	7.3	66.6
14.00	33	11.5	11.5	78.0
16.00	32	11.1	11.1	89.2
18.00	29	10.1	10.1	99.3
20.00	2	.7	.7	100.0
Total	287	100.0	100.0	

T-Test

Group Statistics

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
COMPUTERSKILL	MALE	103	13.4757	3.28945	.32412
	FEMALE	184	12.2717	3.89929	.28746
SCANNINGSKILL	MALE	103	11.0874	2.93427	.28912
	FEMALE	184	9.7065	3.49563	.25770
EDITINGSKILL	MALE	103	8.5728	3.13613	.30901
	FEMALE	184	8.1304	3.83603	.28280
DOCUMENTANALYSISSKILL	MALE	103	8.0000	4.13498	.40743
	FEMALE	184	6.9022	3.99333	.29439
ARCHIVAL	MALE	103	10.8350	4.40609	.43415
	FEMALE	184	10.1087	4.95544	.36532

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
COMPUTERSKILL	Equal variances assumed	2.650	285	.009	1.20399
SCANNINGSKILL	Equal variances assumed	3.394	285	.001	1.38086
EDITINGSKILL	Equal variances assumed	.998	285	.319	.44238
DOCUMENTANALYSISSKILL	Equal variances assumed	2.206	285	.028	1.09783
ARCHIVAL	Equal variances assumed	1.238	285	.217	.72626

T-Test

Group Statistics

	STATUS	N	Mean	Std. Deviation	Std. Error Mean
COMPUTERSKILL	PROFESSIONAL	110	13.5818	3.69572	.35237
	PARAPROFESSIONAL	177	12.1582	3.65840	.27498
SCANNINGSKILL	PROFESSIONAL	110	10.5273	3.90415	.37225
	PARAPROFESSIONAL	177	10.0000	2.97719	.22378
EDITINGSKILL	PROFESSIONAL	110	8.6818	3.74639	.35720
	PARAPROFESSIONAL	177	8.0452	3.49646	.26281
DOCUMENTANALYSISSKILL	PROFESSIONAL	110	8.2909	4.28213	.40828
	PARAPROFESSIONAL	177	6.6780	3.81880	.28704
ARCHIVAL	PROFESSIONAL	110	11.5818	5.13377	.48949
	PARAPROFESSIONAL	177	9.6158	4.37833	.32910

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
COMPUTERSKILL	Equal variances assumed	3.193	285	.002	1.42363
SCANNINGSKILL	Equal variances assumed	1.292	285	.197	.52727
EDITINGSKILL	Equal variances assumed	1.459	285	.146	.63662
DOCUMENTANALYSISSKILL	Equal variances assumed	3.319	285	.001	1.61294
ARCHIVAL SKILLS	Equal variances assumed	3.459	285	.001	1.96600

