THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR THE SUPPORT OF KNOWLEDGE MANAGEMENT IN SELECTED ACADEMIC LIBRARIES IN NIGERIA AND SOUTH AFRICA

BY

REXWHITE TEGA ENAKRIRE
M.Sc LIS, PGDE, B.Sc LIS, Dip in LS
(Student No: 201200077)

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DECLARATION

I declare that this study, "The use of information and communication technologies (ICTs) for the support of Knowledge Management in selected academic libraries in Nigeria and South Africa", is my original research work. This Thesis has not been submitted to any other university for the award of any other degree except this submission. Every data and information used in this research work has been acknowledged in the text, references and appendixes.

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Enakrire, Rexwhite Tega Date

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Prof. D.N. Ocholla Date

Promoter/Supervisor

Department of Information Studies

University of Zululand, Kwadlangezwa

DEDICATION

If it had not been the LORD who was on our side, when men rose up against us, they would have swallowed us alive; blessed be the LORD who hath not given us as a prey to their teeth. Our help is in the name of the Lord, Who made heaven and earth - Psalm 124:2, 3, 6, and 8

This thesis is dedicated to God Almighty, for His immeasurable love, support and grace that enabled me to embark on this Doctoral Journey at the University of Zululand, Kwadlangezwa, South Africa. To my most treasured wife and children: Blessing, Great and Githa and Mother in the Lord, Mary Dempsey whose sacrifices, motivation and unending support has kept me going even when I almost gave up this task in consideration to so many challenges. May God bless and keep you all.

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ABSTRACT

Knowledge management (KM) is increasingly important for university library management and information services. Libraries have excelled in the management of explicit/tangible/recorded knowledge for many years, however, not as much in the management of tacit/intangible knowledge which is assumed to be more difficult to manage. Information and Communication Technologies (ICT) play a crucial role for knowledge management in the academic libraries. Unfortunately, the knowledge of the role of ICT in KM in university libraries is limited generally, and in Nigeria and South Africa in particular.

The purpose of the present study was to explore and examine the use of ICTs as tools for the support of KM in selected academic (university) libraries in Nigeria and South Africa. In accomplishing this, eight research objectives that were guided by nine research questions. Finally, three research hypotheses were examined. The research objectives were: establishing how knowledge management is practised by librarians in academic libraries of Nigeria and South Africa; exploring the available ICT facilities, KM tools, and services that can be used for the support of KM in academic libraries in Nigeria and South Africa; determining the extent to which librarians in Nigerian and South African university libraries utilise ICTs to support KM; investigating strategies that would promote the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa; determining and comparing librarians' knowledge and ICTs skills for the support of KM in academic libraries in Nigeria and South Africa; finding policies that guide the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa; examining the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa; and recommending a conceptual model of the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.

The study was informed by positivism and the interpretivism research paradigm. The quantitative (survey) and qualitative (interpretive and content analysis) research methods were employed. The population for the study consisted of all professional librarians in the two countries university libraries. The non-probability sampling, grounded on purposive and convenient/accidental sampling techniques, was used to select 171 professional libraries in the six university libraries. The six university libraries in the two countries were University of Ibadan, Federal University of Technology, Delta State University, University of Zululand,

University of KwaZulu-Natal and Durban University of Technology). The six university libraries were selected on the basis of first generation universities and university ranking index in Africa, funding and resourcefulness of the institution (University of Ibadan library and University of KwaZulu-Natal library); Technological universities as practically oriented and the availability of facilities (Federal University of Technology library and Durban University of Technology library); as well as rurally based universities, government-owned and growing institutions (Delta State University library and University of Zululand library).

The instruments for data collection used were the questionnaire, interview and observation methods. The professional librarians across the sampled university libraries in Nigeria and South Africa were administered 171 copies of structured questionnaires. While six key informants working in the university libraries in the two countries were interviewed. Observation methods were also used to gather information regarding the university libraries environment, physical structure and location, office space (conduciveness), availability and accessibility of computers and other ICT tools, collections (print and electronic resources), shelving space, size and lighting in the office and attitude of staff towards their work while with them. Of the 171 copies of questionnaires administered among the respondents, 132 (77.2%) were returned. The 132 (77.2%) returned consisted of 77 from university libraries in Nigeria, while 55 came from university libraries in South Africa. The 132 copies of returned questionnaire were subjected to statistical analysis of descriptive and inferential statistics.

The findings revealed that knowledge management practices (KMPs) involve all library operations, processes and services. There are variations in ICT and KM tools and services among the sampled university libraries as their level of development is not the same. The most available and accessible ICT and KM tools and services vary in terms of jobs undertaken by librarians from one university library to another. Old technologies such as computers, CD-ROMs, scanners, projectors, telephones, printers, and monitors appeared to be the most available and accessible tools across the selected university libraries in the two countries.

South African university libraries were better resourced than the Nigerian university libraries in the sample. The availability and accessibility of ICT and KM tools and services appear to be in greater effect, as librarians were able to use them to carry out library operations and other

management functions. The university libraries sampled tend to use updated ICTs/KM tools including smart boards, semantic web-tools, information retrieval tools, database management systems, management systems for electronic documents, and management information systems for improved library and information management of the organizations. The use of these tools became necessary as current practices in information services have equally changed. It was established that various strategies have been used to train and foster innovation and growth in the library organizations. These strategies have affected the university libraries organizational culture, work environment, management support systems, librarians' knowledge, and access to information. In order for librarians to cope with the emerging knowledge and skills levels in information service requirements in university libraries, continuing education and training is necessary. The main challenges that affected the use of ICTs in supporting KM in the sampled university libraries included: inadequate funding; lack of motivation; lack of infrastructure; the loss of LIS practitioners to other professions; language barriers; and the inability to work independently. However, the inadequacy of professional staff was noticed in all cases.

It was found that the role(s), for which ICTs play an indispensible tool, in present day library organizations, cannot be overemphasized. ICTs are used to manage knowledge in diverse ways: acquisition, processing, storage, and dissemination of large volumes of information resources, stored in university libraries' institutional repositories. It can also be used to access and retrieve knowledge from library websites without the need for a physical visitation to the library building. Different strategies have emerged where social networks are used to promote library products and services. Library professionals have equally shifted from being custodians of information and knowledge to facilitators of library resources and services through the attendance of workshops, seminars and conferences. The exposure to workshops, seminars and conferences has enabled librarians to be more knowledgeable and skilled in managing knowledge through the use of ICT tools in the university libraries that were sampled.

The study concluded that, knowledge management practices in the academic libraries are diverse, and include the management of both tacit (apprenticeship and mentoring and mentoring of information service providers and training of the library users for effective information access and use, particularly academics who produce new knowledge) and explicit knowledge. ICTs play a major role in the KM activities and processes but re-skilling of both

information service providers and the library users is essential at all times in order to counter the rapid changes in information access, service and use of the environment. The challenges that are highlighted in the current study are largely known, however, should be handled boldly and with more immediacy than before.

The study recommends the need to create more awareness of KMPs among librarians in academic libraries. The acquisition of new ICTs and KM tools for better access and use of information services should also be intensified. Staff development through formal, informal and continuing education should be supported. The work of university committees that are charged with coordinating, monitoring and evaluating library services should enable the improvement of the library services. The LIS schools have to step up LIS education to meet the current information service requirements in their curriculum. The management body of academic libraries should set up staff member committee to review and evaluate ICT policies on regular basis to meet their demand. Relevant library stakeholders should be involved in KM activities of the library where such bodies do not exist. TAM should be considered for informing ICT access and use for KM in the academic libraries.

Kew words: Information and Communication Technologies (ICTs), Knowledge Management (KM), Tacit and Explicit knowledge, KM tools, University libraries (Academic), Nigeria, South Africa.

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LIST OF ABBREVIATIONS

ACRL	Association of Colleges and Research Libraries
ATU	Attitude Towards Usage
BIT	Business Intelligence Technology
CHE	Council for Higher Education
COP	Community of Practice
DAC	Department of Arts and Culture
DELSU	Delta State University
DHET	Department of Higher Education and Training
DIS	Department of Information Studies
DLA	Delta Library Association
DUT	Durban University of Technology
ETL	Extraction transformation Loads
ETF	Education Trust Fund
FAO	Food and Agriculture Organisation of the United Nations
FG	Federal Government
FUT	Federal University of Technology
ICT	Information and Communication Technology
IESSA	International Education Society of South Africa
IFLA	International Federation Libraries Association
IL	Information literacy
IP	Information policy
ISL	Integrated Library Systems
IT	Information Technology
ITU	International Telecommunication Union
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KUL	Kenyatta University Library
KM	Knowledge Management
KMLCM	Knowledge Management Life Cycle Model
KMP	Knowledge management practices
KMT	Knowledge Management Tool
KS	Knowledge sharing

KSTAM	Knowledge, Skill, Technology, Acceptance and Model
LIASA	Library and Information Association of South Africa
LISE	Library and Information Science Education
LISET	Library and Information Science Education and Training
LISS	Library and Information Science (LIS) Schools
LISTA	Library and Information Science and Technology Abstract
LMCS	Learning content management systems
MMS	Multimedia message service
NCLIS	National Council for Library and Information Services
NG	Nigeria
NICTP	National Information Communication Technology Policy
NIICTP	National Integrated ICT Policy
NLA	Nigeria Library Association
NTP	National Telecommunication policy (NTP)
NPC	Nigerian population commission
NUC	National University Commission
OCLC	Online Catalogue of library Congress
ODL	Open distance learning
OLAP	Online Analytical Processing
OPAC	Online Public Access Catalogue
PEOU	Perceived Ease of Use
PU	Perceived usefulness
SA	South Africa
SALA	South African Library Association
SAPSE	South African Post-Secondary Education
SANLiC	South African National Library and Information Consortium
SMS	Short Message Service
SPSS	Statistical Package of Social Sciences
TAM	Technology Acceptance Model
TF	Theoretical Framework
UI	University of Ibadan
UKZN	University of KwaZulu-Natal

UL	University Libraries
USA	United States of America
UZ	University of Zululand
UZIR	University of Zululand Institutional Repository
WPPSET	White Paper for Post-School Education and Training
WIPO	World Intellectual Property Organisation
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION AND BACKROUND OF THE STUDY

1.1 Introduction

The purpose of this chapter is to present the background regarding the use of Information and Communication Technologies (ICTs) for the support of Knowledge Management (KM) in the context of academic library operations. This chapter defines the variables of ICTs, KM, academic libraries, as well as their operations in as much as they are applicable to the study. The chapter also discusses the contextual setting, motivation, research problems, aims and objectives, research questions, research hypotheses, significance and contribution of the study, scope and delimitations of the study, structure of the research and a comprehensive summary of the entire study.

Knowledge and KM are critical factors in decision-making. The extent, to which an organization and its members survive and prosper, in a competitive and continuously changing environment, depends largely on the proper management of knowledge (Mostert and Snyman, 2007). Therefore, organizations need to grow and become unique in terms of the products and services that they provide, through the knowledge and skills of employees which result in a greater output of work performance. Information and knowledge continues to be fundamental to processes of continuous change. The process of information gathering, repackaging, communication and dissemination has significantly advanced through the aid of information and communication technologies (ICTs) (Ola, 2004; Ukwegbu, 2005). The traditional methods of information and knowledge management according to the World Intellectual Property Organization (WIPO) (n.d) unveils that in earlier social eras, information and knowledge was managed and handled by indigenous people and local communities. Akporhonor (2012:76) argues that information and knowledge in recorded formats was stored in wooden shelves, drawers, file cabinets, maps, engineering drawings, floppy disks, papers files, steel cabinets among other mediums. Ali (2011:5) argues that earlier information and knowledge format were not only managed in carving on stones, ceramic, bamboo, wood, but also in printing papers due to an increase in knowledge growth.

Sunil and Kumar (2009) are of the view that CDs, DVDs, pictures, and slides have been used to manage information and knowledge in order to save libraries from the lack of space. WIPO (n.d) further adds that the information and knowledge was not easily managed. This was as a result of the people who developed, sustained and transmitted the knowledge from one generation to another within the community. This knowledge formed the basis of the traditional, cultural and spiritual manifestation of that time (WIPO, n.d). WIPO (n.d) established that knowledge was distinctly important as it addressed many of the community's needs. This was evident in the case of skills, innovations, practices, and technical know-how displayed in health, agriculture, intercultural diversities, cultural performances, music, folklore, arts, designs, as well as symbols (WIPO, n.d). WIPO (n.d) established that part of their drive in managing knowledge was to develop and strengthen national and regional systems that could promote and protect the policies, laws and practical tools used in documenting intellectual property.

The influx of information and knowledge, which experienced radical changes, as mentioned by Ali (2011:5) brought about the need to manage and/or preserve knowledge. This included tacit and explicit genres of knowledge. Ali (2011) argues that a vast amount of knowledge has been lost by individuals and organizations (Ali, 2011:5). The lost knowledge to organization or individual is a gradual deterioration of organic materials, which the physical body is disposed to (Ali, 2011:6). While looking at the human perspective as a factor, we cannot tell how long the knowledge carrier (knower-tacit) can last. However, Ali (2011:6) asserts that it is of great value to share and manage information and knowledge through digital mediums. This medium can be replicated through networks, irrespective of geographical locations. Therefore, the use of technological tools to support operations of KM in academic libraries, being the subject under the present investigation, becomes imperative as affirmed by most of the scholars above.

From inception, irrespective of the specific types, libraries have dealt with the acquisition, organization, preservation, and dissemination of recorded knowledge (print and electronic formats). The essence is to meet diverse users' information needs. The researcher noticed that from experience, the information needs of users and librarians now requires more tacit knowledge of librarians (knowledge in the human brain) than explicit knowledge (knowledge that appears in documents) in the present operation of library activities. The use of tacit

knowledge enables both users and librarians to carry out information search and services without much delay. It is on this note, and with this context, that the present researcher seeks to investigate the use of ICTs for the support of KM in selected academic libraries in Nigeria and South Africa. The use of ICTs to support KM in the two countries' university libraries is essential in present day library services. This would advance the consideration of the trends and nature of current library operations; involvement of academia in research and development programmes; and maintaining standards at the institutional platform (Omotayo, 2015).

1.2 Conceptual background

This study presents two variables of ICTs and KM in academic libraries in Nigeria and South Africa. The rationale behind these two nexuses is that ICTs are used to facilitate, improve and support the organizational functions and activities. This became necessary considering the large volumes of information, knowledge and other work operations carried out by librarians. The term Information and Communication Technology (ICT) has been broadly defined as a diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information (Blurton, 1999:46). The ICTs thus encompass a broad range of rapidly evolving technologies. This includes telecommunication technologies of telephony, cable, satellite, TV, radio, computer-mediated conferencing, and video conferencing as well as digital technologies (computers, information networks, internet, the World Wide Web, intranets and extranets) and software applications (Chisenga, 2006).The scope of ICTs used in this study comprises of tools such as the following: computer, CD-ROM, multi-media, projector, scanner, modem, telephones, printer, smart board, amongst others. The use of these tools became necessary considering the diverse user base and their information needs in present day library services. They have also helped librarians to improve in the management functions that are carried out on a daily basis in the library environment.

UNESCO's (2002) perspective of ICTs is seen as a range of technologies that are applied in the process of collecting, storing, editing, retrieving, and transferring information in various forms. Several countries have placed a great deal of importance on the use of ICT in their administrative affairs. For example, E-filing has become the best solution in the area of tax administration, in both Ghana and Nigeria (Boakye and Banini, 2007). This is similarly prevalent in other African countries, including South Africa. Similarly, libraries, especially

academic libraries, are increasingly using ICTs to automate their core functions; implementing efficient and effective library operations. Resource sharing networks; management information systems; institutional repositories of digital local contents; digital library initiatives and ICT-based capacity building programmes for library users were equally noticed to have great effect with regards to ICT use. One area that has benefitted from the rapid growth in ICTs is the field of Knowledge Management (KM). Although the concept KM may not be new as that is what libraries have been doing for centuries, largely in regards to the management of explicit knowledge. KM is still viewed to be an emerging science, drawn from a broad range of established disciplines such as organizational learning, networking, intellectual capital, social construction, communities of practice, and social interaction (Beesley and Cooper, 2008).

Knowledge Management is the management of explicit and tacit knowledge (Skyrme, 1997), which includes the capturing, organizing and disseminating knowledge within an organization (Bender and Fish, 2000). KM is a rapidly growing field in Library and Information Science (LIS). Since the late 1990s, both academia and the business sector have shown an unprecedented interest in Knowledge Management and have conducted extensive research into its underpinning theories and implementations. Jantz (2001:3) argues that many scholars have considered KM to be primarily a business activity in which the use and reuse of knowledge create business value in terms of profits, improved return on investment and quantitative measures. While KM plays an increasingly important role in scholarly research, little effort has been devoted to the study of how to improve library operations through the continuous use of tacit KM.

The goal of KM is to make full use of the knowledge that exists within a corporation (Branin, 2003). This would increase the productivity and operational efficiency that gives competitive edge over other organizations (Branin, 2003). Without the proper understanding of KM and the utilization of knowledge, organization cannot function very well. This has become essential component that drive the goals of every organization. The under-utilization of has effect on the work operations as well as staff performance. Library and information professionals have shown a great interest in KM. This is regarded to be considerably similar to the concept of coding, storing, and transmitting knowledge, which is the primary focus of libraries (Townley, 2001). KM can thus be perceived as a re-branding of librarianship or information management

(Townley, 2001). KM can help organizations to grow stronger and become more productive especially in terms of work performance (Knowledge Management Research Centre, 2010). In this global economy, which is knowledge driven, economic activities have shifted from people working with their hands to people working with their heads; from tangible resources like steel to intangible resources like knowledge (Davenport, 2002; Boom and Pimentel, 2009). Academic libraries are not exempt from these changes.

Presently, library and information professionals are being referred to as knowledge workers and libraries and information centres as knowledge centres (Rowley, 2003). Knowledge is the full utilization of information and data coupled with the potential of people, skills, competencies, intuition, commitments and motivations (Hawkins, 2000). The knowledge discussed here is classified into two broad categories, namely: explicit and tacit. Explicit knowledge is the human knowledge represented in documents or books that has been captured through songs, reading of books, watching of movies, word of mouth and images among others (Dalkir, 2011:9). This type of knowledge can easily be interpreted, represented and shared among individuals in order for effective application (Evangelista, Esposito, Lauro and Raffa, 2010). Knowledge tied to the senses, (tactile experiences, movement skills, intuition, unarticulated mental models), or implicit rules of thumb, can be defined as "tacit" knowledge (Nonaka and Krogh, 2009). Tacit knowledge is rooted in action, procedures, routines, commitment, ideals, values, and emotions (Nonaka, *et al*. 1996). Tacit knowledge is difficult to express, represent, and communicate. It can be described as personal knowledge embedded in an individual's brain, representing his or her experiences and involving intangible factors like personal beliefs, perspective, instinct and values (Nonaka, 1994).

The distinction between explicit and tacit knowledge is vital in the understanding of KM. This is because the primary problem in handling explicit knowledge is the management of volume, as well as ensuring its relevance. The challenge that is faced in handling tacit knowledge, on the other hand, is that of translating the knowledge into a communicable form (Minonne, 2007). In some developing countries, Nigeria and South Africa in particular, KM is not widely adopted by all university (academic) libraries as an essential activity. The acceptance of KM in an organization would bring about a greater capacity to survive, even though the university libraries have been directly, and negatively, affected by changes in ICTs.

The relevance of ICTs for KM cannot be under-estimated in the present day knowledge economy. A general perspective of this has been demonstrated in regards to improved work performance, and fostering innovation of employee in organizations (Martin, 2015).

The importance of ICTs for KM in the library organization can be shown to function such as: acquisition, processing, storage and dissemination of large volumes of information resources in university library institutional repositories (Bhardwaj and Walia, 2012). It can also be used to access and retrieve knowledge from library websites without physical visitation to the library building (Bhardwaj and Walia, 2012; Online Computer Library Center, (OCLC) 2002). Different strategies has emerged where social network are used to promote library products and services (Dafiaghor, 2012). Library professionals have equally changed from acting as custodians of information and knowledge to facilitators of library resources and services through attending of workshops, seminars and conferences in order to acquire more knowledge and skills (Ridwan, 2015; Rahman, 2014). The site of the academic library, where this study is anchored, implies a library established in a higher institution of learning (Akporhonor, 2012). The activities and functions carried out in this library are the sole responsibility of the librarian. A librarian, as defined by Abels et.al (2014), is someone with a degree in librarianship or library and information science, trained with the theoretical and practical knowledge and skills regarding how information resources are organised and preserved in the library environment.

1.3. Contextual setting

The use of ICT for the support of KM cannot be overemphasized. It can assist academic libraries to serve entire communities of the university, irrespective of their internally set objectives. By 2012, when this research started, there were 124 universities with libraries in Nigeria. By 2013, this figure had increased to one hundred and twenty eight (128) accredited university libraries in Nigeria (Okojie, 2013:6). These are clustered into 40 federal, 38 state and 50 private university libraries (Nigeria School, 2014- Nigeriaschool.com.ng, 2014; NUC, 2014; Okojie, 2013:6). The first academic library in Nigeria was established at the University of Ibadan in 1948 (Babalola, 2007). By comparison, South Africa, with its nine provinces, had 25 universities in 2014. They were categorised into 11 traditional, 8 comprehensive, 6 technology universities (International Education Society of South Africa, 2007:n.p; SouthAfrica.info, 2014). As can be expected university libraries collections and services are

primarily geared towards fulfilling the research and academic needs of the members of its community. The fulfillment of the objectives of academic libraries is carried out in the following functions: selection and acquisition of learning resources (both print and non-print); organization of acquired resources (cataloguing and classification); reference and information services; documentation and bibliographical services; user education, readers' advisory services; orientation courses and lectures; research support; consultancy service; administration and management (Ogunsola, 2004).

1.4 Motivation

The author uses his experience as a librarian, and currently as a lecturer in the department of Library and Information Science (LIS), Delta State University, Abraka, Delta State, Nigeria as a vantage point to carry out the study. The researcher has observed that over the past 11 years, up till the current date (2005-2016) librarians, to a large extent have used and continue to use tacit and explicit knowledge in order to provide library services to meet diverse users' information needs. Maponya (2004) reiterates that, the success of academic libraries depends on their ability to utilize information and the individual and collective knowledge of its staff to better serve the needs of the academic community. A second motivating factor for this study is the fact that ICTs are increasingly essential for information and KM in libraries.

1.5 Problem statement

The purpose of the comparative thrust of the study was to draw a distinction on how ICTs are used (and to what extent) in managing knowledge in both countries' (Nigeria and South Africa) university libraries. This became necessary due to high expectation from users and the influx of knowledge in diverse field of study. The comparative analysis considers the availability, accessibility, and effectiveness of ICTs in rendering information services and other management practices. It further looked at the extent of use, librarians' knowledge and skill levels, policies and strategies and challenges encountered by librarians while using these tools for library operations. The value of the findings and recommendations from the study would help to improve the strategies used by libraries within and outside the study context, in the operations and management functions of university libraries.

The use of ICTs is now one of the greatest advancements being experienced in the 21st century. This explains why in the last few years, students, librarians and lecturers in Nigerian and South African tertiary institutions have increasingly demanded and preferred access to electronic sources, virtual libraries and networked information (Harle, 2009; Adetimirin, 2007). Presently, many tertiary institution libraries still struggle to keep up with the pace of the use of ICTs, specifically to have access and accessibility to information and knowledge (Itsekor and James, 2012).

The delivery of electronic resources, through internet access, is one of the technological improvements enjoyed by users in the present day library environment. However, there is still a paucity of internet and other ICT facilities in terms of availability, accessibility and utilization in some academic libraries in Nigeria. This has affected librarians' operations and the quality of the services rendered to users. Internet access revolves around ICTs, which has gone a long way in sway the mode of information gathering, storage, retrieval and dissemination (Adetimirin, 2007). Information access has opened diverse opportunities, which were unknown. Now, they are rapidly changing the library environment.

There is a vast amount of literature that supports studies regarding how academic librarians are key gatekeepers of information in every facet of knowledge (Enakrire and Onyenania, 2007:15). Akintunde (2006:12) argues that: Many libraries in Nigeria still operate in the traditional service pattern where librarians are charged with many responsibilities of services without ''much knowledge, skills and exposure to ICTs." The use of the traditional service pattern by some libraries results in constraints in service delivery, slow processing and repackaging of knowledge as well as poor ICT security policies. The acquisition of ICT skills by LIS professionals fosters and enhances easy and quick service delivery (Kattimani and Naik, 2013). The feasibility to eradicate the constraints in the acquisition of ICT skills depends on the preparedness of libraries and librarians in training need analysis.

Harris (2011:2) argues that in South Africa, there is a shortage of ICT skilled professionals, both at schools and universities. Evidence of this claim has affected the distributions of telecommunications infrastructure across South Africa (Darch and Underwood, 1999:2). Inadequate deployment of infrastructure and skills has also been revealed to have affected

some sectors in South Africa (Ofulue, 2011). Therefore, the reason behind the skills gap is that there is an increasing demand for ICT services across industries in order to drive operational efficiencies and growth (Harris, 2011:1).

Rosenberg (2007) asserts that the level and state of electronic readiness of a country, regarding infrastructure and capacity building, determines the extent to which ICTs are adopted and used. It has been noticed that during each annual budgetary allocation, some academic libraries in Nigeria and South Africa pay less attention to the acquisition and maintenance of technological tools that are needed in order to affect quality service delivery in their libraries. This affects the subscription capacity in libraries (Swain and Panda, 2009). Specific ICT policy and regulatory framework is crucial for the utilization of ICTs in library operations. This led Opati (2013) to affirm that the absence of ICT policy cannot drive the promotion of ICT initiatives in university libraries.

Regular provision of infrastructural facilities such as ICT gadgets and their accessories, administrative buildings, knowledge and skills of ICT professionals are a basic requirement of every developing or stable knowledge economy. In the midst of the available ICT tools used presently in most academic libraries, knowledge and skills gap regarding the application of ICTs still exists among some librarians (Anyira, 2011). This kind of limitation could deprive librarians from the knowledge and skills in new research areas (Onyancha, 2014:51). The new research areas consist of cybermetrics, bibliometrics, informetrics, webometrics, scientometrics and altmetrics (Onyancha, 2014:51). Ocholla and Bothma (2007) argued that continuous educating and training of LIS graduates with adequate knowledge and skills would make librarians more knowledgeable in rendering information services. Davis, and Lundstrom (2011) assert that, presently libraries are faced with many challenges, especially, continuous increase of users; thrive to stay relevant and ahead in this information age. This puts libraries in a very tight situation, as they are expected to do more than lees (Lockhart and Majal, 2012:3). The situation of such expectations from libraries is compounded by the closure of some library schools in South Africa over the last few years. This adds extra pressure to librarians in terms of training and development in libraries, in order to close the information and ICT skills gap (Lockhart, and Majal, 2012:3).

Bello, Emmanuel and Busari (2013) argued that librarians' self-development is relevant in capacity building in order to acquire the knowledge and skills required in library environment. However, even in the present information age, some librarians still, do not motivate themselves for self-development. Bello, Emmanuel and Busari (2013) emphasized that librarians should thrive towards consistent use of ICT facilities for effective and efficient work operations. Moelle and Reitzes (2011) noted that teachers are not able to continue to teach learners with ICTs if they are not ready to master the skills correctly. This assertion can be attributed to librarians being unable to perform effectively and efficiently in the library environment. The non-performance of librarians in rendering services results in the inadequacy of knowledge and ICT skills in the LIS profession more broadly speaking. This affects both the librarians and the users as their expectation and diverse information needs are cut short in academic libraries.

The present researcher observed from the literature in this chapter that, sound knowledge and ICT skills enhances and influences the management of information and knowledge in academic libraries. Koina (2002) argues that many librarians still believe that KM is simply the management of explicit (documented) knowledge. This is what many librarians have been doing for years. The researcher observed that there is inefficient application and utilization of tacit knowledge for the improvement of library operations among librarians in academic libraries. The awareness of institutional memory or know-how promotes and adds value to the organization (Guthrie, 2010).

The application of KM allows library organizations to change its way of operating and also keeps up with current trends (Yaacob, Jamaluddin and Jusoff, 2010:15). To manage knowledge effectively, librarians need appropriate KM frameworks in the library environment (Omona, van der Weide, and Lubega, 2010). A recent study by Fu and Fitzgerald (2013:47-48) argued that presently, many academic libraries manage a wide range of electronic resource subscriptions. The subscriptions are purchased using well-established traditional Integrated Library Systems (ILS). This provides a friendly interface for both library staff and students due to the increased workload of operating systems in the library. Islam and Ikeda (2014:140-142) argued that new collections opened in present digital environment have innumerable features in academic libraries. The immeasurable features of KM-based digital library system support the creation, organization, storage, dissemination and utilization of institutional knowledge assets.

The immeasurable features of the KM-based digital library system consist of different types of ICT and KM tools, their software, and storages devices, etc. Vaughan and Costello (2011:62-63) suggests that information resources can be managed and supported by Integrated Library Systems (ILS); while Breeding (2012:30-31) recognizes the changes that have evolved since the establishment of libraries. The changes cut across different patterns in terms of the acquisition of information resources, processing/repackaging, storages, dissemination and the quality of service delivery (Breeding, 2012).

The usefulness of ICT as a resource cannot be underestimated. This can be seen from its accuracy, reliability, and efficacy in any work environment. These studies, by Islam and Ikeda (2014:140-142); Vaughan and Costello (2011:62-63); and Breeding (2012:30-31) were unique in their own findings, and were applicable globally. Relating this to the present study, it was established that policy, methodology, theory, and the practical application of ICTs as used to support KM are the gaps the current study seeks to fills. The support of both specific and work operations' context is another gap. Another gap specification is the tacit and explicit knowledge of librarians as used on regular basis in the library environment. This study's fundamental question focuses on how, and to what extent, ICTs are used to support KM in the selected universities libraries in Nigeria and South Africa.

1.6 Aims and objectives of the study

The aim of the study is to explore and examine the use of ICTs as tools for the support of KM in selected academic (university) libraries in Nigeria and South Africa.

The objectives are to:

1. Establish how KM is being practiced by librarians in academic libraries of Nigeria and South Africa.
2. Explore the available ICT facilities, KM tools and services for the support of KM in academic libraries in Nigeria and South Africa.
3. Determine the extent to which librarians in Nigeria and South Africa utilise ICTs to support KM.
4. Investigate strategies that would promote the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.

5. Compare librarians' knowledge and ICT skills for the support of KM in academic libraries in Nigeria and South Africa.
6. Find out about policies that guide the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.
7. Examine the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.
8. Recommend a conceptual model of the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.

1.7 Research questions

The study focuses on the following research questions, namely:

1. How is KM being practiced by librarians in Nigerian and South African university libraries?
2. What are the available ICT facilities, KM tools and services for the support of KM in academic libraries in Nigeria and South Africa?
3. What are the available and accessible ICT facilities that support KM in academic libraries in Nigeria and South Africa?
4. What is the perceived effectiveness of the ICTs for KM, in terms of ICTs that are available and used in academic libraries in Nigeria and South Africa?
5. To what extent are librarians utilizing ICTs to support KM in academic libraries in Nigeria and South Africa?
6. What strategies can promote the use of ICTs to support KM in academic libraries in Nigeria and South Africa?
7. Do academic librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs to support KM?
8. How often are librarians trained and supported in current knowledge and skills acquisition, specifically in the use of ICTs for KM, in academic libraries in Nigeria and South Africa?
9. What policies guide the use of ICTs to support KM in academic libraries in Nigeria and South Africa?
10. What are the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa?

11. What is the recommended conceptual model for the use of ICTs to support KM?

1.8 Research hypothesis

Research hypothesis has been used globally in terms of research undertaken. A research hypothesis entails tentative answers that are arrived at, about a phenomenon (Bernard, 2013; Akuezuilo and Agu, 2003 and Asika, 2002). This implies testing the phenomenon whether there is a relationship between the variables (Akuezuilo and Agu, 2003 and Asika, 2002). The sample is represented in the population (Bernard, 2013:579). The reason for the testing of the phenomenon is to ascertain if there are relationships that exist between the variables that are under investigation, namely: ICT facilities; librarians' knowledge and skills; and training and support for the acquisition of current knowledge and skills. The research hypothesis was derived from the research questions, which were also used in the discussion of the literature chapters (see chapter 2 and 3). Neuman (2011:181) asserts that a research question differs from a hypothesis. The research question is expressed as a question, while hypothesis is expressed in a statement form. It can be seen from this that; the research question is more about descriptive and inductive research whilst the hypothesis is simply explanatory and deductive in nature. Neuman (2011:182-183) notes that, a hypothesis helps us to know the relationships between variables, in any research undertaken, whilst research question do not.

Vos, Strydom, Fouche and Delport (2014:510) argued that since a hypothesis can be transformed into proposition, which in turn predicts the truth of a theoretical model. The use of a hypothesis becomes necessary as it helps to explain the relationship between two or more variables. Ordinarily, it would have been difficult to ascertain the relationship between ICT facilities as used by librarians for the support of KM; librarians' knowledge and skills in the use of the tools and training and support for the acquisition of current knowledge and skills given to librarians in the use of ICTs. The use or application of hypotheses in this study was to support the research questions already provided. The hypotheses used for this study were also part of the literature discussed or that support of the claims made by several authors in this study (see table 1.1, chapter 2, 3, 6 and 8).

As earlier mentioned, the research hypotheses used in this study covers three areas in terms of the research objectives. The ICT tools used by librarians for work operations; the context of the university libraries in the two countries which has some relationship that they share in common, and the application of the tools by librarians in work operations depends largely on the knowledge and skills possessed and acquired on a daily basis. It becomes necessary, therefore, to find out, whether there are relationships that exist in the ICT tools used. The library environment share some commonalities and differences in the operations carried out through facilitated tools. While the present and future sustainability of the library organization depends on the knowledge and ICT skills of librarians to affect information service rendered to users. These are tied to regular training programmes in the library. The training programme is undertaken by librarians in order to maintain relevance of skills with current trends of the LIS profession/activities. The following research hypotheses had been tested. Namely:

- **Ho1:** There is no significant difference between the ICT facilities used by librarians for the support of KM in academic libraries in Nigeria and South Africa.
- **Ho2:** There is no significant difference among librarians with knowledge and skills to use ICTs for the support of KM in academic libraries in Nigeria and South Africa.
- **Ho3:** There is no significant difference in the training and support for the acquisition of current knowledge and skills given to librarians in the use of ICTs to support KM in academic libraries in Nigeria and South Africa.

1.9 Significance and contribution of the study

The study is of significance to the researcher in diverse ways. Firstly, it has unveiled and enhanced the researcher's research skills, especially by conducting research in two distinct contexts (Nigeria and South Africa), which requires much knowledge and persistence. Secondly, it enabled the researcher to know what is happening in the two countries' university libraries, in terms of LIS carried out, nature of library activities going on, opportunities and challenges faced by librarians. The study is of immense value to the profession of LIS in various ways, including the following:

1.9.1 Contributions to the two countries

The study established existing gaps in the adoption and use of ICTs and the use of KM by academic librarians in achieving their statutory (library) functions in Nigeria and South Africa. This would provide a basis for the comprehensive and effective use of ICTs by librarians, university libraries in Nigeria and South Africa, and other corporate organizations that manage tacit and explicit knowledge in the two countries.

1.9.2 Contributions to the body of knowledge

The present study adds to the existing body of knowledge in the following ways: First, findings from the current research built on LIS practices in the diverse literature that was sourced for this study. Second, the existing literature gap in research and development of ICTs and KM, which was of global perspectives, is now context specific for Nigerian and South African university libraries. Third, current studies have broken new grounds of observable facts, as revealed in the data obtained through questionnaires and interviews, new knowledge in theories, methodological approaches, as well as policy and development in both global and contextual phenomenon of university libraries in Nigeria and South Africa. This implies the data collected from respondents through interview and questionnaire; methodological paradigm and design used; theories applied and the context of the study have broken new grounds of observable facts. Fourth, the findings to the identified problems, which provided the impetus for this research investigation, have contributed to the body of knowledge of the institutions where the study was carried out. Fifth, a number of research objectives, questions, and hypotheses raised in the first chapter are context specific and unique in their own ways to this study. Sixthly, the selected Nigerian and South African university libraries now add to both global and national research perspectives on ICTs as used for the support of KM.

1.9.3 Contributions to existing theory

Existing literature sourced in the subject areas of ICTs to support KM in academic libraries for in this study was informed by several theories (see chapter four, Table 4.1 and 4.2). The theories were found to be in use in other related research studies. This makes the theories distinct as they offer innovative and practical ideas for the analysis of theoretical frameworks. The related theories applied to this study have added to the context specific knowledge of librarians in Nigerian and South African university libraries. The existing theories of TAM and

KMLCM, and other related theories cited and as applied in this study, created knowledge gaps in the content and context of Africa, specifically Nigeria and South Africa. The application of TAM and KMLCM theories in the use of ICTs to support KM in Nigerian and South African university libraries indicates that the frameworks can still be investigated in other environments. This led to the formulation of a new model known as KSTAM (Knowledge, Skill, Technology, Acceptance and Model). The new model of SKTAM is illustrated in chapter nine of this study. The new formulated theory, which has broken new ground in knowledge and theory, is a contribution to the body of knowledge in theory. This can also be used for further studies in the field.

Based on related studies in the African context, it was established that the theories used for this study has been applied. Studies by Erasmus, Rothmann and Van Eeden (2015) as well as Averweg (2008) demonstrated how TAM has been tested and widely applied in a variety of studies and countries. The rationale of the adaptation of the TAM in the selected university libraries would contribute to librarians' scientific knowledge in regard to the application of systems (Erasmus, Rothmann, and Van Eeden, 2015). The study therefore, found out that there is an existing knowledge gap in recent African literature that has used TAM.

The searches in the databases of Ebsco-Discovery (multi-database search; advanced search), Scopus, Science-Direct, Google scholar, and Library and Information Science and Technology Abstract were between the years 2005-2015. In Ebsco-Discovery (multi-database search-Advanced search) search, it was established that 285,632 items of literature in the recent African context have used TAM in their research study. However, none of these items relate their work to the present study. In Scopus, 42 recent literature items, from the African context, were found to have used TAM, but not as stipulated in the present study. In Science-Direct, 990 related literature items form the African context were found to address issues of variability in TAM, but did not address this present study. In Google scholar, 6, 890 research papers have used TAM in their studies, but none of these was related to the present study and in LISTA, there were 436 recent literatures in the African context that have also used TAM, though none of them spoke specifically to the present research study. Therefore, as established in the findings above, it is evident that the usage of the TAM in this study is of immense value. It has added much strength to the current existing theory in a unique way. This is demonstrated by its

wide usage and acceptance by individual, and organizations, for their research and work operations.

1.9.4 Contributions to existing literature

Contributing to existing literature is fundamental in research growth. Based on the discourse on existing literature in this study, a knowledge gap exists in the body of literature sourced in the domain of ICTs and KM. The knowledge gap existed in theory, practice, and principle, as applied in the use of ICTs and KM in library environment. The knowledge gap was also present in the various sub-topics treated in the research objectives and question of this study. The researcher emphasizes that the previous existing literature searched in the following databases of LISTA (Library and Information Science and Technology Abstract), Web of Science, Scopus and Science-Direct were of immense value to the study. The search of the databases occurred within the past ten years (2005-2015). It was established in LISTA that, 2,732 research articles were found in related subject areas as applied to this study. Though, of these researches, did not address the present topic under investigation in both countries. In Web of Science and Scopus, there were no results found, while in Science-Direct, between the year 2005-2015, 11 results were found, though none of them address the present research work directly. Therefore, based on these findings, the current study adds to existing literature in its unique way. Also, this study serves as a reference tool for masters and doctoral research students, academic librarians, academic library management, university libraries board of trustee, amongst others.

1.9.5 Contributions to library and information science (LIS) profession

The findings of this study can be used to review and modify the curriculum of Nigerian and South African LIS profession. The review can serve as guide in the teaching of related courses/modules in library schools, both in Nigeria and South Africa. The adoption of the courses/modules of technologies taught in library schools both in Nigeria and South Africa would help librarians in carrying out library operations effectively and efficiently. The operations cut across services of ICT skills application; training need analysis; acquisition of knowledge in cyber-metrics, bibliometrics, informetrics, webometrics, scientometrics, altmetrics, programming and database management systems, just to mention a few. The exposure, experience, knowledge and skills acquired through these courses/modules canequip

young graduates of LIS profession as well as librarians already practising the profession in different libraries and information centres. University libraries and librarians can apply different policy of library services in both countries. This would foster and enhance library operations and services through the use of different ICTs to support KM.

1.9.6 Contributions to professional practices

The young graduates in the LIS department, and those already working in different libraries, information centres, research institutes, and other related organizations, can use the findings of this research to develop themselves professionally. The findings of this study can support professional associations (for example the Nigerian Library Association; Delta Library Association and the Library and Information Association of South Africa, amongst others) in the LIS profession during the formulation of policy and other related matters. Those already working in libraries and who might have basic library qualifications can be sent on informal training. Therefore, this research can add to their study guidance regarding the use of technologies to support KM in academic libraries. The changes in technology and the requirements of the present day job market in libraries and other corporate organization requires knowledge and ICT skills. The knowledge and ICT skills required to use ICTs would support the library profession, such that, librarians can re-position themselves in order to be abreast of current trends in the LIS profession. Therefore, the findings of the study would guide practicing librarians in the two countries' university libraries towards the strategic application of ICTs for improved library operations. This can be achieved through tacit and explicit knowledge management (KM).

Staff professional development is a pre-requisite in the present day library organization. Therefore, libraries require regular training and re-training of librarians in current trends of the profession. This is also a part of the requirement for promotion in most library organization today. Librarians are also encouraged to have dual areas of expertise in order to address the specific needs of the libraries, especially when there is shortage of staff. The findings and recommendations made in this study can feature in the library guides of the various universities in both countries.

1.10 Scope and delimitation of the study

This study emphasized and described the use of information and communication technologies (ICTs) as used to support knowledge management (KM) in academic libraries both in Nigeria and South Africa. The study emphasized different variables of ICTs, such computers, CD-ROMs, Multi-media, projectors, scanners and printers, amongst others. These are used, by librarians, for library services and other management functions in the academic libraries in Nigeria and South Africa.

The study acknowledges the existence of KM practices, available ICT facilities, KM tools and services for the support of KM; utilization of ICTs; strategies that promote the use of ICTs; librarians knowledge and skills; librarians training and supported in current knowledge and ICT skills acquisition; policies that guide the use of ICTs and challenges faced in the use of ICTs for the support of KM in academic libraries.

The study sites were six selected university libraries: University of Ibadan (UI), Federal University of Technology (FUT), Delta State University (DELSU), KwaZulu-Natal Province University of KwaZulu-Natal (UKZN), University of Zululand (UZ) and Durban University of Technology (DUT) in Nigeria and South Africa.

The study targeted the population of 400 librarians in both South Africa and Nigeria. The purposive and convenient/accidental sampling was used to select 171 librarians, across the six university libraries in both countries. This gave 43% of the entire populations, calculated against expected and actual sample, over one hundred percent. The purposive and convenient/accidental sampling technique was adopted based on the following reasons: The two countries (Nigeria and South Africa) were selected for this study/research as they are two leading countries in Africa in terms of education and research development. Three university libraries were from the southern part of Nigeria. They include: the University of Ibadan (UI), Federal University of Technology (FUT) and Delta State University (DELSU). Three South African universities were from the Kwazulu-Natal province; they included: the University of KwaZulu-Natal (UKZN), University of Zululand (UZ) and Durban University of Technology (DUT). The University of Ibadan (UI) and University of KwaZulu-Natal (UKZN) libraries were selected based on generations of establishment and a high university ranking in Africa

(University Web Rankings-Africa, 2014). The Federal University of Technology (FUT) and the Durban University of Technology (DUT) were selected because they are both technologically-based libraries, and practically oriented. Delta State University (DELSU) and University of Zululand (UZ) libraries are both government-owned and located in rural areas; which is why they were selected.

The six key informants interviewed were university librarians/head of university libraries in both countries' university libraries. The selected key informants are in the position to give information regarding how ICTs are used to support KM in academic libraries. The professional librarians were purposively and conveniently/accidentally selected from the different categories of staff working in the university libraries. The questionnaire instrument was administered to the professional librarians who have been professionally trained to handle and manage knowledge within the university libraries. The researcher purposively carried out research observations on the university libraries during and after the interview(s) with key informants.

Data obtained from respondents through questionnaires, interviews and observational methods were collated, coded and presented for analysis. The questionnaire was analysed by the use of Statistical Package of Social Sciences (SPSS), of descriptive and inferential statistics and Microsoft excel for conversations. The interview and observation data and information obtained were coded and clustered into themes and key words. These were presented in tables and analysed using simple percentages for the demographics of interview respondents and content analysis for the narrations of key informants' opinions/views. The observation results also captured pictures of ICT tools that were in use, the university library buildings, librarians' offices and resources, amongst others things. The rationale of the observation method in conjunction with other methods used (interview and questionnaire) was for triangulation purposes. Besides, it would help to unveil the present state of the condition of the university libraries, physical structure of the building, offices and facilities used by librarians as claimed by respondents. The study is limited to the six sampled university libraries across the two countries only due to limited time to do broad research. Details of the scope and limitation are presented in chapter 1, 2,3,4,5,6,7,8 and 9 of this study.

1.10.1 Subject coverage of the study

The subject coverage of the study focuses on how librarians make use of ICTs and KM tools in order to harness and manage knowledge (both tacit and explicit) in the midst of other library operations that work to meet users' information needs.

1.10.2 Literature review and theoretical model

This study explored and evaluated current literature including published and unpublished work, peer review articles, journal/conference proceedings and workshops papers. The sources pertained to in the areas of ICTs; KM; academic libraries; academic libraries' roles in the university; data and information; ICTs and KM theories; KM practices; KM infrastructures/facilities; KM tools and services; utilization of ICTs by librarians; librarians' knowledge and ICT skills; training and support given to librarians; strategies used to promote the use of ICTs; ICT policies used in academic libraries; challenges faced in the use of ICTs in academic libraries and proposed model of the use of ICTs. The theoretical model used for this study was the Technology Acceptance Model (TAM) of the use of ICTs, theorized by Davis (1989) and the KM life cycle model, theorized by Sagsan (2007); which revolves around knowledge creation, knowledge structuring, knowledge sharing, knowledge using, and knowledge auditing; as well as its management. The details of the Literature Review were represented in chapters 1, 2, 3, 4, 5, 8 and 9.

1.10.3 Methodological scope

The study employed the positivistic (quantitative) and the interpretivistic (qualitative) research approaches. The rationale of the positivistic approach was to obtain data that reflects the reality of the knowledge of the study. The interpretivistic approach provides the researcher's vital information about the research participants within their own domain. Additionally, it uncovers the knowledge of the respondents' feelings and opinions through discretional thoughts and actions.

The positivistic and interpretivistic approaches made use of both survey, interpretive and content analysis methods. The survey, interpretive and content analysis research methods used the research instrument of questionnaire, interview and observation to elicit information from librarians regarding the use of ICTs to support KM in the various university libraries that were

sampled in Nigeria and South Africa. A non-probability sampling, which made use of the purposive sampling technique, was used for the selection of171 academic librarians in the six sampled university libraries in Nigeria and South Africa. A sample size of 171from the entire population was used as sample size across the six university libraries in Nigeria and South Africa.

Before the questionnaire was administered, a pilot study was conducted at the libraries of the University of Petroleum Resources, Effurun, Nigeria; and the Mangosuthu University of Technology, in South Africa. This was done in order to test and verify the research instruments. Information obtained from respondents and obstacles encountered, were used in order to modify and make improvements on the questionnaires before the final administration to the six sampled university library respondents in Nigeria and South Africa.

The full methodology is represented in chapter five of this study. The data and information obtained from professional librarians, and key informants, who were interviewed, were subjected to the Statistical Package for Social Sciences (SPSS) of descriptive and inferential statistics and Microsoft excel. The results of data, information, line graphs of inter country comparison, and narrations were derived from key informants. The results are presented in tables and graph in chapter six and seven of this study. The table 1 (below) shows the research road map of the study.

1.11 Research Map of this study

Table 1.1: Research Map of this study

Aim	**Objectives**	**Research Questions /hypothesis**	**Research Paradigm**	**Research methods**	**Data collection instruments**	**Chapter**
Explore and examine the use of ICT as tool for the support of KM in selected academic (university)	01. Establish how librarians in academic libraries in Nigeria and South Africa are practicing KM	How is KM being practiced by librarians in Nigerian and South African university libraries?	Positivism Interpretivism	Survey, Qualitative content analysis	Questionnaire and interview	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9

libraries in Nigeria and South Africa.	02. Explore the available ICT facilities and services for the support of KM in academic libraries in Nigeria and South Africa.	What are the available ICT facilities and services for the support of KM in academic libraries in Nigeria and South Africa? Ho1: There is no significant difference in the ICT facilities used by librarians for the support of KM in academic libraries in Nigeria and South Africa.	Positivism Interpretivism	Survey, Qualitative content analysis	Questionnaire interview and observation	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9
	03. Determine the extent to which librarians in Nigeria and South Africa utilize ICTs to support KM.	To what extent are librarians utilizing ICTs to support KM in academic libraries in Nigeria and South Africa?	Positivism Interpretivism	Survey, Qualitative content analysis	Questionnaire interview and observation	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9
	04. Investigate strategies that would promote the use of ICTs for the support KM in academic libraries in Nigeria and South Africa.	What strategies can promote the use of ICTs to support KM in academic libraries in Nigeria and South Africa?	Positivism/ Interpretivism	Survey/ Qualitative content analysis	Questionnaire and interview	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9
	05. Determine and compare librarians' knowledge and ICTs skill for the support of KM in academic libraries in Nigeria and South Africa.	Do academic librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs to support knowledge management? Ho2: There is no significant difference among librarians with knowledge and skills to use ICTs to support of knowledge management in academic libraries in Nigeria and South Africa.	Positivism Interpretivism	Survey/ Qualitative content analysis	Questionnaire interview and observation	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9

		How often are librarians trained and supported in current knowledge and skills acquisition, specifically in the use of ICTs for knowledge management in academic libraries in Nigeria and South Africa? Ho3: There is no significant difference in the training and support for acquisition of current knowledge and skills given to librarians in the use of ICTs to support knowledge management in academic libraries in Nigeria and South Africa.	Positivism Interpretivism	Survey/ Qualitative content analysis	Questionnaire and interview	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9
	06. Find out about policies that guide the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.	What policies guide the use of ICTs to support KM in academic libraries in Nigeria and South Africa?	Positivism Interpretivism	Survey/ Qualitative content analysis	Questionnaire and interview	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9
	07. Examine the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.	What are the challenges faced in the use of ICTs to support KM in academic libraries in Nigeria and South Africa?	Positivism Interpretivism	Survey/ Qualitative content analysis	Questionnaire, interview and observation	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9
	08. Recommend a conceptual model for the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.	What is the recommended conceptual model for the use of ICTs to support KM?	Positivism Interpretivism	Survey/ Qualitative content analysis	Questionnaire and interview	Chap 1, 2, 3, 4, 5, 6, 7, 8 and 9

Table 1.1 (above) indicates the research road map of the study. It emphasized the aim of the study; which seeks to address the use of ICTs for the support of KM in academic libraries in

both countries (Nigeria and South Africa). Eight objectives and nine research questions were structured to address this aim. The positivistic and interpretivistic research approaches were used as a mirror to view the study under survey, as well as the content analysis methods. The questionnaire, interview and observation methods of data collection were used to elicit data and information from respondents in the sampled university libraries in both countries. The review of literature was developed or conceptualised using themes of the research questions in the study. Each of the chapters relate to one another even though they were treated separately. The theories of TAM of ICTs, and Sagsan in KM, were used as pivotal drivers in the research investigations. Each of the chapters is linked with one another in order to achieve cogency and consistency in the specific subject, and commonalities in the current study.

1.12 Dissemination of findings

Research output is incomplete when it is not published in any journal. The publication of such results contributes to knowledge and is to be shared with the wider academic community. The findings from this dissertation would be published as a thesis and made accessible through the University of Zululand Institutional Repository (UZIR-http://uzspace.uzulu.ac.za/) at the main campus of Kwadlangezwa, Kwa-Zulu-Natal (KZN) province. It would also be disseminated through published articles in peer review LIS Journals, books, and conferences. One research paper has been published by the researcher in Mousaion Journal titled: Using Information and Communication Technologies in the University of KwaZulu-Natal and University of Ibadan libraries. Preliminary findings from this study were presented at the LIASA (Library and Information Association of South Africa) and DIS (Department of Information Studies) conferences in Cape Town and the University of Zululand respectively. The proposal for this study was also presented at the PROLISSA-Doctoral forum at the University of South Africa, Pretoria, South Africa.

1.13 Ethical considerations

For this research project, the following resources were utilized to conduct appropriately ethical research: The University of Zululand's ethical clearance policy and the Faculty of Arts' ethical guidelines and policies regarding intellectual ownership and plagiarism; including the consent of participants and non-participants and a permission letter to conduct research from sampled

university libraries. Ethical clearance requirements at national levels, for South Africa and Nigeria, were also complied with.

1.14 Definitions of key terms

Academic libraries: Academic libraries are libraries established in higher institution of learning such as universities, colleges of education, polytechnics, amongst others, in order to support the institutions' attainment/key function of teaching, research, and community service (Okiy, 2011).

Academic librarians: Academic librarians are considered as professionally trained academic staff with bachelor's degree onwards in the field of librarianship, information studies, archival and documentation amongst others, working in any libraries or information centers for the purpose of information acquisition to the stage of its dissemination to users of libraries (Eze, and Uzoigwe, 2013).

Explicit knowledge: Explicit knowledge is the human knowledge that has been captured orally, through writing in documents or books, and/or in movies and images. It is easy to interpret, represent, and share among individuals for effective application (Dalkir, 2011:9).

Information: It implies awareness or familiarity gained through experience about a fact, practical understanding of a subject or a situation. It can also be referred to as important resource used in accomplishment of set goals (Spender and Scherer, 2007; Reddy, 2010).

Information and Communication Technologies: ICTs can be broadly defined as a set of technological tools that provide an enabling environment for physical, infrastructural and services deployment in applications for generation, transmission, processing, storing and dissemination of information in all forms that include voice, text, data, graphics, video, and teleconferencing, amongst others (Voogt, 2003).

Knowledge: Knowledge can be described as a set of knowledge acquired over a long period of time, either through work experience, training and mentorship. The knowledge stored is shared

among colleagues and different group of people having common goals in an environment or culture (Omotayo, 2015).

Knowledge Management: Knowledge Management has to do with the mix of strategies, tools, and techniques used in an organization in order to identify, create, represent, process, and distribute information. Such strategies and techniques enabled the adoption of insights, and experiences through storytelling, peer-to-peer mentoring, and learning from mistakes in education, training, and artificial intelligence amongst others (Dalkir, 2011:7).

Knowledge Management Tools: Knowledge management tools (KMTs) are software in nature used in facilitating the processing, storage and retrieval of tacit and explicit knowledge. They are essential components used to store information and knowledge in databases, web portals, and institutional repositories (Kwiecien and Rao 2005; Dalkir, 2011).

Tacit knowledge: Tacit knowledge is personal knowledge of individuals that is embedded within the individual experiences and knowledge. It is rooted in action, procedures, routines, commitment, ideals, values, emotion, personal beliefs, perspectives, instincts and values (Nonaka, 1994). Tacit knowledge is difficult to express, represent, and communicate (Nonaka, 1994).

1.15 Structure of the thesis

Preliminaries

The preliminaries comprise of an emphasis on chapter one to nine of this present study. The explanation made in each chapter represents what took place at the beginning and completion of the research undertaken.

Chapter One: Introduction and background of the study

The chapter covers the introduction and background of the study with regards to the concepts of ICTs, KM, and academic libraries as applicable to the study. It goes on to look at the motivation, context, the aims and objectives, research questions, significance, scope and limitations of the study, definition of findings, definition of key terms and structure of the thesis.

Chapter Two: Conceptual setting

This chapter discusses the art of ICTs and KM in academic libraries with specification to contextualization in Nigeria and South Africa. Issues relating to both countries university libraries in the areas of ICT application for KM in University libraries in Nigeria and South Africa; the overview of university libraries in Nigeria and South Africa; status and issues of ICT for KM in University libraries in Nigeria and South Africa; challenges of ICT for KM in University Libraries in Nigeria and South Africa; and opportunities of ICT for KM in University Libraries in Nigeria and South Africa were discussed.

Chapter Three: Literature review

This chapter explores and evaluates current literature of print and electronic sources in published and unpublished work, peer review articles, journal/conference proceedings, workshops papers among others in the following areas: KM practices among librarians in academic libraries, availability of information and communication technologies facilities, KM tools and services used for the support of KM, ICTs utilisation for the support of KM, ICTs strategies for the support of KM, librarians ICTs skills for support of KM, ICTs policies for KM, and challenges faced in the use of ICTs for the support of KM. This was done according to the objectives of the study.

Chapter Four: Theoretical framework

The theoretical framework chapter began with brief description and background information regarding theory, theoretical framework, and what an overview of the study in general. The chapter went on to address different types of ICTs, and KM theories/models. This was done so as to have a better understanding of why and how the theories were consistently used in research activities. The proposed theories of TAM theory of ICTs by Davis (1989) and Sagsan's KM life cycle model (Sagsan, 2007), was introduced and elaborated in the current study. The sub-variables in the main theories were highlighted. The TAM addressed issues of perceived usefulness (PU), and perceived ease of use (PEOU) of information systems or

technology. KM life cycle model by Sagsan's revolves around knowledge creation, knowledge structuring, knowledge sharing, knowledge usage and knowledge auditing.

The rationale of these theories helped to address issues of what, why, and how its adaptation becomes relevant in the present study. It can be noticed that the graphic representation seen in the diagram of the two theories featured and addressed the variables of the research title 'USE' and 'KM'. Related studies applied in the theories showed relevance to the present study. The criticism and implication of the theories adopted proved the strength and area of weakness of the theories in this study. This was concluded with a summary that addressed salient issues from the chapter, the gap, the novelties and the contribution of the chapter to the study.

Chapter Five: Research methodology

This chapter covers the research methodology that was used for this study. It discusses the research paradigm and research approaches which consist of both positivism (quantitative-questionnaire) and interpretivism (qualitative-interview, observation, and content analysis of literature). The study area and population, sampling methods as well as the sampling techniques used for the study were discussed. The sample size, sampling frame, data collection instruments (questionnaire, interview, observation, and content analysis), data presentation, and analysis (use of SPSS, Microsoft excel and content analysis) were also covered in this chapter. Issues that arose from the pilot study were used to improve the instruments. Challenges that were encountered during the research investigation and summary of the chapter form the concluding part of this chapter.

Chapter Six: Data presentation and analysis of questionnaire responses

This chapter presents and analysed data collected through the administration of questionnaires. The questionnaire results/data collected from respondents was presented separately from graphs in tables being analysed with the SPSS in chapter six. Inter-country comparisons represented in line graphs showed cross tabulation at different intervals. Results/findings of respondents from this chapter showed many variances and unique methods, with regard to how librarians apply ICTs, KM tools and services in university libraries in the two countries.

Chapter Seven: Data presentation and analysis of interviews and observations

This chapter presented and analysed data that was obtained through interviews, observations and content analysis of the narrative of key informants' views. The narrations of key informants' opinions were represented verbally as reported by respondents in tables; with the utilization of content analysis of factual representation. This was done with keen interest, in order to tell how and why respondents working with the tools were able to discharge their responsibility of managing knowledge in their libraries. The observations of pictography, working tools, environment, and so on, in the visited university libraries across the two countries showed some commonalities and differences.

Chapter Eight: Discussion of the Findings

This chapter discusses the findings from the questionnaires, interviews, and observations. The three datasets were triangulated with regards to the research questions that addressed the applicability to each. The results of each dataset were supported with literature of related fields and theories, in which this study was anchored. The comparison made in the results from chapter six and seven revealed many novelties that had not yet been seen in previous research. It was established that librarians' use of ICTs to support KM in academic libraries in both countries is quantifiable. This was shown in the working knowledge and skills demonstrated by librarians whenever they use the technological tools in their operations. Observation pictures of the visited libraries, tools used and other resources were presented in appendix C.

Chapter Nine: Summary, Conclusion and Recommendations

Chapter nine covers the summary, conclusion, and recommendations based on the findings obtained from chapter six, seven, and eight. Suggestions made by respondents would help to improve on areas of recommendations addressed by the researcher. This would attest to the areas of discourse in the subject matter**.**

1.16 Summary

This chapter has provided an overview of ICT and KM as used in academic environments in Nigeria and South Africa, with a specific focus on what motivated the researcher in embarking on the study. The problem statement, aims and objectives, research question and hypotheses, significance, scope and limitations of the study, definition of key words, and structure of the

thesis are context specific as well as aligned to one another. The novelties in this chapter are shown in the following ways. Firstly, the unique and robust research road-map of this study, which address different discourses in ICTs, KM and academic, were not only of a global view but also context specific. Secondly, that KM as a discipline and practices has brought collaboration with fellow colleagues through seminars, workshops, conferences and departmental meetings that are seen in the present day.

The gap this chapter fills is with regards to the differences in library operations, usefulness of ICTs and KM, and digital content which is mostly valued and sourced by present day library users, in order to meet their information needs. The contribution of this chapter is that present day library operations requires the tacit knowledge of librarians in order to capture the proliferation of information resources, even though the technological tools are available. Librarians, with the nature of their work, have devised ways to meet up with current trends of the profession in the midst of satisfying users' devised information needs.

The next chapter presents the contextual setting of information and communication technology application for knowledge management in university libraries in Nigeria and South Africa.

CHAPTER TWO
CONTEXTUAL SETTING

INFORMATION AND COMMUNICATION TECHNOLOGY APPLICATION FOR KNOWLEDGE MANAGEMENT IN UNIVERSITY LIBRARIES IN NIGERIA AND SOUTH AFRICA

2.1 Introduction

This chapter discusses the context of ICT application for Knowledge Management (KM) in university libraries in Nigeria and South Africa. The chapter responds to two research questions that have been presented in chapter one. They are:

- What are the available ICT facilities, KM tools and services for the support of knowledge management in academic libraries in Nigeria and South Africa?
- To what extent are librarians utilizing ICTs to support KM in academic libraries in Nigeria and South Africa?

The contextualization of the chapter focuses on an overview of university libraries, ICTs, KM and library development in Nigeria and South Africa.

2.2 University libraries in Nigeria

The overview of the status and issues of university libraries in Nigeria is anchored in the National University Commissions' (NUC) official document (NUC, 2004/2005; 2011). The discussion of the overview of university libraries focused on historical background, requirements of NUC standards for university library establishments, policy, infrastructural facilities, human resources development, funding, information services and staffing.

Nigeria is the most populous country in Africa with a population of 170, 000,000 people (NPC-National population commission, 2014). The country is made up of 36 states and a federal

capital territory located in the city of Abuja. As at 2012, when the present research project began, there were one hundred and twenty four (124) universities categorised into 37 federal institutions, 37 state-run institutions and 50 private universities (NUC, 2004/2005; 2011). Presently, the number has increased to one hundred and twenty eight (128) accredited university libraries in Nigeria (Okojie, 2013:6). These are clustered into 40 federal, 38 state-run and 50 private university libraries (Nigeria School, 2014- Nigeriaschool.com.ng, 2014; Okojie, 2013:6, NUC, 2014). These are located in different states in the country. The number of university libraries has increased alongside with the growth of universities in the country.

The NUC was established in 1962 and subsequently reconstituted in 1974. In 1998 and 2004 the document of the NUC policy was reviewed in order to comply with Act No. 1 of the statutory body. The mandate of the NUC is to act as an advisory body in terms of the accreditation of university programmes (NUC, 1983; 2004/2005; 2011). The NUC enforces uniform standards as well as admissions capacity and criterion for every university in Nigeria. The universities are managed by the federal, and state, governments by way of the National Universities Commission (NUC). The NUC also oversees and supervises them for quality control. The NUC mandates the universities in terms of quality control in order to ensure that the approval of courses and programmes complies with the minimum academic standards. The determination and maintenance of academic programmes in universities are monitored and guided, with the processing of applications for the established universities (NUC, 2014).

According to NUC (2014), universities are mandated to host degree programmes amongst other qualifications. This provides the requisite knowledge of high-level manpower and undertaking quality control of the content and curricula of the academic programmes. The curricula of the academic programmes afford the universities the ability to compete globally and nationally. This has been demonstrated in the output of relevant graduates that are produced in line with a number of quality assurance indices (NUC, 2004; 2014).

University libraries' missions are to support teaching, learning and research within the university's academic community. University libraries in Nigeria are strategically positioned as the heart of universities (Ifidon, 1996), in order to support the mission of the universities by enabling access to information resources for teaching, learning and research. The university

institution, and its associated libraries, is governed by the NUC in Nigeria (NUC, 2014). The authority grants licenses to individuals, corporates and religious bodies to establish, fund and manage the various private and public universities in Nigeria (NUC, 2014).

The history of university libraries in Nigeria shows that, over the years, there has been a profound growth and development of the libraries in terms of funding, professionalism, staffing, coordination and processing of information resources (Utulu, 2010:289). University libraries in Nigeria cannot function without the provision of adequate staffing, funding, collections and services. This requirement becomes an imperative as NUC enforces the measurement of quality assurance of the information products and services offered in Nigerian universities (NUC, 2004; 2011; 2014). The reason behind NUC's move to set up quality assurance mechanisms is to regulate and enhance accountability (NUC, 2004; Obadara and Alaka, 2013; Okojie, 2013).

One of the major standards and guidelines used for libraries in higher education institutions in the United States of America (USA) were those formulated by the Association of Colleges and Research Libraries (ACRL, 2011:5). The ACRL standard is meant to guide the advancement and sustainability of the roles played by education and students, in order to achieve the mission of the respective institutions. Academic libraries are expected to exhibit the importance of the standards and contribute to their general institutional effectiveness at any point in time. The ACRL (2011) standards and guidelines addressed issues of vision, mission, and objectives; information resources; ICT resources; organisation and access to information resources; and library services. The other standards, which are the focus of this chapter, are issued from the NUC (2014). The NUC (2014) standards also addressed the development of guidelines that assess the achievement of the mission and objectives of the institution amongst other things. It guarantees the development of a well-coordinated and productive university library system, which ensures quality and relevance so that each information service provider achieves national and global competiveness.

The ACRL and NUC standards are presented in Table 2.1 below.

Table 2.1: Standards and guidelines for University Libraries (UL) in higher education

ACRL standards for UL	NUC standards for UL	Remarks
Vision, mission, and objectives.	The development of guidelines that assess the achievement of the mission and objectives of the institution.	The vision, mission, and objectives of the two standards for UL (ACRL and NUC) are aligned with one another. Usually, when formulated policy is implemented there is every tendency that the vision, mission, and objectives of UL would be fulfilled. These are the drivers of all functionalities in the library operations across the world. The vision, mission, and objectives, if not well spelt out, can be difficult to actualize. This is because some of the staff members do not value the organisation at heart. Besides this, they do not see the vision, mission, and objectives as an obligation that must be fulfilled.
Provision of instruction in a variety of contexts and platforms, with enhances pedagogical learning.	The development of policies such as security policy, acquisition, and services, which could facilitate the achievement of the library for enhanced users and resources.	The policies and instruction, as used in ARCL and NUC, are synonymous. They help to guide the procedures and sustainability of organizational goals. Without policies UL cannot function effectively. The significance of policies in UL is affirmed by NUC (2014) and Mohamed, Mohamed and O'Sullivan (2010:227)
Information resources.	Ensure the quality provision of accessed information resources required for university education in local, national and global competition	The provision of information resources across print and electronic mediums, are used to support the mission of the university libraries. University libraries depend largely on policy, budgetary allocation, and staff to effectively utilize their resources and meet users' needs. This affirmed by Commission for University Education (2014:97).
ICT resources.	Initiate and encourage the capability needed in the application of ICT tools for quality service delivery.	It can be noticed that, ICT resources cut across hardware and software resources needed for the operations in UL. UL must ensure that there is ICT development plan. The plan is guided by ICT policy and qualified ICT personnel. The personnel ensure the library management system is maintained and upgraded at all times. This correlates with Commission for Higher Education (2007:10) and Kaplan and Haenlein (2010).
Organization and access to information resources.	Access to information resources should be organized such that users can be able to retrieve them easily.	The information resources noticed in the two columns are supposed to be organized and made available to users. By standards, physically fit and disabled users are supposed to be considered for information provision with efficient access through local and international convention. For example, with the experience of the researcher at the Delta State University library, Delta Sate, Nigeria where the researcher originates from, materials are well organised. However, having access to them is another issue. The researcher observed that most users are denied access due to limited copies of those books. This affirmed with Donner, Gitau and Marsden (2011).
Library services.	Network and promote inter-library loan	UL was established so as to meet users'

	services amongst others with other university libraries.	diverse information needs, through quality service delivery. The services varied based on needs. But practically, most libraries have neglected their responsibilities of information provision. The essence of the different kinds of services is to complement, promote and sustained highly efficient and effective services that accommodate research, teaching and learning in university library environment. This confirmed with Gbaje and Kotso (2014:3).
Library facility	Promote the maintenance of physical facilities in the library and university systems for quality education	Usually, library facility comprise of both material and human resources, both used in meeting the goals of the library. However, due to limited budgetary allocation given to libraries by their parent organisation and government, provision of some facilities and repairs of library buildings are neglected. This is confirmed by the Commission for University Education (2014:101).
Staffing	Foster the achievement of constant university system that promote recruitment of qualified staff who engage in research collaboration	It can be observed that staffing is a very sensitive issue in a well-established UL. It involves the recruitment of qualified information professionals with relevant and appropriate educational background in Library and Information Science (LIS), experience, knowledge and skills requirements. Also, other technical staff serves as supporting staff for the smooth operations of the library. The size of the library users, academic programmes offered among other things are factors that determine the numbers of staff to be recruited for any library services. This affirmed with Utulu (2010:291).
Administrative structure	Provision of university library building that will accommodate users of students, staff members in a convenient and quiet place for research and study.	The administrative structure of the UL is integrated into different components in the library building. Usually, the library building is separated from every other building in the community with its full fledge organs where the university librarian is the head to every other staff. The structure accommodate different cadre of professionals and offices. However, in fulfilment of the standards, present administrative structure of UL is not built to meet the standards set-up. This correlates with Commission for University Education (2014:101).
Library budget	Foster corporation with a minimum 10% budget, whilst seeking international bodies for funding purposes that would aid staff growth within and outside the university environment.	Library budget entails the provision of 10% of the annual operational budget allocated to libraries for acquisition of resources. Unfortunately, the present day library organizations are not properly funded. This affirmed with Commission for Higher Education, (2007) and Ekere, Ugwu and Ekere (2014).
Competency and information literacy	Academic libraries should encourage lifelong learning through information literacy by combining both new technologies and techniques.	In actual library standards, competency and information literacy are basic requirements for a functional library. Without this, no librarians and university library can advance the promotion of quality academic success and learning among students and staff. When this is in place, the use of technologies, techniques and skills enhances retrieval and

		evaluation of resources on daily basis in the library. This correlates with Commission for University Education (2014:101).
Open, Distance and E-learning	There was no specific issue discussed here with relation to open, distance and e-learning	Open, distance and E-learning is the debate in most institutions and libraries today. By standards, UL are supposed to create awareness for open, distance and e-learning services to users and staff of the university. The services are designed such that those who are unable to visit the university library physically for their information needs, can be assured of easy access to reliable. This confirms with the Commission for University Education (2014).
Assessment of library outcomes	Provision that requires checking records of work performance of staff, acquired resources, and students' utilization of resources through library services that are offered on an annual basis.	Assessment of library outcomes is paramount in the setting up of any library standards. It offers understanding of the usage of library resources; acquired information resources; staff performance; and areas of needs. When library outcomes are carried out on an annual basis, it helps to know areas of weakness and strength. This could strengthen strategies that are put in place to sustain the user-centered mechanisms of the library system. This correlates with Commission for University Education (2014:106).

Source: ACRL, (2011:9-21); NUC, (2014) (in reference to column 1 and 2)

The emphasis for the standards and guidelines for university libraries is reported in Table 2.1. The standards and guidelines are the ACRL (2011) and NUC (2014), represented in columns one and two. The rationale for the standards and guidelines was to have an understanding of the functions of ACRL and NUC in university library operations and services. When the two columns (ACRL and NUC) are assessed, there is a significant overlap of the two UL institutions' standards and guidelines. The two columns have some commonalities that are found within the issues of vision, mission, and objectives; information resources; ICT resources; organisation and access to information resources; library services; library facility; staffing; administrative structure; library budget; and competency, as well as information literacy. However, there is a divergence in the areas of policy as well as open distance, and E-learning.

The affirmation in the two standards shows that there are expectations of the roles university libraries are to play. This is most significant if the libraries want to remain relevant and up to standards in terms of service delivery. The roles played by each of the items, as shown in the column in the library standards cannot be over-emphasized. University library standards seem

to be quite similar as is exhibited in the two institutions' standards above. This could be as a result of interdependence of standard developers on existing standards and expertise.

NUC's (2004; 2011; 2014) policy emphasized that the requirements for university libraries established in Nigeria include an equal ratio of one to two of the following:

- Staff and student ratio
- Information resources–books and electronic
- Information services and their relevance to current trends
- The available programs require infrastructure such as building and reading capacity
- Policy with relation to library funding and budgeting
- Students and academic staff research must be balanced to avail effective information services

The basis of this policy was to have a standard university library establishment. The outlined points mentioned above are what each university library should adhere to in planning towards viable and functional libraries. Without these factors, no libraries in the world, irrespective of their vision and goals, can attain their dreams.

According to Mohamed, Mohamed, and O'Sullivan (2010:227) ICT policy safeguards specific principles, practices, training and evaluation that can support library operations and services in university libraries. Presently, several university libraries in Nigeria have flourished as a result of established formulated ICT policies. The policy is aligned with set objectives of the operations embraced by the university libraries in question. There are several university libraries that are still struggling due to the lack of ICT policy that could guide the operations in university libraries. Scheeder (2005:8) argued that policy in libraries educates and promotes the institutions' mission, thus placing the libraries as an access point to knowledge.

The NUC policy document, regarding accreditation requirements for university libraries established the need for good governance, in order for the organization to function properly (NUC, 2004; 2014). The NUC ensures that external governance supervision adheres to standards that spell out the kind of library resources and costs to be supplied by vendors (NUC, 2004). The governance, which describes the kind of resources needed by university libraries, brought about a close look at the history of university libraries in Nigeria. This can be traced

back to 1948, where University of Ibadan library was the first to be established (Ifidon, 1996). The adoption of new technologies in academic libraries changes the knowledge, skills and attitudinal requirements of the librarians. The ICT tools such as computers, mobile phones, internet and social media (Castells, Fernandez-Ardevol, Qiu, and Sey, 2007; Donner, Gitau, and Marsden, 2011) are increasingly important in the librarians' workspaces. The access to information through these mediums has increased drastically over the past decade (Howard and Hussain, 2011). Mchombu and Cadbury (2011) argued that library collections and services in the African context have not been widely accessed through the help of ICTs (Mchombu and Cadbury, 2011). ICT facilities are transforming academic libraries in Nigeria in diverse ways. The transformation is demonstrated in terms of an increase in the acquisition of resources; shifts from manual to web-enabled and easy access, retrieval and management of knowledge (Mohammed, Garba and Umar, 2014:1), as well as the use of social media (Kaplan and Haenlein, 2010).

The effectiveness and efficiency of library operations depends largely on the knowledge and skills of the librarians who apply themselves to do the work/operations. University libraries' roles have been sharpened to align with the available working tools and human resources in the institution's given community. The improvements of ICT have rapidly changed due to increased usage of technology and the regular up-skilling of librarians. As new ICTs are introduced and applied in academic libraries, librarians must also acquire new and diverse knowledge sets and skills in order to use them (Okon, 2005; Dastgerdi, 2009; Jegede, 2002; Maponya, 2004).

Okon (2005); Dastgerdi (2009); and Jegede (2002) emphasized that knowledge and skills are required in study areas like LIS, computer science, database management systems and networking. Regular acquisition of new knowledge sets and skills diversify the expertise of librarians. Shongwe and Ocholla (2012) argued that, in the past, library operations such as cataloguing and collection development, amongst other operations, were carried out using manual systems. However, the advent and introduction of ICTs into the library tasks changed the approaches of handling and rendering information services. This has also changed the job titles and descriptions for quite a few years. These changes now require LIS professionals to be

trained to acquire the necessary ICT knowledge and skills, in order to better compete in the global knowledge.

Funding has been a major issue for the development of libraries in Nigeria (Osagie and Orheruta, 2013:195; Okiy, 2005). Utulu (2010:292), Ahmed and Nwalo (2013) and Tunde and ISSA (2013:48) acknowledged that the 10% allocation to libraries from the main institutional budget was used to accommodate libraries' needs as part of the NUC's provision for the funding university libraries. Enyia (2013) observed that university libraries in Nigeria have experienced many funding challenges. The problems result from non-conformity with criteria and standards as specified by NUC. Allocated funds, for the purchase of library materials and other equipment have been diverted to other uses without accountability. This has affected the operations and services of academic libraries (Enyia, 2013; Ani and Edem, 2010). However, where implementation of the requirement has occurred, the funding has helped libraries to evaluate the adequacy of their stock, suitability of staffing and availability of office space and readership services (Utulu, 2010:292).

A major contributor to University funding has been the Education Trust Fund (ETF). The ETF, instituted according to Tax Act No. 7 of 1993 and later amended by Act No. 40 of 1998, was meant to provide funds in order to improve the quality of education in Nigeria (Saidu, 2006; Akindojutimi, Adewale and Omotayo, 2011). This fund was formerly known as the (ETF), and was established in 1992. The aim of the fund was to enable the proper funding of universities and their libraries (Saidu, 2006; Akindojutimi, Adewale, and Omotayo, 2011). The Federal Government (FG) mandated companies in Nigeria to pay 2% out of their profit as tax to ETF, by law. The ETF has been used for the development of projects and libraries at various universities in Nigeria (Akindojutimi, Adewale and Omotayo, 2011). This source of funding university libraries, apart from the basic 10%, is regarded as a secondary source allocated to libraries and information-based institutions (Akindojutimi, Adewale and Omotayo, 2011). Some evidence of the use of ETF is shown by the example of the forty-six computers acquired for the computer laboratory at Hezekiah Oluwasanmi and Olabisi Onabanjo University libraries at Ago-Iwoye, Ogun State, Nigeria (Akindojutimi, Adewale and Omotayo, 2011). The explanation of the forty-six computers acquired for the Hezekiah Oluwasanmi and Olabisi

Onabanjo University libraries, computer laboratory was based on the effort of ETF scholarship to these libraries.

The funding of University libraries, as included in the NUC guidelines, are:

- Capital grants which are on the basis of the year of university establishment.
- Ratio of personnel cost to overheads is between 60% and 40%
- Library 10%, research cost 5%, capacity building 1% of the total recurrent-minimum.
- Academic to non-academic funding-60:40%.
- Internally generated revenue-10%.
- Expenditure on central administration-25% maximum.

Adequate provision of funds to university libraries enhances and fosters the acquisition of information materials and facilities (Ahmed and Nwalo, 2013). This has also facilitated the recruitment of qualified staffers that are ready to discharge the necessary responsibilities in the institutions (Ahmed and Nwalo, 2013).

Library and Information Services (LIS) are also critical to the growth of academic libraries. Presently, university library services have flourished due to the embrace of web-based electronic documents, and use of Web 3.0 technologies (Gbaje and Kotso, 2014:3). The use of web-based electronic documents has led to the increase of users' expectations and information needs (Gbaje and Kotso, 2014:3). These services have helped to facilitate easy access to information and have created opportunities for users to collaborate and contribute towards the creation of information and knowledge (Gbaje and Kotso, 2014:3). Utulu (2010:282) argued that university libraries (UL) are compelled to consider human, social, technological and economic capital as requirements in rendering ICT-driven library systems and services to users. The unfamiliar and irrelevant foreign collections at libraries, in rural African communities, have affected information services in various ways, such that patronage of the libraries is low (Mchombu and Cadbury, 2011; Sturges and Neill, 1998).

University libraries have continued to provide relevant, adequate, and up-to-date information resources and services that work to support the parent institution's goals (Kwanya, Stilwell and

Underwood, 2012). The provision made it such that one of the institutional goals of the university library is to strategize on capacity building of librarians' skill competencies. This decision became the desired outcome of effective and efficient work performance in service delivery (Kwanya, Stilwell, and Underwood, 2012). Fatoki (2005) and Nok (2006) complained that many university library staff members are not sufficiently computer literate. They view this gap as affecting the performance of library staff and disadvantage them from using ICT/computer systems in the library environment (Nok, 2006). Ahmed and Nwalo (2013) and Tunde and ISSA (2013:48) argued that university libraries continue to build strong information services that ensure the proper acquisition policy and utilization of the information resources.

In agreement, Utulu (2010:291) and Orcutt (2010:290-291) state that universities with user populations of 18, 600, or above, are expected to have 33 librarians, 8 paraprofessional staff members, 3 senior administrative staff members, 6 secretaries, and 161 junior staff. NUC (2004/2005; 2011; 2014) emphasized the requirements for university libraries with regards to staffing are:

- One librarian to every 400 users, up to a maximum of 20 librarians to 8000 users
- One librarian to every 800 users after the first 8000 users, up to a maximum of 30 librarians for 16000 users
- One librarian for every additional 1000 users after the first 16000 users
- One paraprofessional staff member for every four librarians
- One senior administrative staff for every 10 librarians
- One secretary for each university librarian, deputy university librarian, and dean of division or department of a deputy university librarian status
- Five junior staff for every one librarian

However, as the population of users' continues to increase, staff strength is equally expected to increase. Librarians in present day academic libraries continue to acquire skills and knowledge that are necessary to develop their personal capacities, and improve their work performance. The work performance and services offered depends largely on the various ICT facilities available to the specific organization.

Other issues worth mentioning in the university libraries of Nigeria are: evaluation of staff performance/productivity (Ikem and Ajala, 2000), management of library operations (Olorunsola, 2000) and the user's preference for e-resources and institutional repositories (Abubakar, 2011; Singh and Kaur, 2009). These have equally supported the library organizations, and the quality of service delivery rendered to users in academic libraries. The educational programmes offered at various institutions depend solely on the adequacy of library resources and staff strength in building standardized institutions (Eze and Uzoigwe, 2013).

2.2.1 ICT application for KM in university libraries in Nigeria

ICT application for KM in libraries entails the use of technological facilities to acquire, process and store information and knowledge in different databases and repositories. This involves management strategies, tools, and techniques that enable the achievement of such goals. The ICT application for KM in university libraries in this segment is based on issues of policy; information resources (print and electronic); library and information services and training in ICT skills.

The National Information Communication Technology Policy (NICTP, 2012) argued that ICT policy in Nigeria harmonizes related policies and laws that guide the development of different sectors for the benefit of national growth. Prior to 1999, the National Telecommunication policy (NTP) was formulated in Nigeria. This policy framework provides ICT sectors the opportunity and ability to tackle issues of socio-economic transformation in Nigeria. The fast development of new technology and convergence of the ICT industry led to the review of the policy. The NTP was reviewed in 2000 due to increase in population size and resources (NICTP, 2012). The review of the policy led to the formulation of the National Information Technology Policy in the same year of 2000 (NICTP, 2012); which was approved by the Federal Government (FG). The policy was meant to guide the Information Technology (IT) industry and related institutions in Nigeria (NICTP, 2012). In 2012, ICT policy improved in functionality in every sector such that Nigerians who use the mobile/telephone line increased from 400, 000 in 1999 to 90.5 million (NICTP, 2012).

Studies by Onoriode, Ivwighreghweta and Akpojaro (2012:13) and the NICTP (2012), argued that ICT policy in academic libraries incorporates the organization and governance of the procurement, use, management and maintenance of the tools for its longevity and especially for library services. Adomi (2008) argued that there are no specific ICT policies in academic libraries. ICT policy in libraries is built or tied into infrastructural facilities. The policy in academic libraries consists of the collection development, acquisition, circulation, cataloguing, reference, serial management, reserve and ICTs, amongst others. Venkatraman (2011) argues that ICT policies are documents that comprehensively provide information regarding the protection of ICTs and other resources in any library organization. The provision of the policy helps libraries to effectively apply ICTs in support of research, teaching, learning and community development (Venkatraman, 2011).

Easy access and accessibility to information and knowledge results in dependable and regulatory frameworks that are integrated into the policy. Therefore, university libraries should strategically develop and manage the learning potentials of librarians who are required to improve the management of ICT policy (Ani and Edem, 2011). Venkatraman (2011) and Ani and Edem (2011) concluded that the areas of most concern with ICT policy in academic libraries are: adoption and application of ICT, funding/budgeting, ICT infrastructural procurement/maintenance, ICT literacy, and ICT use. There are major concerns when addressing ICT policy. The ICT policy framework in university libraries accommodates the convergence and maximizes the potentials of ICT tools used for library operations (NICTP, 2012). The convergence and maximization recorded that, over 400, 000 fixed telephone lines and 200, 000 internet users were recorded across universities libraries in the country (NICTP, 2012).

Presently, ICT policy in academic libraries in Nigeria has created an environment for the rapid expansion of ICT networks and services. The network services have transformed the library environment, thus having increased users (NICTP, 2012). However, several challenges that affect the ICT policy in academic libraries were equally noticed as well. These include (NICTP, 2012):

- Non implementation of policy, legal and regulatory framework

- Inadequate ICT infrastructure
- Internet and broadband
- Capacity building
- Problem of universal access
- Community broadcasting
- Public private partnership
- Local content development
- Security
- E-application
- Research and development

Information resources are *sinquanon* in present day library organizations. University libraries in Nigeria have rapidly changed due to unique information resources that are used to meet users' information needs. Studies by Okite-Amughoro, Makgahlela and Bopape (2014); Hamade and Al-Yousef (2010), as well as Ji, Michaels and Waterman (2014) argued that most university libraries and their users prefer electronic resources in favor over print. This results in the compactable saving of space, conducive reading and office work environment, efficiency and effective performance of the resources. It also enhanced speed of access, increased and diverse users con-currently and provision of comprehensive amount of resources. However, the preferred choice varies from one user and his/her library, to the next. There is no extent to which print sources would not be used to render information services to users and researchers in academic libraries (Okite-Amughoro, Makgahlela and Bopape, 2014; Hamade and Al-Yousef, 2010; Ji, Michaels and Waterman, 2014).

Information services are fundamental in the support of educational objectives in institutions. Ndinoshiho (2010) argues that different information services have been used to support the educational objectives of their parent institutions. This includes services of online-based information resources, reference services, selective dissemination of information, current awareness service, amongst others. These services have opened up strategies for ways to market their products and services in academic libraries (Suresh, 2010; Yaya, Achonna and Osisanwo, 2014).

Basic knowledge and ICT skills play a significant role for the efficient and effective information services provision in academic libraries (Ekere, Ugwu and Ekere, 2014). The training of librarians in recent times, to be versatile and innovative in ICTs application, has placed them at a competitive advantage over other library organizations (Ekere, Ugwu and Ekere, 2014). Presently, training programmes offered through workshops, seminars and conferences has made it such that librarians in Nigerian university libraries have improved their ability to manage knowledge and services that embrace hybrid expertise (Abbas, 2014:1-3).

2.2.2 Challenges of ICT for KM in university libraries in Nigeria

The challenges of ICT for KM in university libraries are multifarious in nature. This can be categorized into ICT policy, ICT infrastructure/facilities, ICT personnel, funding and the cost of equipment. ICT policy was established to guide and assist sectors in the development and application of ICTs in their different projects and programmes (NICTP, 2012). Ridwan (2015) argues that no library can function without a formulated policy. The policy addresses the aims and objectives of the libraries with much priority to users and services rendered by staff (Ridwan, 2015), within the context of institutional vision and mission. Ridwan (2015) further notes that academic libraries keep investing so much on ICT facilities without giving much attention to policy that should drive the facilities. A previous study by Oni (2004:2) suggested six factors, which could lead to effective ICT policy implementation in academic libraries. This, in his view, includes: delineation of library goals and objectives, knowledge of recent technological trends, clearly written policy and procedures, management commitment and support, analysis of library specifications and requirements, ongoing users' education and well written ICT policy that would incorporate the programs. ICT policy provides a framework that coordinates and governs the procurement, use, management, and maintenance of ICTs as major information management tools in academic and research libraries (NICTP, 2012; Onoriode, Ivwighreghweta, and Akpojaro, 2012:13). ICT policy safeguards trainees of ICT, whilst they are acquiring knowledge and skills that are required in work operations in the library environment (Onoriode, Ivwighreghweta and Akpojaro, 2012:13).

Previous studies by Jensen (2002); Magara (2002) and Ashcroft and Watts (2005:8), argued that one in every one hundred persons does not have access to a personal computer (PC) in

some university libraries in Nigeria. It was also noted that fewer ISP (information service providers) are inexpensive; power supplies are unreliable and even non-existent of telecommunications among the population living in rural areas in Nigeria, thus not having telephone lines (Ashcroft and Watts, 2005:8).