Appendix F

TEST MARKING GUIDE

1. **C**
2. **B**
3. **A**
4. **B**
5. **A**
6. **B**
7. **C**

8. C
9. B
10.B
11.C
12.B
13.B
14.B
15.C
16.C
17.C
18.D
19.D
20.B
21.A
22.C
23.C
24.B
25.A

26.C
27.B
28.C
29.A
30.C
31.D
32.B
33.C
34.C
35.B

36.A
37.B
38.C
39.A
40.B

S/N	GENDER	STATUS	COMPUTER SKILLS	SCANNING SKILLS	EDITING SKILLS	DOCUMENT ANALYSIS SKILLS	ARCHIVAL SKILLS	TOTAL	REMARKS

41.A
42.A
43.B
44.D
45.D
46.B
47.C
48.B
49.B
50.A

Appendix G

Library Staff Knowledge of ICT Skills Test Scores

1.	2	3	12	14	10	6	18	60	
2.	1	3	18	12	6	-	10	46	
3.	1	4	16	14	12	6	6	54	
4.	1	3	14	12	2	16	14	58	
5.	1	3	18	14	14	12	20	78	
6.	1	3	10	12	10	-	4	36	
7.	1	3	18	16	8	10	16	68	
8.	2	4	8	8	-	2	6	24	
9.	2	4	10	12	14	8	6	50	
10.	1	4	12	4	-	4	10	30	
11.	2	3	14	14	10	6	10	54	
12.	1	3	14	14	8	6	8	50	
13.	2	4	12	10	12	8	10	52	
14.	2	4	10	8	10	6	0	34	
15.	2	3	16	2	8	14	16	56	
16.	1	4	20	12	10	16	16	74	
17.	1	3	14	10	12	10	14	60	
18.	2	3	12	8	12	10	14	56	
19.	1	4	8	8	10	6	12	44	
20.	2	4	12	6	12	8	14	52	
21.	2	4	4	14	10	10	6	44	
22.	2	4	8	10	12	2	2	34	
23.	2	4	8	6	8	8	8	38	
24.	2	3	12	6	10	10	10	48	
25.	2	3	16	14	12	14	16	72	
26.	2	3	12	10	6	10	14	52	
27.	1	3	12	12	6	4	2	36	
28.	2	4	12	12	6	4	16	50	
29.	1	4	18	16	10	4	14	62	
30.	2	4	10	12	6	4	16	48	
31.	2	3	10	4	6	2	4	26	
32.	2	4	8	6	2	6	8	30	
33.	2	4	8	6	2	8	6	28	
34.	2	4	12	12	8	4	0	36	
35.	2	3	16	14	12	14	18	74	
36.	2	4	8	8	8	6	4	34	
37.	2	4	10	8	0	0	6	24	
38.	2	4	14	10	8	2	14	48	
39.	1	4	10	14	8	2	14	48	
40.	2	4	14	10	8	2	14	48	
41.	2	4	18	12	10	10	18	68	
42.	1	3	12	8	10	6	10	46	
43.	1	4	10	8	4	6	6	34	
44.	1	3	14	12	12	14	20	72	
45.	2	3	14	8	4	4	10	40	
46.	2	3	16	6	10	6	14	52	
47.	2	3	16	4	10	6	14	50	
48.	1	3	20	20	12	12	18	82	
49.	2	3	14	10	6	8	6	44	
50.	2	4	12	10	10	8	6	46	
51.	2	3	16	14	10	10	18	68	

52.	1	4	14	14	8	12	8	56	
53.	2	4	14	10	12	8	6	50	
54.	2	4	12	6	10	8	8	34	
55.	2	4	16	10	8	8	8	50	
56.	2	4	12	10	8	10	10	50	
57.	1	4	14	10	8	4	14	52	
58.	2	4	14	10	8	8	14	54	
59.	2	4	18	10	10	10	14	54	
60.	1	4	8	4	4	4	4	28	
61.	1	3	18	12	12	10	18	70	
62.	1	4	12	12	10	2	12	48	
63.	1	4	8	6	12	6	10	42	
64.	2	4	12	12	10	0	12	46	
65.	2	4	4	14	8	8	2	36	
66.	2	4	16	0	0	0	10	26	
67.	1	4	16	12	10	8	14	60	
68.	1	3	14	10	14	6	6	50	
69.	1	4	16	6	8	0	8	38	
70.	2	4	18	14	16	4	12	64	
71.	2	4	8	10	8	6	6	38	
72.	1	4	10	8	12	8	8	36	
73.	2	4	4	4	8	6	0	22	
74.	1	3	16	12	10	10	18	66	
75.	1	3	16	10	8	4	10	48	
76.	1	3	10	12	8	10	14	54	
77.	1	3	10	10	10	10	18	58	
78.	2	4	10	6	8	2	16	32	
79.	2	4	4	8	0	6	6	24	
80.	2	4	8	6	2	4	2	22	
81.	2	3	10	8	8	8	8	42	
82.	1	4	16	10	4	0	10	40	
83.	2	3	8	12	10	8	14	52	
84.	2	4	12	8	6	8	4	38	
85.	2	4	16	12	4	4	10	46	
86.	1	4	12	14	10	8	6	50	
87.	2	4	12	14	10	8	6	50	
88.	1	4	16	12	12	8	14	62	
89.	1	4	18	12	6	2	6	42	
90.	1	3	6	12	10	10	12	50	
91.	1	4	12	14	8	8	6	48	
92.	2	3	18	12	12	6	14	62	
93.	2	4	14	12	12	12	16	66	
94.	2	3	14	12	12	12	16	66	
95.	2	3	16	12	12	12	16	68	
96.	1	3	16	12	12	12	16	68	
97.	2	4	14	12	12	6	14	58	
98.	2	4	14	12	12	12	16	66	
99.	1	4	14	12	12	8	14	60	
100	1	3	16	12	12	14	16	70	
101	2	4	12	12	12	8	14	58	
102	2	4	14	8	10	8	16	56	