Anuforo and Olayinka (2010) decry the low level of electricity supply in Nigeria, which now affects the population. The Nigerian government has not fulfilled its promises of the provision of 6000 megawatts of electricity generation in Nigeria. Currently, there is fluctuation between 3700 and 3801.19 megawatts of electricity generation into and for the economy (Okere, 2015). This has affected majorly all sectors that require electricity for survival. In this technological age, academic libraries need to have a backup plan for electricity so that the ICTs can be fully utilised (Anuforo and Olayinka, 2010; Gbadamosi, 2012). Anuforo and Olayinka (2010) argued that the epileptic power supplies have affected the computerization and digitization of academic libraries and their resources. Individuals, companies and institutions are now being forced to procure alternative power supplies that are expensive and unreliable.

In addition the milieu of challenges associated with electricity supply, a previous study by Okiy (2005:2) identified a shortfall in the knowledge of ICTs. This includes users and staff in libraries. The level of computer literacy among some librarians in Nigeria university libraries shows that the non-consolidation of application of ICT facilities is relatively pronounced. Although, in recent time, the situation has changed, thus leading to regular training of staff and library users. This has continued to meet the rapidly changing information environment. The users of academic libraries can now make full use of available ICT facilities, to meet their information needs.

Ekere, Ugwu and Ekere (2014) lamented on poor funding, inadequate ICT infrastructure, and ICT staff as critical issues in present day university libraries in Nigeria. The issue with poor funding is not new in academic libraries in Nigeria. Previous studies of Zakari (1997); Ochai (2000); Oketunji (2000); and Okiy (2003) attest to this fact. Funding is perhaps one of the greatest challenges facing academic libraries in Nigeria. The barrier is the non-acquisition and application of relevant information technology facilities in academic libraries.

The cost of equipment in Nigeria, with its battered economy and devalued currency, is enormous. This is not seen as the fault of funding or of the technology; rather it is on the part of government and the governors in the education sector (Itegboje and Okubote, 2002). Previous studies by Chisenga (2000); Oketunji (2001); Okiy (2003); Gbaje (2007); and Akanni (2008) lamented on the dearth of ICT infrastructural facilities, which results in the poor provision of funds in order to acquire and maintain them. Unfortunately not much has changed. This leads to ineffective information service provision to users in academic libraries in Nigeria.

2.2.3 Opportunities of ICT for KM in university libraries in Nigeria

Opportunities abound in the use of ICTs for KM in university libraries in the following areas: increased use of electronic resources, speed accessibility of information, retrieval of many volumes of information resources, open access, and distance educational training as well as proper housekeeping mechanisms. The factors mentioned are discussed below:

2.2.3.1 Increased use of electronic resources: Electronic resources are increasingly replaced with print resources for easy access, storage capacity, multi-volumes, and use for a variety of different purposes. Traditionally, library services that replaced print resources with electronic resources have improved the way information is harnessed and accessed by users (Bhardwaj and Walia, 2012). Bhardwaj and Walia (2012) argued that the appearance of web-based ICTs and the globalization of networks resulted in the exponential growth of presently used electronic information that is, utilized by librarians. Information professional roles, has equally changed in managing information. This alteration is due to improved better information services in web-based environment. Studies by Ani, and Ahiauzu (2008); Sadesh and Ellingsen (2005); Sampath and Kumar (2010) asserted that, dependence of students on e-resources differs based on their information needs. Electronic resources generated through electronic mediums are made available to wider range of users across the globe. Therefore, the efficiency and capacity of electronic learning can be enhanced in order to apply self-methods of using E-resources in academic libraries.

2.2.3.2 Speed and accessibility of information: Access and accessibility to information resources is much easier when the internet bandwidth connectivity is reliable. Henderson (1992) argues that easy access to information resources brings multiple and distinct provisions

used to facilitate users' needs. The European Commission (2012:3) opines that access to scientific information is essential as it advances the acceleration of innovation, fosters collaboration, reduces duplication of efforts, and improves the quality of results through constant improvement of research and the involvement of people and society through the transparency of scientific process.

2.2.3.3 Processing and retrieval of large volume of information resources: The processing and retrieval of large volumes of information resources is enhanced through the internet. Ebunuwele and Ola (2014) argued that ICT facilities have progressively replaced old methods of information collection, processing, storage, and retrieval. This has given new phase of operation to academic library in recent times. Reflecting on previous studies by Ehikhamenor (1993) and Marshall (1984) Information and Communication Technologies (ICTs) used in academic library services basically facilitates the acquisition, storage, retrieval, and dissemination of information, to meet diverse users' needs.

2.2.3.4 Open access and distance educational training: Open access and distance educational training are very fundamental in the 21st century. It entails free access without fees attached in acquiring knowledge and training in a technological environment. Studies by Anunobi, Anyanwu, Oga and Benard (2011); and Okon, Edem and Ottong (2010) emphasized that ICTs is beneficial to us in several ways: It promotes the use and enhances the surfing of information on the internet, that allows teachers/learners or lecturers to share their knowledge with peers in diverse subject areas. Seekers of information have harnessed this privilege to study anywhere in the world with a clarification of doubts and possible room for learning. Educational institutions now have access to current information that is available in developed countries through the internet. A previous study by OCLC (2002) viewed the academic library as a supporter and provider of reading and study materials, and for research purposes. Yusuf (2005) highlighted outstanding opportunities of ICTs with relation to teaching, learning, and research in traditional and distance education.

2.2.3.5 Proper housekeeping mechanism: Proper housekeeping mechanism has to do with the adoption and use of ICT's for housekeeping operations. It also involves integrated library management systems, and extensive resource delivery of library products and services to users.

One major implication of the use of ICTs in academic libraries is the repackaging of information resources (Chauhan, 2004). Chauhan (2004) established how ICT tools are used to locate physical materials as well as online resource through the use of the online public access catalogue (OPAC) in the library. The OPAC allows multiple searches concurrently, through the convenient and quick searching of catalogues in the library. There are other varieties of formats such as: Anglo America cataloguing rules, 2nd edition (AACR2) and MARC records are used in displayed of a desired order through which the capability of the OPAC operates. This offers accessibility from remote computers to WAN and LAN networks. The products and services offered are geared towards enhancing the library's growth and development.

2.3 University libraries in South Africa

The discussion in this segment is on the historical background of libraries in South Africa, as well as the establishment and growth of academic libraries, policies, ICT facilities, collections, staffing, services, funding, users' of libraries, information literacy, and growth of LIS education. South Africa is an economy with a population of approximately 54.96 million people (Statistics South Africa, 2015).

2.3.1 Status and issues

The overview of the university libraries (UL) in South Africa was anchored on the legislative and policy documents of the South African Education Act, Council for Higher Education (CHE), and National Council of Library and Information Service (NCLIS) (Satgoor, 2015:107; Dick, 2007:13; and Thomas, 2007:71-75).

South Africa has 25 public universities categorized into 11 traditional, 8 comprehensive, and 6 technological (SouthAfrica.info, 2014). The 25 various institutions are spread across the nine provinces. The history of South African libraries cannot be mentioned without the manacles of the apartheid era (Satgoor, 2015:97). This can be traced back to the earliest democratic transition led by Nelson Rolihlahla Mandela (Satgoor, 2015:97). During this time, official policy of racial segregation that involves legal, social, and economic discrimination was still in place (Satgoor, 2015:97). The Bill of Rights, enshrined in the Constitution of South Africa, brought about the propagation of access to information (Satgoor, 2015:97). This led to the responsibility placed on the South African library and Information Services (LIS) sector today.

Presently, the LIS sector serves 51.7 million South African under various categories of National Library of South Africa, South Africa library for the blind, library of parliament, five legal deposit libraries, nine research council libraries amongst others (Satgoor, 2015:97).

The foundation of libraries in South Africa dates back to the 19th century was shaped with British and Dutch colonial histories (Satgoor, 2015:97; Dick 2007:13). The history of the libraries was marked with stories of religious, voluntary, cultural and political organization; which were noticed in the libraries. This shaped the growth of reading and readers in the establishment of more libraries in South Africa (Satgoor, 2015:98; Dick, 2007:13). The libraries were sponsored by the associations of the Carnegie Corporation of New York; as well as the South African Library Association (SALA). SALA is now known as Library and Information Association of South Africa (LIASA), under the legislation that helps secure financial viability (Dick, 2007:13). South African libraries have passed through a progressive advancement from private reading societies to public subscription libraries since the year 1994 (Dick, 2007:13).

The growth of universities led to the establishment of more academic libraries in South Africa (Satgoor, 2015:105; Thomas, 2007:71). This was done in order to strengthen the pivotal role played by the libraries in supporting teaching, learning, research and community services, which they offer (Satgoor, 2015:97). The transformation and restructuring of higher institutions, and their libraries, by higher education during the transition era were considered an issue of legacy, transformation, and national policy framework (Thomas, 2007:71-75). The establishment of academic libraries prior to 1994 had limited published literature regarding the transformation and achievement of Library and Information Service of the academic library sectors (Thomas, 2007:71-75). It was established that very little information on conferences proceedings were found in websites of the academic libraries at that time (Thomas, 2007:76) which is indicative of the paucity in policy relating to LIS.

Policies are benchmarks that guide and govern the functionalities of operations in academic libraries. The policies guide both general and specific operations in Library and Information Services in South African university libraries (Satgoor, 2015:97; Thomas, 2007:76). A previous study by Nassimbeni (2001:36) argued that the policy terrain has become more

complex within the Library and Information Services (LIS) sector. The policy relates to the development of government's information policy and the African Renaissance (Nassimbeni, 2001:36).

As earlier mentioned, different policy works in order to address specific operations, within the library organization. This includes the General Information Provision Policy, Internet and Equipment-Use Policy, Reference Services Policy, Reference and Research Services Policy, Information and Communications Technology (ICT) Skills, Public Notice Bulletin Board Policy, Development Policy, Library Services Policy and Disasters Policy (Nassimbeni 2001:36). The White Paper for Post-School Education and Training, (2013: xiv), asserted that Department of Higher Education and Training (DHET)'s policy focused mainly on research, innovation, and building on areas of strength in retention of academics. This is aligned with academic library policy-making and could assist librarians in having more experience, skills and exposure; all of which is required in order to effect changes in library service delivery.

The available ICT facilities determine the varied library operations carried out on daily basis. A previous study by Herselman and Britton (2002) asserted that, in South Africa, there is an increasing availability of broadband internet, which facilitates operations in libraries. This has opened more opportunities in social networking, online consumer forums and multimedia services demands. Beebe (2010:4) argues that a range of ICT tools such as computer, multimedia, audio and video have becomes more asynchronous in learning in this present era. Therefore, academic libraries and librarians cannot do without the use of ICTs in designing the library processes as well as the accessibility of knowledge.

Knowledge, gathered in library collections is the pillar of academic library functionalities. Dube (2011:29) asserts that, the goals of libraries are geared towards the acquisition of relevant collections, used to meet a variety of users' needs. The provision of access to information sources, and resources, depends on the breadth, quality and accessibility of such information/collections (Dube, 2011:29). ACRL (2011:11) noted that the provision of access to collections by academic libraries should be based on the quality, format and relevance; in order to aid teaching and research missions. This becomes necessary as the provision is tailored towards areas of the academic library's vision.

The usefulness of staffing in library organizations cannot be ignored. Library organizations cannot function effectively when qualified, experienced and knowledgeable professionals are not recruited for the facilitation of the smooth operations of the academic library systems. Vergueiro and de Calvariho (n.d) argued that academic libraries need skilled staff with knowledge, attitude and the willingness to perform the job descriptions effectively and efficiently. The performance of such staff depends on the training that is had either through in-house learning, short courses, conferences and/or workshops. These have a direct effect on the knowledge, skills for work performance, and quality of services that are rendered to users.

ACRL (2011:13) established that since academic libraries recruit personnel who maintain the library IT infrastructure, it is recommended that applications and participation in on-going research be embraced. The provision of regular instructions on a variety of contexts by librarians would help to employ diverse learning pedagogies in today's academic libraries (ACRL, 2011:17). Studies by Minishi-Majanja and Ocholla (2004), Ocholla (2008), Ocholla and Shongwe (2013) argued that the training of LIS education becomes more significant, in this present knowledge economy, where knowledge and information are required in decision-making and planning. This would enhance and change the graduates of LIS into much better products, ready for the profession and job market.

University libraries are often involved in partnerships with other institutions in order to facilitate service collaboration. This became significant based on the viable relationship with their users. There are varieties of services in the present day academic library system (Adomi, 2009:163). These services vary from one user and library, provided access to resources is guaranteed. Services offered in academic libraries connect the operations, activities, and programmes offered in the institution (Adomi, 2009:163). Anunobi and Okoye (2008) argued that services, manually offered in libraries, have moved into a technological phase. Dube (2011:33) asserts that indicators of library services should make academic library service flourish in regular intervals. This includes access to resources (print and electronic), relevance of the sources used, how current the source is, efficacy of the retrieval tools used in sourcing for the material, end-user instruction, and affirmation of customer needs meet. These have brought a quality assurance mechanism to academic libraries in recent times.

Funding university libraries is a regular issue of debate. Compared to other African countries, university libraries in South Africa are well funded. However, as institutions in South Africa began to be merged together, their libraries began to have several issues, especially funding (Satgoor, 2015:105). This funding is needed in order to acquire collections, human resource management as well as to; budget for physical buildings and facilities (Satgoor, 2015:105; Thomas, 2007:76). The inadequacy of infrastructure, limited access to ICT, and disparity of allocation of resources results in the poor funding of university libraries (Thomas, 2007:76).

Funding is a fundamental source for the survival of university and their libraries in present day knowledge economy. South African university libraries are largely funded by the government; facilitated through the Department of Higher Education and Training (Satgoor, 2015:105). However, other ministerial bodies of the Library and Information Association of South Africa (LIASA), National Council of Library and Information Services (NCLIS), South African National Library and Information Consortium (SANLiC), among others do largely fund universities and their libraries (Satgoor 2015:105; CHELSA, LIASA, NCLIS, SANLiC 2014:1). Studies by Hoskins and Stilwell (2011:55) and Willemse (2002:2) established that due to increasing university budget allocation; the budget given to libraries was pegged at 6 to 7% of the university income.

The provision of funds was on the basis of having quality education through the acquisitions of information resources in university libraries (Satgoor, 2015:105). Academics in South African universities do have their research projects/research work, Masters, and Doctoral programmes published in high impact overseas journals through this funding (Satgoor, 2015:105). The priority of funding university libraries has given librarians a lot of concerns in recent times (Hoskins and Stilwell, 2011:51). The issue with funding university libraries is not only a problem of the present day. A report made by Parry (1960), demonstrated where library budget was pegged to be 6% out of the total university expenditure (University Grant Committee on Libraries, 1967). Van Orsdel and Born (2009) argued that global economic recession has severely affected library budgets. Hoskins and Stilwell (2011:55) admitted that outstanding university libraries require good funding. Recommendations of income generation scheme as alternative to funding university libraries include: Donors (Hoskins and Stilwell, 2011:55), the introduction of the South African Post-Secondary Education (SAPSE) information system in

1980, amongst others (Hoskins and Stilwell, 2011:55; Buchanan, 2008; University of Natal 1989:1).

The operations and services offered in academic libraries would be worthless if there were no users. The increased student population across the 25 South African universities was meant to ensure that the communities are well served, based on their different information needs. In the bid to meet with the high demands of students, libraries have strategized to improve and increase access to information resources within and outside the context of the libraries. The users of academic libraries also vary in categories. This comprises of undergraduates, post-graduates, researchers, post-doctoral students, professors and lecturers (Dube, 2011:28). The users, through the knowledge specialist capacity of the librarians, select, acquire, process and organize the library collection. This helps to facilitate access to physical and remote collections. The increase in the enrolled students' population of 937,000 in 2011 (WPPSET, 2013: xiv), which later increased by 2% from 938,201 in 2012 to 953,373 in 2014 (DHET Annual Report, 2014), led to an increase in the user population of the academic libraries across universities in South Africa. The increased user population across the various institutions challenges librarians with regards to meeting their information needs on a daily basis.

With this growing need in mind, there has been remarkable achievement and growth, since 1994 till 2015, in terms of the establishment of academic libraries in South Africa (Satgoor, 2015:105, Dick, 2007:13, Thomas, 2007:77-83). Much in terms of transformation, improved information resources and services has been achieved through initiatives supported by Library and Information Association of South Africa (LIASA), internationalization, Academic Library Leadership Development, Department of Education/European union Higher Education Libraries Programme, the Committee for Higher Education Librarians in South Africa, Quality assurance, National Electronic Theses and Dissertations projects, Information literacy collaboration, Consortium development and participation, and South African National Library and Information consortium, just to mention but a few (Satgoor, 2015:105; Dick, 2007:13; Thomas, 2007:77-83).

The institutions that were established offered a range of different programmes; and research opportunities, to both local and international students (Satgoor, 2015:105; Dick, 2007:13). This

has strengthened and improved the capacity of the university system in South Africa (White Paper for Post-School Education and Training, 2013: xiii). It was also revealed that the Department of Higher Education and Training (DHET) promoted the quality and capacity building of the nation in diverse ways. These include participation through embarking on a university study in order to increase population and quality assurances of the product; which meant easy access and service delivery of the system. The WPPSET, (2013:xiii) asserts that the increase of the student population across South African universities has risen in 2011 from 17.3 percent to 25 percent.

The findings from the report on student population across South African universities revealed that by the year 2030 the enrolments of students would have risen to 1.6 million (WPPSET, 2013: xiii). It was established that in 2011 the student head count conducted across the former 23 universities had risen to 937, 455 students for both full and part-time enrolment (WPPSET, 2013:28). The headcount enrolment comprises of 82 percent undergraduate level, 5 percent Masters, 1 percent PhD level and 2 percent Honours and postgraduate diploma studies (WPPSET, 2013:28). Reflecting on previous records of 1994, it was revealed that the student head count was 495,356. The increase embraced many students in research Masters by 45% from 4179 to 6076 and Doctoral students by 36% from 1380 to 1879, as compared to undergraduates of 19% (DHET Annual Report, 2014). These figures provide an eminent challenge to university libraries' development in the country.

ACRL (2011:2-3) argued that information literacy (IL) demonstrates that an individual has the abilities to know when information is required and be able to locate, process and use it effectively to meet the required needs. IL is a requirement in this present-day environment of continuous change, both in terms of technology and information resources. IL has become predominantly known and recognized as an essential component of higher learning. The component is required by librarians to support their users and perform the operations in the library environment. Users and librarians in South African university libraries should advance to acquire more skills and knowledge that are required to navigate the web as well as search for library materials.

Library and Information Science Education (LISE) is both practically and theoretically oriented. The pedagogy used differs in content of curriculum and context. However, its goals

are the same across the globe. The South African Higher Education transformation and restructuring resulted in outstanding academic libraries from 1994 till 2015 (Satgoor, 2015:105; Dick 2007:13; Thomas, 2007:77-83). The tremendous growth that has been witnessed in university libraries across the nation was due to the effort of Library and Information Science (LIS) schools. The LIS schools, to a great extent, have transformed the products working in most libraries today. The transformation results in advanced training offered to librarians for quality service delivery. The training offered has theoretical and practical experiences, which is the reason behind the functional university libraries that we have today (Ocholla and Bothma, 2007:151).

2.3.2 ICT application for KM in university libraries in South Africa

The application of ICT to support KM in university libraries in South Africa as discussed in this segment varies from one institution to the next. This involves the use of tools, techniques, and knowledge of librarians in managing the information resources in the libraries. The discussion of ICT application for KM in university libraries was anchored on policy, acquisition of information resources, and ICT access for users.

The university (academic) libraries in South Africa have experienced tremendous growth since their institutional transformation in 1994 (Satgoor, 2015:105). Presently, they serve in excess of 625 000 students and 60 000 academic staff in the 25 universities that have thus far been established (Eisterw, 2015:18). The operations in the libraries are guided by formulated policies that facilitate the management of the use of resources and facilities. The policies tend towards efficiency and effectiveness in the library environment. The existence of the National Integrated ICT policy became significant as it addresses core issues of libraries (National Integrated ICT policy, 2014). The ICT policy became essential, as it provides a framework that adopts new ICT legislation more suitably than the information age (National Integrated ICT policy, 2014). The ICT policy, which provides a basis for libraries and how librarians' can advance their operations, still requires new strategies that can stimulate the delivery of services to users (National Integrated ICT policy, 2014). The ICT policy was a landmark that addressed the constructive development both in the ICT sector, and other sectors as well. The transformation made in the ICT sector ensured a consistency of community development made by libraries (National Integrated ICT policy, 2014). The ICT policy in academic libraries is

fundamental as it regulates the environment through the evaluation and monitoring of librarians' work performance (National Integrated ICT policy, 2014).

The acquisition of information resources (print and electronic) is guided by a set of policies that enables librarians to select, acquire, evaluate and maintain library materials and services in order to meet users' needs (University of Cape Town Libraries, (UCTL) 2001). The essence of the acquisition is to support the institutional goals of meeting students (undergraduate, post-graduate and researchers) research and programmatic needs. The fact that no library can supply all necessary materials to meet users' needs, led to an inter-library loan mechanism. The inter-library loan mechanism is encouraged through local, national, and international platforms. This could help to meet standards and set best practices of subscribed agreements among libraries (UCT Libraries, 2001). Before information resources are acquired they go through different phases of bibliographic search, whether the materials is available or not. This procedure is made known in the formulated policy and procedures of each university library, budget allocation, and needs assessment that are presented to the library. The acquisition procedures requires that users and staff members interests are considered first while advancing the proper selection, acquisition, organization, and management of the information resource (LIASA, 2014). This would enhance effective access in present day library operations (LIASA, 2014).

ICT access has become a norm across university libraries, where users can access and retrieve information resources at no cost. Statistics South Africa (2012) reveals that the presence of ICTs in the economy has brought transformation in terms of development to rural and urban areas. This transformation has extended to other sectors, of which the academic library is a part Prior to universal ICT access made available in South Africa, the figure below showed the extent of the transformation in the economy. This suggests that access and accessibility to ICTs is a basic requirement for any growing economy. Specifically, transformation can be understood through the following statistics:

- Viewership of Television 27.7 million
- Satellite subscription with DSTV service 9.9 million
- Households with fixed line 18.0%
- Households with fixed computers 24.5%
- Households with fixed Radio 62.3%

- Households with fixed Television 78.2%
- Households with fixed Internet 53.4%
- Cell Phone ownership 84.2%

This transformation, in terms of access to ICTS, has also affected the operations in the library environment in South Africa. This is because the government of South Africa, in line with the Bill of Rights, espouses the value of universal access, working hand in hand with institutions to set the priority for the provision of access and accessibility for users. The penetration was as a result of the strong will of the policy that supports the framework of the ICT usage and access in the nation, throughout all sectors.

The right to information access has made it such that libraries acquire the most recent information resources for users to access (Department of Arts and Culture (DAC); and National Council for Library and Information Services (NCLIS), 2014:7). The increasing access to education and many other instruments for strategic planning makes it such that libraries are able to provide the most current information resources (DAC and the National Council for Library and Information Services, 2014:7). According to Attwood, Diga, Braathen and May (2013), access to information is a fundamental accomplishment of a set of objectives in university libraries. The consideration placed on access to information, led to the South African government spending capital in lieu of the commitment to achieving universal ICT access and services, especially for those in the rural areas where the services are not available (Parkinson, 2005).

This commitment by the South African government has extended to university libraries where access to the internet is a norm. The effectiveness of research output is considered to be related to the proper access to timely and useful information (Dulle, et al. 2001:190). One basic requirement that would facilitate access to the internet by users is computer literacy. The ability to use the computer technology requires skills and knowledge to navigate the search for information and communicate such information (Laudon and Laudon, 2007). Students, researchers and staff members might not necessarily visit and use the library resources, however, with adequate access they can navigate and source for information through any remote route in the university (Laudon and Laudon, 2007).

2.3.3. Challenges of ICTs for KM in university libraries in South Africa

Challenges can be generic or specific. If not properly handled, they can have an adverse effect in organizations. The challenges discussed here are anchored in policy framework, ICT personnel, access and accessibility, costing, uneven distribution of telecommunication, and ICT education. For Africans, and particularly South Africans, to effectively use ICTs, there needs to be a consolidated effective legal, regulatory and policy framework that would enable the implementation of viable learning strategies (Mutula, 2003).

The lack of qualified skilled ICT personnel in academic libraries in South Africa is still a major challenge. Harris (2011:2) stated that South Africa has started to witness a shortage of ICT skilled professionals both at schools and at universities. Industry is also not doing much to build its skills base for the future (Harris, 2011:2). The shortage of skilled ICT personnel is seen in varied departments, from software development to telecoms, hardware infrastructure to business intelligence. South Africa's ICT industry is also facing a crippling shortage of skills in order to deliver on large projects (Harris, 2011:2). Harris established that, even with graduates in the discipline of ICT across the nation, there is still a need for senior managers, and especially mid-career professionals, who would take up the responsibilities of tasks in organizations (Harris, 2011:2).

The situation is likely to get worse before it can improve, especially as the industry recovers from a long slump in demands for its products and services. Harris referred to the quote made by Greg Vercellotti-the Executive Director of Software Development firm at 'Dariel Solutions' in a conference that "We spend a lot of time thinking and worrying about the skills shortage" (Harris, 2011:2-3). The skills shortages lead to the recession of most organization in the economy. Now that we are seeing a lot of activity in the market again, we are faced with a massive shortfall of qualified skills (Harris, 2011:2-3). This is gradually affecting university libraries as the specialists needed in ICT department require hybrid personnel with experiential practices in order to take the organizations to where they ought to be today.

The reason for the skills gap is the increasing demand of ICT services across industries (Harris, 2011:1). Industries such as banking, telecoms, retail, mining, institutions, education, health sector, and government as organization seek to drive operational efficiencies and growth

(Harris, 2011:1). Ofulue (2011:144) argues that South Africa has had a similar experience as some African countries, especially in regard to the need for increased access and accessibility. Ofulue (2011) argued that the inadequate deployment of infrastructure, skills and access is affecting some sectors, especially the information sector in South Africa.

Ocholla and Shongwe (2013:35-36) argued that since present job market in LIS profession require much knowledge and ICTs skills from LIS graduates, LIS curriculum need to also change, in order to accommodate the required skills, knowledge, expertise and experience in the ICT profession. Based on this, LIS professionals need to be well trained and versatile in preparations for future task of their work performance. Studies of the LIS job market, by Ocholla (2000, 2001, 2005, 2008); Lutwana and Kigongo-Bukeny (2004); Minishi-Majanja and Ocholla, (2004); and Ocholla and Bothma (2007) highlighted the changes that have rapidly affected the LIS profession with a significant proportion of the market within and across Africa where non-library employers seek their services.

2.3.4. Opportunities of ICTs for KM in university libraries in South Africa

Several opportunities have accrued in the use of ICTs for KM in university libraries in South Africa. Among these is the availability of ICT infrastructure and digital content, easy communication and access, educational training and development of librarians. Satgoor (2015:105) argues that the availability of Web tools and social media has greatly impacted the academic library environment. Satgoor (2015:105) admits that technologies, library space, dynamic user services, design mechanism, and staff development have proven to be drivers in KM in academic libraries in present day library services.

A Global Information Technology Report (2013:2) argued that South Africa performed tremendously well in the following areas of ICT infrastructure, as follows:

- Electricity production (kwh/capital)-45th out of 144 economies,
- Mobile network coverage (population coverage)-40th out of 144 economies,
- Internet International bandwidth (kb/s per user) -66th out of 144 economies,
- Secure Internet servers (per million users in population)-54th out of 144 economies,
- Accessibility of digital content-85th out of 144 economies.

However, without mentioning institutions and libraries, it appears there is a need to increase the energy sector of institutions and libraries in South Africa. This would help to enhance and improve the electricity production and low mobile network coverage. This is essential in the use and access to digital content in university libraries.

Beebe (2010:3-4) argues that changes have occurred with relation to collaboration with higher education institutions in South Africa, thus leading to better access and accessibility of information. This act would continue to place South African universities, and their libraries, ahead of their African counterparts. The transformation, which education enables, can be much stronger when the use of internet is applied, thus providing new education (Nulens, 2003 and Jensen, 2003). The use of ICTs in library operations has improved the access to information through the networking and sharing of information.

According to Ocholla and Bothma (2011:162-163), research in Library and Information Science Education and Training (LISET) has proven to generate diverse opportunities. This included collaborations and partnerships with other libraries through the sharing of resources and inter-library loan services, staff development training, retreat and short courses within and outside libraries and marketing of librarians' skills. Ocholla and Bothma (2011) emphasized that such training opportunities have strategically improved the use of ICTs in university libraries in recent times. The creation of a consortium of internet-based enhances web visibility that offers librarians and university libraries continuous education. This continuous education promotes productivity of staff in efficiency and effectiveness of work operations.

2.4. Summary

In this chapter, several salient issues arose. First, it was established that the Nigerian and South African university libraries have had a long history of development. Second, the history of academic libraries recorded profound stories of transition phases in religion, culture and political organization. Third, the transition enforced the restructuring of Nigerian Educational system by way of the NUC; and the South African Higher Education National policy framework, in their respective countries. Fourth, earlier academic library operations witnessed a disparity in the allocation of resources and infrastructural facilities and accessibility to ICT. Fifth, remarkable achievements made in the present day in most academic libraries, were made

possible as a result of instituted bodies of LIS associations, thus propagating library and information services. Sixth, significant projects found in most academic libraries and their institutions were enabled by the allocation of funds by governmental and foundation external bodies.

This chapter elucidated the contextual setting of the study. This unveils the relation to ICTs, KM, and university library management in both Nigeria and South Africa. This chapter established that a significant growth of the university libraries in the two countries has occurred. Government support, with policy infrastructure and resources, has played a crucial role. The support provided is not uniform in the two countries, and implementation of policy and standards cannot be verified, as evaluation data was not available for this study. The literature reviewed seems to suggest that better support to university libraries occur in South Africa than in Nigeria. The provision and access to ICT resources is another concern. While access issues are more prevalent in Nigeria, inadequacy of ICT personnel is increasingly mentioned as a challenge in South Africa. All studies point out that ICT education and training is essential for both information service providers/librarians and the university library users. The regular evaluation of the library services based on applicable standards and benchmarks need to occur in order to establish monitoring of achievement and failures.

The next chapter discussed the literature review; which was drawn from the objectives of this study.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter reviews existing literature on the use of Information and Communication Technologies (ICTs) for the support of knowledge management (KM) in academic libraries. Literature reviews, according to Bless and Higson-Smith (2000:20) are deepened reviews, which assist individuals and/or organisations to sharpen the theoretical framework of their research question. It also updates researchers on the latest developments in related areas of study; identify gaps in knowledge, as well as weaknesses in studies that have already been carried out. Literature reviews, in addition, establish what has been done, what has not been done, and what needs to be improved. Finally, the review works to discover connections, contradictions, or other relationships between different researches results. The literature review was done by comparing various investigations that identify the variables that are considered in any given study. These help to examine the definitions used in previous works as well as the characteristics of the population that is under investigation. Neuman (2011:445) argued that the literature review is the accumulation of knowledge through experience and skills upon which people have learnt, and continue to builds upon.

The current chapter focuses on KM practices among librarians in academic libraries, availability of information and communication technologies facilities, KM tools and services used for the support of KM, ICTs utilisation for the support of KM, ICTs strategies for the support of KM, librarians ICTs skills for support of KM, ICTs policies for KM, challenges faced in the use of ICTs for the support KM.

3.2 Knowledge management practices among librarians in academic libraries

Knowledge Management Practices (KMP) originated from the domains of data, information, knowledge, and wisdom. IT refers to set of technological tools used to create and manage information and other activities in any organisation (Blurton, 1999:46). The technological tools can also be used to manipulate or effect changes in the organisation. Information as a commodity and resources can be likened to natural resource such as land, and capital. When codified, and synthesized, they become knowledge. It enables the accomplishment of set goals in any work environment. This emphasis was established by Opeke (2004); Wilson (1999); and

Uttor (1999). Therefore, the state of information, and its use on a daily basis, depends largely on the individuals and organizations that apply it towards the aims and objectives of the organization.

In the present knowledge economy, data, information, and knowledge dominate as fundamental issues discussed on daily basis. Its relevance cannot be undermined in knowledge management practices (KMPs). Singh and Sharma (2011) argued that KMPs implies a scenario where learners analyses organizational culture through work performance and satisfaction of employees working in that organization. Mundra et al., (2011) established that KMPs enhances competitive advantage and innovation needed for organizational growth. Previous studies by pioneers of KMPs, Nonaka and Takeuchi (1995); Nonaka (1994) and Scarbough (1999) established that KMPs is predicated on six basic principles of KM in organizations. The principles are: orientation towards development; transfer and protection of knowledge; continuous learning in the organisation; development of innovative culture; competence development; approaches to people; and understanding the organisation in a global prospective. Bernborn (1999) posits that KMP involves capturing collective knowledge in organizations as well as filtering and sharing that knowledge among colleagues in order to enhance the complexity of collaborative work.

Shanhong (2000) argues that KMP promotes knowledge innovation and development between libraries and users in order to strengthen knowledge networking. Thorn (2001) asserts that KMP is concerned with training transmitted through prescription, which is sometime difficult to capture. The prescription exists on its own basis, and can be passed by example, from the master to the apprentice. The diffusion occurs through personal contacts. This implies watching the master through emulating efforts in the presence of his examples. The apprentice unconsciously picks up the rules of the art, including those, which were not explicitly known to the master himself (Thorn, 2001). The rationale behind KMP in academic libraries is that, present day library organizations become more effective and efficient as they continue to capture, share, retain, and re-use individual and organizational knowledge. This knowledge has helped to create a more thriving production and service in library environments (Jyoti, Rani, and Kotwal, 2013:9).

Kidwell et.al (2002) asserts that academic library should not see KMP as a radically new idea in its activities; rather, understand the framework within individual residual knowledge. This would help to address the difficulty to code and acquire more knowledge. The proportion of tacit knowing of librarians has helped to articulate and communicate in a social context within the organization. Thus, it is argued that academic libraries would understand this better if the theoretical, methodological, and scientific approach were adopted in the management of individuals' knowledge within the organization. A good example of KMP has to do with issues of collaboration, organisational learning, best practices, workflow, intellectual property management, document management, and user expertise which now focus on using effective and better standards. Kidwell et.al (2002) argues that more tasks await academic libraries due to the fact that KMP involves the entire organisations. There is now an intermediary of human intelligence in academic libraries through KMP where groupware application is capable of interfacing with other applications and systems that help in the distribution of knowledge in the World Wide Web (Kidwell, et.al 2002).

Kimble (2013), Swart and Harvey (2011), as well as Kimble, Grenier and Goglio-Primard (2010) argued that, tacit and explicit knowledge has the potential to alter and facilitate innovation and growth in organizations. More so, Nonaka (1991) and Polanyi (1966) established that tacit and explicit knowledge has been popularized mostly in the business and education (universities, research institutes and libraries) sectors. The profound benefit in adapting and using KM application is to create and share knowledge in the organization. This creation rests on the desirable data, information, and knowledge- which the organizations generated over time and managed effectively (Nonaka, 1991 and Polanyi, 1996). KMPs, therefore, becomes a strategy aimed at harnessing organizational knowledge. This has helped to enhance the capacity derive from relevant knowledge and information.

The current researcher concur with the view that academic libraries should seize the opportunity to harness and use expert skills to capture, process, store, and distribute knowledge at every point in time. This could help colleagues to have trust, be willing, and innovative to publish the wealth of knowledge in journal articles. The wealth of librarian's knowledge repackaged, in diverse contexts, has made university libraries (academic) to flourish in information services delivery to both staff and users. The efficiency and effectiveness of

information services delivery was as a result of the aid of ICT use. Therefore, academic libraries should continually facilitate product innovation in resource sharing and service delivery. The ability of librarians to understand their organizations, users' information needs, and act effectively on these, is what sustains the viability of the library. The viability is made possible through a range of practices used by librarians to identify, create, represent, and distribute knowledge (tacit) for re-use, and learning (Nonaka, 2004).

The importance of information, as explicit knowledge and organizational resources, has helped most learning organizations today (Drucker, 2002; Strassrnann, 2001; and Senge, 1990). Maponya (2004) argues that academic libraries have to devise viable means that would improve information services in this knowledge economy. The sharing of expert knowledge among the library staff members is facilitated through organisational culture. Maponya further argues that the success of KMP in academic libraries depends on the ability of the library staff to utilize information and knowledge to better serve the needs of the academic community for whom it was established. Maponya's emphasizes KMP as applied in academic libraries in the area of knowledge creation of (research writing, discussion in meetings), knowledge capturing and acquisition, knowledge sharing and re-use, to meet users need varies with library resources and services. Jantz (2001:35) asserts that the systematic approach used by librarians to improve the operations of the library is through know-how, buried in the skills, experience, and competencies of staff members. This improves the knowledge of staff as well as the work performance. The successful implementation of such knowledge-enabling initiatives in the workplace requires the knowledge of the manager (librarians) to apply several skills-sets (TFPL, 1999).

Jantz (2001:34-35) and Lee (2000) emphasized policy, which could possibly enhance the implementation of KMP, in academic libraries. This can be efficient and effective in knowledge sharing organizations. The transformation that has taken place through KMP in academic libraries resulted in the accumulation of knowledge throughout the centuries. Recent studies by Khan and Bhatti (2012); Rogers (2009); Hendrix and Zafron (2009); Tortorella (2012); MacManus (2012); Ezeani and Igwesi (2012); Luo, Wang and Han (2013); Mundt (2013) amongst others, have shown that the significance of the use of social media, internet,

web portals, digital dashboards, and analytical tools to promote and foster KMP in academic libraries. These have also showed indication in research collaboration and business ventures.

Previous studies by Rowley (2000); Petrides and Nodine (2003); Skyrme (1997); Yu (2002); Prusak (2001); Grant (2007); Brown and Duguid (1991); Smith and Mckeen (2003); Dickinson (2002); Davenport and Prusak (1998); Wiig (2000) have shown that KMP in academic libraries can be categorised into the following categories. Namely:

a. Group discussion/meetings-brainstorming
b. Apprenticeship
c. In-house training
d. Interpersonal relationships among colleagues
e. Routine documentation
f. Communication networks within the library
g. Socialisation
h. Seminar/conferences and workshops
i. Communities of practice
j. Storytelling
k. Research investigation

The types of knowledge required by librarians for KMP are the tacit and explicit (Davenport and Prusak (1998); Gourlay (2004); Nonaka and Takeuchi (1995); Polanyi 2002; 1958). For KMP to be more proactive in academic libraries, the need to balance the sourcing and dissemination of both print and electronic resources is required. This could affect or enhance KMP, specifically with a focus on ICTs and KM tools used. The ICTs and KM tools used consists of the followings: multi-media, social networks, databases, hardware and software applications (word processors, spread-sheets, databases, interactive presentation software, e-mail, web browsers and website design), CD-ROMs, computer, scanner, printer, used to support the operations of academic libraries (Adomi, and Kpangban, 2010:1; Foo, et.al. 2002; KMIS, 2013; and Cambridge International Examination, 2013). Seeing to the need for KMP in academic libraries, librarians' roles have equally expanded as they continue to identify users' information needs, capture knowledge resources to meet such needs, and re-organize knowledge resources available in the library for research and academic work (Ekere, Ugwu and Ekere, 2014).

3.3. Availability of information and communication technology facilities, knowledge management tools and services for the support of knowledge management in academic libraries

This segment addressed variables of availability of information and communication technology (ICT) facilities (ICTs), knowledge management tools (KMTs), and services tied together in these research questions. The availability of information and communication technology (ICT) facilities implies the required tools needed to work with, in any organization. But availability does not mean accessibility (Ofori-Dwumfuo, and Kommey, 2013:91). The availability of ICT facilities leads to easy and fast operations of the organizational goals. The library organizations are affected in several ways including: inadequacy of funds to acquire the required tools; qualified personnel/expertise to use the tools; organizational culture does not accept the tools; and training need analysis of staff, to master the use of the tools are not properly considered. The effectiveness and efficiency of the tools can be determined by the quality of service delivery rendered to users of libraries (Ofori-Dwumfuo, and Kommey, 2013:92).

There are different types of ICT facilities available to library organizations today, depending on the operations that need to be carried out in the specified organization. According to Ofori-Dwumfuo and Kommey (2013:92) ICT facilities are a major catalyst that drives the management process of organizations. The tools are diverse, which consists of social media, video, teleconferencing in the organisation. Banquero, Aguilar and Ayala (n.d) concluded that ICT infrastructure is a key element of hardware and software, services, procedures, processes, and persons that are used in the organizations. Additionally, ICT facilities reflect technological tools, methods, and access needed to promote the efficient transfer of knowledge in today's massive flow of information resources (Enakrire and Onyenania, 2007:15).

Present day library organizations have thrived through the aid of infrastructural facilities as well as material and human resources (Iwu, 2003). Without these three components, it might be difficult for any organization to achieve its set goals. The ICT facility available and used in many library organizations has enhances work production. The facilities range from computer to sensing technologies. These are used to gather data and translate them into forms that can be understood (Iwu, 2003). For example- the sensors comprises of scanners, keyboard, mouse, electronic pen, touch or digital boards, barcode sensors or readers, voice recognition system).

The communication technology which helps to transfer information from one source to another without barriers, speed and distance consists of telephone, facsimile machines (fax), telecommunication system, electronic mail, teleconferencing, and electronic bulletin boards). The display technologies facilitates the output devices with interface between communication, sensing, analysing and human user-interface are made up of the computer screens, printers, television sets, et cetera; analysis technologies (Iwu, 2003). These technologies help to investigate data, analysis in-depth queries, in order to find possible answer to intricate phenomena (Iwu, 2003). The computer systems, irrespective of the type, facilitate the effective and efficient storage capacity of information in diverse context. This has enabled the ease of access and retrieval of information in libraries. ICT facilities such as USB, external disc, CD-ROM, database, flash drive, disc cassettes, magnetic tapes, disks, optical, amongst others are continuously used by librarians and libraries, to support the operations and services of libraries (Iwu, 2003).

Previous studies by Chisenga (2006); Lalitha (2004); Madu (2004); UNESCO (2002); Prytherch (2000:357); Blurton (1999:46); Kawatra (2000); Kevin (1996:51–52) argued that ICT tools used to acquire, create, store, disseminate, communicate, and manage information and knowledge in libraries differ in purpose, contexts and content. The processes of the new systems and products brought opportunities that enhance training and re-training of librarians for service delivery. To facilitate the production of knowledge as well as the development and training of librarians in different subject areas, most of the tools mentioned are required (Ofori-Dwumfuo and Kommey, (2013:92). Ofori-Dwumfuo and Kommey (2013:92) asserts that, the role played by ICT infrastructure used to support KM has increased due to knowledge transference among workers.

Tiwari and Sahoo (2011:1) were of the view that ICT infrastructure/tools are generally used in university libraries. The use of these tools, as stipulated by Tiwari and Sahoo (2011:1) varies in diverse context. It can be used from communication to collection; driving hardware and software; network and perform house-keeping operations in the library environment. There are plans and supervisions that have changed the successful integration of infrastructures in university libraries in recent times. Enakrire and Onyenania (2007:15) admit that ICT infrastructure cannot be removed from the management of widespread sharing, and use of

information, in libraries. The success of KM is enabled through the application of ICT tools (Rao, 2005:3). KM as an interdisciplinary field, became proactive in libraries as it addressees a set of approaches of information and knowledge flows, and creates value for the organizations (Rao, 2005:3). The tasks carried out by people in the organization require enabling tools of best practices (Rao, 2005:3).

KM tools (KMTs), which also compliment ICT facilities, are software in nature. They are sets of tools used to solve specific and general problems that are difficult to handle by staff members (Rao, 2005:4). The KMTs enhance productivity and the work performance of colleagues in the organizations. The productivity is seen from the perspective of staff members; using both tacit knowledge and the KMTs to improve work performance. The KMTs include social network analysis; database management systems; portals; innovation management tools; groupware; E-learning, amongst others (Rao, 2005:4). The KM tools available in libraries are now gradually replacing ICT technologies/infrastructure used in support of KM. For example, information and knowledge are now being stored and retrieved in databases, institutional repositories, D-space, clouds, through the aid of KMTs of Web 3.0; groupware; multi-media; internet; artificial intelligence; semantic web, information retrieval tool; social network, expertise location; summarization; corporate portals; intranet/extranet; mapping tools; electronic document management; computer; data warehousing workflow management systems; machine learning; simulation tools; content and database management systems (Raja, et. al 2009; Rao, 2005:4). The latest ICT technologies of social media, has equally allowed the creation and exchange of generated content by users of the libraries (Kaplan and Haenlein, 2010). University libraries today have devised mechanisms of disseminating their products and services through the use of the KMTs and social media platforms. The users can interact and communicate through highly accessible WiFi/network and router, without necessarily visiting the physical building of the library.

The practical validity of KMTs used in academic libraries was attested to in most of the KM literature that was sourced for this study. Dalkir (2011:444) argues that KMTs are essential components that reduce the time and cost of development in organizational performance. The value created in organizations through the transformation of data into knowledge, is now managed by the KMTs. This has integrated the capturing and re-use of information and

knowledge through new research techniques (Dalkir, 2011:444). The usefulness of KMTs has allowed different institution such as health; genomics; proteomics; pharmaceutical; biotech industry among others; to understand how the tools can be used to discover initiatives and capture data in the development and implementation of workable systems (Dalkir, 2011). Most organization or systems have used KMTs to capture staff members' initiatives or ideas. This can also be applied to academic library environment where lots of data and information are captured and processed on daily basis. Improving access to knowledge in the library organizations through availability, accessibility, and affordable tools is most crucial in present day knowledge economy.

The significance of ICT facilities compliments KM tools, and how it supports library organizations. Studies by Ebijuwa and ToAnyakoha (2005:4-5); American Library Association (1983); Walmiki and Ramakrishnegowda (2009); Ahmad and Fatima (2009); Adeleke and Olorunsola (2010); Shafi-Ullah and Roberts (2010); Etebu (2010); Patil (2010) and Ani et, al. (2005) have demonstrated areas of weakness in the diverse use of ICT infrastructure. These include inadequate funding; slow internet nodes and bandwidth; irregular training offered to increase the use of ICT-based products and services; campus LANs not fully extended to libraries for digitalization; amongst other issues. These, if properly addressed in university libraries, would increase the promotion and support of acquisition and dissemination of knowledge to users. The author of this study affirmed that the ICT facilities, which have brought much transformation, in terms of the support of KM, have equally affected human growth and development. This includes economic, political, social-cultural, religion, and physical transformations, thus leading to a global reality with today's digital divide (Ebijuwa and ToAnyakoha, 2005:4-5; Etebu, 2010; Patil, 2010; and Ani, et al. 2005).

Awuor, Rabah and Maake (2013:253-254) argued that ICT infrastructures have generally supported KM in most libraries. The areas of support include increased print and electronic resources production; delivery of information products and services; new business approach that require the use of information products; access and dissemination of much volumes of information; transformation of LIS professional roles as subject specialist; capacity building and shift from traditional to virtual/online resources and services of internet; large volumes of information and knowledge in institutional repositories; sourcing for knowledge through use of

mapping and auditing tools; artificial intelligence/information retrieval tool, metadata, workflow management systems and machine learning amongst others (Awuor, Rabah, and Maake, 2013:253-254).

Reflecting on the services offered in academic libraries, the researcher states that services are a by-product that stimulates operations within organizations. Imperial College London (2014) asserts that library staff should inspire researchers and learners through quality access to information as well as areas of expertise. This report was based on a research project carried out in 2012-14, on the promotion of library services at the college, it was established that 91% of the library budget was spent on e-resources; over 1.1 million users visited and made use of the library resources in 2013/2014; 990 hours of teaching to 15, 000 users of the college library by staff members between 2013-14. It was established that the results showed a sharp increase in users. The result lead to the launching of new strategies to improve library services in 2014. The strategies include: provision of e-learning resources; Wifi everywhere in the library; Edu-roam facilities; training in education and learning workshops; adequate library spaces; excellent research support to students through open access, research data and content management and review of library hours to 24/7 (Imperial College London, 2014).

Tenopir, Birch and Allard (2012) assert that several services, which include research data services; information services; consultative-type services; reference-type services and technical-type services among others are offered to users in most academic libraries today. Tenopir, Birch and Allard (2012) argue that services offered differ from one user to another. Also are professional librarians, do have their areas of expertise. The services rendered to users depend on their information needs. There are significant difference in the information services offered in academic libraries through the aid of different ICTs and KM tools. Tenopir, Birch and Allard (2012:5) conclude that librarians should advance in knowledge in order to better serve and explore ways to meet users and researchers' information needs in academic libraries. This becomes paramount as it affects the organization if proactive services are not offered. The unprecedented influx of both print and online resources that could promote increased user interface should be intensified.

Support systems from the library organization are provided, especially, in the areas of needs in KM (Banquero, Aguilar and Ayala, n.d). This could take strategic implementation of whether higher education should adopt the learning models of ICT infrastructure that is able to use open distance learning (ODL), with electronic and blended learning in meeting users' (students, researchers) needs. Banquero, Aguilar and Ayala (n.d) suggested that clarity is necessary on the areas where tools could support KM in libraries. The services and procedures of hardware and software, could advance the processes of operations by library staff, particularly, librarians requires the involvement of open interactions. The open interactions platforms consolidate the ICT infrastructure framework needed in academic library systems (Banquero, Aguilar and Ayala, n.d). The consolidation requires both the technical ICT experts and infrastructural service maintenance. This become necessary as cabling infrastructure, hardware and software techniques, and web services are required, in order to guarantee the reliable services, which were designed, developed and managed over time (Banquero, Aguilar and Ayala, n.d).

The skills, experience, and innovative technique, needed by librarians before ICT infrastructure is applied is a requirement in LIS professional in present day library organization. This informed Popoola's, (2002:42) highlighting of human regulation, telecommunications, information technology and government support, which every library institutions require, in order to have full support of KM. The centralized systems architecture used in the running of organisation projects today has proven proactive as basic requirement in acquisition, processing, storage, and dissemination of information. Popoola (2002:45) emphasis was that transferable knowledge can be achieved through systems of computers, office machines and telecommunications, now used in libraries. Resource and knowledge sharing are now feasible through networks; develop within libraries as well as institutional repositories used to build knowledge (Walmiki, Ramakrishnegawda and Karnataka, 2009).

Prytherch (2000:357) argues that the support made available for KM varied between library different organizations. The areas where KM is mostly supported is through learning and training of new users of libraries. This offer opportunities of quality service delivery both in digital and print resources to users. Librarians, information resources and infrastructural facilities are also integrated into the support of KM. This could lead to better serve and manage the changes and sustainability of the library organizations. The maximization of the core

functions of automation, in efficient and effective library cooperation results to resource sharing (Rana, 2008). Another remarks made by Rana (2008) used to support KM is management information systems (MIS), digital local content, and information literacy programmes, which are very useful to both library staff and users of the library. This has helped to reduce a considerable and enormous work operation that requires the manual undergo re-processing (Rana, 2008). KM Australia (2014:1-2), asserts that utilized ICT infrastructures of web content management, emails, Microsoft, and Oracle have significantly improved business operational efficiency, to greater access of information, and encouraged collaboration between employees. TRM (2013:1) argues that ICT infrastructure/facilities have supported professionals in their capacity to deliver more reliable services in greater volumes within complex information environment. This proven support, in the use of facilities and service delivery, has given university libraries in Nigeria and South Africa the opportunity to grow beyond boundaries in business analysis, technology assessment, IT system specification, integration, and implementation of ICTs operation in their service delivery.

3.4 The utilisation of information and communication technologies for the support of knowledge management

The utilization of information and communication technologies (ICTs) has to do with the tools used in the execution of library work by library staff or librarians. There is no extent to which the utilization of ICTs can be quantified in academic libraries only. Its usage is most paramount in all work operations and contexts. The development of the information society, and the wide-spread diffusion of ICTs, gave rise to new digital skills and competences. This becomes a necessity in employment, education and training, self-development, and participation in the society today. Technologies, especially ICTs, now have key roles to play in realizing the changes in library environment. It is difficult and almost impossible to imagine a future learning environment without some sort of ICTs, in its planning and implementation phase.

Previous studies by Moffett et al. (2004); Malhotra (2005); Ajiferuke (2003), and Ryan and Prybutok (2001) have contributed immensely to ICTs use in KM programmes. They informed clients of innovations and developments in the business sector. Omona, Weide and Lubega (2010:83) admit that the adoption and use of ICTs cannot be quantified. It has not only

enhanced and improved KM through the utilisation of new methods, tools, and techniques used in the development, but have also built on KM framework used for delivering of services in diverse contexts. Sulisworo (2012:112) supported knowledge-based creation through the best practices of ICT tools that enables experts to do their work. Aujirapongpan, Vadhanasindhu, Chandrachai and Cooparat (2010) affirmed the sharing of knowledge among employees through the provision of access to retrievable knowledge embedded in employees' brains; which could have been difficult ordinarily. Knowledge sharing has become, and continues to enhance collaboration of knowledge creation within and outside library organizations. Omona et al. (2010:91) argued that, currently KM tools and networks are used in managing or supporting knowledge content in academic libraries. The management and utilization of the knowledge content became feasible through individual librarians participation/engagement in electronic documents management, knowledge web portals, academic publishing, data mining, individual/communities of interests, and communities of practices (COP) (Omona, et. al. 2010:91).

Kumar and Pahuja (2008) affirmed that the awareness of the vision of ICT and learning, known to have been promoted in Europe, has transformed the way people work, learn, and make sense of their world in this digitalized world of networked and knowledge-based societies. This vision can also be adopted and applied in the African context; especially, university libraries in Nigeria and South Africa, where librarian could work, learn, and make sense of their own world, without being led by others. This strategy has some cost benefit analysis if it was to be adopted. The cost benefit analysis and index factor, could affect the growth and development of the use of ICTs for the support KM and librarians in most libraries today. However, the non-implementation of this strategy would make the traditional libraries to be redundant and unequal with digitalized world (Kumar, and Pahuja, 2008). The knowledge organization with innovation and greater expectations posed much treat to librarians who are not innovative in their thinking (Kumar and Pahuja, 2008). Based on the analogy of scholars in this segment, the researcher, proposed the improvement of all operations with high quality products and services that would promote social-cultural and technological changes in present day libraries. The development of ICT competencies, and capabilities, among librarians has shown to foster the optimum utilization of services productivity through increased library resources and users. The existing ICT infrastructures acquired are essential in the execution of

jobs in the libraries. This has not only supported the librarians and users, but facilitators who render short course services both to users and the library communities (Kumar, Ravi and Pahuja, 2008).

The present day focus of library organizations is more on users, and staff training needs analysis. This embraces the learning of ICTs through in-depth knowledge-based societies and skills acquisition, needed to compete in global world. Robbins and Coulter (2009) asserts that ICTs have been used rapidly to change the way organization members communicate with one another. This is done sometimes through managers monitoring performance; ability of the individual staff to use the ICTs efficiently; librarians' collaboration in sharing information across boundaries (Robbins and Coulter, 2009). Ofori-Dwumfuo and Kommey (2013:92) observed that new devices could improve knowledge collection, storage, and exchanges on a scale that was not practical in the past. This involves an interactive learning phase where extracted knowledge is harnessed through various ICT technologies, such as cell phones, tape recorders, and magnetic devices. Lee and Choi (2003) admit that, when there is free flows of knowledge in multiple resources integrated, it can be generated through a database of a news group of artificial intelligence (Davidavičien and Raudeliūnien, 2010).

Changes have also evolved in recent times in the areas of selection, organization, as well as the retrieval of accessed information. Large amounts of information sources, sourced through different search engines, have equally been feasible though search engines, such as Google, Mamma.com, and Yahoo, amongst others. These search engines have frequently been used by public web knowledge portals as well as by libraries. The varieties of information in portals currently used today in academic libraries are supported internally through knowledge retrieval, as well as the synthesizing and exchanging of tasks for knowledge workers across borders (Ofori-Dwumfuo, and Kommey, 2013:93-94; Mack, et al. 2001). ICTs have equally been used by experience-based librarians; new users learning interfaces; learning and training programmes of workshops and seminars by staff via computer-generated simulations, pedagogic veils; and experimental learning practices. ICTs are also used to repair and support people with special need through podcasting, blogging, social proximity and synchronous learning, and Learning Content Management Systems (LMCS). This platform has transformed the potential of librarians and the library systems, such that, much attention is given to the

learning process and not just receivers of learning content. The flexibility of this user-friendliness of the systems requires librarians with different digitalized learning styles and skills to address social instruction (Ofori-Dwumfuo and Kommey 2013:93-94; Mack, et al. 2001).

The e-learning opportunities in academic libraries today are most often geared towards users who are online customers (Ward, 2001). Employers of librarians should capitalize on the knowledge as an intellectual asset. While considering the ICTs used to support KM, the data warehouse, data mining, and virtual reality modeling, has been found to be one of the biggest store-rooms of knowledge in libraries should also be addressed. Even, if ICTs has helped to visualize and transcend the complex knowledge of librarians through transaction-based data. The position of users' information needs concerned more on the warehouse where information and knowledge are stored. The need to improve the web services becomes fundamental, in order to address user's first point of contact as well as the satisfaction expected in related to web information needs (Ward, 2001). Hooper (2001:74-75) asserts that ICT literacy, new skills, knowledge, and competences are basic requirements for librarians to be acquainted with current job trend operations. A more glaring factor that influences ICT usage is age, ethnicity, language, context, background, and educational qualification, to mention but a few. These have acted as barriers to many with aged, diverse ethnicities, and who have to struggle to learn English languages (Hooper, 2001:74-75). Most people in the African context, specifically, in some areas in Nigeria and South Africa, are still battling with learning the English language. The battle over this struggle is even worse, since the mother tongue language is used in most universities, especially in South Africa. Many people believed that learning becomes flexible, dynamic, and personalized for a catalytic change. The uses of ICTs, thus far in libraries, have improved teaching and training of new users and library staff in diverse ways and context. The operations and varied services are equally unimaginable (Hooper, 2001:74-75).

Rapid ICT developments had resulted in many systems becoming compatible, to manage the dynamic world of technological changes, with certain requirements. There is need to select the right ICT technologies/components that address the need of any given organisation (Hooper, 2001:74-75). The relevant hardware and software can change the rate at which printed resources to electronic resources are accessible through networks (Hooper, 2001:74-75. The

growth of electronic resources is less visible in physical appearance to users who would rather access the library resources through different hosts (Borgman, 2003:653). Borgman (2003:656) argues that the usage of information resources and ICTs by users and librarians even in the midst of its costly subscriptions cannot be under-estimated. As users need increases, access and accessibility to libraries and their resources will increase (Hooper, 2001:75-76). Therefore, usage is of great significance in the library environment. Hooper (2001:75-76) suggests that since academic libraries can use ICTs to stimulate the interaction platform where user and the library can be at interface, library organizations should improves user interactions during loans services, searching database, and making of available feedback when necessary. This would help to improve and strengthen the images of the library organizations.

3.5 Information and communication technology strategies for the support of KM

By information and communication technologies (ICT) strategies, the researcher implies different ways through which improvement can be made in the application and utilization of ICTs. There is no specific definition stipulated, or known by authors, with regards to the strategies used for the support of KM and other broad areas of disciplines. According to Boundless Management (n.d) a strategy is an action plan designed for the achievement of specific goals. It helps to determine and prioritize sets of alternatives rather than only focusing on a fixed plan. Mind Tools (2014:1) view strategy to mean different ways through which people analyse present situations, in order to anticipate changes in the organizations. This can also be seen as plan for substitutes for success in the event that their prediction fails. Queen's University Belfast (2012:1) states that ICT strategies are action plans aligned to support the creation, access, storage, and use of information through the knowledge, skills, and expertise of information service providers. In recent times, ICT strategies have been embraced by most library organisations.

The ICT strategy addresses issues that affect the provision of agenda for the development of ICT infrastructure and networks in academic libraries. This agenda would help to avoid duplications, and provide a specified plan for the procurement of hardware and software. The hardware and software is highly for the operations of information services delivery in academic libraries. The plans cover the convergence of academic research and media information resources. The provision is expected to support the followings: business information;

university administration; academic and research at different units of the organisations; development of staff and users experience; international, national and local research support; develop high quality of learning and teaching space and promote effective support of pedagogy (Queen's University Belfast, 2012:9-21; University of East London, 2006:12-14). A good example of ICT strategies that can be used to support KM includes: external relationship; building KM practices; leadership; knowledge production; knowledge integration changes in knowledge processing rules; management initiatives; resource allocation and collaboration; widening lifelong learning; and promotion of e-learning (University of East London, 2006:11-14).

According to Allen (2012) book fairs, workshops, seminars, conferences, people, World Wide Web, readership campaign can be leveraged as strategies to promote the use of libraries and their resources, of which ICTs is plays a part. Brenya (2008) reflected on motivations, attitudes of librarians, operations of organising knowledge, bibliographic searches, internet sites, use of different cataloguing tools, and software as strategies that can equally promote creation of ideas in the library environment. IFLA (2011) referred to academic libraries today as where information are created in order to inform society. The process of informing society about the functions of the libraries entails strategies of the management of information and knowledge resources.

An ICT strategy is believed to have strengthened libraries through acquisition of relevant ICTs, knowledge and skills needed in the fulfilment of their operations. Allen (2012:1) asserts that KM strategies, which include knowledge application, research investigation, experience gained at work, behaviours, and consultation of projects, are used to improve sharing of knowledge. The sharing occur through intranet, communities of practice, wikis, brain scan, global open forum, and design intelligence portal without boundaries (Allen, 2012:1). Adams (1998) argues that KM has changed the organisational pattern such that, knowledge processing and its outcomes have affected the rules used in knowledge production as well as the quality of knowledge intervention. Allen (2012) further notes that the knowledge in library organizations goes through a journey of capturing and building organizational knowledge. This achievement is obtained through KMTs, and the experiences of the librarians.

The transition made in KM is a valuable asset and discipline to the individual and the organization. It is also a strategy that unveils staff expertise (Allen, 2012:2). Butcher (2007:n.p) argued that whether ICTs or KM strategy, the work they perform varies from one institutional context to another. This depends largely on the context, and specific policy that guides its implementation. Butcher (2007:n.p) further explained that when strategy are designed, what should be considered first, are the systems/tools, processes, people, organizations, operational contexts, history, and ICT capacity of the organization as well as how this can be achieved. The roles played by people, process, and technologies are three core strategies in the organizations. The library organisation is no exception, as this is also applicable in their planning and decision-making. Therefore, for ICT strategies to support KM in academic libraries, librarians should ensure that proactive participants of team members and institutions to facilitate collaborations, built upon trust through shared understanding and the creation of communities of practices (Butcher, 2007:n.p).

Institutional policies and practices work better when regularly reviewed in order to address the weaknesses and strengths of any given community of practice (CoP). This requires libraries, and librarians, to devise systematic ICT strategies with information and knowledge experts in diverse ways. UN Habitat (2010:n.p) asserts that organizations had, and would continue to adopt, new strategies that take into account new cultures, social networks, and technologies. This enables new modes of sharing knowledge with individuals and the communities at large. A study by UN Habitat (2010:n.p) encouraged knowledge audits that involve the systematic evaluation of both tacit and explicit knowledge in the organization. This sort of knowledge audit would help to build and establish required knowledge of employees, as well as establish how they can be used to expand the organization.

FAO's (the Food and Agriculture Organization of the United Nations) (2011:n.p) in knowledge strategy elaborated that, contextualization be strengthen in order to avoid weaknesses of delivering knowledge services. The delivering of knowledge services ensures that knowledge-sharing techniques to improve work performance are applied. King (2009:9) argues that the codification and personalization of strategies for the support of KM occurs in two forms. Codification tries to unpack the electronic document systems that help codify and store knowledge for easy dissemination and re-use. Personalization, on the other hand, is about the

networks that are used to facilitate how people interact with knowledge, during transfer and sharing. The WHO (2005:1) claims that KM strategies ensure improved access to the diverse world health information. These strategies lead to easy translation of knowledge that is needed for policy and actions towards decision-making; foster knowledge enabling environments; share and re-applying experiential knowledge of individuals and organisations in e-Health countries. Therefore, as libraries and librarians continue to expand in the strength of print and electronic resources, they also need to adopt these strategies whilst using ICTs to support KM in present day library organizations

3.6 Librarians knowledge and ICT skills for the support of knowledge management

Librarians' knowledge and ICT skills for the support of KM, implies the expertise and experiences of the information professional, applied with the capabilities of ICTs, in work operations in library organizations. Knowledge, skills, experience, and exposure have become a prerequisite for the successful adoption, application, and use of ICTs today in academic libraries. Knowledge as a concept is understood as insight, understanding, and the practical know-how possessed by every librarian (Asogwa, 2012:2). BusinessDictionary.com (2014:1) defines 'skills' as the ability and capability acquired through systematic and sustained effort, that is carry out through complex activities or job functions. This accordingly involves ideas (cognitive skills), things (technical skills), and people (interpersonal skills) of an individual (BusinessDictionary.com, 2014:1). The knowledge and skills acquired are influenced by individual choices of action and responses to challenges in the form of the affective: emotions or feelings; cognitive: belief or opinion; conative: inclination for action and evaluative: positive or negative response to stimuli (BusinessDictionary.com, 2014:1). The experiences, insights, and knowledge gained over a long period of time enables and facilitate work and organizational performance.

Rahman (2014) observed that employees do not remain competent forever as their skills can become obsolete. Rahman (2014) and Karim, Huda and Khan (2012) established that, continuous training needs analyses becomes necessary for proficient skills acquisition. It is a requirement needed, in order to perform, develop, and improve innovative programmes of workers. Suleiman (2012) adds that training staff members increases growth, experience, and confidence with regards to the job responsibilities put before them. The training programmes

require librarians in order to acquire specific areas of specialization both in adequate knowledge of ICT and skills. Studies by Igun (2010); Singh (2013); Ajiferuke (2003) and Daneshgar and Parirokh (2007) argued that knowledge; skills, experience, and attitudes are basic requirements to better handle the use of ICTs. The analogy above gave the researcher an insight that librarians need to advance in ability to keep up with new ideas in technology and librarianship profession. The understanding of the knowledge processes has created business processes of knowledge creation; information literacy skills; navigate in the online medium; good research output skills among others to control the entirety of the organization.

Singh (2013) argues that librarians' knowledge of ICT and skills, when integrated into the university libraries, sharpen the work performance and services rendered to users. It also guides in the assessment of policy upon which the ICTs operates in the organization. The provision of ICTs in the organization establishes that the library is working towards achieving its aims and objectives. The achievement of such aims and objectives depends on the development of the ICT professional. The ICT professionals are required to carry out the function maintenance of the systems, teaching, as well as other obligations that are required of them. The potential of ICT support and development enhances the effectiveness of the library organization and the users (Singh, 2013).

Stoker (1997) asserts that the continuing education and qualification obtained serves as proofs of the knowledge possessed, even though certificate is issued to that effect. The qualifications serve to show the training that the professionals have undertaken, which also is considered for promotion in every place of work or organization. IFLA (2000); Burton (1997); Ajidahun (2007); Akhigbe (1997) and Ugbokwe (1998) reflected on similar factors as paramount in pre-professional education. This consists of in-service training as continuing education; short courses and professional meetings; on-the-job training/learning; job rotation; coaching; modeling and apprenticeship; through off-the-job conferences, seminars, workshops and lectures as ways to improve staff knowledge, skills, competence, and development of librarians in present day academic library operations.

Nonaka, Ichijo and Von Krogh (2004) argued that the exchange of knowledge or creation can be seen as a way through which knowledge is acquired during training. Knowledge created is

efficiently and effectively used in existing organizational know-how. The risk of losing such valuable knowledge of staff has given most organizations the opportunity to understand and value their staff members, even in the midst of challenging times. Omotayo (2015); Drucker (1999) and Nonaka, Ichijo and Von Krogh (2004) observed that the processes of managing knowledge and organizational performance of staff is such a difficult task. However, if properly managed, it improves or maximizes the training that was supposed to be given to them. Therefore, for librarians' knowledge to be fully utilized, it should be made best use of, regardless of the training activities they have to undergo. The skills of librarians' expertise should be incorporated into collaborative and cultural interface in the library organization, such that, external and internal activities of face-to-face contact, skills workshop, presentations, seminars and social forums would be part of professionals functions (Nonaka, Ichijo and Von Krogh, 2004).

The training and development programmes offered to librarians cut across different subject areas. The different areas are unique in their own ways, such that, they are both convergence and divergence. The area that cuts across all fields is the ICTs, used for the responsibilities of other work and that of the librarians. The training programmes have enabled librarians to be acquainted with the followings:

i. Ability to select, acquire, preserve, organize and manage ICT/digital collection;
ii. Ability to design the technical architecture of ICT or digital library;
iii. Ability to plan, implement and support ICT/digital services such as information navigation, consultation and transmit services;
iv. Able to establish friendly user interface over network;
v. Ability to set up relative standards and policies for the ICT/digital library;
vi. Ability to determine the design suitable and maintain added-value information products;
vii. Protect digital intellectual property in network environment and ensure information security.

While the responsibilities placed on librarians entails:

i. Provision of services that analyses and processed the different kind of information resources;

ii. Articulate potential value for users and librarians in information services;
iii. Provides valued information products and services at the right time and in the right place;
iv. Find the right users to provide personalized services.

In affirmation of the responsibilities placed on librarians, Ifidon (2003) notes that libraries cannot function effectively, without physical materials being on ground, with which to work with. It is therefore, imperative that the use of ICTs becomes essential. This would help to facilitate the charging and discharge of information services. It can also be used to transcend from simple librarian-client relationship of question and answer to the involvement of a whole new and more complex process. The ICTs quicken the advisory roles offered to users, and help search, retrieval, and delivery of information by users and staff (Madu and Adeniran, 2000).

Igun (2010:1-2) argues that since the establishment of libraries, the training and knowledge acquisition of librarians have some infrastructural, geographical, and socio-economic implications. The implications have affected much volumes and speed of access of information in world-wide networked environments. Librarians therefore, need to reposition themselves, such that, the changing environment of university library communities, with vast arrays of knowledge in diverse contexts, can meet the needs of students and staff members. This was a part of the mission that led the researcher to address a host of subjects in this study regarding how Nigerian and South African university libraries and librarians could use ICTs to manage both tacit and explicit knowledge. This was meant to improve the organizational growth and work performance of colleagues in both countries.

3.7 ICT Policies for the support of Knowledge Management

Issues with ICT policies for the support of KM, reflect rules and regulations governing the acquisition, use, and maintenance of ICTs in academic libraries. Mohamed, Mohamed and O'Sullivan (2010:227) state that policy is meant to coordinate activities. Thus, the authors argued that policy spells out the activities for which it has been designed. Strassner (2004) suggests that policy is a set of rules used for the accomplishment of decisions. Policies generally govern the processes in business, which serve as the basis for decision-making (Whitten, et al. 2001). Gillwald, Moyo and Stork (2012) argue that ICT policies are designed to

regulate, implement, and monitor the processes of development and governance, particularly of capacity building in library organizations. Therefore, in this context, ICT policy coordinates and governs the procurement, use, management, and maintenance of ICTs as major information management tools in academic and research libraries.

Studies by Adomi (2008:13); Strassner (2004); Spasoff (1999) and Montviloff (1990) were of the view that policy is a set of principles, and plans of action, that guides decision-making in order to achieve specific results in an organization. This framework can be tested with progressive measures of specific activities' outcomes in the organization. Affirming Adomi's (2008:14) argument regarding library policy, it was established that, in order to govern the rules, principles and the action plan used in the execution of library policy, certain formal or informal standards has to be affirmed. The standard of such policy depends on the programmes, activities, and services in operation of ICTs in the library environment. Therefore, ICT policy in academic libraries regulates the coordination, governance of the procurement, use, management and maintenance of ICT tools used in academic libraries. The achievement of the management of ICT tools considered several factors. The factors include change management; planning and decision-making structures; stakeholders; knowledge of internal and external control; skills and attitudes of librarians; operations and services; as well as the future attainment of the organizations (Adomi, 2008:14; University of East London, 2006:12-14).

Adomi (2008:16-111); UNESCAP (2007); and Sarka De (2005) specified library policies, which address a host of specific functionalities and issue in libraries. These include: information policy, ICT policy, copy right policy, collection development policy, cataloguing policy, circulation policy, and reference policy. These policies are built on the principles, practices, training, and evaluation of ICT policy used to support library operation and services. The policies are interwoven, such that, they are related to one another. Oni (2004) asserts that ICT policy yields unmatchable benefits for information outfits in academic libraries. It supports the implementation of knowledge with recent technological trends, analysis of library requirements, delineation of library goals, and objectives. This is clearly a procedure for management support given to users. The support is offered during operational activities of

library week, orientation programmes, awareness month, and seminars and workshops that are organized in libraries by staff members on current trends of work performance.

As earlier mentioned, issues with library policy and ICT policy that surrounds university libraries is not something new. These have been debated by several scholars and institutions. The Kenyatta University Library (KUL) (2013) established that ICT policy addressed issues with access to office facilities, internet, emails and information sources in the library through the aid of infrastructural facilities. The Kenyatta university places emphasis on access to information, facilities and academic excellence; such that, students and staff can effectively teach, learn and participant in distant learning. The Jomo Kenyatta University of Agriculture and Technology (JKUAT) (2014) unveil that university library ICT policy is applied to information and security policy. The digital repository policy and automation is another emphasis made in relation with the ICT policy (JKUAT, 2014). It was also established that this policy guide the use of resources, ICT facilities and its management, such that, users can have access to services and collections, of the library. The digitization and management of the resources are protected through personalized passwords by the library. The human resources department works hand in hand with the communication and ICT department for the repairs of library ICT equipment. The daily maintenance, purchases of ICT facilities for the library, security of data, access to OPAC, and computer laboratories management are obligations of the ICT department in the university (JKUAT, 2014). This analogy would be most appreciated if it can equally work in university libraries resident in Nigeria and South Africa.

Gillwald, Moyo and Stork (2012) argued that several sectors in South Africa, including universities (education institutions), are characterized by ICT policy that regulates the dynamic growth of the organization. The expansion in the universities covers the library, where access to information and services are the primary objectives of its establishment. Gillwald, Moyo and Stork (2012) add that the essence of the ICT policy was to guide the use of ICTs in university libraries in South Africa. The researcher established that, it would be of no use, if South Africa as a country has indices of ICT, when universities and their libraries cannot be connected with internet facilities, which are mostly used in work operations. The implication of this is that, adequate bandwidth and maintenance culture of the tools should be in place, during implementation. As of 2012, the development index of South African rankings on ITU

(International Telecommunication Union) and ICT dropped from the 72nd position in 2002, to the 90th position in 2010 (ITU, 2002). This is an indication that there is still a lack of implementation and decision-making even though there is an existing ICT policy regulating and guiding the operations of services in this sector.

Mohamed, Mohamed and O'Sullivan (2010:227) argued that ICT policy that support KM in university libraries should be integrated into the nature of ICT infrastructure. Its role in knowledge sharing and capacity building contributes strategically by enhancing access to information, and providing added value to knowledge. ICT policy cannot be discussed in isolation without information policy (IP) as it facilitates knowledge and learning. Law (2000) admits that the notion of IP depends on the participation of a range of sectors responsible for its resources and usage. Mohamed, Mohamed and O'Sullivan (2010:228) conclude that for ICT policy to have global standards, stakeholders of various sectors need to validate the formulated policy, whether it address specific needs of the library organization before its approval, and carrying out implementation in libraries. This analogy gave the researcher the view to affirm that through the experience, knowledge and practices of library activities, a well-structured ICT policy should strategically address goals and objectives of university libraries products and services.

Developing ICT policy requires adequate knowledge of the strategies of stakeholders, experts in ICTs, and the management teams. UNDP (2001) affirmed that for many countries of the world, policies and strategies are not separated from ICT sector and telecommunications. Siochru (2003) asserts that, ICT policy creates an advanced ICT sector and services that maximize ICTs development. Academic libraries therefore, being the primary hub of this study should scientifically investigate accurate, timely, and relevant information that is needed for the formulation and implementation of ICT policy (Ifidon and Okili, 2004; Oyelude, 2004). These create a community of computer literate people that establishes enabling environments for library users to search without much assistance of library staff. Uhegbu (2001) argued that some university libraries still lack proper coordination in respect to appropriate ICT policy. Uhegbu (2001) decried that the scenario in some Nigerian information environments is mainly characterized by the non-existence of ICT policies. This has affected the operations in major academic institutions. Obajemuu, Ogunyade and Nwoye (2004) were of the view that old

facilities, poor funding, foreign exchange constraints, and expertise requirements, have become barriers to the use of ICT resources in academic libraries in Nigeria. This problem is compounded by the lack of ICT policy.

In affirmation of the ICT policy for the support of KM in academic libraries, the Nigerian Telecommunication Act (2003) suggests that licenses be given to private telecoms companies that provide a variety of telecom services to the populace. This would help guide the ICT policy and other telecommunications bodies operating in the present day. Policies have a direct impact upon librarians' access, training, and use of information and ICTs. This is true for policy implementing bodies ranging from national, regional, and management levels (specialist of ICT and co-coordinator's), support service, and centre level (inspectorate, specialist librarian).

Stats SA (2013) and Gillwald, Moyo and Stork (2012) argued that ICT policy, which is a land mark in the SA economy, is expected to grow through regulatory framework of satellite formation, telecommunication, broadcasting, post services and e-commerce services. These organizations have different responsibilities, but guided with the same ICT policy. However, a lack of proper planning and execution of laid down policy by the board of trustees and management staff, has affected telecommunications (Telkom, Vodacom) among other ICT service providers. Gillwald, Moyo and Stork (2012) suggested that ICTs in Nigerian and South African university libraries could be re-position, such that, their policy could address issues of:

- Ensuring universal information access and services to all communities of the university.
- Re-articulate library staff commitments to users regarding the access to use of facilities and resources in the library
- Ensure integrated approaches by librarians in facilitating the operations and services to users
- Ensured expansion and availability of adequate facilities, information resources (print and electronic) and qualified staff that would help achieves the drive of the library organisations within and outside context
- Increase availability, accessibility and effectiveness through quality delivery services
- Clarify the roles of librarians through proper organisational structures that stipulate what, why and how such roles should be handled from senior to junior colleagues

This would help manage the operations of academic libraries in both countries, even in the midst of challenges faced in applying the policy of ICT usage in academic libraries. The challenges necessitated the development of strategic ICT plan (Bittel, 1989; Daniel, 1994).

The policies earlier mentioned in section 3.7: information policy, ICT policy, copy right policy, collection development policy, cataloguing policy, circulation policy, and reference policy are adopted and used by different libraries today. The use of these policies depends on the set goals and objectives of the various libraries sampled in Nigeria and South Africa. For example, the University of Zululand library in South Africa has ICT policy, established by the University of Zululand library itself. It is used to render services in the following ways: acquire/procure new ICT tools, maintain old ones, give access to staff and students on their information needs, and ensures that unauthorized users do not access the services, without permission.

The policy ensures that only the Information Technologist/librarians have the passwords used in control of all the systems. This is done in order to protect and monitor the systems. The essence of this is to guide against people hacking into the systems. The Information Technologist/librarians also ensures that the facilities are maintained when damaged and that unauthorized users are prosecuted by law. Every user of the library and systems must be a registered member. This is guided by the law; and by policies of the university library.

The ICT policy addresses both general and specific operations carried out in the library. The ICT policy in the University of Zululand library have helped the promotion of KM practices through the aid of ICTs in the following ways: the librarians uses the tools to acquire information resources; render information services to users; train and development of staff; access and accessibility of resources of different format; avoidance of copy right and plagiarism, and implementation of set goals in the academic library organization. The usefulness of the ICT policy in applying ICTs to support KM cannot be overestimated (Omona, et. al. (2010). The proven activities are seen in the following areas: (i) efficiency and effectives of the processes and management of information and knowledge resources (Omona, et. al. (2010:91), (ii) easy access and accessibility of quality retrieval of knowledge (Omona, et. al. (2010); (iii) it has supported the collaboration of research in KM beyond boundaries (Choenni, Bakker, Blok, and de Laat, 2005).

3.8 Challenges facing the use of ICTs for the support of Knowledge Management

Challenges faced in the use of ICTs for the support of KM have to do with factors that inhibit the proper functioning of the library activities. The support meant here involves the stage of acquisition of information resources till when they are disseminated to meet users' information needs. Numerous challenges have distorted the future of knowledge-based learning societies. Mutt (2010:n.p) states that KM implies innovative thinking, sharing of beneficial work and knowledge that would otherwise stay tacit among colleagues. Singer and Hurley (2004) asserted that available knowledge thus creates new knowledge in the working process of the library environment (Zolfaghari, 2006). KM therefore exploits employees' knowledge whilst building a culture of knowledge sharing (Jashapara, 2004). However, constraints have distorted the creation, processing, storage, and sharing of the knowledge created among colleagues. Among the challenges are inadequate ICT infrastructure, untrained ICTs personnel, financial inadequacy, illiteracy, insufficient electric power supply, and improper implementation of ICT policies (Ajuwon and Rhine, 2008). These have been shown to hamper the continuous exchange of knowledge in the library organization (Ajuwon and Rhine, 2008).

Previous studies by Ikpahindi (1999); Mohammed (1999); Nwalo (2000); Oketunji (2000); and Adomi et. al (2004) have shown that a lack of technical manpower, apathy, lack of will and absence of policy implementation of ICT in libraries, high cost of equipment, ICT components are capital intensive, inadequate power electricity supply, all inhibit the application and use of ICTs for the support of KM in most university libraries in Nigeria. Distances, cultural differences, languages, time factors of regular activities, human tendencies to focus on immediate tasks, resistance to change and people's inhibition to share knowledge (Gupta, et al. 2000) have equally been observed to affect KM in academic libraries. Moahi (1996) reported on the lack of trained/unskilled ICT personnel, as this has consistently been one major obstacle to ICT application. The use of ICTs would have been much more effective if qualified and well trained ICT operators are made available. The provision of this would help reduce the cumbersome nature and extent to which librarians' spoon-feed users with a broad array of information resources and services.

Yacob (2011) stressed that ICT policies, which were supposed to gear the sourcing and rendering of effective services, were improperly implemented. The problem is the insincerity

of government and management of university libraries, for not paying much attention towards the implementation of ICT policies. Power outage has also become an outstanding barrier in Nigeria. The effort made by mini firms to provide ICT services to users has adversely paralyzed the capacity of firm (Yacob, 2011). This is due to the huge amount of money involved in running a personal generator. Nonetheless, in South African university libraries, infrastructural development is attained. A recent study by Ofori-Dwunfuo and Kommey (2013:95-96) admit that, the lack of policy for organizational learning, limited e-personnel, rapid changes in technology, cyber-crime, misuse of facilities by staff, as well as mismanagement of malware and spyware was are challenges affecting the libraries. Ajuwon and Rhine (2008) reflected on inadequate ICT facilities and capacity building, in terms of ICT usage, inadequate proper training, and under-utilization of available resources, has acted as barriers to the use of ICTs in support of KM. ICT polices which govern all sectors should be reviewed from time to time so as to gain full and proper implementation both in Nigerian and South African university libraries.

The immediate problem facing academic libraries is cyber cafés where access to information is not regulated or guaranteed at all times. Lesk (1995) asserts that there is a problem of accessibility to the resources, even though there is access to internet. Librarians should familiarize themselves with access to information not only from the web but through other mediums too. This could include web blog, short message service (SMS), multimedia message service (MMS), integrated broadcast, new internet-native content players, social software, alternative wireless technologies like Wi-Fi, content/media convergence, newspapers, music, TV, multi-modal devices such as mobile phones used for pictures, email, movies, radio amongst others. These could help as alternatives to provide easy access to information, as some of these are ubiquitous and user-friendly. Taylor (1986) asserts that in order to repackage information, there is much need to analyse and evaluate information, such that, it provides an added valued source of ingredients pleasant and presentable to users. This act can be operational only if librarians are regularly training with best practices, codes and conducts of practical application of ICTs in libraries (Ugboma, 2005).

3.9 Summary

Based on the observations of the extensive discourse of literatures in the domain of ICTs and KM, the researcher found insightful arguments in this chapter. Firstly, it was established that KMP has helped to capture and filter the complexity of collaborative work of librarians developed over time through knowledge networking in academic libraries. Secondly, several principles have led to the development, transfer, and protection of knowledge and achievement of continuous learning among librarians in the organization in relation to KMP. However, not every academic library and librarian is fully involved in KMP in the present day library operation. Thirdly, the theoretical, methodological and scientific approaches to KMP in academic libraries are dependent on the management of individual's knowledge in the organization. Fourthly, it was established that KMP revolves around the following activities in the library: brainstorming, apprenticeship, in-house training, and inter-personal relationships among colleagues. These have enhanced the organizational learning and best practices of librarians' intellectual property. Fifthly, ICTs and KM tools and services, categorized into distinct kinds, have promoted the practices and management of knowledge in academic libraries in recent times. Unfortunately, not every academic library has and uses all the mentioned ICTs, KM tools, and services in carrying out their daily work operations. Sixthly, the diffusion of ICT use gave rise to new digital skills and competencies that are necessary for librarians' employment, education and training, and self-development in academic libraries today.

There still exist gaps in knowledge, skills, experience, and competencies of librarians. These when, strategically addressed would position librarians for potentials that alter and facilitate innovative growth in present day library and information services (LIS) in academic libraries. Seventhly, it was established that ICT strategy in academic libraries are action plans aligned to support the creation, access, storage, and use of information and knowledge through skills and expertise of librarians. Interestingly, several ICT strategies have evolved in recent times to support KM. Eighthly, it was established that ICT policies are fundamental for the support of KM. The ICT policies have helped to regulate the coordination and governance of the procurement, use, management and maintenance of ICT tools used for decision-making in academic libraries. Nonetheless, the ICT policies are tied with library policy in most academic libraries. The inability of some libraries to separate ICT policy from library policy affects its

specified functions in the library. Ninthly, several challenges have affected knowledge-based learning of librarians in academic libraries while using ICTs to support KM. The constraints of improper implementation of ICT policies, inadequate ICT infrastructure, and ICTs personnel, amongst others were more pronounced in some academic libraries. This results in the financial inadequacy of the library organization.

Several gaps were noticed in this chapter. Firstly the importance placed on ICT infrastructures/tools and KMP to effectively harness library operations by librarians has equally caused inaccessibility to knowledge, management, and retrieval in present day library organisation. Secondly, in spite of the increased volume of research in ICTs and KM in academic libraries, there is still no much practical application (know-how and skills) among librarians to use ICTs to support KM specifically tacit and explicit knowledge. Thirdly, pre-existing concepts and contexts in ICTs and KM literature, sourced from different backgrounds, had showed disparities. Fourthly, challenges in the use of ICTs and KMP were noticed in some academic libraries. Fifthly, the old and new technological tools used in the massive deposition of knowledge in institutional repositories and databases in academic libraries are not user-friendly to some librarians in academic libraries.

Following a number of studies in this chapter, several novelties were noticed. First, it was established that access to digital content is a top interest to users and librarians, in Nigerian and South African university libraries in the present day library services. Second, strategies have equally evolved among librarians through knowledge of research, experience, behaviours and a consortium in academic libraries. Third, more recent technologies of KM tools, such as Web 4.0, groupware, multi-media, internet, artificial intelligence, semantic web, information retrieval tools, social network, expertise location, summarization, corporate portals, machine learning, simulation tools, content and database management systems (CDMS), amongst others, are continuously used in the management of tacit and explicit knowledge in academic libraries. Fourth, capacity building programmes and training of LIS professional remain proactive in the delivery of academic library services. Fifth, the present study revealed that knowledge, skills, experience, exposure and attitudes have become a prerequisite for the successful adoption, application, and use of ICTs in university libraries.

This study contributes to knowledge in diverse ways in the two countries' university libraries. First, a knowledge gap exists in the recent content and context of ICTs and KM literature in Africa, specifically in Nigerian and South African university libraries. Second, the competencies of librarians to actively produce work performance needs diverse experience, pedagogic drive, new skills, and support from organizations. This would help improve services in the areas of ICTs and KM in academic libraries. Third, ICTs and KM strategies of knowledge application, research investigation, experience gained at work and consultation of projects, are continuously used by librarians to meets multifarious users' information needs across Nigerian and South African university libraries.

The next chapter addressed is the theoretical foundation that informed this study.

CHAPTER FOUR
THEORETICAL FRAMEWORK

4.1 Introduction

This chapter focuses on the theoretical framework that has been used for the investigation of the utilization of ICT tools to support Knowledge Management (KM) in academic libraries in both Nigeria and South Africa. In this chapter, the theoretical framework concept, as well as its significance to this study, was discussed. Several theories that apply to the study of ICTs and KM were also presented. The chapter is concluded with a summary of the study.

4.2 Understanding theoretical framework

According to Vos, Strydom, Fouche and Delport (2014:37) theories are integrated concepts that systematically predict phenomena based on certain facts and observations. Creswell (2009:51) argues that a theory is the construction of concepts, hypothesized through specific variables, in relationship with the production of insights into a phenomenon. In addition, empirical evidence, which establishes scientific proof in research undertaken, which was rigorously controlled to avoid bias, can be defined as a theory (Dusick, 2011). Dusick (2011:1) emphasizes that 'there is no field of study today that is not based on an existing research theory.