103	2	4	14	8	12	8	8	50	
104	1	4	12	10	10	6	8	46	
105	2	4	10	6	6	6	8	36	
106	1	3	14	14	14	8	16	66	
107	1	3	10	16	1	4	6	37	
108	2	4	12	10	12	12	16	62	
109	1	4	14	14	12	8	12	60	
110	2	4	12	4	12	8	4	40	
111	2	4	6	8	8	2	2	26	
112	2	3	18	12	12	14	18	74	
113	2	4	14	8	10	8	8	48	
114	2	4	12	12	10	6	16	56	
115	2	3	10	12	0	2	18	42	
116	2	4	14	10	16	12	4	56	
117	2	3	2	0	0	0	0	2	
118	2	3	16	10	14	10	16	60	
119	1	4	18	16	14	12	18	78	
120	2	3	16	10	14	10	16	66	
121	2	3	16	14	12	12	18	72	
122	2	4	16	6	4	2	12	40	
123	2	3	10	6	12	6	12	40	
124	2	3	10	6	12	6	12	46	
125	2	4	14	12	12	8	16	62	
126	1	3	16	12	12	14	18	72	
127	2	3	8	8	12	6	10	34	
128	1	4	12	12	12	8	14	58	
129	1	4	12	10	6	6	4	38	
130	1	4	10	14	4	12	10	50	
131	2	3	12	14	0	2	16	44	
132	1	4	12	8	4	2	10	36	
133	2	4	12	6	8	12	12	50	
134	1	4	12	12	12	14	18	68	
135	1	4	8	6	8	6	10	34	
136	2	4	14	6	14	10	18	62	
137	2	3	8	8	14	8	8	46	
138	2	3	14	12	12	8	16	62	
139	2	4	8	8	12	6	8	42	
140	2	4	16	10	8	4	10	48	
141	2	4	14	12	12	8	16	64	
142	1	4	14	12	12	14	18	70	
143	1	3	20	6	8	6	8	48	
144	1	4	14	14	14	10	12	64	
145	2	3	14	6	10	10	10	50	
146	2	3	12	12	6	2	10	42	
147	1	4	14	8	8	10	10	50	
148	1	3	18	12	12	10	18	70	
149	2	4	12	14	14	10	14	64	
150	2	3	16	14	6	4	16	56	
151	2	4	6	8	6	4	2	26	
152	1	4	18	14	6	0	14	52	
153	1	3	10	4	4	8	8	34	

154	2	3	14	8	2	6	4	34	
155	2	4	6	4	4	0	4	18	
156	2	4	16	12	8	0	8	34	
157	1	4	16	12	12	0	12	52	
158	2	4	20	12	14	0	14	60	
159	2	3	16	12	14	16	16	74	
160	1	4	10	14	8	8	10	50	
161	1	4	14	14	12	0	16	56	
162	2	3	18	12	8	2	2	42	
163	2	4	12	14	6	0	12	44	
164	2	4	16	12	12	0	14	54	
165	2	4	8	10	4	10	4	36	
166	1	4	6	12	6	8	4	36	
167	2	4	14	12	10	6	16	58	
168	2	4	4	8	4	4	8	28	
169	2	4	10	14	8	4	10	46	
170	2	4	10	12	4	0	6	32	
171	1	4	12	6	6	6	8	38	
172	2	4	2	4	0	6	2	14	
173	2	4	8	6	6	6	12	38	
174	1	4	10	12	12	6	12	52	
175	2	4	18	10	6	0	12	46	
176	2	4	12	12	12	6	16	60	
177	1	3	18	12	8	12	8	58	
178	2	4	10	4	6	14	10	44	
179	1	3	20	18	12	16	18	84	
180	2	4	8	2	6	6	6	28	
181	2	3	20	14	14	0	6	46	
182	2	3	6	0	0	0	6	12	
183	2	3	12	2	0	12	10	26	
184	2	4	18	10	10	8	2	48	
185	1	3	20	12	10	10	18	70	
186	2	3	16	8	10	6	10	50	
187	1	3	12	12	12	12	12	60	
188	2	3	18	18	10	10	14	70	
189	2	3	16	16	10	14	16	72	
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192	2	3	16	18	12	6	18	70	
193	1	3	12	4	6	2	6	30	
194	1	4	10	10	8	14	6	48	
195	2	4	14	12	6	10	4	46	
196	1	4	14	14	4	14	8	60	
197	2	3	8	10	10	0	0	28	
198	2	3	8	10	8	6	8	40	
199	1	4	14	8	8	10	14	54	
200	2	3	14	4	0	0	0	18	
201	2	3	14	14	14	14	18	74	
202	2	3	12	6	6	2	6	32	
203	2	3	20	18	8	0	10	50	
204	2	3	8	6	14	2	18	48	