Another remark made by the University of Southern California Libraries (2013:1) is that theories (Ts) are formulated in order to explain and predict an existing phenomenon, thus challenging the limitation of critically-bound assumptions. Based on the analogy above, the researcher defines theory to be a proven and observable phenomenon, which was tested and confirmed, as predictable in natural occurrence. The theories of ICTs and KM being the focus of this study serve as the engine that drives and guides the study on the relationship between the various distinct phenomena. The writer uses these theories to strengthen the value of the literature sourced, and infer the gap, that needs to be filled in this field of study. The understanding of the theory discussed above would help to harness the philosophy of the theoretical framework (TF) that has been used for this study.

According to University of Southern California Libraries (2013; 1-2) a theoretical framework (TF) refers to how the researcher reports not only the questions, but ponders and develops thoughts or theories on what the possible answers could be. The thoughts and theories grouped together into themes form a framework of the subject. This perspective identifies core sets of connectors within a topic, as well as showing how they fit together. Egbule (2004:4) argues that, when a researcher identifies research problems, and formulates hypotheses, an appropriate research design that would guide the study is required. The explanation made could forecast the theory that would fit into the study.

The description given above reveals that the various areas in the study, including the independent, dependent, as well as intervening variables are found in research topics. Ocholla and Le Roux (2011:1) argued that TFs include part of a research proposal or study that sets out to describe the research question, the line of inquiry, as well as the methodology that is utilized to answer the research question. Therefore, the agenda of any research investigation should be strictly followed. Ocholla and Le Roux (2011:1) further stressed that the grip and support of theory in research serves as a lens that the researcher uses in order to examine his/her field of study. The nature and function of a TF attempts to answer two basic questions: first; the problem to be investigated and answered and second; the approach or possible solution to the identified problem (Ocholla and LeRoux, 2011:1).

The TF is the structure that holds or supports the theory in a research study. This tends to describe the theory upon which the research problem, and study, exists. The University of Southern California Libraries (2013) argues that TFs demonstrate an understanding of theories and concepts that are bounded in the existing body of knowledge in a particular study. A good reason for the use of a TF is that, it strengthens the study in a variety of ways. For instance, if one were investigating a particular area we are not familiar with, the TF would connect us to existing knowledge of relevant theory. This, we need to use for that research work, based on the variety of research methods that would be adopted. Articulating the TF in a research study such as this, forces someone to address certain questions. The questions like why and how, thereby allowing one to move from simple to complex issues of describing the phenomenon observed while generalizing influential variables. Moreover, strategic steps are also taken in order to ensure proper development of an effective TF. Among these are: the examination of

the thesis title and problems, brainstorming key variables, revision of related literature to find answers to the research questions, and the revision of key social science theories (University of Southern California Libraries, 2013:2). Khans (2010) established that TF are observed social frameworks, formulated by scholars, and are based on a reality of phenomenon that consists of interrelated logical ideas of a known body of knowledge.

4.3 Types of theoretical framework in ICTs and Knowledge Management

There are different theories that explain the domain of ICTs and KM literature globally. These are used for specific and general purpose in research investigation. Some of the theories mentioned are expatiated into the two areas of this research investigation (see Table 4.1 and 4.2). The purpose of the separation of the theories in two tables was for easy clarification and identification of the theories as used in various research works whilst showing what they portray. The demonstration made by these theories interweaved in the body of knowledge that forms the existing theories today.

Table 4.1: ICTs theories, authors and areas of emphasis

ICT theories, authors' and year formulated	Emphasis of the theories and areas of focus
Rogers, (1983)	❖ Diffusion of innovation theory: ❖ Predictions ❖ Constructs communication networks ❖ Acceptance of technology for use
(Ajzen, 1985, 1991),	❖ Theory of planned behaviour: ❖ Social behaviour ❖ Use of information technology
Davis, (1989)	❖ Technology acceptance model: ❖ Perceived usefulness (PU) ❖ Perceived ease-of-use (PEOU: ❖ Acceptance and use of technology by users
Taylor and Todd, 1995)	❖ The decomposed theory of planned behavior
Dishaw and Strong, (1999)	❖ Task technology fit: ❖ IT user have more interest if the available tools fit the user needs ❖ Activities/functions which users engage in
Ventakesh *et al.* (2003)	❖ Model of Personal Computer (PC) ❖ Utilisation (MPCU)
Biemans, Swaak, Hettinga and Schuurman (2005)	❖ Behaviour and intentions ❖ Nurses' intention towards Medical Teleconferencing ❖ Application
Carlsson, Carlsson and Hyvönen (2006)	❖ Acceptance of mobile telephones examined
He and Lu (2007)	❖ Consumer's acceptances of mobile advertising prediction
Tibenderana and Ogao (2008)	❖ Model predicting the intention to use electronic Library services in Ugandan Universities through
AlAwadhi and Morris (2008)	❖ Using UTAUT for e-government services
Venkatesh and Bala (2008)	❖ Advancing the Technology Acceptance Model with focus on interventions
Heerink, Kröse, Wielinga and Evers (2009)	❖ Acceptance of robot interface and screen agent by elderly users.
Šumak, Polančič and Heričko (2010).	❖ Behaviour of students on the intention to use Moodle: ❖ Social influence as predictor of behavioural intentions ❖ Performance expectancy and effort expectancy.

Source: Compiled from different sources of ICT literature (e.g. Rogers 1983: Diffusion of innovation theory; Technology acceptance model Davis 1989 amongst others).

The representation of the identified theories in Table 4.1 shows diversity and convergence of knowledge-based resources as used for service delivery in the domain of information and communication technologies (ICTs). The reasons for this was that, some of the theories has been tested; widely used; and continued to be used on the basis of their significance, and underlying sources, in having much effect in research investigations. Besides, the theories would not have been considered for adaptation, if they were not appropriate and having intervening variables as the case may be. Therefore, the choice of any of the theories in research application is dependent on the researchers' areas of research interest, as well as mediating factors. Comparing some of these theories might be difficult due to the conceptual background from which they were developed. Some of the theories are interwoven with commonalities and differences of variables.

Table 4.2: KM theories and their authors

KM theories, authors, and year formulated	Emphasis of the theories and areas of focus
Albert Bandura (1977)	❖ Social learning, ❖ People, ❖ Knowledge within social context
Kogut and Zander (1992)	❖ Competitive advantage, ❖ Creation, ❖ Knowledge transfer
Peter Senge (1992)	❖ Learning organization, ❖ Ideal learning environment, ❖ New and expansive pattern of thinking and nurturing, ❖ Where people are continually learning together
Wiig (1993)	❖ Building and using knowledge-creation, ❖ Sourcing, ❖ Compilation, ❖ Transformation, ❖ Dissemination, ❖ Application, ❖ Value realization
Gunnar Hedlund (1994)	❖ Articulation, ❖ Organizational structure, ❖ Career patterns, ❖ Organizational domain (individual, group, organisation)
Von Krogh and Roos' (1995)	❖ Organizational epistemology ❖ Individual, ❖ Social knowledge ❖ Organisational KM
Nonaka and Takeuchi (1995)	❖ Knowledge spiral and transformation, ❖ Individual and group ❖ Organizational creativity and innovation (explicit and tacit-reversed)
Meyer and Zack (1996)	❖ Acquisition, ❖ Refinement, ❖ Store/retrieve, ❖ Distribution, ❖ Presentation
Nickols (1996)	❖ Acquisition, ❖ Organization, ❖ Specialization, ❖ Store/access, ❖ Retrieve, ❖ Distribution, ❖ Conservation, ❖ Disposal
David Snowden (1997, 1998,2002)	❖ Explicit/tacit, ❖ Knowledge assets, ❖ Trust, ❖ Cognitive science, ❖ Semiotics ❖ Epistemological pragmatics
Skyrme (1998)	❖ Identify, ❖ Create, ❖ Collect/codify, ❖ Knowledge database, ❖ Diffuse/use
Choo (1998)	❖ Sense making, ❖ Develop strategies, ❖ Make decisions
Davenport and Prusak (1998)	❖ Routines, ❖ Process, ❖ Practices, ❖ Norms, ❖ Documents/repositories,

Boisot (1998)	❖ Knowledge asset, ❖ Development, ❖ Conversion, ❖ Social learning
Glazer (1998), Jordan and Jones (1997), King and Zeithaml (2003)	❖ Quality management ❖ Risk management, ❖ Benchmarking ❖ Knowledge equity, ❖ Qualitative frameworks
Andrew Inkpen and Adva Dinur (1999)	❖ KM design ❖ Learning, ❖ Knowledge transfer, ❖ Strategic alliances ❖ Ideas in organisation ❖ Dynamic system
Bukowitz and Williams (2000)	❖ Get, ❖ Use ❖ Learn, ❖ Contribute, ❖ Assess, ❖ Build/sustain, ❖ Divest knowledge
Bhatt (2000, 2001, 2002)	❖ European foundation for quality KM ❖ Organisational goals
Alavi and Leidner (2001)	❖ Creation, ❖ Storage ❖ Retrieval, ❖ Transfer ❖ Application
Gamble and Blackwell (2001)	❖ Framework, ❖ Knowledge, ❖ Brain, ❖ Non-sharable documents
Stankosky and Baldanza (2001)	❖ Learning, ❖ Culture, ❖ Leadership, ❖ Organization ❖ Technology.
O'Dell, Grayson and Essaides (2003)	❖ Organizing ❖ Sharing, ❖ Adapting, ❖ Using, ❖ Creating, ❖ Defining, ❖ Collecting
McElroy, (2003)	❖ Individual and group learning ❖ Knowledge claim ❖ Validation, ❖ Information acquisition.
Rollet,(2003)	❖ Planning, ❖ Creating, ❖ Integrating, ❖ Organizing, ❖ Transferring, ❖ Maintaining, ❖ Assessing
Frid's (2003)	❖ Knowledge chaotic, ❖ Knowledge aware, ❖ Knowledge focused, ❖ Knowledge centric
Awad and Ghaziri (2004)	❖ Capturing, ❖ Organizing, ❖ Refining

	❖ Transferring.
Becerra-Fernandez, Gonzalez and Sabherwal (2004)	❖ Discovery, ❖ Capture, ❖ Sharing, ❖ Application.
Dalkir (2005)	❖ Knowledge capture, ❖ Creation, ❖ Knowledge acquisition, ❖ Applications, ❖ Knowledge sharing, ❖ Dissemination.
Girand (2005)	❖ Knowledge to help manage Canadian government department ❖ Technology, ❖ Leadership, ❖ Culture, ❖ Measurement, ❖ Process
Sağsan (2006, 2007, 2009)	❖ Knowledge creation, ❖ Knowledge sharing, ❖ Knowledge structuring, ❖ Knowledge using and ❖ Knowledge audit
Tordoir (1995); Inkpen and Tsang (2005); Teece (2000); Foray (2004); Beazley et al. (2002)	❖ Intellectual capital, and property, ❖ Information economics, ❖ Knowledge economy, ❖ Knowledge networks ❖ Clusters, ❖ Knowledge assets, ❖ Knowledge spillovers, ❖ Continuity management,
Conner and Prahalad (1996); Eisenberg (1997); Inkpen and Dinur (1998); (Conner and Prahalad (1996); Kafentzis et al. (2004); Baskerville and Pries-Heje (1999)	❖ Strategic management ❖ Core competencies ❖ Dynamic capabilities ❖ Dumbsizing, ❖ Knowledge alliances, ❖ Knowledge ❖ Strategy, ❖ Knowledge marketplace, ❖ Knowledge capability
Graham and Pizzo (1996), De Long and Fahey (2000)	❖ Organizational culture, ❖ Knowledge culture, ❖ Cultural values, ❖ Power, control and trust
Starbuck (1997); Dyer and Nobeoka (2000)	❖ Organizational structure, ❖ Goal-seeking organizations, ❖ Knowledge organizations,
Fayyad et al. (1996), Shaw et al. (2001); Davenport et al. (1998); O'Leary (1998b) and Zhuge (2002)	❖ Artificial intelligence, ❖ Knowledge-based systems, ❖ Data mining, ❖ Knowledge infrastructure, ❖ Knowledge architecture, ❖ Knowledge discovery
Markus (2001); Hansen *et al.* (1999); Nonaka and Takeuchi (1995); Nonaka and Toyama (2003); Wiig (1995)	❖ Organizational behaviour, ❖ Organizational creativity, ❖ Innovation, ❖ Organizational learning, ❖ Organizational memory, ❖ Knowledge creation, ❖ Knowledge codification ❖ Knowledge transfer/reuse

Source: Compiled from different sources of KM literature (e.g. Sagsan, 2007; Dalkir, 2011; amongst others).

Based on the observations made on the various theories of KM as indicated in Table 4.2, the following was established: (i) the authors' theories both in column 1 and 2 differ from one another in terms of approach; (ii) they address both specific and general purposes in research investigations in the areas of KM; (iii) the majority of the theories have been proven tested, adapted, and widely used in KM and related fields of study; (iv) the descriptions of each theory are interwoven to some extent; (vi) and several organizations have used them to formulate the framework for work performance and policy. Different issues arise among academics towards these theories, thus suggesting the need to add alternative approaches in solving research problems. Interestingly, it was established that distinct premises in these theories arises in the areas of knowledge creation and dissemination. This is shown in present day knowledge economy, most empirical research. The study also observed that existing body of knowledge is anchored on these existing theories. Therefore, it can be said that the adaptation of theory in research investigation brings creativity, innovation, changes, and continuous learning. Theories are meant to inform the information needs of diverse users. These were the factors that distinguished the researcher's intent of applying theories in this study.

Of the multifarious theories mentioned in Table 4.1 and 4.2 in the field of ICTs and KM, this study considered and adapted Technology Acceptance Model (TAM) by Davis, (1989) and Knowledge Management Life Cycle Model (KMLCM) by Sagsan, theory (2007). The two theories, TAM and KMLC were considered for this study as they addressed the variables of ICTs and KM in the research topic under investigation. The TAM aligned with the variable of ICTs, while the KMLCM correlates with the variable of KM in the chosen research topic.

4.4 The proposed theories for the study

The management of knowledge (print, electronic and tacit) in present day library organizations cannot be attained. This is because without the support of information and communication technologies (ICTs), the organization could bring different things that would. The support comes in various forms. This could be in the form of operations of library and information services, which revolves round acquisition, processing, storage, retrieval and repackaging of knowledge. The usefulness and continuous use of ICTs to manage information and knowledge in academic libraries, led to the adoption of the proposed theories/models for this study. The

adaptation resulted in the variables of perceived usefulness and perceived ease of use of ICTs and management of knowledge through different premises (see Table 4.1 and 4.2).

The theories/models presented in Table 4.1 and 4.2 have been used for different purposes and context in research undertaken. Different fields of study have shown much interest in these theories, especially, present day academics and business organizations. Usually, when considering theory that informed any research investigation, it is important to know whether such theory speaks to the conceptual research framework of the investigation. This reflects the remarks made by Van den Brink (2003) on the issue of technology models that consider social factors of individual, technology, and organizations. These three factors, identified by Van den Brink (2003) are fundamental in the utilization of ICTs. A better understanding of the technology theory in social research that addresses the three variables of individual, technology, and organizations helps to strengthen theory when applied properly. The present study therefore, was informed by the theories of Technology Acceptance Model (TAM) by Davis (1989) and Knowledge Management Life Cycle (KMLCM) by Sagsan, (2007). The choice of the researcher anchoring the present study on these two theories were as follows: (i) the two theories were chosen for this study, as it speaks to the two central variables, of ICTs and KM, used in the current research study; (ii) these variables have been tied into several formulated theories (Sagsan, 2007; 2009); (iii) the two theories are evaluated from the social context of researchers, practitioners and business organizations (Glanz, n.d); (iv) it has the credibility of consistency and validity; (v) it is parsimonious with regards to management of ideas (Glanz, n.d); (vi) the researcher deduced that, they both deals with social phenomenon, especially, people, organization, environment and social problems.

The purpose of choosing TAM and KMLCM which addresses ICTs and KM, became significant. It serves as focal point on which the study is rooted. The two theories were used to inform the study on the use ICTs for KM. This was done in order to have better understanding of the domain of ICTs and KM field of study. The FT of this study revolves round the entire chapters, starting from identification of the research problems, objectives, research questions, amongst other items discussed in this study. Each of these phenomenon as represented from chapter one to nine of this study have their scientific proof that contributes to existing body of

knowledge. The theories chosen for the study was as a result of the several factors both for TAM and KMLCM.

Having established the reasons for choosing the two theories/models, the position, which each theory holds in the study, was later expatiated. The TAM was chosen for the present study for the following reasons: (i) it has been validated concretely through the testing of the theory, as it predicts phenomenon (Venkatesh, et.al 2008; Venkatesh, Thong and Xu, 2012; Park, 2009; Taiwo and Downe, 2013); (ii) it accurately predicts users' intentions with regards to the use of technologies (Al-Qeisi, 2009:1); (iii) TAM was chosen with the intention of the intervening variables of 'use and perceived ease of use' (Davis, 1989); (iv) its use is diverse in context and content of the research study (Wahdain and Ahmad, n.d); (vi) it is seen as a robust and parsimonious model, that can accommodate other variables (Al-Qeisi, 2009:2); (vii) it has expanded to suit different purposes, users' interests, and environments of research investigation (Wahdain and Ahmad, n.d); (vii) since TAM was originally drawn from Fishbein and Ajzen (1975) model, which has some social-psychological constructs (Roca, Chiu and, Martínez, 2006:1071 and (Gbolahan, 2014). It therefore means human behavior is very important with regards to the use of information systems (Roca, Chiu and Martínez, 2006:1071 and Gbolahan, 2014); (viii) it addresses the relationship between the awareness and behavior of systems and users (Shroff, Deneen and Ng, 2011:601).

The KMLCM by Sagsan, (2007) was chosen due to several factors. These include: (i) it enhances organizational and individual knowledge effectiveness (Sagsan and Zorlu, 2007); (ii) the theory permits re-conceptualizing behavior of knowledge, expansively (Sagsan and Zorlu, 2007); (iii) empirical research has shown that KM helps to analyze the procedure of individual, organizational accomplishment (Sagsan, 2009); (iv) The achievement of set goals in organization is rooted upon KM activities (Sagsan, 2009:628); (v) the theory attests to peoples' tacit knowledge utilized for organizational productivity, irrespective of the context (Sagsan, 2009); (vi) it analyzes individual's behaviors, practices, and experiences gained over a period of time (Sagsan, 2009); (vii) it establishes knowledge creation, and utilization within the organization and individuals fulfilment of set goals and decision-making (Sagsan and Zorlu, 2007; Sagsan, 2009); (vii) it helps to strengthen the fulfilment of shared knowledge among colleagues (Nonaka and Krogh, 2009); (viii) the utilization and auditing of shared knowledge

is enhanced through innovative and creative measures of the organization and its staff members (Sagsan, 2007; 2009). Based on the emphasis above, the researcher established that, the shared knowledge is what helps the re-structuring of activities in the organization and work functions. The two theories that informed the study equally x-rayed the study through proper formulation of research objectives, research questions and hypotheses that validated the research instruments (questionnaire, interview schedule and observation) administered to respondents. Without concrete theory aligned with the framework of research, the whole purpose of such research is defeated.

The two chosen theories/models for this study, 'TAM and Knowledge Management Lifecycle Model, were meant to support the enterprise viability and success. This can be possible through the pursuance of explicit, systematic, and priority-driven approaches. The approaches can be on regular basis in order to do the followings: (i) identify which intellectual capital (knowledge) and tools needed to be created and maintained; (ii) provide and transform the required knowledge and ensure it is continually renewed; (iii) ascertain that all available knowledge assets and ICT tools (intellectual capital) are diligently leveraged wherever appropriate and (iv) govern knowledge management-related processes and facilities and relationships by providing enterprise-wide support, infrastructure, and leadership.

In recent times, a considerable number of ICT and KM theories have been developed, with the aim of improving knowledge access and usability among users and librarians. Sagsan (2007:406) argues that the use of TF has helped knowledge processes that drive an individual's mind via technology and the social systems throughout organizations. Dalkir (2012) provides a significant theoretical model of KM, which has helped to explore and/or critique other theories of KM. This provision harmonized the continuous knowledge capturing and sharing; towards organizational growth. The new knowledge that is created should continually be shared in order for it to have maximum applicability among colleagues. Therefore, librarians should cultivate the habit to share knowledge, as it helps to harness insight and skills that are required in operations and service delivery.

4.4.1 Technology acceptance model (TAM) 1989

The Technology Acceptance Model (TAM) theory, developed by Davis (1989) addressed the factors affecting the acceptance, and use, of computer technology or ICT infrastructure in organizations (Johnson, 2005; Lee, Kozar and Larsen, 2003; Ramayah, 2006**)**. Lee, Kozar and Larsen (2003) report that TAM has been the most widely used theoretical model in information science and other related fields of study. The acceptance of technology, for use, depends on the nature of work it is associated with or to the organization that uses it. Lee, Kozar and Larsen (2003:3) established that TAM has been, and would continue to be, used by organizations and individuals for improved work performance. The application of different technologies; such as the internet, e-mail, information systems, and word processors; among others, were some of the tools perceived useful by librarians in their organization.

The two variables of TAM- perceived usefulness and perceived ease of use -were employed by TAM to predict the acceptance of the use of technology by different people in an organization. Present day activities in libraries are factored into criteria that lead to the use of modern ICT infrastructure to render services to users. The two variables- perceived usefulness and perceived ease of use, usually described as original variables of TAM by scholars, have a number of "external variables;" such as accessibility, job relevance, compatibility, and complexity; amongst others (Lee, Kozar and Larsen, 2003). Shroff, Deneen and Ng (2011:601) noted that TAM is seen from the perspective of a user's willingness to accept or not to accept the utilization of the systems; measured along three factors. These factors are perceived usefulness (PU), perceived ease of use (PEOU) and attitudes towards usage (ATU).

According to Johnson (2005) TAM was employed in order to study librarians' behavior towards the acceptance and use of computers, World Wide Web, software, and decision support systems in the library organization. The rationale of this was to find out how the librarians perceived the usefulness of new technologies, as well as their willingness to adapt to its usage in carrying out their work functions. It is believed that if librarians could accept the new technologies, it would enhance the efficiency and effectiveness of the operations and services rendered to users. The determinants of information systems use is based on two conceptual constructs of perceived usefulness and perceived ease of use. These are further elaborated below.

4.4.1.1 Perceived usefulness

Perceived usefulness has to do with the usefulness of a system to a user or an organization. Previous studies by Pfeffer (1982); Schein (1980) and Vroom (1964) argue that perceived usefulness is the perception of an individual regarding the belief that certain information systems could improve his/her work operations. Bradley (2009) asserts that the technologies' capacity to increase work performance depends on the user as well as how it was applied in the organization. That was the view of Bradley (2009) with regards to perceived usefulness. Another point made by Wahdain and Ahmad (n.d:20) was that perceived usefulness is when certain systems, used by an individual or organizations, increase job performance. This, however, depends largely on the extent to which the technology is used. For example, in the library environment, if librarians perceived that computer systems, and other related tools, are useful or beneficial to their work operations, they would embrace or adopt its usage. This implies that the management of library operations, and the meeting of users' information needs, requires some degree of willingness by librarians. The willingness is based on the perception of how useful the technology in question really is. The reason behind librarians' perceived usefulness of the information systems could result from them having prior awareness and knowledge of its utilization as well as the training they have acquired. Davis (1989:320) argues that the usefulness of certain tools or systems could be advantageous in terms of positive effects, rewards, additional benefits, performance, et cetera to both the organization and the individual. These are mediating factors towards the researcher's intent of embracing systems as variable of perceived usefulness.

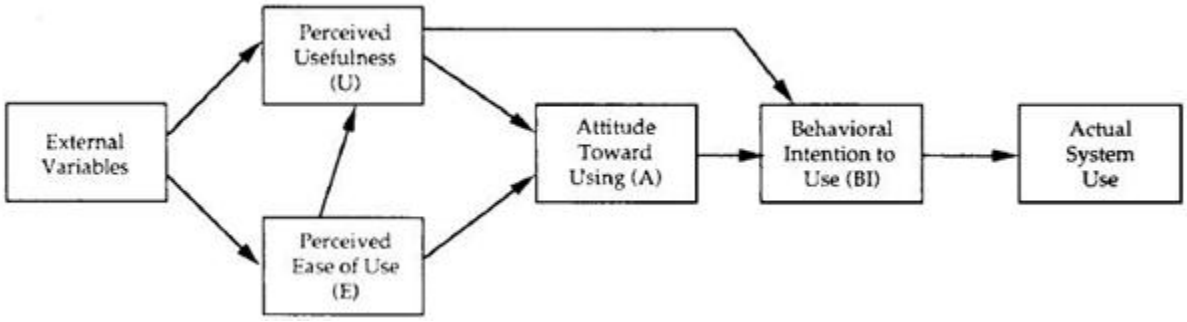
4.4.1.2 Perceived ease of use

Perceived ease of use describes the phenomenon where a user of systems finds that the usage of such a system would aid their work performance when used. Previous studies by Radner and Rothschild (1975) and Davis (1989:320) argue that the perceived ease of use is one of the constructs in TAM. It relates to the extent to which someone feels that certain systems could assist them in their work. This implies that when librarians use computers, and other related tools for tedious work, they believed that it would relieve them of much stress. Bradley (2009:279) unpacked the perceived ease of use to show whether librarians (user) would find the system easier to use or not, although, it is believed that librarians would encounter some difficulty while using the systems in their work operations. Wahdain and Ahmad (n.d:20) adds

that the degree of freedom gained while using certain tools can be difficult to ascertain. However, the perceived ease of use of any systems depends largely on the user's ability, knowledge, and exposure towards such tools.

According to Wahdain and Ahmad (n.d:20) the construct of TAM can be simple, robust, and predictive tools when accepted by users-irrespective of context and organizations. The researcher, while perceiving the ease of use of technologies to be associated with librarians' work performance, suggests the need for increased knowledge and skills and can be versatile in current trends in the LIS profession. This would help address some challenges encountered while using the information systems for their personal and office work operations. The emphasis of the TAM theory brought about its representation in figure 1 below. The diagram of TAM below substantiates the actual system use as interweaved with behavioural intention of individual and the attitude. The behavioural intention suggests whether to accept or reject the perceived usefulness (PU) and perceived ease of use (PEOU). It can be noticed from TAM diagram below that other intervening variables can also be adapted from the external variables within the PU and PEOU. This made the TAM robust and flexible for expansion into other theories like Unified Theory of Acceptance and Use of Technology (UTAUT) as noticed in several studies (Lee, Kozar and Larsen, 2003; Ramayah, 2006; Venkatesh, et.al 2008; Al-Qeisi, 2009:2; Gbolahan, 2014).

Fig 1: Technology acceptance model 1989



Source: Fred Davis 1989 TAM version 1

The TAM which was developed by Davis (1989) resulted to what Davis saw in the theory of reason action (TRA) (Fishbein and Ajzen, 1975). The reason was based on the behavioural attitude of individuals towards the use and intention to use systems (see Fig 1). The

representation made out of the external variables in TAM determined that the perceived usefulness and perceived ease of use can be expanded. In which case the attitude and intention to use, and/or not to use, the actual systems is most crucial. A study by Venkatesh and Bala (2014:1) has helped to improved and/or expand on TAM due to growth in empirical research investigation. The expanded study, by Venkatesh and Bala (2014) established several intervening variables that allows for the flexibility in the use of modern technologies. The TAM has been, and would continuously be, studied and expanded on a continuous basis. Scholars that have expanded on TAM include Venkatesh and Davis (2000), Venkatesh (2000), Venkatesh et al. (2003), Davis (1989), Venkatesh and Bala (2008), Davis, Bagozzi and Warshaw (1989), King and He (2006), amongst others. The TAM provided valid and reliable measures that predict the acceptance or adoption of new technologies by end users in contemporary knowledge economy today.

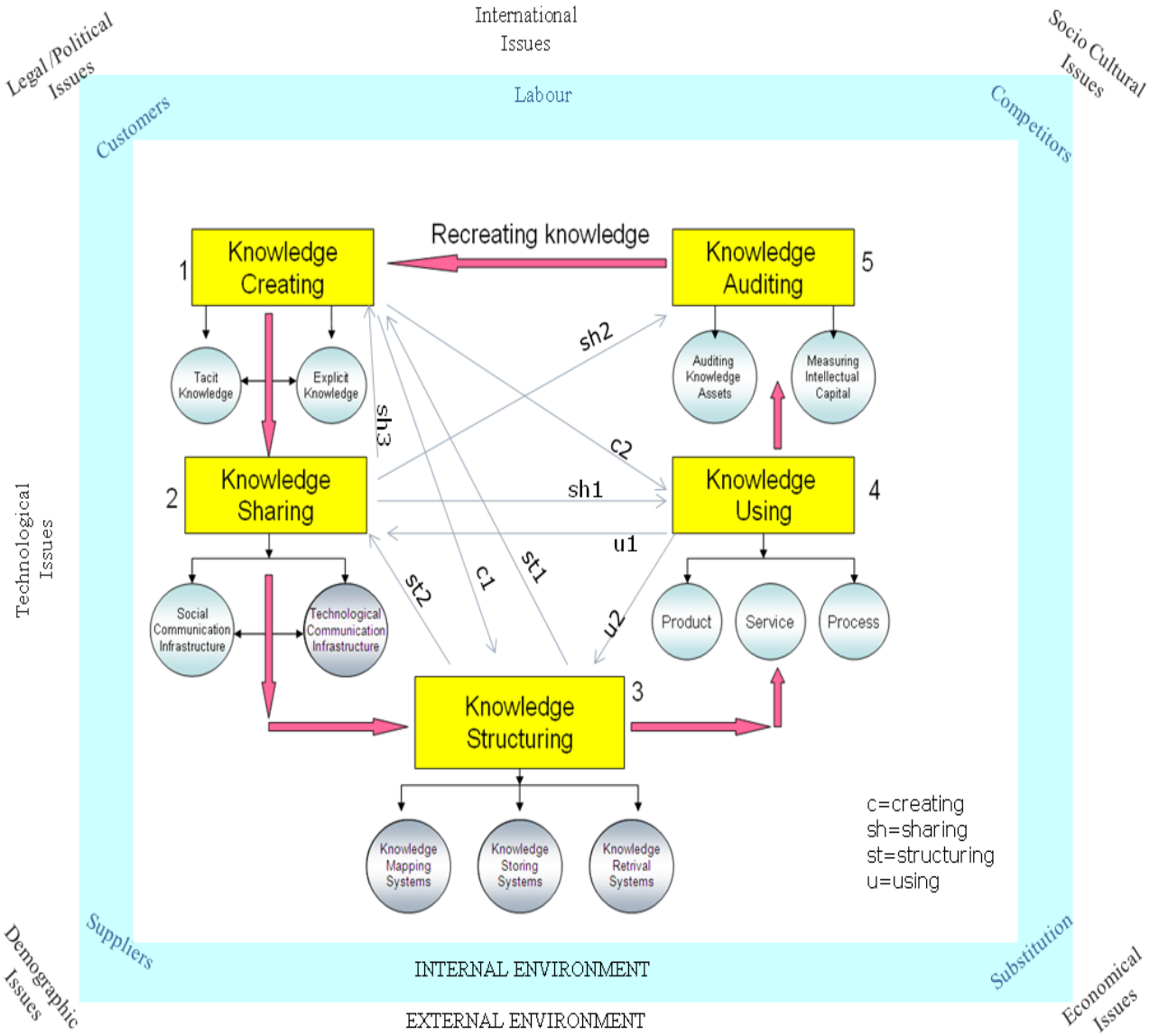
4.4.2 KM Life cycle model by Sagsan's 2007

The purpose of the knowledge management life cycle model (KMLCM) by Sagsan in this study is to assess KM from the perspectives of knowledge creation, knowledge sharing, knowledge structuring, knowledge using, and knowledge auditing. The researcher adopted the theory of KMLCM as it emphasizes KM as a domain or field of study. The emphasis made covers in-depth harnessing, generating, creating, sharing, using, as well as auditing of knowledge. These factors are necessary for individuals and collective work performance in the library organizations. Audited knowledge could foster librarians' willingness to render information services on a continuous basis. Present day library services, with many volumes of electronic and print based knowledge, reflect that librarians work operation is continuous.

The continuous knowledge creation either in print form, and/or tacit enables the delivery of information service to users. The shared knowledge also helps librarians to structure the library organisational activities, such that every member of the university or institutions benefits from it. Also, the library would not have been the eye and engine room of the institutions, if the knowledge created were not used and audited. The audited processes were through functional activities that evaluate and monitor the progress made in libraries and institutions today. Therefore, the intervention of Sagsan's theory requires librarians to use technological tools to meet organizational goals. The goal is seen in the work performance, knowledge creation, and

its' auditing. Sagsan's theory emphasized that what is obtainable in the library environment, is where librarian assist users with the knowledge created, through sharing, structuring, using and auditing the activities within and outside the library environment. The representation is further simplified in figure 2 and noted below (next page).

Fig 2: KM Life Cycle model by Sagsan 2007



Sources: Sagsan, (2007): Knowledge management from practice to discipline: a field Study (AID TODAIE's).

This model has five intervening variables, which later expand into other areas of knowledge. The edges of the Sagsan theory are supported with demographic, economical, socio-cultural, and legal/political issues. The variables in the yellow boxes are interwoven with each other, thus have other units of analysis. These are further elaborated below:

4.4.2.1 Knowledge creation: Creation of knowledge has to do with the initiation of ideas, knowledge, skills, and experiences in order to invent or improve an existing phenomenon (Sagsan, 2007). It implies the activities that increase the stock of organizational knowledge and that of an individual. Knowledge creation revolves around the acquisition, resource dedication, fusion, adaptation, and building of knowledge networks among colleagues (Sagsan, 2007; 2009). The researcher notes that one of the purposes of a university library is for knowledge creation through several mediums. These consist of: social communication networks, both formal and informal; teamwork; community of practices; organizational learning; and formal communications technology (Sagsan, 2007). This can be achieved through individual, group, or departmental institutions. Therefore, librarians should apply their analytical abilities, experiential experiences, insights, and supportive interactions in harnessing knowledge that is required to meet users' needs (Sagsan, 2007).

4.4.2.2 Knowledge sharing: Knowledge sharing (KS) implies communication between people and organizations. This occurs through personal conversations, knowledge fairs, open forums, as well as the publishing of articles/papers, books, and peer reviews (Sagsan, 2007). KS has become an important debate in the present day knowledge economy (Sagsan, 2007). Emphasis has shown the avenue for sharing information and knowledge through established organizations and people (Sagsan, 2007). Organizations have proven to grow better and faster through the sharing of knowledge between groups of people within and outside a specific context (Sagsan, 2007).

4.4.2.3 Knowledge structuring: Knowledge structuring means the re-organization of knowledge in order to address the present needs of the system (Sagsan, 2007). In order words, it refers to re-organizing the staff knowledge; which might be difficult to achieve, sometimes, since most staff comes from diverse context and approaches to issues differs. But it can be achieved, if strategies are in place to do so. The re-structuring becomes important since the sources from which they were accessed differ from one to another. Structuring of knowledge takes different forms, most especially, when employees do not have knowledge of the organizational structure and or organogram (Sagsan, 2007). The processes of knowledge structuring in university libraries include: screening and classification of knowledge; pre-defined taxonomies of neatness, mapping, storage, and ease in getting back the stored

knowledge. Infrastructural support initiatives are paramount in the proper re-structuring in organizations (Sagsan, 2007).

4.4.2.4 Knowledge usage: By this, the organization applies its knowledge repositories after structuring has been done. The individuals' knowledge is transformed into information and experience with which the organization improves its skills, abilities, creativity, and with this it's organizational culture (Sagsan, 2007).

4.4.2.5 Knowledge auditing: Knowledge auditing implies the assessment of the individual and organization's knowledge, in the form of routines and processes that are carried out regularly. Sagsan, (2007) argues that the quality of stored knowledge is derived from the auditing process. The auditing process helps by adding and removing used and unused knowledge. The result becomes innovative in approach. The process of auditing measures the performance of Knowledge Management in the organization (Sagsan, 2007).

4.5 Application of the theories in related studies

The application of TAM, and KMLCM, by Sagsan, implies areas of study where these theories have already been applied. The TAM, and KMLCM, that informed this study is known to have been widely adopted by several scholars in various fields of study. This was based on expertise research interest and problem statement being addressed in their research study. Some of the scholars that have used TAM and Sagsan's theories to meet their information seeking needs are as follows:

The study areas and authors that have applied TAM are: (i) Lee et al. (2003) used TAM to worked on research in laboratory experiment and field study; (ii) Gangwar, Date and Ramaswamy (2015) used TAM to determine cloud computing adoption; (iii) Rauniar, Rawski, Yang and Johnson (2014) used TAM to investigate social media usage of facebook; (vi) AbuShanab and Pearson (2007) used TAM in Internet banking in Jordan; (v) Shroff, Deneen and Ng (2011:602) used TAM to find out the understanding of students use of e-portfolio systems and potential; (vi) Bertrand and Bouchard (2008:201) looked at TAM construct and how they relate with one another; (vii) Serenko, Bontis and Detlor (2007:119) investigated users' boundaries in accepting TAM; (viii) Behrens *et al*. (2005:2) unpacked TAM through the

measures that determine the effective nature of its use; (ix) Lin, Shih and Sher (2007) used TAM to evaluate users behaviour on e-stock; (x) Chen and Chen (2009) made use of TAM to clarify whether users have intentions towards automotive telematics.

Other scholars who have equally used TAM in their research work are Venkatesh and Davis (2000); Venkatesh (2000); Venkatesh et. al, (2003); Davis (1989); Davis, Bagozzi and Warshaw (1989), among others. These researches did not treat topics on the application of ICTs use to support knowledge management in academic libraries. The adoption of the TAM is the gap this study seeks to fill.

Reflecting on Sagsan's theory, Grant and Grant (2008) laid emphasis on how the model of next generation of knowledge management should look like. The Sagsan KMLCM showcases authors and areas of application in related studies. These are as follow: (i) Bensghir and Sagsan (2009) worked on knowledge orchestration with emphasis on people, process and technology in an organisation; (ii) Ribière and Román (2008) argued that knowledge flows in the form of creation, storage, transfer, use and maintenance; (iii) Draghici et.al (2008) demonstrated that knowledge management life cycle manufactures, synthesizes, transports, and uses knowledge in order to meet particular needs.

The KMLCM acquires relevant knowledge from users through diverse means of identification, creation, collection, and application (Du Preez, et.al. 2008). Sagsan's theory has been shown to have been applied in the automobile company, where chains of knowledge are managed in the organisation (Sukumaran and Shetty, 2009). Durišová (2011) established that the application of knowledge in automotive industry is related to the knowledge life cycle. The knowledge moves in anti-clockwise and clockwise directions. Ferreira (2007) argues that the utilisation of knowledge and how they are managed can be evaluated through the growth witnessed in the automobile industry. The analogy of the various theories applied in related studies did not address KMLCM the same way it was handled by Sagsan. It is imperative therefore to use Sagsan's theory in this present study, as it relates to the management of knowledge and activities in university libraries. The use of the Sagsan KMLC that addresses KM domain is part of the gap this research hope to fill.

The application of TAM and Sagsan's theory in this study was necessary based on the following factors: (i) its popularity, acceptability, relevance, and efficiency; (ii) it was shown to have been used in information systems and organizations; (iii) its use by people, technology, and processes differs in order of management; (iv) the knowledge which would have been difficult for librarians to harness became simpler due to its applications in work operations. The application of systems in library environment provides librarians a basis from which to advance in personal development towards effective service delivery. The emphasis made on studies that have used TAM and Sagsan theories mentioned above, did not mention the variables of TAM and that of the five seen in Sagsan's. Besides, the two theories have social influence that requires continuous exploration; the use of systems and the management of knowledge is a continuous process. The flexibility and robust effectiveness of the two theories meant that librarians had a preference for its adoption in this study.

4.6 Relevance of the theories to the current study

The relevance of any things depends largely on what it is capable of achieving. The relevance of the present models/theories 'TAM and KMLCM' as noticed by the researcher unveils underlying construct of the variable identified among them. This can be categorized accordingly: (i) TAM, has been proven as a theoretical lens in the undertaking of research regarding the on willingness of users' to use new technology (Williams, Rana and Dwivedi, 2015); (ii) TAM is a classical model of computer systems (Shroff, Deneen and Ng, 2011:601); (iii) TAM prediction was on human behaviour of whether or not to use information systems (Pearlson and Saunders, 2006); (iv) the characteristics of users' skills, capabilities, belief and attitude are most significant in TAM (Davis, 1989; Silva and Dias, 2007); (v) TAM serves as a determinant of users' willingness and behavioural intention to use systems (Shroff, Deneen and Ng, 2011); (vi) TAM is seen as theory of technology and professionals who theorises, validate, apply technique, skills and knowledge in their work performance; (vii) TAM has been cited over 424 times in Social Science Citation Index with specialised sources and literature showing aged validation since 1989 (Silva and Dias, 2007); (viii) between 1989 and 2001, over 100 studies have been published in technical reports, peer review journals, and proceedings with relation to TAM (Liu, and Ma, 2004:61); (ix) TAM has been tested with different user groups, organizations, and sample sizes; analyzed with various statistical tools and compared with

competing models (Liu, and Ma, 2004:61), (Gefen, 2000); (x) Venkatesh and Davis (2000) argue that TAM is robust, valid, and parsimonious.

While reflecting on KMLCM, the researcher establishes the following: First, the wisdom and strategies derived from the theory can help organizations that are in their early stages to be well strengthened (Sagsan, 2007). Second, the Sagsan model helps to distinguish data, information and knowledge and how these are managed (Sagsan, 2007). Third, it is an open system model used for intra-organizational level (Sagsan, 2007). Fourth, the theory has mediating factors of different types of knowledge; repositories for data; information and knowledge; business initiative; procedures; has channels of intra-communication; filter the intellectual capacity of the organizations; fascinated in product and services (Sagsan, 2007). Fifth, most of its implementation is holistic in KM (Sagsan, 2007). Sixth, the theory revolves around the creation and transference of knowledge; re-engineering of knowledge-bases of expertise; competitive advantage; learning culture; leadership; organization and technology; change management; innovation; complexity and uncertainty (Sagsan, 2007). Seventhly, the five stages and their subtitles in Sagsan theory cover every areas of KM. This implies the use of skills and ability of librarians both tacit and explicit knowledge in the organization (Bensghir and Sagsan, 2009).

The effect proven in this theory enhances librarians' appreciation on the usefulness and adaptation. The use of ICTs to manage knowledge in university libraries was established based on these adopted theories. The theory filled the gap of theoretical and practical application of the use of tacit and explicit knowledge in the services delivery in the present day library environment. It also revealed that the application of this theory changed organizations irrespective of their age and sizes (Sagsan, 2007). This point of emphasis is another indication as to why the theory was adopted. When judiciously used by librarians, it will not only promote the effective and efficient service on behalf of users, but also improve strategies of tacit knowledge utilization as a key factor in the sustainability of library organizations. The KMLCM, by Sagsan (2007) mentioned three key things as fundamentally valuable regarding why the theory differs from others:

- It is among the first established generation of knowledge management activities which clarifies best the KM idea at an interdisciplinary manner.

- It promotes the easy free flow of information and knowledge at the organizational level, thus with more emphasis on tacit and explicit knowledge used to capture and share knowledge for organizational growth.
- It is like a roadmap used in the implementation of KM strategies on procedural steps that foster knowledge usage in organizations.

The two theories chosen; 'Technology Acceptance Model (TAM) by Davis (1989) and Knowledge Management Life Cycle (KMLCM) by Sagsan (2007); for this study complement one another in diverse ways: first, the present study has two major variables 'ICTs and KM'. The TAM as one of the theory chosen is a technology or information systems model. By this, it has already represented the interest of the first variable. Besides, the KMLCM address the need of how knowledge is managed in libraries. KM is a broad spectrum that oversees how knowledge as well as when it is acquired till when it is used for organizational proficiency. Other choices for the selection of the two theories are: (i) the two theories are tied into other formulated theories (Sagsan 2007; 2009); (ii) they address social problems, organizations, people and the environment (Glanz, n.d); (iii) they have proof of credibility in terms of validity and consistency in research investigation (Glanz, n.d); and (iv) most importantly, Sagsan theory of KMLCM deals with knowledge creation, knowledge sharing, knowledge re-structuring, knowledge use and knowledge auditing, which surrounds every work operation the librarian does in the library organization (Sagsan 2007; 2009).

Without the aid or support of ICTs, as indispensible tools that help facilitate these processes, it becomes difficult for librarians to actualize their work operations. Reflecting on the variables in TAM (ease of use and perceived usefulness), the researcher can say that tools become useful or easier to use, to an individual or organization, when the tool is available. Therefore, there must be some relationship between availability, accessibility, and effectiveness before; someone can conclude that such a tool is actually useful. Also, there is no organization that can exist without the use of tools. It is on this notes that, the two theories complement each other in this study. The theories, upon which this study is anchored, are demonstrated in existing body of literature in the various chapters (see table 1.1 of the road map of the study and chapter 4). The theories treated variables of ICTs and KM as a body of knowledge, which were also discussed in the different sub-themes in this study. The research objective two and hypothesis

one in the study addressed the needs of using TAM, while research objective three focused on Sagsan's KMLCM. The two theories used in this study can be used concurrently in the framework and application of the work operations of library services.

4.7 Criticism and implication of the theories as identified in this study

In spite of the justification accrued to TAM and KMLCM that informed this study, and related research field that have used it, several criticisms have been noted. Firstly, there is insufficiency of TAM in measuring the usage of information systems (Szajna, 1996; Straub, Keil, and Brennan, 1997). Secondly, there is inconsistency on certain experimental findings of literature by scholars on TAM (Moore and Benbasat, 1991). Thirdly, some of the findings presented among scholars' results of the two constructs PU and PEOU have a tendency of being qualitative and subjective, thus what is most needed is a quantitative and objective synthesis (Liu, and Ma, 2004:62). Fourthly, many organizations such as, institutions, and educational systems, which, academic libraries are a part of, have spent vast resources on TAM in running their framework. Rather there is loss on the underutilization of TAM based on the unwillingness of users' to accept information systems due to inability to apply knowledge and skills (Park, 2009; Teo, 2009; Liu, Liao and Pratt, 2009; Shroff, Deneen and Ng, 2011). This problem has equally been addressed in related studies, which became known to the researcher through diverse literature search. The researcher have identify through critical measure on how consistency of experimental findings can be brought in a research nature like this.

The criticism noticed in KMLCM is: first, high-level discourse of knowledge focuses on insight and experience of the author who formulated it and again anchoring the work on other theories. Second, there is no specific policy that guides the capturing of tacit knowledge as part of the subtitles variables in the theory (Sagsan, 2007). Third, there is no appropriate management support system on strategy initiatives used to implement KM at a functional level in most organizations (Sagsan, 2007). Fourth, the theory is limited by bureaucracy and institutionalized culture (Sagsan and Zorlu, 2007). The use of theories is significant in any research investigation. When the right theory is anchored in line with related literature, the research journey is smooth (Sagsan and Zorlu, 2007). The implication of these theories/models in this research was to it helps the researcher boost and design a proper research methods. This

would strengthen the researcher's knowledge base on the subject areas under investigation. It would also serve as guide and evidence in other related theory.

4.8 Summary

It was observed in this chapter that salient issues emanated from the two theories/models adopted for this study. First, existing studies that have used TAM and KMLCM demonstrated the value placed on the use of theories/models in research investigations. Second, the systematic phenomenon of observable predictions in TAM and KMLCM theories explained that when carefully monitored, constructs of variables are inter-weaved. Third, despite the criticism observed in the two theories, there is still wide applicability of TAM and KMLCM in recent studies, specifically across settings like value systems, technology, and institutions, amongst others. This has led to the enhancement and promotion of strategic usability in present day library organizations. Emphasis of the anchored theories of TAM and KMLCM though discussed in a larger context, were enormous. The application and importance in Nigerian and South African university libraries' context was the gap this chapter seeks to fill. Therefore, librarians should feature in the development of innovative and enhanced transformation in the library working environments. There are new ideas of knowledge based in theoretical and practical applications, which librarians explore and use to promote the adoption of theories for organisational performance.

This chapter established that organizational strategies are necessary in order to achieve the determined competitiveness in professional growth. This has given libraries some advantage in marketing their products and services. The products and services offered have equally improved the quality of libraries through the use of established theories. Librarians are now propelled to generate, codify, and transfer knowledge for organizational productivity through the use and application of theories in present day university libraries. Therefore, sending librarians or staff members on regular training and development programme on the applicability of ICTs and KM need to be intensified. The accomplishment of this requires strategic integration of adequate knowledge and skills, as well as practices of continuous research investigation and competence among employees.

This chapter's contribution to knowledge dependency on theories used to demonstrate expertise knowledge based in other related theories as cited in this chapter. This demonstrates diverse knowledge, skills and acceptance of the tools as it can be applied to support library activities. Another point of emphasis in this chapter was the considerable number of ICT and KM theories developed over the years. The continued knowledge gap increase among the theories identified is another mediating factor. This has helped to improve knowledge access and usability among scholars today. The need to also consider people, organizations, tools, and social contexts is another critical success factor identified in this chapter. For example, if you have the right data but the data does not speak to the theory, there is bound to be problem in the research investigation. This chapter established that, theories are fundamental principles anchored in research investigations.

The next chapter addressed the research methodology used for the study.

CHAPTER FIVE
RESEARCH METHODOLOGY

5.1 Introduction

This chapter explains the methods and research methodology used for the investigation of the study. Leedy and Ormrod (2010:2) view research as involving the act of collecting, analyzing, and interpreting information that has been obtained from respondents by way of increasing the understanding of phenomenon of interest. Research methodology does not have a standard definition that is widely accepted, as some definitions are overly inclusive while others overly exclusive. Jankowick (2005) defines research methodology to be a systematic and orderly manner undertaken in the investigation of a research project. The investigation takes different measures in the collection of data and its analysis. BusinessDictionary.com (2013:1) defines research methodology to be the collection of information for the purpose of making business decisions.

Nevertheless, from these definitions, the researcher established that research methodology can be understood as the application of research knowledge for proper guidance of the study. The guidance forms different stages of the problem identifications till the stage of obtaining results or findings. Therefore, the research methodology of this study was based on the understanding of the research paradigm, design and population of the study, sample, sampling techniques, research instrument, and methods of data collection, which is further discussed below.

5.2 Research paradigm and research approach

Taylor, Kermode, and Roberts (2007:5) argued that paradigms are representations of phenomena that guides the researcher under a specific approach adopted in research investigation. Braun and Clarke (2013) assert that paradigm has to do with the understanding towards a certain beliefs, values judgment, and practices shared among researchers about research framework. The framework has to do with standards or patterns followed in any research investigation (Neuman, 2011). Dash (2005:1) argued that a research paradigm is concerned with educational discourse that explores the understanding of social phenomenon and unplanned occurrences that are social, cultural, and psychological in nature.

Weaver and Olson (2006) also note that positivist, post positivist, interpretive, and critical social theory paradigms are the most prevalent in research today. There are different types of paradigm used today in research undertaken. The choice of the use of any research approach depends on the nature of research carried out and its operationalization (Cresswell, 2009). However, this study is concerned with the positivism and interpretivism research approaches. The study adopted the positivism and interpretivism approaches as the positivism is quantitative in nature (the use of figures, numbers and quantity), while interpretivism has to do with qualitative (expression of ideas, opinions, feelings and interpretations) research approaches. The positivism and interpretivism approaches are discussed below:

5.2.1 Positivism research approach

The positivism is a well-known research approach that is widely used in any research undertaken (Dash, 2005:1). The positivism connotes phenomenon of an existing facts or reality that cannot be altered (Dash, 2005:1). This refers to the reality of stable, observed and predicted phenomenon (Braun and Clarke, 2013). The positivist emphasized that phenomenon be separated while observation repeated (Braun and Clarke, 2013). The most interesting part observed in the positivist approach is the reality of social world seen in terms of constituent elements. The rationale behind the use of positivism approach is the prediction on the basis of known and observed reality that is explained within existing body of knowledge (Neuman, 2011; Braun and Clarke, 2013; Dash, 2005). The positivism also known and referred to as quantitative research approach attests to figures, numbers or quantity (Braun and Clarke, 2013; Neuman, 2011; Dash, 2005).

The positivism (quantitative) research approach becomes significant as it has a long historical basis (Kuhn, 1970; Alavi and Carlson, 1992; Neuman, 2011; Dash, 2005). It is also embedded on scientific proof that revolves in the society (Neuman, 2011; Dash, 2005). The positivistic approach was adopted in this study to determine the available ICT tools and used by librarians in the various university libraries. This was done in order to ascertain the availability, accessibility and effectiveness of the tools. Neuman (2011:100) established that positivism measure the predictions of observable and explained realities and their relationships. The relationship has some cause-effect on external behaviour of an individual in order to produce quantitative data that can be exposed to statistical analysis (Neuman 2011:100).

The quantitative research approach, also known as the positivistic paradigm involves the inference or occurrence of activities of research at different intervals (Leedy, 2004:180). Leedy (2004:180) argued that quantitative research includes behavioral occurrence, counted to determine the overall frequency, which is rated in accuracy, maturity or in other dimensions. The essence of the use of quantitative research as observed by the researcher is that, it helps to cross-check and validates the data obtained in the cause of the research investigation (Leedy, 2004). It allows the researchers to repeat the same research and be more familiar with actual results obtained, in order to mitigate cases of uncertainty (Leedy, 2004; Neuman, 2011). The measurement obtained in the quantitative data gives assurance of the established validity of the findings (Neuman, 2011). Its success is associated with the domain of the physical and natural sciences (Cresswell, 2009).

The quantitative research approach was used in this study to predict and validate the relationship among the librarians working in the various libraries in both countries. The prediction and validation made was based on the nature and extent to which they manage knowledge using ICTs. It was also used to know the operations of information services and policy that guide the use of ICTs. By so doing, the results of the study can be predicted, explained and also confirmed. This made Creswell (2003:18) emphasize that, usually, the first point to consider in quantitative research is the problem statement. Once the problem is simplified, it becomes much easier to consider the formation of research questions and hypotheses, literature review and data analysis. These were strategically followed on the basis of the method of investigation.

5.2.2 Interpretivism research approach

Cresswell (2009) established that interpretivism research approach has to do with emphasis of expression made in order to understand the reality of social phenomenon or life. Usually, the best way to explain the interpretive research approach is when such person is actively involved. Cresswell (2009) re-emphasized that the subjectivity of such interpretation gives better intervention of the social reality. The intervention made in the explanation, makes people with different understanding and approaches to see the issues or views from the scientific knowledge perspective. Neuman (2011:101) asserts that the interpretive paradigm involves where someone get to have the understanding of research from experiences, and skills, gained

over time. This could be due to different research approaches used for investigation of human behaviour, environment and situations. Neuman (2011:362) views the qualitative research as where the researcher is very much involved, by seeking to find out the opinions and feelings of certain phenomena.

The phenomenon involves individuals, or groups of people, situations of real life stories or experiences. Sometimes, it can be very difficult for this to actually occur. What helps the researcher in reaching a better understanding of this approach is the experience and knowledge of research gained over time. The reasons of the use of interpretivism research approach are: The experience and knowledge gained could take the form of images, written words, or symbols that focuses on social activities of real life (Neuman, 2011); the nature of such processes shows certain relationship between people, environment that changes from time to time. The interpretive paradigm (qualitative approach) becomes significant as it provides the researcher the opportunity to view the research participants within their own domain (Neuman, 2011:364). It also helps to uncover the knowledge of the respondents' feelings and opinions through discretional thoughts and actions (Neuman, 2011:364). The extent of credibility of the design, and analysis of literature sourced, are combined with the responses obtained from respondents. It dwells more on discovery and interpretation of real life experiences that people have been involved in (Cresswell, 2009). The interpretivistic approach, grounded on content analysis and interpretive, was used to uncover the deductive reasoning of librarians working in the various libraries in the two countries.

The deductive reasoning of librarians covers the extent to which they manage knowledge and are involved in knowledge management practices, staff training mechanism adopted, and policies that guide all these activities. This was done in order to observe the element being involved in the cause of the investigation. The most interesting part of this approach is that, the information obtained does not have a beginning and a concluding part. The information obtained cannot be controlled as well.

As earlier mentioned, the study made use of both the quantitative and qualitative research approaches. The quantitative approach was based on a survey while the qualitative used interpretive and content-analysis methods. The quantitative (survey) research method was used

to elicit largely measurable information from librarians (respondents) at the various university libraries sampled. The survey was equally used to finds out the types of ICTs, KM tools and services used by librarians to render information services to users, the availability, accessibility and effectiveness of these tools amongst other things. The survey also considered phenomenon at both countries university libraries in order to gather data for the study. Cresswell (2009) and Neuman (2011) emphasized that survey as a research method is used as key data collection or instrument endorsed through numerical means.

The notion behind this is that both quantitative and qualitative methods enable triangulation in research investigation (Ngulube, 2015; Cresswell, 2009; Neuman, 2011). Triangulation in research investigation is very important, though it may be difficult sometimes (Neuman, 2011). It supports, strengthens, and validates the results that are obtained from one dimension (Cresswell, 2009; Neuman, 2011; and Ngulube, 2015). The information obtained through questionnaires can be validated during interviews and/or observations. If there are doubts in the data obtained through questionnaires, the interviews conducted could clarify those doubts. For example, if the doubt is based on fabricated or false information obtained through questionnaire, during the interview, such information can be well explained or check further, in order to know the truth.

This is usually obtained through the interactions had with the interviewee or through literature search carried out in the cause of the study. The researcher can also use the observation methods of data collection to cross check whether what was said is true or not. Above all, if the information obtained using the three methods did not show any differences and similarities, it therefore means, something must have gone wrong during the research investigation. In that case, the research instrument or the approach adopted for the study can be re-visited. Triangulation is divided into two types: inter-method triangulation which involves two or more methods that uses different methodological pattern and nature while the intra-methods triangulation laid emphasis to two or more techniques of the same method (Halcomb and Andrew, 2005; Cole, 2006; Weaver and Olson, 2006). The quantitative research surveyed respondents on the issue of the use of ICTs for the support of knowledge management in academic libraries in Nigeria and South Africa.

Studies by Maree (2011:155), Leedy and Ormrod (2010:187), and Neuman (2011:272) established that survey research methods involves the process of acquiring information and records answered from different groups of respondents. The people have various opinions, attitudes, experiences and characteristics that would help address the problem statement. The survey research method enables the collection of data from librarians working in the university libraries across the two countries for this study. The survey method used the questionnaire as an instrument to collect data, while interpretive and content-analysis used interviews and observations. The survey (questionnaire) and content analysis used as method in this study (quantitative and qualitative) foster and broaden the researcher's understanding regarding some grey areas in this study. It also enhanced the results in determining the present state of university libraries in both countries. Besides, it helped to address the needs of future researchers.

The questionnaire was a major instrument used to collect data from the respondents. The quantitative covered majorly questionnaire administered to the professional librarians across the university libraries. The information requested from respondents covered demographics and the subject matter of the study. Before the questionnaire was administered to respondents, a pilot study outside the main research scope was conducted in both countries. The essence of the pilot study was to help scrutinize and improve on the research instrument. This was carried out at different libraries, outside the main scope of this study, and the responses obtained from the respondents in both countries libraries was later used to improved and re-work the research instruments.

Before embarking on field-work, permission to allow the researcher to visit the sampled university libraries was first requested. Thereafter, approval was given to the researcher, in order to have free access with the university libraries and librarians. The researcher and Research Assistant then travelled to the various libraries to administer the questionnaire and conduct interview with the professional librarians who were working in the various university libraries. The research was not an easy task, as the researcher had to travel to the various university libraries in the two countries, with the assistance of research assistant. Before handing questionnaire over to the professional librarians, the researcher had to explain some of the concept regarding what the study entails to them. While seeking their support in filling the

questionnaire, the researcher pleaded with them and requested notice for likely, the questionnaire can be returned to the researcher. Due to the tight schedule of some the professional librarians, the researcher even had to send emails and make some phone calls, in order to remind them of the questionnaire. There were some of the librarians who sacrificed time and attempted the questions and returned to the researcher on that very day.

In the overall, the administration of the questionnaire instruments lasted three to four weeks before they were all returned. For the interpretive approach and content analysis, interviews were conducted with key informants whilst observing the office environment where the respondents worked. The questionnaire, interview and observation methods of data collections were the research instruments used for this study. This is presented in appendix A, B and C in this present study.

The qualitative (interpretive) approach was first carried out through a content analysis. The content analysis made use of literature searched from different sources of archival materials in the several subject areas (ICTs and KM, university libraries, operations carried out in these libraries, opportunities and challenges faced with in the use of ICTs, policy, just to mentioned a few). This was carefully done using each of the objectives in the study as guides (see chapter one). The literature sourced was used to support the results obtained through interview and observation in the discussion chapter (see chapter 7 and 8). The results obtained through interview were coded, and interpreted as they were represented by respondents. This was done in order to draw a distinction in the results of interviews and field observations already at hand. The results showed variances in the areas/environment where the research was carried out.

The research instrument of interview, content analysis and observation, of the qualitative research covered literature/information from respondents on their demographics. The qualitative had face-to-face interviews with key informants (head of units/university librarians) while observing the available facilities, university building, and offices used by the respondents across the sampled university libraries. This procedure helped to unveil the environment of the research. Due to issues of language barriers, the assistance of an interpreter was employed. The interpretative research approach enables the researcher to comprehend the phenomenon from a broad perspective. Reading current research articles and interaction with

other experienced researchers helped the researcher to develop better understanding of the research and its environment. The knowledge and experience gained during the research process was able to address critical issues that pertain to the present study. These issues would have been difficult to address by the researcher on his/ or her own.

The justification for the use of survey and content analysis is that the survey was used in this study to examine the professional librarians in order to collect original data. The content analysis was meant to obtain the opinions, feelings and understanding/ explanation given by the key informants interviewed in the various university libraries. The documents and observation made during the time of visit to the university libraries are also part of the materials used in the qualitative content analysis. The data collected through survey helped to describe and measure librarians' attitudes towards the use of ICTs to support KM in their work operations. The work operations can now be examined through the questions given to the librarians to answer. The questions given to the librarians, as well as their responses, were counted and tabulated using percentages, frequency and statistical analysis. Leedy and Ormrod (2010:187) argued that statistical data obtained from respondents who willingly participated in the study can be used at any given point in time to draw inference or summary of the result. Cresswell (2009) adds that, survey methods are best used for descriptive, exploratory and explanatory research, where the unit of analysis is the individual. Therefore, since the librarians are the unit of analysis of this study, the survey was best suited.

The survey research design, featuring both quantitative (structured questionnaire) and qualitative (observations and interviews) data collection methods, was used in the study.

5.3 Study area and population

Neuman (2011:224) refers to 'population' as the totality of respondents who meets the unit of analysis about what the researcher seek to establish. It emphasizes specific content and context under investigation. Population is essential; as there is no way research investigation can be carried out without determining the phenomenon that needs to be examined. The study areas for this research are the university libraries mentioned at the beginning of the chapter (see chapter one and Table 5.1). The locations were selected to make comparison of the phenomenon in the use of ICTs to support KM in those libraries. The rationale regarding

selecting the six university libraries was earlier discussed in chapter one of this study and further expatiated in 5.5.1.2.4 of purposive sampling technique- see below. The basis for choosing purposive and convenient/accidental sampling was based on the researcher knowledge of his respondents and nature of work. This would enhance and facilitate possible ways of reaching or having quick access to the professional librarians. The study targeted 400 librarians across the two countries' university libraries. The targeted population of 400 for the study was arrived at, based on inquiries through phone calls, sending of e-mails and online search of the various university libraries websites. This was done in order to ascertain the position/figure of the population of the professional librarians. This results to the 400 professional librarians, which the researcher used for the study. The targeted 400 professional librarians were based on available librarians working in the various universities libraries in the countries. The university libraries are University of Ibadan, Federal University of Technology, Akure, Delta State University, Abraka, University of Zululand, Kwadlangezwa, University of KwaZulu-Natal and Durban University of Technology, in Nigeria and South Africa, and six key informants (one from each of the university libraries in the two countries stipulated), to be interviewed across the six sampled University libraries in Nigeria and South Africa as reflected in table 5.1.

Table 5.1: Targeted population in the various university libraries sampled

Targeted population of the university libraries in Nigeria and South Africa						
UNI Library	**FUTA Lib.**	**DELSU Lib.**	**UNIZULU Lib.**	**UKZN Lib.**	**DUT Lib**	**Total**
73	**57**	**70**	**49**	**81**	**70**	**400**

Source: Staff record register of each institution library (2013).

A professional librarian in this study is defined as someone who holds a degree in the librarianship profession. The degree could be in library and information science or library science. The person is trained professionally with knowledge and skills in different areas of specialization, in order to provide and render information services to users of libraries. Haycock (2011) asserts that a professional librarian is a person with a university degree and master's degree holder in Library and Information Science (LIS). Additionally, Abels et.al (2014) noted that professional librarians, also referred to as information professionals, are

persons with university degrees in library or information science, who work to organize, develop, and manage information resources and services in order to meet users need.

5.4 Sampling method

There are several sampling procedures used in present day research investigations. Vos, Strydom, Fouche and Delport (2014:223) established that sampling is the selection of the smallest number of units of the population. The selection must have representative or having certain features of the relationship during generalizations or its representativeness. Aina (2002) argues that sampling relates to the selection of some units from a study's population of interest. Burns (2000:83) asserts that sampling involves using appropriate techniques that could be representative of the entire population. Sampling is imperative, as it allows the researcher to make inferences regarding the population with regards to the sampling method that is to be used in research undertaken. It helps to narrow down the time, money, and effort for the improved concentration of the research. It also helps to determine the capacity for improved quality of research, better instruments, and more in-depth information.

5.4.1 Types of sampling

There are two types of sampling. They are probability and non-probability.

5.4.1.1 Probability: Probability sampling is based on randomization (Vos, Strydom, Fouche and Delport, 2014:228). This has to do with having knowledge of the population that is to be studied (Grinnell and Unrau, 2005:155). In order words, the researcher is certain about the accuracy of the population and sample before the study is carried out. The probability sampling permits the researcher to compute an estimate of accuracy of the sample before the study is carried out. There are five probability-sampling methods. Namely:

5.4.1.1.1 Simple random sampling technique: Marlow (2005:139) asserts that simple random sampling is the easiest of all the sampling methods. In each case, individuals in the population have an equal chance of being selected from the sample. It provides the researcher inclusion of each sample in the population. The researcher ensures that there is equal chance of representativeness by the characteristics identified in the population.

5.4.1.1.2 Systematic sampling: Vos, Strydom, Fouche and Delport (2014:228) viewed systematic sampling as the random selection of only the first case, before moving to other cases. This helps to determine the percentage of sample needed for the research.

5.4.1.1.3 Stratified sampling: Creswell (2003:156-157) argues that stratified sampling is used to ensure that different groups of the population have sufficient representation in the sample. The purpose of using stratified sampling help to determine prior knowledge of the population with relative homogenous strata.

5.4.1.1.4 Cluster sampling: Cluster sampling is seen from the angle of multistage sampling (Monette, et.al 2005:137). It is a method whereby the total population is divided into smaller sub-divisions. The reason for cluster sampling is that, it is used where the population is too large. It has full variability of the population captured.

However, the present study did not use probability-sampling methods to select the respondents, to investigate the use of ICTs for the support of knowledge management (KM) in academic libraries of Nigeria and South Africa.

5.5.1.2 Non-probability sampling

According to Vos, Strydom, Fouche and Delport (2014:231) non-probability sampling has to do with where the researcher does not have knowledge of the population prior to embarking on the study. The opportunity to select any particular population before the research investigation commences is usually very difficult, however it is often preferred. Having knowledge of the population gives the researcher a better understanding of the population that is to be studied (Vos, Strydom, Fouche and Delport, 2014:231; Neuman, 2011). The non-probability sampling was used for the present study, as the researcher was not sure of the actual population or respondents to be studied in the university libraries. It is therefore necessary for the researcher to embark on field research before the population can be known. There are four non-probability sampling technique to include:

5.5.1.2.1 Convenience/accidental sampling: Vos, Strydom, Fouche and Delport (2014:231) note that convenience/accidental sampling is a method of sampling whereby the respondents

who are present and easily available to the researcher, are selected as respondents for the study. In which case, the person who comes across the researcher's path and has something to do with the phenomenon is included in the sample until the desired number is obtained. The reason for the use of convenience/accidental sampling is that the researcher reaches the respondents without much difficulty.

5.5.1.2.2 Quota sampling: Quota sampling is the identification of certain phenomenon to be studied and assigned equal ratio to each of the quota. It implies sets of categories of respondents that are first identified and then decisions are taken regarding which members of the specific category are to be investigated (Babbie, 2007:185). The purpose of this method is to draw sample that is as close as possible to replicate the actual population. It is important to bear in mind the relationship between age and gender, as these categories could be a factor.

5.5.1.2.3 Snowball sampling: Vos, Strydom, Fouche and Delport (2014:233) view snowball sampling as when there is no knowledge of the sampling frame and limited access to appropriate participants of the intended study. The reason for this is that, it helps the researcher approach a single case that involves the phenomenon to be investigated, in order to gain more information. The person/respondent refers the researcher to another similar case and sometime more than one case.

5.5.1.2.4 Purposive sampling: Purposive sampling is when the researcher makes a conscious decision about which individuals to be included in the research investigation (Vos, Strydom, Fouche and Delport, 2014:232). The use of purposive sampling helps the researcher to identify unique cases or a specialized population under investigation.

The present study used the purposive and convenience/accidental sampling method to select the 171 professional librarians. The purposive and convenience/accidental sampling became necessary and achievable, because it really helped the research investigation, especially for specific work operations of the librarians. The established actual respondent in the sampled university libraries across the two countries was because the researcher knew from the on-set that his dealing concerns librarians. The purposive and convenience/accidental sampling became necessary for the study, as it assisted the researcher to reach the available professional

librarians that were present, ready and willing to attend to the researcher's questionnaire in the university libraries sampled.

The researcher selected Nigeria and South Africa for the survey because his area of focus (the librarianship profession) is in this two leading countries in Africa. The two countries are fast growing in terms of education and research development. The study used the non-probability sampling technique to select six universities libraries from the Southern part of Nigeria (University of Ibadan, Federal University of Technology and Delta State University), as well as Kwazulu-Natal province in South Africa (University of KwaZulu-Natal, University of Zululand and Durban University of Technology). The University of Ibadan and University of KwaZulu-Natal libraries were selected based on first generations universities, years of establishment, as well as university ranking (University Web Rankings-Africa, 2014). The Federal University of Technology and Durban University of Technology libraries were selected because they are both technological and practical oriented university libraries, and are practically oriented. While Delta State University and University of Zululand libraries, on the other hand, were both government-owned that are growing institutions, and located in rural settings.

The study also purposively selected six key informants/experts for interview (university librarians and/or head of university libraries). The selected experts and key informants are in the relevant position/capacity to provide information regarding how ICTs are used for the support of knowledge management. The essence of the key informants' information was on the basis of the library work operations of the librarians. This is so because, the nature of the study concerns librarians management of tacit and explicit knowledge through the aid of ICTs. The professional librarians were purposively selected from the different categories of staff working in the university libraries. The questionnaire instrument was administered to the professional librarians who have been professionally trained to handle and manage knowledge within their respective university libraries. The researcher also purposively carried out research observation on the university libraries and the librarians to understand how they access and use the ICTs in knowledge management within the library domain. The sampling frame and sampling size is described and represented in table 5.2 below.

5.6 Sample size

Bless, Higson-Smith and Kagee (2006:107) refer to sample size in research investigation as relative homogeneity that influences the population. It shows that the desired degree of reliability of the investigation is ascertained. Kumar (2011:194) admits that sample sizes are the number of people to be included in research study, which would yield the necessary information. When the researcher visited the sampled university libraries across the two countries, he found out that, of the targeted population of 400 (200 respondents from each country) professional librarians across the two countries, some had retired, others on study leave, while some who have bachelor's and master's degree in library and information science, are yet to be converted to professional librarians (academics). This made the figure of professional librarians reduced to 171 (see Table 5.2). The researcher therefore applied the purposive and convenient/accidental sampling technique to select the 171 professional librarians based on the statistics of the professional that were available in the two countries libraries. The same 171 professional librarians that were purposively and conveniently/accidentally selected from the six sampled libraries were also used as sample size (see Table 5.2). Therefore, the 171 sample size of professional librarians makes the 43% of the entire population. The 43% that makes up the entire population was calculation based on expected from the actual respondents, multiplied by one hundred percent. Neuman (2011:268) asserts that purposive and convenient sampling is very important, as it could help researchers' to locate and identify cases that were difficult to identify.

The purposive and convenient/accidental sampling used in this research became necessary as it helped the researchers' in locating and identifying the professional librarians being specific cases in this regards. It can be noted that the cases under-investigation relates to specific entity of professional librarians. The professional librarians are those involved in the training and practices of rendering information services and other management functions in libraries through the aid of ICTs. Therefore, the sample size arrived at, and chosen for the present study is 171. The sample size was determined based on available professional librarians in the two countries university libraries. For every number of populations, a certain sample size is given to be used or chosen. This led the researcher to adopt purposive and convenient sampling, as it helps to guide the research on the actual number that is chosen on the researchers' intention or mindset from the entire population.

The six key informants who were part of the sample size were university librarians/head of units in the various libraries from the two countries selected for this study. The use of sample size becomes significant as it enables the researcher to have representatives of the characteristics of an entire target population. The sample size for the study was broken down into professional academic librarians. These were the librarians working in different section in the university libraries across the two countries.

5.7 Sampling frame

A sampling frame presents the characteristics of the population from which the researcher collects data for the purposes of the research investigation (Neuman, 2011:246). The essence of the sampling frame in any research undertaking was to help armed or guide the study on the particular element to be included in the sample (Asika, 2002). This is done in order to know and differentiate from the expected and actual element. Besides, it helps to measures the parameters of interests. The measurement becomes necessary as it guides in examining and observing the sample in particular (Asika, 2002). The researcher draws his sampling frame from the various university libraries department/units where the librarians use ICTs for the support and management of knowledge in their libraries. The sample frame guides the researcher even to the extent where the respondents can be targeted in the investigation. A good sampling frame is essential for accurate sampling. The actual sample as represented in Table 5.2 shows the actual figure gotten at the various libraries.

Table 5.2: Actual sample obtained in the various university libraries in both countries

Actual sample size purposively and conveniently chosen across the sample university libraries in Nigeria and South Africa						
UNI Library	**FUTA Lib.**	**DELSU Lib.**	**UNIZULU Lib.**	**UKZN Lib.**	**DUT Lib**	**Total**
40	**27**	**39**	**12**	**38**	**15**	**171**

Source: Staff record register of each institution library (2013).

The Table 5.2 shows the sample of respondents as reported in each of the various university libraries.

Detailed sampling frame demonstrated in the table below.

Table 5.3: Sampling frame in the university libraries in Nigeria and South Africa

University libraries	Section/units	Expected Respondents	Actual Respondents
University of Ibadan Library Ibadan	Cataloguing and classification	7	7
	Systems	5	5
	Social sciences	5	5
	Circulation	4	2
	Serials	4	2
	Digitization	4	3
	Law library	3	1
	Collection development	3	1
	Reference unit	2	2
	Reserve	1	1
	Total	**38**	**29**
Federal University of Technology Library, Akure	Cataloguing and classification	3	3
	Social sciences	4	4
	Circulation	2	2
	Serials	1	1
	Acquisition	2	1
	Reference section	2	1
	Science school library	1	1
	Publication research & development	2	2
	Administration	1	1
	Total	**18**	**16**
Delta State University library Abraka	Cataloguing and classification	8	6
	Systems	5	3
	Circulation	10	8
	Serials	4	3
	Acquisition	4	2
	Collection development	5	5
	Reference section	5	3
	Reserve unit	2	1
	Special collection	1	1
	Total	**44**	**32**
University of Zululand library, Kwadlangezwa	Cataloguing and classification	2	1
	Circulation	2	2
	Acquisition	4	4
	Education resource centre	1	1
	Laboratory unit (Audio)	1	1
	Zulu collections	1	-
	Serial section	1	-
	Total	**12**	**9**
University of KwaZulu-Natal Library	Systems	2	1
	Circulation	11	11
	Collection development	3	2
	Law library	4	4
	Reserve unit	2	1
	Science school library	2	2
	Information services	5	5
	Documentation centre	1	1
	Music branch library	1	1
	Cataloguing and classification	2	
	Total	**33**	**28**
Durban University of Technology Library	Systems	4	2
	Circulation	10	10
	Serials	2	2
	Acquisition	2	1
	Publication research & development	3	1
	Information services	2	2
	Cataloguing and classification	2	-
	Collection development	1	-
	Total	**26**	**18**

The representation in Table 5.3 shows the differences in the estimated and actual respondents obtained from the field in the university libraries that were visited in both countries.

Table 5.4 Sampling frame for interviews in both countries' university libraries

University libraries	Units	Expected Interviewee	Actual Interviewed
University of Ibadan Library Ibadan	Management	1	1
Federal University of Technology Library, Akure	Technical service division	1	1
Delta State University library Abraka	Research service division	1	1
University of Zululand library, Kwadlangezwa	Acquisition	1	1
University of KwaZulu-Natal library	Cataloguing and classification	1	1
Durban University of Technology Library	Circulation	1	1

Table 5.4 indicates that there were no significant differences in the expected interviewer and actual expected. Expected interviewees matched with actual number of respondents that were interviewed.

5.8 Data collection instruments

There are several research instruments that are often used by researchers in carrying out a research investigation. These instruments help to collect primary and secondary data. They include: questionnaires, checklists, observations, attitude scales, focus groups, interviews, and documentary sources in eliciting data and information from respondents. The instruments used for collection of data for the present study are questionnaire, interview, observation, and content analysis of literature that is segmented into three parts.

5.8.1 Questionnaire

The questionnaire had a ratio of 98:2% structured questions and 1.8% unstructured (see appendix A). The interviews and observation were 100% structured (appendix B). These were used to elicit information from academic librarians across the six sampled university libraries (appendix A, B and C). The academic librarians across the six sampled university libraries were targeted. The use of questionnaires, interviews and observations in this study becomes significant for triangulation of the research findings, which entails the improvement of reliability and validity.

The present study used the questionnaire to elicit data from librarians working in the six sampled university libraries, as mentioned in table 5.2. The questionnaires administered

consisted of both unstructured (open-ended), and structured (closed-ended) questions. The open and closed-ended questions comprise of the overall questions. Neuman (2011:49-50) suggests that when there are mixed (open-ended and closed-ended) questions, there is a greater provision for a variety of views and responses. The open-ended questions that were used, elicited unlimited possible answers, which are of value to this research. The detailed questions that were raised in the questionnaires, interviews, and observations are presented in annexure A, B and C.

The sub-themes of the questionnaire that was used are categorized into the following sections: (i) Bio-data of the respondents, (ii) KM practices in academic libraries; (iii) Availability of ICT facilities, KM tools and services for the support of KM; (iv) Utilization of ICTs for the support of KM; (v) ICT strategies for the support KM, (vi) Librarians knowledge and ICTs skills for the support of KM; (vii) Librarians training and support for current knowledge and skills of ICT; (viii) ICTs policies for the support of KM; (ix) Challenges faced in the use of ICTs for the support of KM and (x) ICT/KM Models for the support of KM. This aligned with the research questions presented in chapter one of this study. The questionnaires, which consist of open-ended and closed-ended questions, were administered in person by the researcher and support of a research assistant in both countries university libraries. 171 copies of the questionnaire were distributed across the six university libraries both in Nigeria and South Africa. However, only 132 copies of questionnaire were returned. These were used for the analysis of the study. This gave a response rate of 77.2%.

5.8.2 Interview

Leedy and Ormrod (2009:369) opine that interviewing is the process of interrogation of discourse between an individual about their opinions, feelings, motives, and behaviours regarding certain phenomenon. Additionally, Gray (2009:369) views the interview as the process of establishing conversation with either one person or a group of people about a particular issue in question. The purpose of the interview method (qualitative research approach) of data collection is to enhance the rigorous emphasis of discourse with respondents. The current study targeted and interviewed six key informants (heads of different units in the library or university librarians) across the six surveyed university libraries. The university libraries head of units/university librarians interviewed were: the university librarian at the

University of Ibadan library, Ibadan; head of unit at the technical service division of the Federal University of Technology library, Akure; deputy librarian at the Delta State University library, Abraka; senior librarian-systems at the University of Kwazulu-Natal library, Pietermaritzburg, senior librarian-information services at the University of Zululand library, Kwadlangezwa and senior librarian-circulation at the Durban University of Technology library. During the course of the face-to-face interviews, the researcher gained in-depth insights on various issues that helped the librarians validate their knowledge of the use of ICTs in managing information and knowledge resources in their various university libraries.

5.8.3 Content analysis

Content analysis can be both qualitative and quantitative, and qualitative or quantitative (Cho and Lee, 2014:1). Content analysis is regarded as qualitative when it analyzes qualitative descriptive studies (Cho and Lee, 2014:1). The qualitative aspect of content analysis unveils the feelings, opinions and data that are collected through the interviews, documents and observations (Cho and Lee, 2014:1). The results of the qualitative content analysis are best analysed if the phenomena are well understood. Qualitative content analysis is also a research method (Cho and Lee, 2014:1). However, quantitative content analysis is more dominant, than qualitative content analysis (Cho and Lee, 2014:1; Schreier, 2012). The quantitative content analysis used for this study was, first, laid emphasis to the various literatures sourced for this study. The literature sourced covers every area of the variables of ICTs and KM domain rooted in the objectives of the present study.

Neuman (2011:362) argues that content analysis is considered as a supplement to, but not a substitute for, the subjective examination of documents. This entails the analysis and description of words, pictures, symbols, ideas, themes, or messages in text. The qualitative was done in order to have a broad description of the results needed for the study. Cho and Lee (2014:1) and Schreier (2012) argued that content analysis of both quantitative and qualitative gives broader narrative of the data obtained in research investigation. Both are also used as methods of data collection (Cho and Lee, 2014:1).

Cho and Lee (2014:1) and Hsieh and Shannon (2005:1278) recommend that qualitative content analysis can interpret the subjective content of text data through coding and the identification

of themes. The reason for content analysis is that, it helps the researcher to broaden his or her viewpoint, and descriptive capacity, of words, pictures, symbols, ideas, themes or messages in text. These descriptions and analyses are not revealed in quantitative approaches. This method helps the researcher to reach beyond his or her level of understanding of the phenomena that is being studied.

Quantitative content analysis appears different from qualitative content analysis. Quantitative content concerns with quantitative information from text, figures, and statistics, which help to estimate quantities, usually through scaling (Benoit, 2014). Quantitative content analysis is used to determine the exact occurrence of certain themes or key words in data/results obtained from respondents. It becomes necessary as it helps to cluster or group related terms if they appear on more than one occasion. The reason for the use of content analysis in both quantitative and qualitative is that, it gives a broader narrative of the data obtained. It also gives the researcher a clear understanding of the data in the form of content of themes, key words, and related notions as proposed by respondents during interpretation. The present study used both content analyses of quantitative and qualitative approaches. The qualitative content analysis was obtained from the interviewed respondents, conducted in the two countries' university libraries and facilities observed in the library environment. The quantitative content analysis was majorly on themes and key words of literature sourced. The sourced literature was in the areas of the research objectives used in the various chapters in this study. The knowledge of the materials, resources, services, and staff strength were verified along the results obtained.

5.8.4 Observation

Observation can be both a method (qualitative method), and an instrument, for data collection. It is the process of watching a phenomenon in action with the demonstration or intention to prove something in a particular area or environment (Vos, Strydom, Fouche and Delport, 2014:182). Kumar (2011:140) argues that observation, as part of the qualitative research approach in a research investigation involves the act of selecting known phenomena that needs to be observed, listened to, and recorded. It is regarded as a research approach under the qualitative research method, while it is also regarded as an instrument during the collection of data. There are several types of observation. Among these are the participant and non-participant observation approach. The participant observation approach requires the researcher

to be actively involved in the act. This is done by going out to learn new things; in the cause of experiencing the lives of the people you are studying (Bernard, 2013:310). While the non-participant involves the researcher watching what is happening from a distance without necessarily getting involved. This is done through taking of notes, capturing pictures, and so forth. The two approaches complement one another under the present research investigation.

The essence of observation, as part of qualitative research method, is to have direct observation of people in their natural environment. It also helps to describe the narratives and recordings as used in the actual scene of the phenomena being studied. The present study used the observation method (qualitative) to observe the university libraries' physical structure and location, office space (conduciveness), availability and accessibility of computers and other ICT tools, collections (print and electronic resources), shelving space, size and lighting in the office and attitude of staff to work while with them. Maree (2007:84) argues that researchers should be certain about what they are looking for before employing observation method as means of data collection. This would help articulate the purpose and who to focus on in the observation process. Please see observation schedule in annexure C.

5.9 Pilot study

The pilot study is the study that is carried out before the main study is conducted. This helps to strengthen the instruments that are used in the actual research investigation. Leedy and Ormrod (2011:111) argued that pilot studies save the researcher effort and time. It also helps to distinguish the approaches that would be better, in finding answers to the research problem. Sarantakos (2004:291) and De Vos et. al (2005:206) have encouraged the application of pilot studies before the main study of any research investigation. The pilot study was carried out with the assistance or help of two research assistants. One from Nigeria and the other was from South Africa. This enabled the researcher to plan, prepare, and be ready to use the instruments most effectively for collection of data. The rationale of the pilot study helps to save the time and money through proper testing of the instrument. The testing is done by experts in the field of study or by an external body. This helps to identify problems that could be avoided in the actual study. The current study used Federal University of Petroleum Resources library and Mangosuthu University of Technology library in Nigeria and South Africa respectively as pilot

studies before embarking on the main study. This was done through the researcher visiting the university libraries in order to administer the questionnaire to the academic librarians.

The pre-test was carried out with the same instruments of questionnaire and interview regarding the use of ICTs for the support of KM in the selected academic libraries in Nigeria and South Africa. This was to ensure the reliability of the instrument before administration. Information obtained, and problems encountered, were used to improve in the modification and administration of the questionnaires in the actual survey. The results obtained from the pilot study was later collated, extracted and prepared for publication in a local journal in Nigeria.

5.10 Validity and reliability of instruments

Leedy and Ormrod (2010:91) ascertain that certain measurements provide the basis for which a research investigation is anchored. Leedy and Ormrod (2010) argued that, the researcher must classify how the measurement should follow, based on the instrument used. The instrument is validated either through face or content in order to removes unnecessary materials that are not needed. The description of each instrument is explicitly scored by experts in the field and supervisors of the research study, in order for its reliability and usage. Leedy and Ormrod (2010) noted that the research instrument needed for the collection of data must have evidence of degree of validity and reliability before usage.

5.10.1 Validity

Neuman (2011:208) asserts that validity is about how well ideas are reflective of actual reality. It helps to measure the wellness of social reality through the use of a construct. Gray (2009:155) and Leedy and Ormrod (2010:29) conclude that the extent to which one is able to measure what is intended to be measures, is termed validity. The research instrument was matched with the operational subject area. The research instrument used for this study had face validity of the supervisor and other experts in the field of library and information science. This was done to ensure that the instrument is able to measure what it is expected, when administered to the respondents. Babbie and Mouton (2001:122) and Leedy and Ormrod (2001:31) argued that validity implies a situation where the devices used for measurement (instrument) yields accurate result and the results represent the intended extent of application in the research study. The present study used diverse strategies such as content and construct

validity, verification of the instruments with related ones, proper examination and editing by expert in research in LIS, pre-testing through pilot study and approval by the supervisor. Kimberlin and Winterstein (2008:2278) are of the view that an instrument for data collection can be reliable but not valid. The validity depends on the ability of the instrument to measure the content of the items and the construct (Kimberlin and Winterstein, 2008:2278). The construct tries to measure specific inference among group of respondents.

5.10.2 Reliability

Neuman (2011:208) argues that for a research instrument to be reliable, it needs consistency or dependability. This implies, when something occurs again or repeatedly, it is known as reliable. Leedy and Ormrod (2010:29) observed that when there is consistency with the measuring instrument used thus far yielding certain result without any changes; we can refer to it to be in a reliable state. The present study ensured that the research instruments was validated and proven reliable through a pilot study carried out and refining the instrument. Comments made from the supervisor, and other experts, reflected that the degree to which the research instrument measure the nature of the research problem, methodology used, and the type of data collected was reliable.

According to Kimberlin and Winterstein (2008:2277) reliability involves when the instrument used for the research is able to reduce the possibility of error in the process of measurement. Reliability ensures that the source of measurement is not prone to error (Kimberlin and Winterstein, 2008:2277). If it does, it could be disadvantageous to the scores obtained during interpretation. The rationale of the reliability is that, it brings stability to the measures used in collecting data at different times, standards followed and individual that was involved (Kimberlin and Winterstein, 2008:2277). There is consistency of internal and external scoring of procedures or behaviour observed (Kimberlin and Winterstein, 2008:2277).