205	2	4	14	12	12	14	18	70	
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209	2	4	6	4	6	6	6	28	
210	1	4	14	12	12	8	16	62	
211	2	4	12	10	8	4	4	38	
212	2	4	8	10	10	10	10	48	
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214	2	4	16	12	14	14	18	74	
215	2	3	10	10	4	6	8	38	
216	2	4	14	14	10	8	8	54	
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218	2	4	8	8	4	8	10	38	
219	2	4	16	12	12	14	18	72	
220	2	4	16	10	10	2	10	48	
221	2	3	12	6	4	8	6	36	
222	2	4	6	8	6	2	6	28	
223	2	4	14	8	4	8	14	48	
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225	1	4	14	12	12	12	16	66	
226	2	3	16	12	14	14	18	74	
227	2	3	12	12	4	8	8	44	
228	1	4	14	12	6	10	8	50	
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230	1	3	14	10	6	10	8	48	
231	2	4	12	12	12	6	14	56	
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235	2	4	16	12	8	12	10	58	
236	2	4	6	12	4	6	10	38	
237	2	4	16	12	6	12	8	54	
238	2	4	10	8	4	8	6	36	
239	2	4	6	4	2	4	10	26	
240	2	4	14	10	12	8	12	56	
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242	1	4	14	10	8	2	12	46	
243	2	4	14	12	10	4	12	52	
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245	1	4	10	8	8	4	8	38	
246	2	4	6	4	6	4	2	22	
247	2	3	18	14	6	10	14	62	
248	1	3	8	12	6	6	6	38	
249	1	4	14	10	4	10	8	46	
250	1	3	12	8	10	4	8	42	
251	1	3	12	10	6	12	8	48	
252	2	4	14	10	4	8	8	44	
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254	2	3	12	16	6	10	10	54	
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258	1	3	14	10	8	12	6	50	
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260	1	3	16	12	8	10	8	54	
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268	2	4	8	6	6	0	8	28	
269	1	4	6	8	6	0	6	26	
270	2	3	6	0	6	16	14	52	
271	2	4	16	12	6	10	10	54	
272	2	4	14	10	4	10	6	44	
273	2	4	14	14	6	10	8	52	
274	2	4	16	12	8	6	8	50	
275	1	4	14	8	6	8	10	46	
276	2	4	6	10	8	6	8	38	
277	2	3	6	10	6	6	8	36	
278	2	3	6	12	8	6	6	38	
279	2	4	6	12	8	6	6	38	
280	2	3	16	10	4	8	10	48	
281	2	3	12	14	6	10	10	52	
282	2	4	16	12	8	10	10	56	
283	1	4	6	12	4	8	6	36	
284	1	4	14	10	4	10	6	44	
285	1	4	16	10	8	10	10	54	
286	2	4	12	10	8	10	6	46	
287	2	4	8	10	6	8	6	38	

KEY TO THE TEST SCORES

COLUMN 1– SERIAL NUMBER

COLUMN 2 – GENDER (SEX- 1 = MALE, 2 = FEMALE)

COLUMN 3- STATUS (PROFESSIONAL =3, PARAPROFESSIONAL =4)

COLUMN 4 - COMPUTER SKILLS SCORES

COLUMN 5- SCANNING SKILLS SCORES

COLUMN 6 – EDITING SKILLS SCORES

COLUMN 7 – DOCUMENT ANALYSIS SKILLS

COLUMN 8 – ARCHIVAL SKILLS

COLUMN 9 – TOTAL

COLUMN 10- REMARKS

Total number of respondents = 287

Number of males = 103

Number of females = 184

Number of professionals = 110

Number of paraprofessionals = 177,

Total = 287

Appendix H

Return rate of Questionnaire

University Libraries	No. of Copies distributed	No. of Copies returned	Return rate (%)
FUNAI library	31	31	100%

FUTO Library	117	92	79%
MOUAU Library	61	48	79%
NAU Library	61	56	91%
UNN Library	83	60	72%
Total	353	287	81%