5.11 Research procedure

Research procedures are overall plans that involve research design, population of the study, sample and sampling technique, research instrument. This includes the method for data collection and analysis. Onyango (2002) states that collection of data involves measuring research phenomenon, be it process, object or human subject's behaviour. The reason of the

data collection procedure is that the object of measurement differs from one research project to the next. There is dependency on the purpose of the enquiry and the availability of suitable instruments. The current study made enquiries about the appropriate time to administer the questionnaire to the respondents and conduct the interview so as to ensure a high rate of responses. This was done through phone calls and sending of emails before visiting the specified sample university libraries.

The research procedure followed in this study covers the duration from May 2012 till December 2015. This started with proposal consultation with the supervisor at various instances in 2012, where adherences were followed while carrying out the investigation. The researcher, upon completion of the research proposal defended the research work with the department board in July 2012. This was followed with an ethical clearance approval that enabled the researcher to collect data from the research and innovation office of the University of Zululand, Kwadlangezwa. The research proposal was approved by the higher degrees' committee. Thereafter a research project number was assigned to the project. Funding approval was also allocated for the study. Upon completion of the draft for the first five chapters, the researcher embarked on field-work, with the purpose of collecting data. Before data collection and field-work was undertaken, a permission letter to embark on field-work was sent out to the different university libraries in the two countries.

A letter of acceptance was received by the researcher from each of the sampled university libraries in Nigeria and South Africa. The letter of acceptance was an assurance that approval has been given to the researcher to embark on filed work in the collection of data in the chosen organization(s). This was later followed up with a visit to all the university libraries sampled in Nigeria and South Africa, in order to administer the questionnaire to the academic librarians concerned. This was done judiciously, with the help of research assistants from both countries. The key informants (head of units in the libraries/university librarians) were interviewed as well during the course of the visits. Meanwhile, as the academic librarians received the questionnaire, the researcher requested them to attend to the questionnaire, within three weeks, due to their tight work schedules. The questionnaires, interviews and observation methods were used to obtain the records of the librarians and their views towards the research investigation. Some of them did comply, while others did not. The updated staff list to

ascertain the accurate numbers of librarians in their libraries was also requested for by the researcher (see research work plan in appendix J).

5.12 Data presentation and analysis

Data obtained from respondents through questionnaires, interviews and observations were collated, coded, and presented for analysis. The questionnaires were analysed using descriptive and frequently analysis of SPSS (Statistical Package of Social Sciences). The Microsoft Excel charts, interviews and observations were also part of this. Data obtained were coded and clustered into themes and key words before they were presented in tables and analysed. The analysis was done using simple percentage and descriptive statistics for the demographics. The interview respondents and content analysis for the narrations of key informants' opinions/view regarding the subject matter were also collated.

The observation results captured the ICT tools used, as well as other resources found in the offices of the librarians. These were also presented in tables according to how the libraries were observed. The presentation showed different items as seen and discussed in chapter six and seven of this study. Bailey (1994:389) opines that statistics have helped to infer truth or falsehood in inferential descriptive statistics. This does not have any inference but only provides descriptions of a sample data. The interview questions were open-ended which gave the respondents opportunity to express their views and/or opinions. Thus, elaborating on their views gave the researcher more insight into the research.

5.13 Challenges encountered in the course of this study

The major challenge of this study was with regards to the number of librarians, which reduced from the targeted population and sample size (see Table 5.1, 5.2 and 5.3). The reduction was as a result of staff movement, leave, and off-duty time. At the first visit to the various university libraries sampled in the two countries, the numbers of librarians dropped to 171. However, during the course of the administration of the questionnaire, it was difficult to get all professional librarians that were sampled to fill the questionnaire. However, the researcher made several efforts to overcome the impact of reduced staff responses. This was done by repeat visits and by keeping close contact with the respondents.

Challenges were also noticed in some university libraries. The challenges includes inadequate staff training on current trends of the profession, the need for constant support from university management, dwindling budget allocation, lack of drive from colleagues to do research, poor infrastructural development, inadequate space and a shortage of staff. The reduction in staff availability compelled the researcher to give the questionnaire to those he met on the ground during the second site visit. After the administration of the instrument (questionnaire), the researcher was still in constant contact communication, telephonically and via email. The reason for constant telephoning and emails is to remind the librarians and to see when best to make a site visit. The questionnaires and interviews obtained were 132 and 6 respondents in number, respectively.

The second challenge was that during the interview, some staff became un-willing to be interviewed. This constraint pushed the researcher to narrow the interview to one (1) librarian only, from each selected university library. Interestingly, out of the six university libraries sampled, all six made themselves available to be interviewed. Challenges are abound in research investigations, however the researcher's persistence and patience is what determines the results of the study. The researcher established from his experience in this study that it is always advisable to be patient, and seek your respondents' attention with humility. It could the pave way in getting their time and willingness to answer your questionnaire or interview. Besides, even if they are too busy, it is advisable to create a relationship that could foster a future re-scheduling of the appointment.

5.14 Summary

This chapter established some salient issues that are of most importance to the present study. Firstly, the research paradigms of both positivist and interpretive approaches were adopted for this study. The positivism and interpretive approaches can be both quantitative and qualitative respectively. The quantitative section of the study made use of survey research method, while the qualitative section is more interpretive, all based in content analysis. The research instrument for the survey is questionnaire, while interpretive and content analysis interview, content analysis and observation. The content analysis sourced literature that was used for this study. This unveils new arguments which were not available, or commonly used, in other research projects that were carried out in the same domain of ICTs and KM. Secondly, the

triangulations of both the quantitative (survey-questionnaires) and qualitative (interpretive and observations) elicited largely measurable data, that was used to unpack the discussion of the present study's findings. The result in this study has equally not been seen in other research work. Thirdly, the non-probability sampling used for the present study gave the researcher the willingness to investigate the work performance of librarians. Sometimes, it is difficult to provide a description about someone's profession until you are fully involved in the study. This could have been difficult to say before embarking on the study.

The present study sampled 171 respondents in the entire research field-work period. Of the 171 sampled respondents, 132 copies of questionnaires and 6 key informants were interviewed. The data obtained from the questionnaires and key informants' interviews were retrieved and used for the analysis of the study. The purposive and convenient/accidental sampling technique used for this study was basically on emphasis of librarians' work operations. The research context of university libraries selected in both countries (Nigeria and South Africa) was of unique interest because of the comparison that could be made in both university libraries (see 5.2.1.2.4). The researcher assumed that the nature of research carried out depends largely on the respondents and the type of research approaches used. The research instruments of questionnaires, interviews and observations played a significant role on the results that would help establish the findings obtained in this present study. It is therefore established that every portion of this study from the research approach, methods, designs and techniques, population, sampling and sample size, research instruments and analysis (Statistical Package of Social Sciences) contributed meaningfully to the findings of how librarians use ICTs in order to support KM in academic libraries.

The next chapter presents analysis of data gathered from respondents in the field.

CHAPTER SIX

DATA PRESENTATION, ANALYSIS AND INTERPRETATION: QUESTIONNAIRE RESPONSES

6.1 Introduction

This chapter presents the data analysis and interpretation of questionnaire responses from the two countries' university libraries in relation to the study objectives, as has been outlined in chapter one. The interpretation and analysis of data was done in accordance with the following research questions. They are as follows:

1. How are librarians in Nigerian and South African university libraries practising KM?
2. What are the available ICT facilities and KM tools and services for the support of KM in academic libraries in Nigeria and South Africa?
3. What are the available and accessible ICT facilities in support of KM in academic libraries in Nigeria and South Africa?
4. What is the perceived effectiveness of the ICTs for KM available and used in academic libraries in Nigeria and South Africa?
5. To what extent are librarians utilising ICTs to support KM in academic libraries in Nigeria and South Africa?
6. What strategies can promote the use of ICTs to support KM in academic libraries in Nigeria and South Africa?
7. Do academic librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs to support knowledge management?
8. How often are librarians trained and supported in current knowledge and skills acquisition, specifically in the use of ICTs for the support of knowledge management in academic libraries in Nigeria and South Africa?
9. What policies guide the use of ICTs to support KM in academic libraries in Nigeria and South Africa?
10. What are the challenges faced in the use of ICTs to support KM in academic libraries in Nigeria and South Africa?
11. What is the recommended conceptual model for the use of ICTs to support of KM?

6.2 Analysis and interpretation of demographic data

This section deals with the analysis of demographic data, and specifically gender, in order to indicate how many male and female respondents participated in the research. Age is taken into consideration, in order to show the different age groups of the respondents participating in the study. University libraries and units/departments in the libraries, which indicate the work environment of the respondents, and the extent to which ICTs and KM tools were used; as well as qualifications, position/rank of the librarians. The work experience variable was used to determine how librarians have been using ICT and KM tools to effect changes in their work performance. Of the 171 copies of questionnaires distributed to respondents, 132 copies (77.2%) were retrieved.

6.2.1 Personal data of the respondents

A summary of the responses is presented in Table 6.1.

Table 6.1 Distribution of demographic data from sampled libraries N=132

Variables	Demographic data across university libraries in Nigeria and South Africa													
	UNI LIB		FUTA LIB		DELSU LIB		UNIZULU LIB		UKZN LIB		DUT LIB		Total	%
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Gender														
Male	17	26.2	10	15.4	14	21.5	2	3.1	13	20.0	9	13.8	65	49.2
Female	12	17.9	6	9.0	18	26.9	7	10.4	15	22.4	9	13.4	67	50.8
Total	29	44.1	16	24.4	32	58.4	9	13.5	28	42.4	18	37.2	132	100
Age														
20-29yrs	2	6.9	0	0.0	2	6.3	1	11.1	1	3.6	1	5.6	7	5.3
30-39yrs	14	48.3	3	18.8	12	37.5	1	11.1	8	28.6	8	44.4	46	34.8
40-49yrs	11	37.9	9	56.3	12	37.5	3	33.3	13	46.4	6	33.3	54	40.9
50-59yrs	2	6.9	3	18.8	6	18.8	4	44.4	5	17.9	2	11.1	22	16.7
60yrs & above	0	0.0	1	6.3	0	0.0	0	0.0	1	3.6	1	5.6	3	2.3
Total	29	100	16	100	32	100	9	100	28	100	18	100	132	100
Qualifications														
Bachelor's degree	8	18.2	6	13.6	13	29.5	5	11.4	7	15.9	5	11.4	44	33.3
Honours degree	0	0.0	0	0.0	0	0.0	2	13.3	9	60.0	4	26.7	15	11.4
Master's degree	18	28.1	9	14.1	15	23.4	2	3.1	11	17.2	9	14.1	64	48.5
PhD degree	3	33.3	1	11.1	4	44.4	0	0.0	1	11.1	0	0.0	9	6.8
Total	29	79.6	16	38.8	32	97.3	9	27.8	28	104	18	52.2	132	100
Position/rank														
University Librarian	0	0.0	1	100	0	0.0	0	0.0	0	0.0	0	0.0	1	100
Dep. Uni. Librarian	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100
Principal Librarian	3	33.3	2	22.2	1	11.1	0	0.0	3	33.3	0	0.0	9	100
Senior Librarian	7	17.5	0	0.0	2	5.0	2	5.0	18	45.0	11	27.5	40	100
Librarian I	2	22.2	3	33.3	3	33.3	0	0.0	0	0.0	1	11.1	9	100
Librarian II	5	26.3	3	15.8	7	36.8	2	10.5	1	5.3	1	5.3	19	100
Assistant Librarian	1	9.1	0	0.0	7	63.6	1	9.1	2	18.2	0	0.0	11	100
Chief Library Officer	0	0.0	1	33.3	1	33.3	0	0.0	0	0.0	1	33.3	3	100
Senior Library Officer	1	16.7	2	33.3	1	16.7	2	33.3	0	0.0	0	0.0	6	100
Higher Library Officer	7	46.7	1	6.7	2	13.3	1	6.7	2	13.3	2	13.3	15	100
Chief Library Assist.	2	18.2	2	18.2	3	27.3	0	0.0	2	18.2	2	18.2	11	100
Principal Libr.Officer	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Principal Libr.Assist.	0	0.0	0	0.0	0	0.0	1	100	0	0.0	0	0.0	1	100
Total	29		16		32		9		28		18		132	100
Work experience														
1-5yrs	11	35.5	1	3.2	4	12.9	4	12.9	5	16.1	6	19.4	31	100
6-10yrs	4	10.8	6	16.2	11	29.7	0	0.0	9	24.3	7	18.9	37	100
11-15yrs	10	45.5	4	18.2	2	9.1	0	0.0	3	13.6	3	13.6	22	100
16-20yrs	2	9.5	2	9.5	9	42.9	1	4.8	6	28.6	1	4.8	21	100
21-25yrs	2	18.2	2	18.2	4	36.4	1	9.1	2	18.2	0	0.0	11	100
26yrs and above	0	0.0	1	10.0	2	20.0	3	30.0	3	30.0	1	10.0	10	100
Total	29		16		32		9		28		18		132	100

In order to distinguish between the different university libraries, their names were presented using the following acronyms. See below.

UI = University of Ibadan library, Ibadan, Nigeria

FUTA = Federal University of Technology library, Akure, Nigeria

DELSU = Delta State University library, Abraka, Nigeria

UNIZULU = University of Zululand library, South Africa

UKZN = University of KwaZulu-Natal library, South Africa

DUT = Durban University of Technology, Durban, South Africa

Other acronyms and symbols used in this study include:

NG = Nigeria

SA = South Africa

F = Frequency,

% = Percentage

Results in Table 6.1 indicate that slightly more females (67; 50.8%) than males (65; 49.2%) participated in the overall research investigation. When comparing the two countries' university libraries, more males (17; 26.2%) and females (18; 26.9%) respondents participated in Nigerian university libraries. This as compared with male (13; 20.0%) and female (15; 22.4%) numbers of participants in South African university libraries showed some differences. With reference to the age of the respondents, the 30-39 yrs age group was well represented by (14; 48.3%) respondents from UI. While (12; 37.5%) respondents came from DELSU in Nigeria. In South African university libraries, UKZN has (8; 28.6%, while DUT (8; 44.4%). The most represented age group of respondents was 40 – 49yrs (11; 37.9%) in UI; (37.9%) and (12; 37.5%) from DELSU in Nigeria. While (13; 46.4%) from KZN and (6; 33.3%) from DUT in South Africa. The ages of 50-59 yrs (6; 18.2%) from DELSU in Nigeria, and (5; 17.9%) from KZN in South Africa were very close. It was revealed that younger generations were few in all the universities libraries sampled.

Regarding respondents' qualifications, across the sampled universities libraries from both countries, it was revealed that majority of those with bachelors' degree are (13; 29.5%, Nigeria), (7; 15.9%, South Africa). For masters degrees, (18; 28.1%, Nigeria), (11; 17.2%, South Africa); Honours degrees (9; 60.0%, South Africa) respondents, while PhD degrees included (4; 44.4%, Nigeria) and (1; 11.1%, South Africa) respondents. Notably, respondents

in Nigerian university libraries showed to have more PhD holders than respondents in South African university libraries respondents. Clarifying the validation on the results above, the qualification attained; whether a bachelor degree, masters, and/or PhDs; is a requirement to work within the university library or any library. However, a diploma or higher diploma in librarianship is also accepted. This is dependent on the position occupied by the individual. So as librarians grow in their profession, they are promoted within the grounds of certain criterion, from one position to another higher position. This brought about the following rank/positions occupied by librarians both in Nigerian and South African university libraries.

The positions occupied in the two countries' university libraries by librarians were simplified to have a better understanding of them. The position of librarian in Nigerian university libraries ranges downward. The position ranges from the university librarians to deputy, principal, senior, librarian I, II, assistant librarian and graduate assistant. While in South Africa, it ranges from chief library assistant, principal library assistant, principal library officer, higher library officer, senior library officer, senior librarian, deputy, and university librarian. It can be noticed in table 6.1 that, there are few principal librarians (3; 33.3%); librarians I (2; 22.2%); and chief library officers (2; 18.2%). While senior librarians (7; 17.5%) and (18; 45.0%) and higher library officers (7; 46.7%) from both countries universities libraries with higher incidence.

The job title, earlier stipulated above, determines the qualifications and responsibilities assigned to the librarian who qualifies for such a position. Though, this varies in context, content, and type of libraries such librarians is positioned. It was established that there were more senior librarians (18; 45.0%), represented in South African university libraries compared to Nigerian university libraries (7; 17.5%). See table 6.1. However, the majority of senior librarians do not have PhD qualifications. Nigerian universities have now made it mandatory that PhD degree, and specific numbers of research publications published, be a requirement before librarians can attained the position of senior librarian.

This assertion reflects in the work of Salaam and Onifade (2009:2) and Ochai (1998) who both studied the reports circulated by National Universities Commission, Nigeria (NUC) in 1993. The directive was that, all federal universities to accord academic status to librarians in appointment and promotion. This basis now requires librarians to publish as a requirement for

their promotion, since they can then be classified as academics. However, the case of PhD qualification was not part of the requirements for the promotion of librarians, before this time. Presently, university libraries in Nigeria now require professional librarians to possess a PhD, before they can be promoted or even be offered appointment to senior managerial positions (Salaam and Onifade, 2009:5). The reason behind the required attainment of a PhD by academic librarians, according to Salaam and Onifade (2009:5), was based on the reasons that follow. Namely: (i) The issue of having two types of academic staff. This implies all academic staff should be treated equally and this makes it compulsory for librarians to possess a doctorate. (ii) Acquiring a PhD will enhance and improve service delivery and research skills of academic librarians. In contrast, South African universities do not require a PhD and publications of academic papers, as a criterion for senior librarianship promotion and/or higher positions (Ocholla, Ocholla and Onyancha, 2013).

Table 6.1 revealed that the work experience accumulated over the years by most of the respondents in the university libraries varied with regard to individual librarians. This depends on the institution, with average differences of five (5) years (see table 6.1). The researcher noticed in the finding that only a few librarians had worked for 26 years or more.

6.2.2 Distribution of departments across university libraries

This section considered how the departments were distributed across the university libraries in the two countries. Respondents had to name their departments in the various university libraries. A summary of the responses is presented in Table 6.2 below.

Table 6.2 Distribution of departments across sampled university libraries N=132

Departments	Demographic data across university libraries (Nigeria and South Africa)												
	UI LIB		FUTA LIB		DELSU LIB		UNIZULU LIB		UKZN LIB		DUT LIB		Total
	F	%	F	%	F	%	F	%	F	%	F	%	F
Units/departments in the library													
Cataloguing & classification	7	24.1	3	18.8	6	18.8	1	11.1	0	0.0	0	0.0	17
Systems	5	17.2	0	0.0	3	9.4	0	0.0	1	3.6	2	11.1	11
Social sciences	5	17.2	4	25.0	0	0.0	0	0.0	0	0.0	0	0.0	9
Circulation	2	6.9	2	12.5	8	25.0	2	22.2	11	39.3	10	55.6	35
Serials	2	6.9	1	6.3	3	9.4	0	0.0	0	0.0	2	11.1	8
Digitization	3	10.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3
Acquisition	0	0.0	1	6.3	2	6.3	4	44.4	0	0.0	1	5.6	8
Collection development	1	3.4	0	0.0	5	15.6	0	0.0	2	7.1	0	0.0	8
Law library	1	3.4	0	0.0	0	0.0	0	0.0	4	14.3	0	0.0	5
Reference section	2	6.9	1	6.3	3	9.4	0	0.0	0	0.0	0	0.0	6
Reserve units	1	3.4	0	0.0	1	3.1	0	0.0	1	3.6	0	0.0	3
Science school library	0	0.0	1	6.3	0	0.0	0	0.0	2	7.1	0	0.0	3
Publication research & development	0	0.0	2	12.5	0	0.0	0	0.0	0	0.0	1	5.6	3
Administration	0	0.0	1	6.3	0	0.0	0	0.0	0	0.0	0	0.0	1
Special collection	0	0.0	0	0.0	1	3.1	0	0.0	0	0.0	0	0.0	1
Education resource centre	0	0.0	0	0.0	0	0.0	1	11.1	0	0.0	0	0.0	1
Internet laboratory unit	0	0.0	0	0.0	0	0.0	1	11.1	0	0.0	0	0.0	1
Information services	0	0.0	0	0.0	0	0.0	0	0.0	5	17.9	2	11.1	7
Documentation centre	0	0.0	0	0.0	0	0.0	0	0.0	1	3.6	0	0.0	1
Music branch library	0	0.0	0	0.0	0	0.0	0	0.0	1	3.6	0	0.0	1
Total	29	100	16	100	32	100	9	100	28	100	18	100	132

Results in Table 6.2 indicate that most of the librarians sampled work in the department/units of cataloguing and classification (7; 24.1%), (3; 18.8%), (6; 18.8%); systems (5; 17.2%), (3; 9.4%), (2; 11.1%); very few works in serial (2; 6.9%), (2; 15.5) and collection development (1; 3.4%), (5; 15.6%). It was observed that more than 90% of the different/units in the university library departments constitute the entirety of the university library organization in both countries.

6.2.3 Distribution of university libraries by participants

The librarians that participated in the study were selected from different university libraries in Nigeria and South Africa. The universities were selected based on several reasons: first they were selected on the basis of whether they are well established, having all the necessary resources to function better, as well as university rankings in Africa. The selection was also centered to make comparison on technology universities in both countries, in order to see how the two operate. The other universities were basically those in rural areas; government-owned and with growing capacity. These were in the Southern, Nigeria and Kwazulu-Natal province in South Africa. In the context of well-established libraries, and university rankings, the

University of Ibadan library in the Southern region of Nigeria was selected in comparison with South Africa's University of KwaZulu-Natal library. The Federal University of Technology library in Akure, Nigeria, was selected in comparison with Durban's University of Technology library in South Africa as they both have similar technological infrastructure. Delta State University library, Nigeria, was selected in comparison with South Africa's University of Zululand; as they are both situated in rural areas, government-owned, and have a growing institutional library. The distribution of the respondents that participated is presented in Figure 3 below.

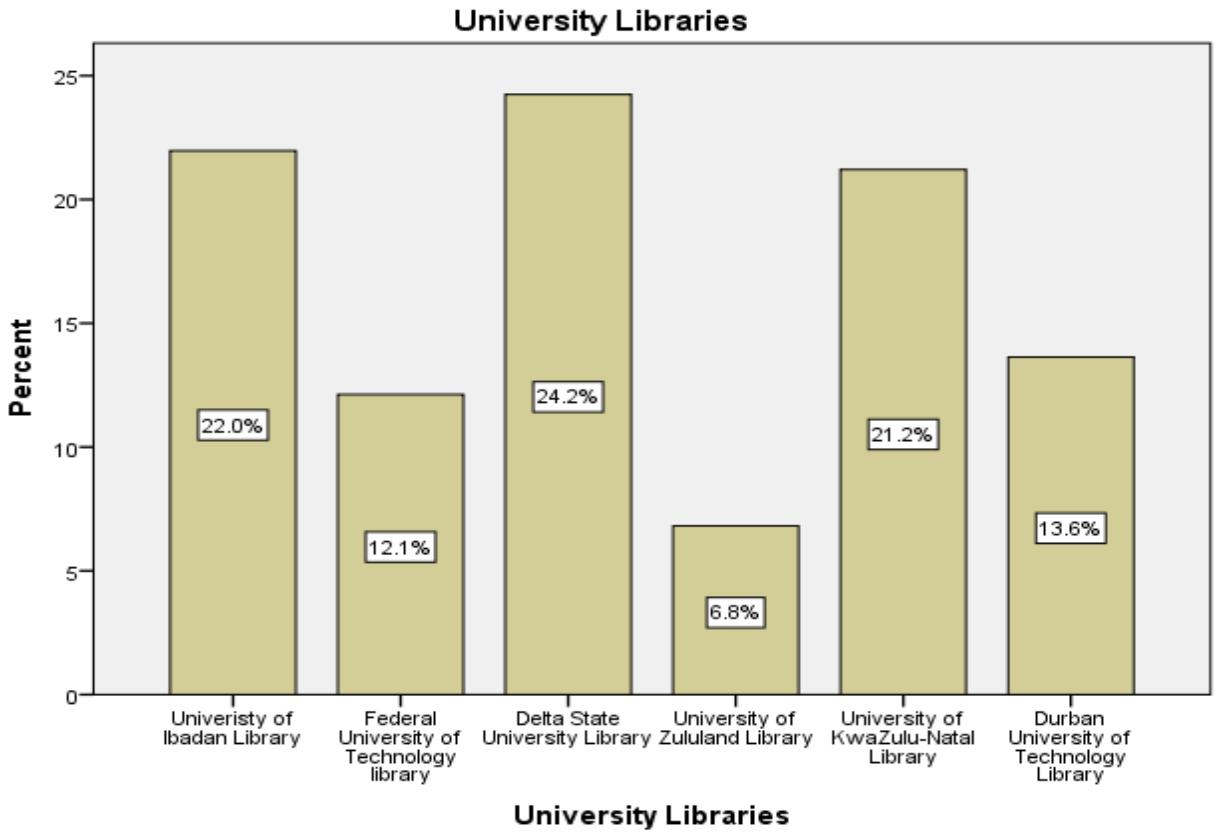


Figure 3: University libraries sampled

The results in figure 3 above shows that Delta State University library sourced the largest number of respondents (24.2%), followed by the University of Ibadan library (22.0%) and the University of Kwa-Zulu Natal library (21.2%) The University of Zululand library had the lowest response rate (6.8%). It is likely that some academic librarians were on leave, hence the low turnout from some university libraries. When comparing the university libraries in Nigeria

and South Africa in terms of response rate, a difference of 16.7% was noticed in respondents' participation. The difference was done by subtracting Nigerian university libraries' respondents from that of South African university libraries' respondents (58.3 - 41.6 = 16.7%).

6.3 The Use of ICTs for the support of KM

The data analysed in this segment was prepared using SPSS. The reporting was done using SPSS, MS Word, and Excel. Every set of variables analysed was interrogated at the following levels:

- Inter-variable level
- Inter-library level and
- Inter-country level.

For every analysis, a report was given at in table presentation and graphical presentation. The tables in the analysis were supported with sufficient trends and comparisons. This is achieved in graphical presentation of the tables. Further analyses have been conducted to establish the strength of variation within and between variables and entities in the university libraries sampled.

6.3.1 Knowledge of KM

This segment sought to explain the question asked in the questionnaire on how respondents attained their knowledge about KM through different sources. This was done to address the first research question of: 'How did you learn about KM using the following sources in your university libraries?' The responses collated below show variance as to how librarians learnt about KM. NR=represents no response, while F = frequency in Table 6.3 below.

Table: 6.3 How did you learn about KM using the following sources

Items	University libraries in Nigeria and South Africa								
How did you learn about KM?	**Response**	**UI**	**FUTA**	**DELSU**	**Nig.(Average %)**	**UNIZULU**	**UKZN**	**DUT**	**SA (Average) %**
Colleagues	**F**	7	3	6	5.33	3	11	2	5.3
	%	24.1	18.8	18.8	20.57	33.3	39.3	11.1	27.9
	NR	22	13	26	20.33	6	17	16	13
	%	75.9	81.3	81.3	79.5	66.7	60.7	88.9	72.1
Old users/friends of the library	**F**	1	0	2	1	2	2	0	1.7
	%	3.4	0.0	6.3	4.85	22.2	7.1	0.0	14.7
	NR	28	16	30	24.7	7	26	18	17
	%	96.6	100	93.8	96.8	77.8	92.9	100	90.2
While in school's library for training	**F**	19	9	21	16.3	2	14	10	8.7
	%	65.5	56.3	65.6	62.5	22.2	50.0	55.6	42.6
	NR	10	7	11	9.3	7	14	8	9.7
	%	34.5	43.8	34.4	37.6	77.8	50.0	44.4	57.4
Read about it in librarianship book and the internet	**F**	13	4	9	8.7	6	11	2	6.3
	%	44.8	25.0	28.1	32.6	66.7	39.3	11.2	39.1
	NR	16	14	23	17.7	3	17	16	12
	%	55.2	75.0	71.9	67.4	33.3	60.7	88.9	60.9
Via teachers/lecturers	**F**	12	0	14	13	4	9	5	6
	%	41.4	0.0	43.8	42.6	44.4	32.1	27.8	34.8
	NR	17	16	18	17	5	19	13	12.3
	%	58.6	100	56.3	71.6	55.6	67.9	72.2	65.2
While attending conferences, seminars, and workshops	**F**	9	5	13	9	3	13	6	7.3
	%	31.0	31.3	40.6	34.3	33.3	46.4	33.3	37.7
	NR	20	11	19	16.7	6	15	12	11
	%	69.0	68.8	59.4	65.7	66.7	53.6	66.7	62.3
Average %		41.4	75.0	50.0	51.3	50	50	54.6	50.4
Sample sizes		$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	NSA_{55}

❖ **NOTE:** Table values are percentages of the sample for each university or country.

❖ The table represents multiple responses.

The results in Table 6.3 showed a high response rate. The high response was as a result of multiple choices being asked. This means the respondents ticked the options they were most familiar with and decided to leave the rest. It can also be noticed that some of the respondents were not too sure of the answers to the question raised. However, it was revealed that the majority of respondents attained their knowledge of KM through the library school for training (19; 65.5%), (21; 65.6%), (14; 50.0%); read about it in the Internet (13; 44.8%), (9; 28.1%), (11; 39.3%) and learnt about it from their teachers/lecturers (12; 41.4%), (14; 43.8%), (9; 32.1%) in the two countries' university libraries. It can be noticed that the average percentage in both countries university libraries is above 50%. It is assumed that a good educational background exposes an individual to diverse types and sources of knowledge in the work environment. However, a relatively high non-response rate among the various sampled university libraries was noticed. Librarians should strive to continuously update themselves

with current knowledge and the ICT skills required to train and work within any library environment.

6.3.2 Practice of KM by librarians in Nigerian and South African university libraries

This section addressed the question that investigates the ways through which KM is practiced in the sampled university libraries. The objective of the question was to explain how KM practices take place within the library environment. This question addressed the first research question: 'How is KM being practiced by librarians in Nigerian and South African university libraries?' The respondents from Nigeria and South Africa were asked to indicate how knowledge management practices (KMP) evolve in their academic libraries. Results are presented in table 6.4 below. The responses of respondents are all represented in percentage across all the tables in the study.

Table 6.4: Ways through which KM is practiced in academic libraries

KM Practices	UI	FUT	DSU	Nig(Average %)	UZ	UKZN	DUT	SA(Average %)
Group discussion/Meetings	100	93	96	96.3	100	94	96	96.7
Apprenticeship and mentoring	98	97	98	97.7	86	92	100	92.7
In-house training	86	100	87	91	94	86	93	91
Routine documentation	88	95	93	92	83	95	94	90.7
Communication network within library	91	97	81	89.7	85	88	97	90
Socialisation	100	97	89	95.3	100	95	97	97.3
Seminar, conferences, and workshops	88	88	87	87.7	87	75	83	81.7
Storytelling	93	98	95	95.3	90	95	89	91.3
Communities of practice	100	98	97	98.3	100	100	95	98.3
Average %	93.8	95.9	91.7	93.8	91.7	91.1	93.8	92.2
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	NSA_{55}

❖ **NOTE:** Table values are percentages of the sample for each university or country.

Results in Table 6.4 indicate that KMPs is carried out in different forms in university libraries. They range from group discussions to communities of practices. The most used patterns of KMPs are group discussion/meeting, apprenticeship, in-house training, socialisation and communities of practice is (100%), while the least used KMPs are seminars, conferences, and workshops. Observably, KMP in academic libraries has improved librarians' routine,

procedures, policies, application, knowledge and skills used in managing information and human resources in the organisation. One issue to reflect on is how KMP has helped corporate organizations such as banks, oil companies, academic institutions, libraries, and research institutes, the politics and legal practice to flourish in present day knowledge economy (Jain, 2007).

6.4 Availability and accessibility of ICTs and KM tools and services for the support of KM

This section investigates the different ICTs and KM tools and services used for the support of KM in the sampled university libraries in both countries. ICTs and KM tools are distinct in nature, though complement one another. ICTs are diverse sets of tools used to accomplish goals and objectives of any organization or individual. KM tools are software in nature. They are knowledge based-engineering tools used to manage knowledge in different web portals (Kwiecien and Rao, 2005:180-183). They are online analytical processing tools used to manage knowledge (Frost, 2014). While services are the assistances rendered to information seekers. Services take different forms (Muhammad, Ibrahim, Bhatti and Waqas, 2014:29).

This question addressed research question two that was presented at the beginning of this chapter: 'What are the available ICT facilities and KM tools and services for the support of KM in academic libraries in Nigeria and South Africa?' Respondents were first asked to indicate the ICT facilities and KM tools and services that are available in their university libraries. Thereafter, respondents were later asked to indicate whether the available ICT facilities and KM tools and services were accessible and effective. This question was separated into a= ICT tools; b= KM tools and c= KM services. This was done in order to clarify and interpret this question with better understanding. This question was well represented in the research instruments (see appendix A).

6.4.1 Availability of ICT tools for the support of KM in academic libraries

Respondents were asked to indicate whether different ICT tools were A = available or NA = not available in the various university libraries that were visited in Nigeria and South Africa. Respondents' views, with respect to this question, are presented in Tables 6.5, 6.6 and 6.7 below.

Table 6.5: Availability of ICT tools for the support of KM

ICT Tools	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Computer	97	100	97	98	100	100	100	100
CD-ROM	97	100	75	90.7	78	93	94	88.3
Multi-media	97	94	56	82.3	100	93	100	97.7
Projector	93	100	53	92.3	100	82	100	94
Scanner	97	100	84	93.7	89	96	100	95
Modem	83	88	75	82	89	61	61	70.3
Telephones	93	75	75	81	100	96	94	96.7
Printer	97	100	91	96	100	96	89	95
Monitor	97	100	94	97	100	89	100	96.3
Smart board	72	63	38	57.7	56	39	44	46.3
Average %	92.3	92	73.8	87.1	91.2	84.5	88.2	87.9
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	NSA_{55}

❖ **NOTE:** Table values are percentages of the sample for each university or country.

Results in Table 6.5 indicate that different ICT tools were available in the university libraries sampled. The availability of the ICT tools varies in job description from one university library to another. However, computers, CD-ROMs, scanners, projectors, telephones, printers, and monitors appeared to be the most available tools across the university libraries in the two countries. Smart boards appeared to be the least available tool to librarians in the support of KM. When compared the two countries, the well-resourced libraries are FUT and UZ. UI and UKZN are equal to one another in availability of resources of tools. ICT facilities are the engine behind the operations in diverse contexts in library and information services today. The ICT tools in academic libraries today have, and will continue, to change due to constant development and growth in knowledge so as to improve ways of managing the material resources and services.

6.4.2 Availability of KM tools for the support of KM

Kwiecien and Rao (2005) and Dalkir (2011) were of the view that knowledge management tools (KMTs) are software used to facilitate, process, storage and retrieval different types of knowledge. The knowledge referred to could be in the form of tacit or explicit. It became essential or necessary that without these tools, librarians and information specialist can no longer advance in competition with other information provider in formation service delivery. The tools which serves as components, store millions of information and knowledge in

databases, web portals, and institutional repositories in university libraries (Kwiecien and Rao 2005; Dalkir, 2011).

In this segment, the respondents were asked to indicate the KM tools that are available in their university libraries. Each KM tool is represented with % across the six libraries. The respondents' results are presented in table 6.6 has a graphic representation of the tools availability and inter-country comparisons of the university libraries.

Table: 6.6 Availability of KM tools in the sampled university libraries

KM Tools	**UI**	**FUT**	**DSU**	**Nig (Average %)**	**UZ**	**UKZN**	**DUT**	**SA(Average %)**
Decision support systems	66	25	31	40.7	33	32	56	83.7
Word processor	90	94	88	90.7	89	100	100	96.3
Search engine	90	88	81	86.3	89	100	94	94.3
Semantic web	59	56	38	51	78	61	78	72.3
Artificial intelligence tools	48	31	22	33.7	33	32	67	44
Simulation tools	55	19	16	30	33	29	50	37.3
Data mining	69	13	22	34.7	44	43	61	49.3
Information retrieval tools	83	88	63	78	78	96	94	89.3
EDMS	72	81	47	66.7	89	68	72	76.3
Database management systems	79	88	47	71.3	89	86	78	84.3
Data warehouse	69	50	34	51	78	57	56	63.7
Content management systems	62	44	31	45.7	67	57	67	63.7
Management Information Systems	79	81	50	70	89	75	78	80.7
Web portals	83	88	53	74.7	56	86	89	77
Site maps	69	56	31	52	67	64	83	71.3
Barcode reader	69	31	59	53	89	82	89	86.7
Indexing and abstracting	79	75	69	74.3	67	86	89	80.7
Average %	71.8	59.3	46	59.0	68.7	67.9	76.5	73.6
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.6 revealed that, according to the majority of respondents, word processors and search engines (90%; 94%; 88%; 81%; 89%; 100%), and information retrieval tools were available. It was also noticed that database management systems (88%), web portals (83%), database management systems, electronic document management system (EDMS), management information systems and Barcode reader (89%), were the available KM tools across the sampled university libraries. It is possible that the various KM tools in different

university libraries are influenced by the varied natures of the library work, as well as the availability of funds to acquire them. Technological growth and development has also made some of these KM tools unavailable, as new technologies have overtaken old ones in facilitating the knowledge management in present day universities of the present day.

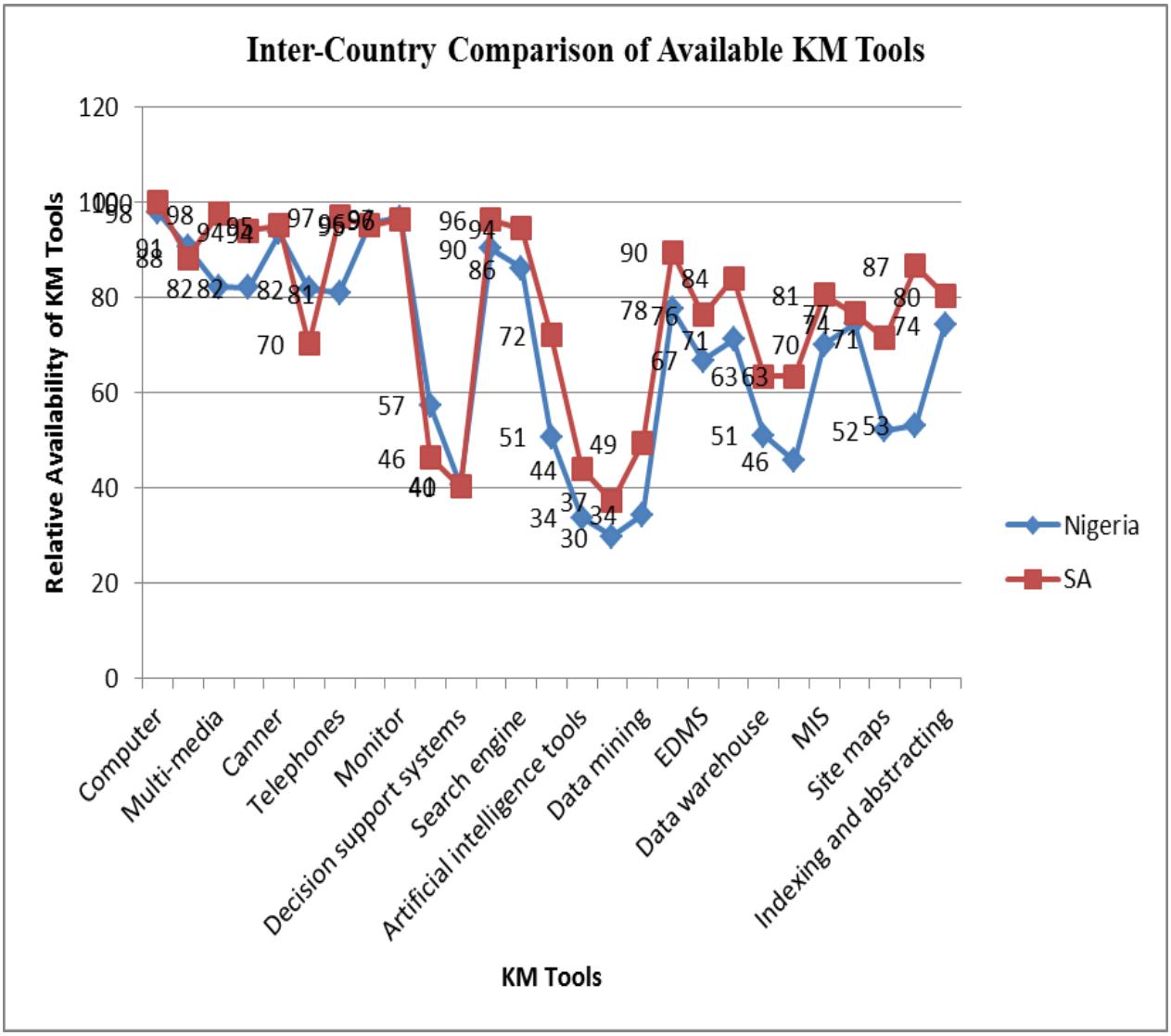


Figure 4: Graph of inter-country comparison of availability of KM resources

From figure 4, when compared the two countries, SA appears to have more of the facilities and resources in general. This may have negative effects on the KM services provided in Nigeria since there is a positive correlation between some tools and services. For example the correlation co-efficient is significant between file-sharing as a service on the one hand, and smart board and decision-support systems as tools on the other hand.

6.4.3 Availability of tools for KM services

In this segment, respondents were asked to indicate the tools for KM services that were A = available or NA = not available in their university libraries. The respondents' views are presented in table 6.7 below. The respondents' results presented in table 6.7 has graphic representation of the tools availability; inter-country comparison of the university libraries results. Knowledge management services according to Adomi, Ugu and Ejitagha (2015:111) are the operations, activities and programmes of library and information centres. They are organized with the purpose of ensuring smooth running of information services to users and other management functions. The rationale of knowledge management services is to foster and improve on the information needs of users, which are met through available information and human resources (Adomi, Ugu and Ejitagha, 2015:111). The knowledge management services offered in libraries depends on the type of library offering such service; the available information resources like tools, facilities and technologies; the size of the library and users; specialization in knowledge and skills of the librarian; and the service policies which guide the library (Adomi, Ugu and Ejitagha, 2015:111). Adomi, Ugu and Ejitagha (2015:111) further notes that, several knowledge management services do exist, and they serve general and specific purposes in the library environment. The services range from specialized to general services in library and information science disciplines. These include user education and literacy, internet services, evaluation of reference services amongst others. See Table 6.7 for some the services rendered.

Table: 6.7 Tools for KM services in the support of KM

KM Services	UI	FUT	DSU	Nig(Average %)	UZ	UKZN	DUT	SA(Average %)
Intranet	90	63	75	76	100	93	72	88.3
WWW-Internet	90	88	81	86.3	89	100	100	96.3
E-mail	90	94	88	90.7	100	100	100	100
Extranet	62	63	56	60.3	89	75	72	78.7
Video/audio conferencing	62	44	34	46.7	56	86	83	75
Text summarizing	52	25	38	38.3	56	50	67	57.7
Online/social media	90	75	63	76	89	96	94	93
Online public access catalogue	97	88	56	80.3	100	93	100	97.7
Text messages	83	88	66	79	100	75	83	86
Web publishing	76	50	47	57.7	89	71	83	81
File-sharing	72	38	34	48	67	68	72	69
Average %	78.5	65.1	58	60.7	85	82.5	84.2	83.9
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{Nig\ 55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.7 indicate that the intranet, www-internet, email (90%; 94%; 100%; 93%), were most frequently available ICT tools for KM services that has supported KM in the sampled university libraries. Notably, fewer services featured with video/audio conferencing (34%) and text summarizing (25%). Users' diverse information needs can be satisfied with the help of these services. University libraries and librarians have also collaborated in research using a number of these services, thus increased their knowledge and skills in the work environment.

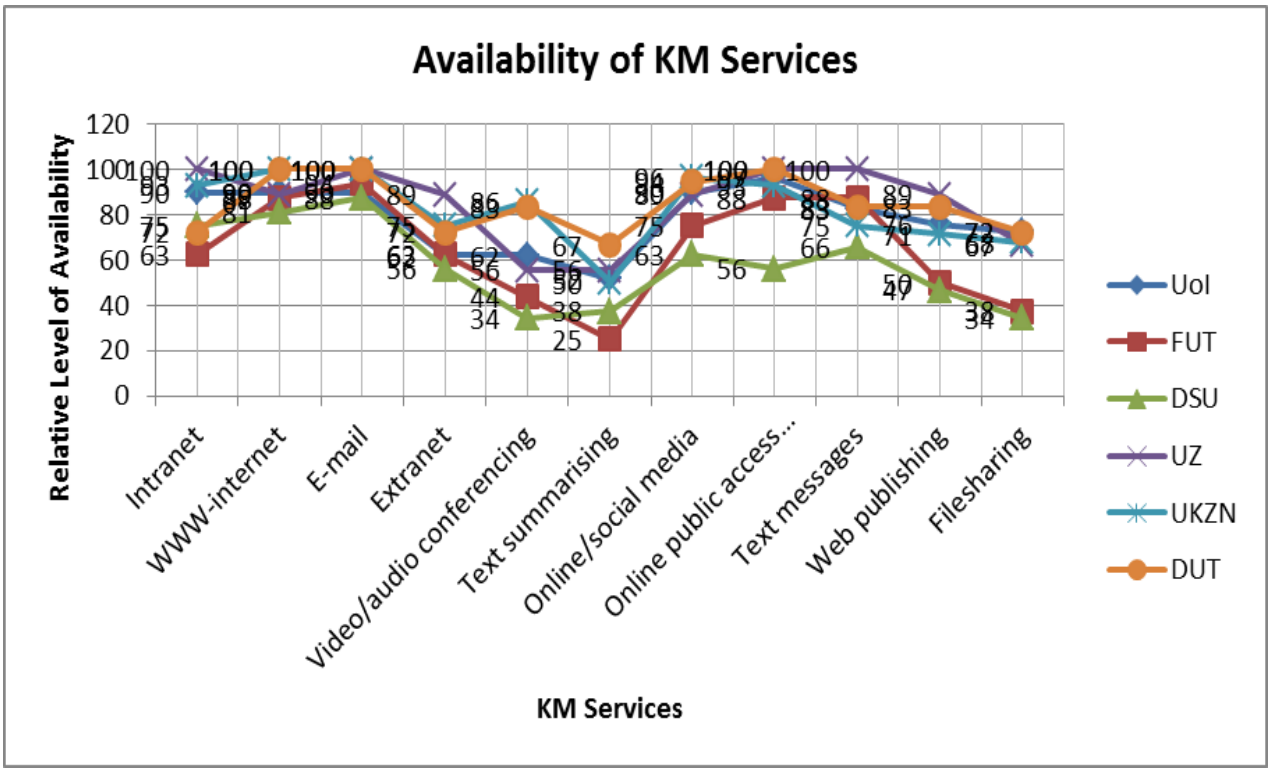


Figure 5: Graph of availability of tools for KM services

Results in figure 5 showed where the various KM services intersect based on the results of percentage presented in Table 6.7. It can be noticed that all university libraries provide the identified services. Internet, e-mail, and online catalogue services are widely available in all university libraries. Video conferencing and text summarizing are the least available services. FUT and DSU are the lowest level of services providers while UZ (mean of 85) dominates in service provision followed by DUT (mean of 84).

Table 6.8: Inter-country comparison of availability of tools for KM services

KM Services	Nigeria **(%)**	SA **(%)**
Intranet	76	88
WWW-internet	86	96
Extranet	86	96
E-mail	90	100
Video/audio conferencing	47	75
Text summarizing	38	57
Online/social media	76	93
Online public access catalogue	80	98
Text messages	79	86
Web publishing	58	81
File-sharing	48	69
NOTE: Table values are percentages of the sample for each university or country		

Results in Table 6.8 revealed that the service provision for KM has high percentage in SA with e-mail and online public catalogue being the best services provided. The least service remains text summarizing. The revelation confirms the correlation between tools availability and service provision. It was established that SA has superior KM tools over Nigeria university libraries; as such service provision is better in South African universities libraries than in Nigerian university libraries.

6.4.4 Testing research hypothesis

The testing of the research hypothesis was based on the hypothesis that speaks to research question two. This was raised in chapter one of this current study. 'Hypothesis', according to Asika (2002:8) is a tentative statement that exists as a relationship of two or more variables subject to be tested and then accepted or rejected. Akuezuilo and Agu (2007:141) argued that hypothesis testing determines the truthfulness or assumptions made by the researcher regarding the phenomenon of interest from the research sample. The reason is that we try to determine the likelihood of the prediction of observable phenomenon to occur or not in specific conditions of the phenomenon in question. To test this prediction, the researcher observed the outcome of the data collected from respondents on how the librarians use the ICT tools in executing their jobs in the library environment. The null hypothesis below was tested.

Ho1: There is no significant difference between the ICT facilities used by librarians for the support of KM in academic libraries in Nigeria and South Africa.

In answering this research hypothesis, t-test analysis was carried out. The t-test became important as this hypothesis is comparing Nigerian and South African university libraries with librarian's use of ICTs in their work operations. The ICT facilities as used by librarians in this context consist of the followings: computer, CD-ROM, scanner, telephones, printer, and smart board.

Table 6.9: t-test analysis of ICT facilities used by librarians for the support of KM in academic libraries in Nigeria and South Africa

t-test analysis of ICT facilities used by librarians								
Variable	**N**	**X**	**SD**	**DF**	**t-calculated**	**t-critical**	**Level of Sig**	**Decision**
Nigeria	77	63.83	2.92	130	2.704	1.96	0.05	Significant (Rejected)
South Africa	55	61.89	5.27					

Table 6.9 revealed that, the t-test calculated value of 2.704 was greater than the t-critical value of 1.96. However, the null hypothesis was rejected. This shows that there was significant difference between ICT facilities used by librarians for the support of KM in academic libraries in Nigeria and South Africa. The reason behind this is that, factors such as age differences, frequency of computer usage, information literacy, attitude and exposure to use, nature, and context of the work for which the ICT tools are usually considered. These show that significant differences exist among librarian as they use different ICTs facilities in their work operations. These factors bring lots of difference as to whether a tool would enhance librarian's performance in the library environment. Therefore, the types of ICT facilities used can only be strengthened if librarians are prepared to adopt and adapt to the environmental culture of the library.

6.4.5 Perceive accessibility of tools for KM services

This section addresses the perceive accessibility of the KM services, which were available in the various university libraries visited. Respondents were asked to indicate how they would rate the perceive accessibility of the tools for KM services at the university libraries. In answering this question of perceive accessibility of KM services, the researcher tried to unveil its concept. Accessibility of knowledge management services has to do with a situation where users' expectation meets with their information needs (Adomi, Ugu and Ejitagha, 2015). This

accomplishment is based on librarians' preparedness in playing their roles in the library environment. See Table below.

Table 6.10: Perceive accessibility of tools for KM services

Tools for KM Services	UI	FUT	DSU	Nig(Average %)	UZ	UKZN	DUT	SA(Average %)
Intranet	79	75	84	79.3	89	96	83	89.3
WWW-Internet	93	88	84	88.3	89	96	100	95
Email	100	94	88	94	89	96	100	95
Extranet	97	75	66	79.3	78	82	89	83
Video/audio conferencing	86	75	69	76.7	78	82	78	79.3
Text summarizing	90	69	69	76	78	75	78	77
Online/social media	97	81	69	82.3	78	86	89	84.3
Online public access catalogue	100	88	56	81.3	100	89	94	94.3
Text messages	97	88	81	88.7	100	89	94	94.3
Web publishing	97	81	66	81.3	89	89	78	85.3
File sharing	86	63	63	70.7	89	82	72	81
Average %	92.9	79.7	72.3	81.6	79.9	87.5	86.8	87.1
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.10 indicate that in all the university libraries, the tools for KM services are accessible. University of Ibadan leads in the tools for KM service accessibility at 95% followed by the three universities in SA, all of which have relative mean accessibility of 87%. Notably, the availability of tools for KM services in UI (79) is lower than those of SA university libraries. UZ, UKZN, and DUT have relative availability of 85, 82 and 84 respectively of the accessibility in UI. This suggests that the availability of services do not necessarily translate to service accessibility. Notably, university libraries continue to use these tools to carry out the function of KM services. Chi-Square test reveals that there is no significant correlation between KM service availability and service accessibility. For example whereas one may expect availability of web portal to relate to accessibility of online public access catalogue, chi-square test reveals very low values all of which are of non-significance, as shown in Chi-Square table below.

Table 6.11: Perceive availability of Web Portal vs accessibility of OPAC

University Libraries		Value	df	Sig. (2-sided)
Univeristy of Ibadan Library	Pearson chi-square	3.288(a)	4	.511
	Likelihood ratio	3.387	4	.495
	Linear-by-linear Association	.432	1	.511
	N of valid cases	29		
Federal University of Technology library	Pearson Chi-Square	12.987(b)	9	.163
	Likelihood ratio	11.667	9	.233
	Linear-by-linear Association	.355	1	.551
	N of valid cases	16		
Delta State University Library	Pearson chi-square	25.754(c)	16	.058
	Likelihood ratio	29.461	16	.021
	Linear-by-linear Association	4.056	1	.044
	N of valid cases	32		
University of Zululand Library	Pearson chi-square	1.575(d)	3	.665
	Likelihood ratio	1.955	3	.582
	Linear-by-linear Association	.266	1	.606
	N of valid cases	9		
University of KwaZulu-Natal Library	Pearson chi-square	11.484(e)	9	.244
	Likelihood ratio	11.358	9	.252
	Linear-by-linear Association	4.033	1	.045
	N of valid cases	28		
Durban University of Technology Library	Pearson chi-square	13.857(f)	12	.310
	Likelihood ratio	11.628	12	.476
	Linear-by-linear Association	2.583	1	.108
	N of valid cases	18		

Results in Table 6.11 indicate that there is a relationship between availability of web portal and accessibility of OPAC in the various university libraries. Web portal and OPAC are of immerse value and significant in libraries when dealing with KM services. University libraries and librarians continue to seek and use Web Portal and OPAC on daily basis.

This section addresses the inter-country comparison of the accessibility of the tools for KM services, which was available in the various university libraries that were sampled. This was done in order to draw a distinction in graphical cross-examination of the two countries' university libraries.

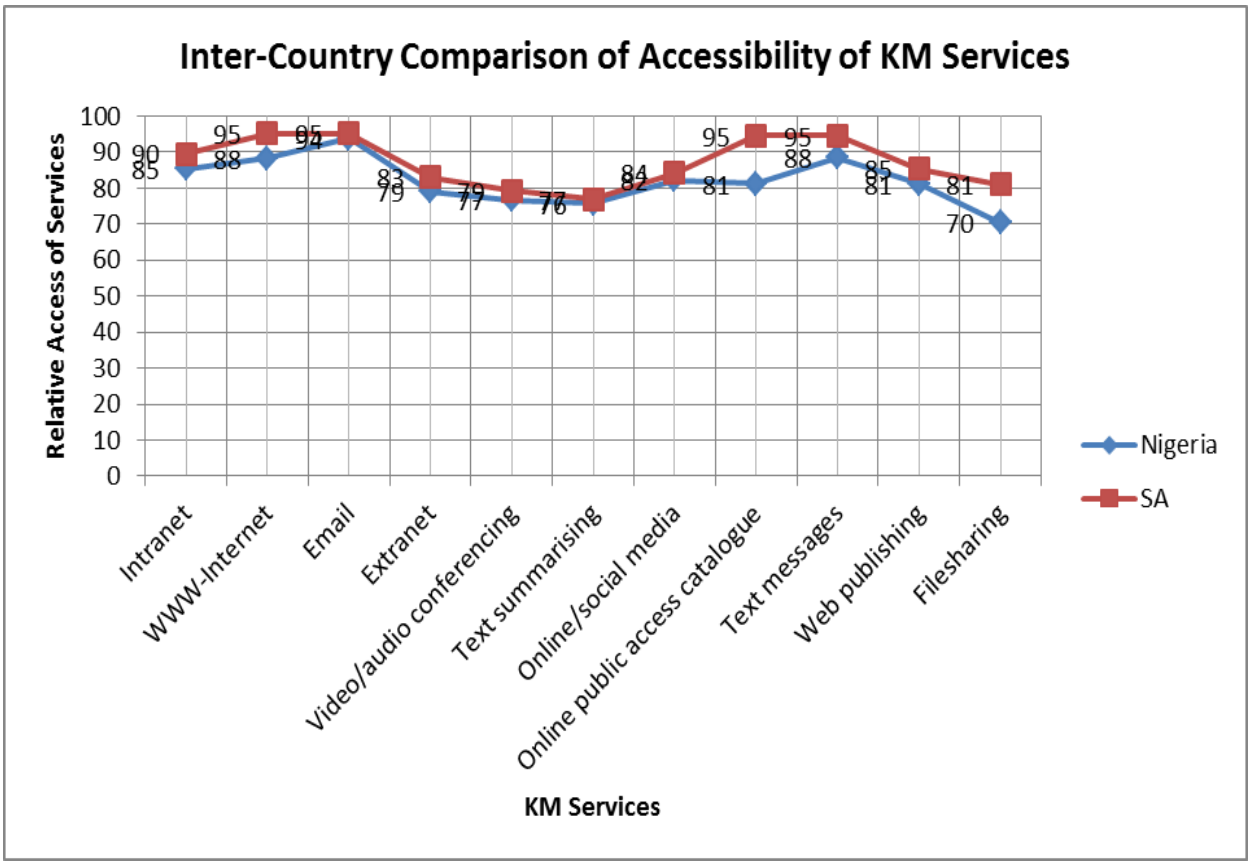


Figure 6: Inter-country comparison of perceive accessibility of tools for KM services

Figure 6 showed that accessibility is higher in SA than in Nigeria even though the differences in accessibility approaches zero for e-mails and text summarizing. The widest difference exists in regards to online public access catalogue. It is likely that these tools could facilitate easy access to users information needs. Notably, what is not available cannot be accessible. The researcher also observed that regular maintenance of the tools could increase the life span, thus leading to the improved productivity of the organisation. In this technological world of ICTs, university libraries cannot function without continuous use of these tools and services.

6.4.6 Perceive effectiveness of tools for KM services

In this section, respondents were asked to indicate which ICTs and KM tools are considered most effective for KM in the library operations. This section addresses research question two of 'What are the available ICT facilities, KM tools and services for the support of KM in academic libraries in Nigeria and South Africa? The respondents' answers are presented in table 6.11 below. The table has graphic representation of the tools effectiveness and inter-country comparison of the university libraries.

Table 6.12: Perceive effectiveness of ICTs/KM tools used for KM services

KM Services	UI	FUT	DSU	Nig(Average %)	UZ	UKZN	DUT	SA(Average %)
WWW-internet	97	88	94	93	100	93	94	95.7
Email	93	81	94	61	100	89	94	94.3
Extranet	86	69	81	78.7	56	68	89	71
Video/audio conferencing	83	69	72	74.7	44	75	89	69.3
Text summarizing	83	56	66	68.3	56	82	78	72
Online/social media	86	88	84	86	89	93	89	90.3
Online public access catalogue	86	88	75	83	89	82	89	86.7
Text messages	86	81	78	81.7	78	75	72	75
Web publishing	83	69	72	74.7	78	75	83	78.7
File sharing	76	56	63	65	78	71	72	73.7
Intranet	83	63	72	72.7	89	86	78	84.3
Average	86	73	77	78.7	78	81	84	81
Average %	93.5	80.0	84.4	83.4	85	88.2	91.9	88.4
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig\ 77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.12 indicate that several ICTs and KM tools are used for KM services. The tools vary from one university libraries to another. The perceive effectiveness of the tools depends largely on what services and operations the university libraries are capable of doing across the two countries. The effectiveness result to the support given to the librarians in smooth running of information services rendered. The information services were carried out on daily basis in the organization. The most effective ICTs/KM tools for services is internet (94%) followed by e-mail (92%). The least effective is file-sharing (69%) followed by text summarizing (70%). At the university libraries' level, despite the fluctuations in ranking, UI has the highest (86%) level of ICTs/KM tools for service effectiveness, followed by DUT at (84%). Even though the relative levels of KM tools for services effectiveness appear to be clustered together, the differences are significant in all KM services with chi-square ranging from 18.45 to 207. The effectiveness of the KM tools is dependent on the knowledge, skills, and practices, which librarians have practiced during time with the organisation. The KM services offered by university libraries to students and staff are guided by sound policy, availability of resources, trained staff, good infrastructural support systems, and security.

Table 6.13: Inter-country comparison of perceive effectiveness of services

KM Services	Nigeria	SA
WWW-internet	93	96
Email	89	95
Extranet	79	71
Video/audio conferencing	74	69
Text summarizing	68	72
Online/social media	86	90
Online public access catalogue	83	87
Text messages	82	75
Web publishing	74	79
File sharing	65	74
Intranet	72	84
NOTE: Table values are percentages of the sample for each university or country		

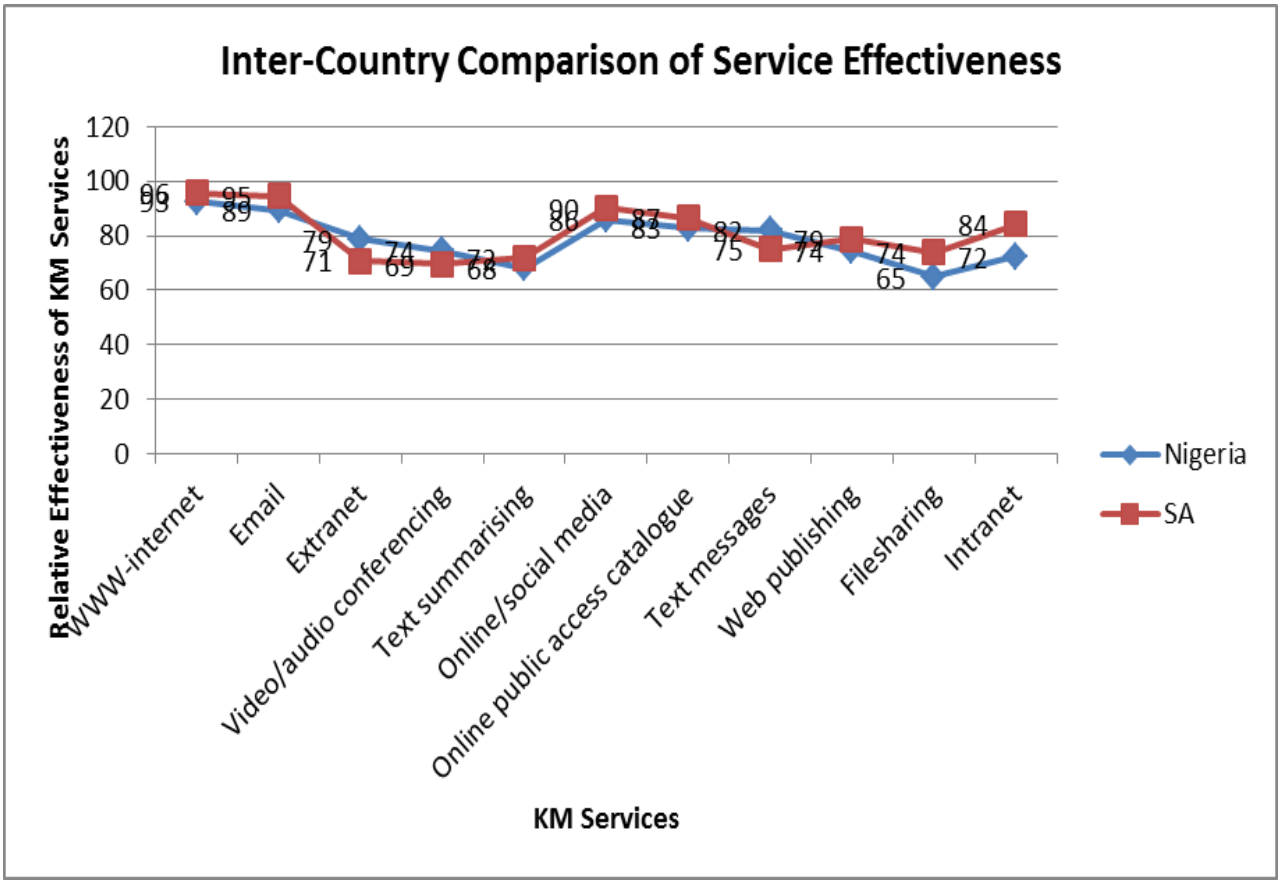


Figure 7: Inter-country comparison of perceive effectiveness of services

Results in Table 6.13 and figures 8 of inter-country level established that the ICTs/KM tools for KM services are more effective in South Africa (81%) than in Nigeria (79). The line graph also showed where the tools intersect with one another. KM effectiveness depends on the tools

and services used in library operations. For example effectiveness of online public access catalogue (OPAC) depends on three services (e-mail, internet, and online social media). Recent trends in research and development of KM tools have shown its effectiveness both in managing resources and improving staff productivity in organizations.

6.5 Utilization of ICTs/KM tools and services for the support of KM

This segment sought to establish the ICT facilities and KM tools and services that respondents mostly used for the operations of library and information services in the various university libraries sampled in the two countries. The question response to the third research question: 'To what extent are librarians utilizing ICTs for the support of KM in academic libraries in Nigeria and South Africa? The results are represented in the three tables 6.13, 6.14, and 6.15 of ICTs and KM tools and services respectively.

Table 6.14: ICTs and KM tools used in university libraries

ICT/KM Tools	UI	FUT	DSU	UZ	UKZN	DUT	Percentage
Computer - Use	100	94	100	100	100	100	99
Scanner	100	88	88	100	100	100	96
Printer	97	94	97	100	93	89	95
CD-ROM	100	94	88	89	86	94	92
Monitor	93	94	88	100	82	94	92
Search engine	93	81	78	100	96	100	91
Word processor	100	81	78	100	93	94	91
Information retrieval tools	93	88	81	89	96	89	89
Multi-media	97	81	72	89	93	100	89
Projector	100	94	63	100	75	100	89
Telephones	97	63	84	89	93	100	88
Modem	86	88	84	100	71	61	82
Indexing and abstracting tools	93	88	69	67	71	100	81
Bar code reader	93	63	69	89	93	78	81
Web portals	100	69	69	78	82	78	79
Management information systems	90	75	59	89	75	78	78
Data base management system	86	75	63	78	86	67	76
Electronic document management syst	86	69	56	67	79	83	73
Content management systems	83	69	47	78	71	72	70
Site maps	90	63	47	78	68	61	68
Semantic web	83	69	47	67	71	67	67
Data warehouse	86	69	47	67	61	67	66
Smart board	79	69	50	89	36	56	63
Online analytical tool	79	63	53	56	64	61	63
Data mining	79	38	34	67	54	61	56
Decision support systems	76	63	41	56	46	44	54
Artificial intelligence	66	44	41	56	54	50	52
Simulation tools	66	38	34	44	50	56	48
Average %	89	76	65	82	80	79	82
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	N_{Nig} **77; SA=55**
NOTE: Table values are percentages of the sample for each university or country							

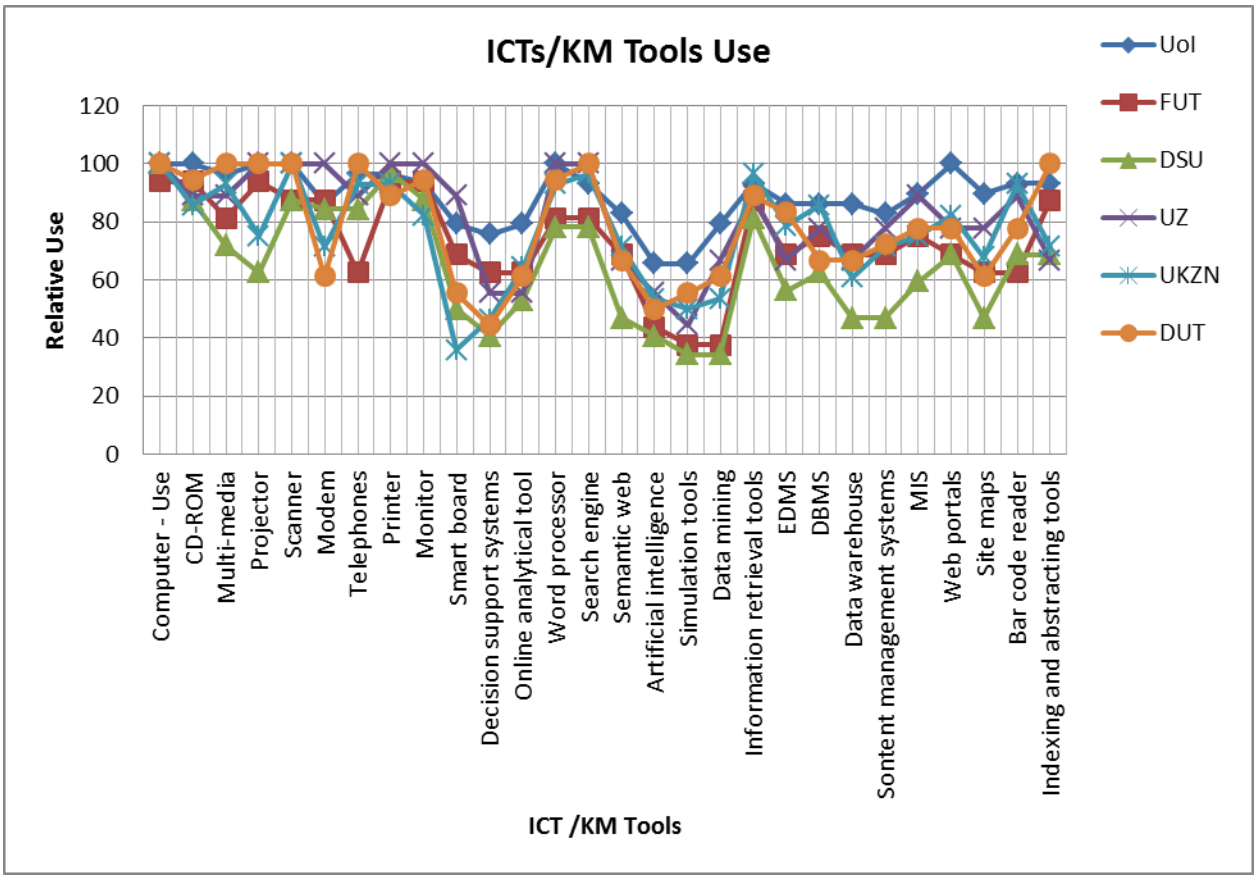


Figure 8: ICTs and KM tools used in Univeristy libraries

The results as represented both in Table 6.14 and figure 9 of most frequently used ICTs and KM tools are computer (99%), scanner (96%), printers (95%) CD ROM (92%), monitor (92%), search engines (91%), and information retrieval tools (91%). In general, it is the computer and its peripherals which are most commonly used. The least used ICT/KM tools are simulation tools (48%), artificial intelligence (52%), decision support systems (54%), data mining (56%) and online analytic tools (63%). These are largely software that perform highly specialized tasks and which require high expertise.

At the university libraries' level, the greatest user of ICTs and KM tools is UI (89%) followed by UZ (82%). The library that ranks least in application of ICT/KM tools is DSU (65%). The low application of ICT hardware can be attributed to challenges in getting funding, whilst low utilization of specialized software can be traced to lack of knowledge of the uses of KM tools. These are evident in the analysis of challenges highlighted later in the chapter. The correlation coefficient between the adoption of ICT hardware on one hand, and specialized task software

such as decision support system on the other, is very low. The highest correlation is p= 0.305; between the adoption of computer hardware and the use of search engines.

Table 6.15: Inter-country comparison of ICT/KM tools used

ICT/KM Tools	Nigeria	SA
Computer – Use	98	100
CD-ROM	94	90
Multi-media	83	94
Projector	85	92
Scanner	92	100
Modem	86	78
Telephones	81	94
Printer	96	94
Monitor	91	92
Smart board	66	60
Decision support systems	60	49
Online analytical tool	65	60
Word processor	86	96
Search engine	84	99
Semantic web	66	68
Artificial intelligence	50	53
Simulation tools	46	50
Data mining	50	60
Information retrieval tools	87	91
EDMS	70	76
Data Base Management Systems	75	77
Data warehouse	67	65
Content management systems	66	74
Management Information Systems	75	81
Web portals	79	79
Site maps	66	69
Barcode reader	75	87
Indexing and abstracting tools	83	79
NOTE: Table values are percentages of the sample for each university or country		

Results as indicated in Table 6.14 indicate that at inter-country level, the use of ICTs and KM tools is slightly higher in South Africa (79%) than in Nigeria (76%). The correlation coefficient is very high (0.908), however chi-square test gives high values all below 0.05, which confirms that the two countries' averages in the use of ICT are significantly different.

6.5.1 Use of ICTs and KM tools for KM services

This section sought to establish the ICT and KM tools used for KM services in the sampled university libraries.

Table 6.16: Use of ICTs and KM tools for KM services

KM Services	UI	FUT	DSU	Nig(Average %)	UZ	UKZN	DUT	SA(Average %)
Intranet	83	63	66	71	78	71	78	76
WWW- internet	97	88	75	87	89	96	94	93
Email	97	88	81	89	89	96	89	91
Extranet	72	69	41	61	56	75	78	70
Video/audio conferencing	69	50	25	48	44	68	67	60
Text summarizing	69	44	28	47	33	54	67	51
Online/social media	93	88	53	78	78	82	100	87
Online public access catalogue	93	88	38	73	89	86	89	88
Text messages	90	81	59	77	89	68	61	73
Web publishing	76	44	41	54	67	54	67	63
File sharing	72	31	31	45	67	57	67	64
Average	83	67	49	66	71	73	78	74
Average %	90.4	73	53	72	77	80	85	81
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

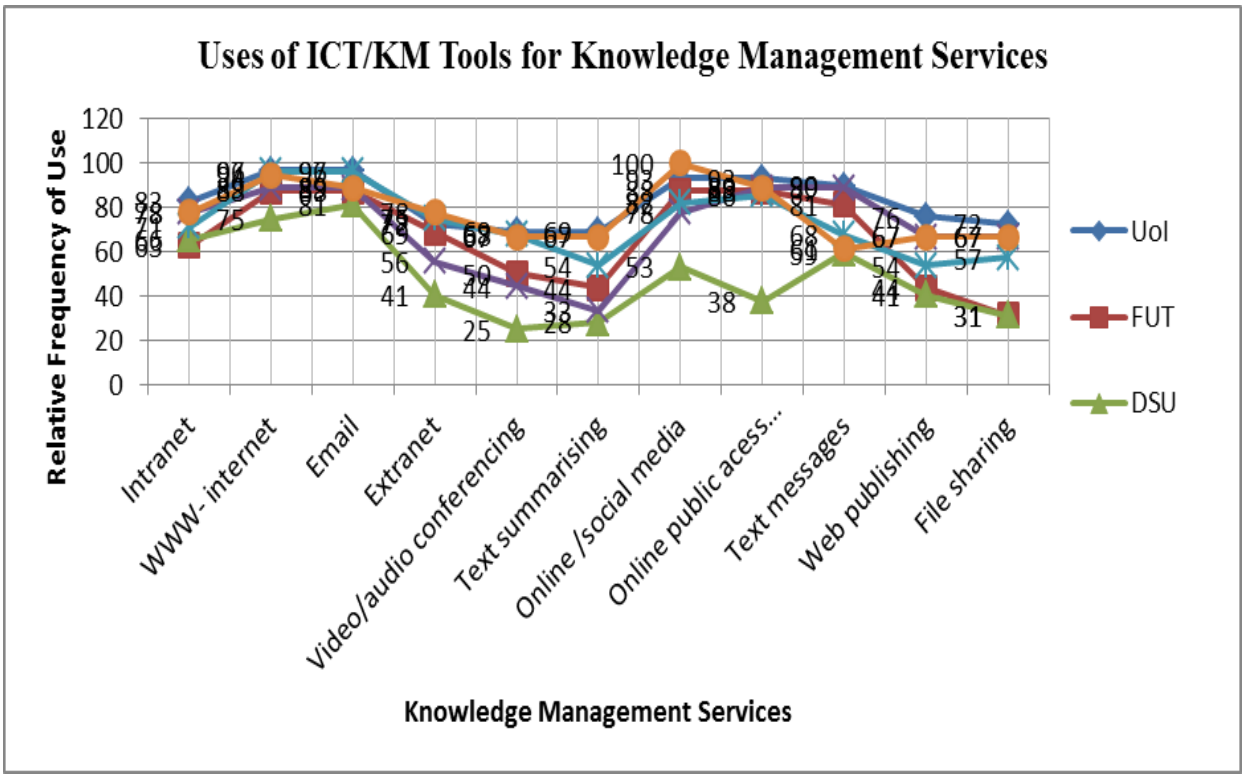


Figure 9: Uses of ICTs and KM tools for KM services

Results as shown in Table 6.16 and figure 10 indicate that the use of ICTs and KM tools for KM services is relatively high in UI (83), moderate in UZ (71), UKZN (73) and DUT (78) but lowest in DSU (49), followed by FUT (67). The graph showed some intersection where the different services meet. The least used services are video conferencing and text summarizing. It is expected that the availability of these services should result in high use. This is not so as most chi-square values are very low with corresponding level of significance being higher than 0.01. This could be due to inadequate ICT skills among library users but this was not tested in the present study.

Table 6.17: Inter-country comparison of the use of ICTs and KM Tools for KM services

ICTs and KM tools for KM Services	**Nigeria (%)**	**SA (%)**
Intranet	70	76
WWW- internet	86	93
Email	88	91
Extranet	61	69
Video/audio conferencing	48	60
Text summarizing	47	51
Online/social media	78	87
Online public access catalogue	73	88
Text messages	77	73
Web publishing	53	62
File sharing	45	63
NOTE: Table values are percentages of the sample for each university or country		

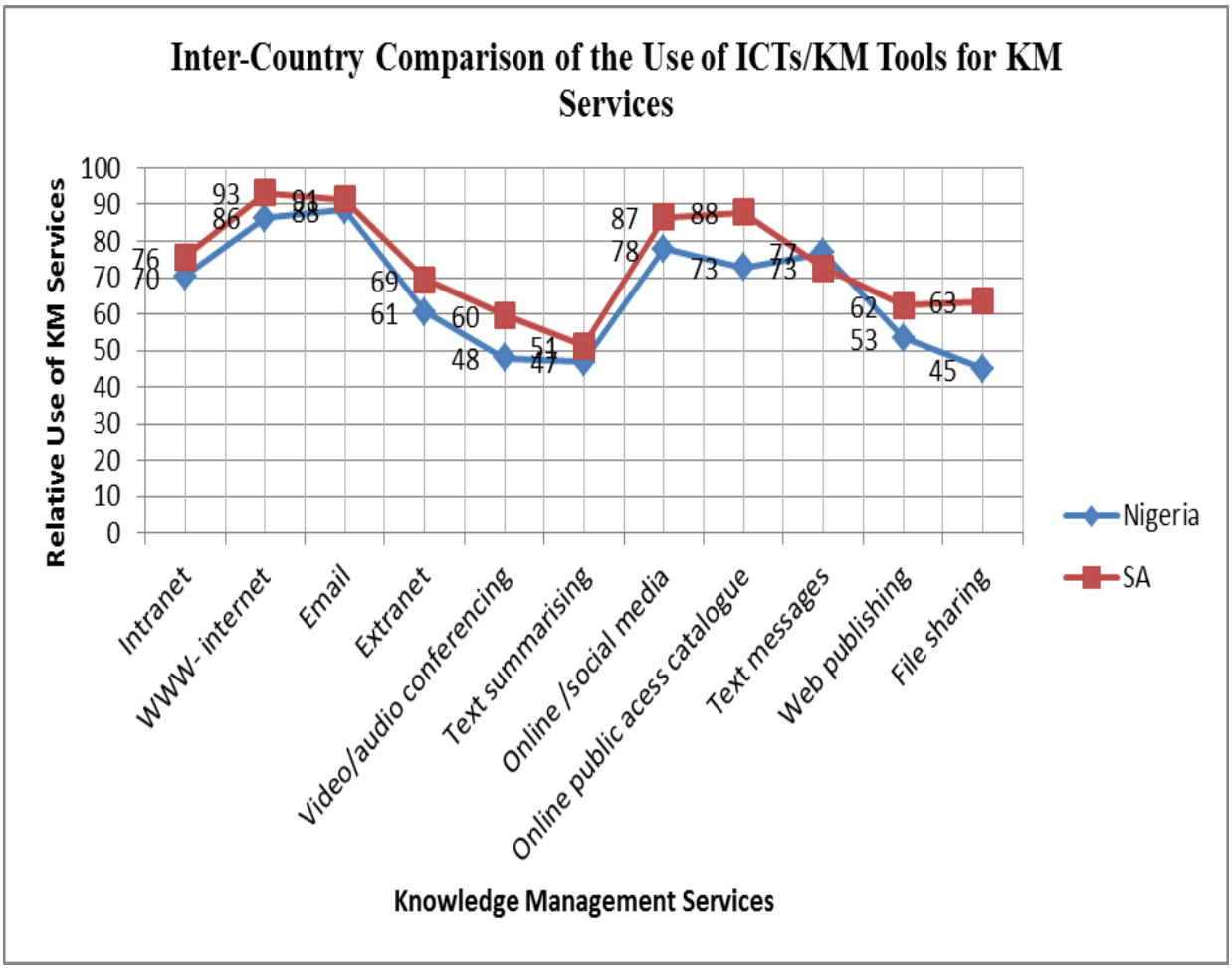


Figure 10: Inter-country comparison of the uses of the tools for KM services

Results in Table 6.17 and with figure 11 indicate that at inter-country level, the use of the tools for KM services is higher in SA than in Nigeria. The convergence in use is, however, observed in text summarizing and text messages. The widest gaps are in file sharing and online public access catalogue. The correlation coefficient of these two variables is weak (+0.361), however still significant. The two variables are also weakly correlated to availability of intranet and extranet as shown below. The file sharing appears to be between universities and persons outside the university as it correlates higher with internet than with intranet.

Table 6:18: Correlations test between use and availability of services of ICTs

Spearman's	ICT tools	Test coefficient	KM services - WWW-internet	KM services - file sharing	KM services - online public access catalogue	KM services - intranet
	ICT infrastructure/KM services - WWW-internet	Correlation Coefficient	1.000	.052	-.187(*)	.232(**)
		Sig. (2-tailed)	.	.557	.032	.008
		N	132	132	132	132
	ICT infrastructure/KM services - file sharing	Correlation Coefficient	.052	1.000	.361(**)	.114
		Sig. (2-tailed)	.557	.	.000	.192
		N	132	132	132	132
	ICT infrastructure/KM services - online public access catalogue	Correlation Coefficient	-.187(*)	.361(**)	1.000	-.209(*)
		Sig. (2-tailed)	.032	.000	.	.016
		N	132	132	132	132
	ICT infrastructure/KM services - intranet	Correlation Coefficient	.232(**)	.114	-.209(*)	1.000
		Sig. (2-tailed)	.008	.192	.016	.
		N	132	132	132	132

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

6.5.2 Various ways through which librarians utilize ICTs for the support of KM

In this section respondents established the various ways through which ICTs are used to support KM across the university libraries in the two countries. The question response to research question three ‘To what extent are librarians utilizing ICTs for the support of KM in academic libraries in Nigeria and South Africa? The results are represented in % across all university libraries.

Table 6.19: Ways librarian utilize ICTs for the support of KM

Ways librarian utilize ICTs for KM	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA(Average %)
Rendering information and administrative services	86	75	71	77	94	71	72	79
Support for research and curriculum development process	76	96	90	87	96	94	78	89
Formulation of policies and strategic planning	66	93	93	84	89	84	68	80
Teaching and learning processes for newly registered users	91	86	90	89	82	93	78	84
Problem-solving and decision-making	76	76	87	80	82	97	77	85
Minutes in staff management meetings	85	75	84	81	67	82	81	77
In-service development and training for support staff	92	100	86	93	77	99	92	89
Transferring existing knowledge into other parts of the organisation	99	96	92	96	82	92	94	89
Generating new knowledge and filtering old knowledge	95	86	99	93	82	80	92	85
Accessing valuable knowledge from external sources	75	76	86	79	83	86	66	78
Storing content documents in databases	76	86	93	85	99	87	72	86
Average %	93	91.3	88.5	90.8	93	91.2	89.6	86
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.19 indicate that rendering information and administrative services (94%); support for research and curriculum development process (96%); formulation of policies and strategic planning, and teaching and learning processes for newly registered users (93%); problem-solving and decision-making (97%); in-service development and training for supporting staff and transferring existing knowledge into other parts of the organisation (99%); generating new knowledge and filtering old knowledge (99%) were ranked at a highest percentage in UZ, UKZN, UI, DSU, and UZ. Accessing valuable knowledge and filtering sources and minutes in staff management meetings as other ways librarians utilize ICTs is the lowest compared to previous results. The utilization of ICTs enhances job description, new innovation and competencies to explore new knowledge among librarians in university libraries. The continuous training, proper management of the ICTs could foster the knowledge and skills of application in work operations.

6.5.3 Information sources that guide librarians in the utilization of ICT for the support of KM

In this section, respondents were asked to indicate the different information sources that enabled and guide librarians' utilization of ICTs for the support of KM? This question addresses research question three: 'To what extent are librarians utilizing ICTs for support of KM in academic libraries in Nigeria and South Africa? Results are presented in Table 6.20 below.

Table 6.20: Information sources that guide librarians in the use of ICTs

Information sources ICTs for KM	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Library materials	86	81	78	82	94	71	92	86
Library catalogues	75	100	78	84	95	94	97	95
Newsletters	95	86	86	89	84	95	95	91
Professional meetings/ Interactions	72	82	95	83	83	92	96	90
Pamphlets/Leaflets	88	87	94	90	72	95	94	87
Sources from workshop, conferences, and seminars	72	87	78	79	94	92	91	92
Theses and dissertations	95	87	85	89	95	90	100	95
Review/journal articles	92	100	92	95	75	97	90	87
Face to face conversations with colleagues	95	88	87	90	88	90	96	91
Discussion forum	92	95	89	92	88	95	95	93
Email	92	85	91	89	88	90	95	91
Research/technical reports	95	93	95	94	96	90	91	92
Internet sources	100	87	98	95	96	97	96	96
Average %	88	89	88	89	88	91	94	91
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.20 affirmed that different information sources as used by librarians depends on their work operations/service rendered to users. The information needs of an individual could lead to the use of one of the sources to another. The various information sources that guide librarians work operations cut across library catalogues, theses and dissertations, reviews/journal articles, and internet sources are the most preferred sources of information. All university libraries across the two countries prefer one information sources to another. This depends on the information need and purpose for search of such information in present day library operations. Notably, literature in recent times, have shown up-to-date information source in diverse field of study. This has promoted social-economic, political, educational,

cultural, and capital stability of any academic institution. The acquisition of knowledge, experience and qualifications results from sourcing of publications and other materials on continuous basis.

6.5.4 Users of KM resources

In this segment respondents were asked who the users of KM resources are. This question addresses the third research question of 'To what extent are librarians utilizing ICTs for support of KM in academic libraries in Nigeria and South Africa? Respondents were asked to rate the users of KM resources.

Table: 6.21 Users of KM resources

Users of KM resources	University Libraries in Nigeria and South Africa								
	Response	**UI**	**FUTA**	**DELSU**	**SA (Average %)**	**UZ**	**UKZN**	**DUT**	**SA (Average %)**
Students	**F**	26	12	20	19	6	20	13	13
	%	89.7	75.0	62.5	76	66.7	71.4	72.2	70
	NR	3	4	12	6	3	8	5	5
	%	10.3	25.0	37.5	24	33.3	28.6	27.8	30
Researchers	**F**	28	16	28	24	8	28	16	17
	%	96.6	100	87.5	95	88.9	100	88.9	93
	NR	1	0	4	3	1	26	2	10
	%	3.4	0.0	12.5	8	11.1	92.9	11.1	38
Librarians	**F**	28	13	25	22	9	25	14	16
	%	96.5	81.3	78.1	85	100	89.3	77.8	89
	NR	1	3	7	3	0	3	4	4
	%	3.4	18.8	21.9	15	0.0	10.7	22.2	17
Lecturers (academic staff)	**F**	27	14	25	22	8	28	17	18
	%	93.1	87.5	78.1	86	88.9	100	94.4	94
	NR	2	2	7	4	1	0	1	1
	%	6.9	12.5	21.9	2	11.1	0.0	5.6	8
Non-academic staff	**F**	17	7	16	13	4	17	11	11
	%	58.6	43.8	50.0	51	44.4	60.7	61.1	55
	NR	12	9	16	12	5	11	7	8
	%	41.4	56.3	50.0	49	55.6	39.3	38.9	45
Average %		100	100	100	97	96	100	100	98
Sample sizes		$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country									

- The table represents multiple responses.

The majority of respondents in Table 6.21 indicated that those who mostly use information resources of KM range from students (26; 89.7%), (20; 71.4%); researchers (28; 96.6%), (100; 88.9%); librarians (28; 96.5), (25; 89.3%); and lecturers (27; 93.1%), (100; 100%). Non-academic staff (17; 58.6%); (4; 44.4%) were not taken into much consideration as they are not

involved in research responsibilities as much. Most importantly, users such as students, researchers, librarians, and lecturers consult information sources more frequently. This they do for several purposes ranging from completion of their assignment to writing of their project/research work, on a daily basis. It is likely that interaction and discourse of research writing and publishing among lecturers and librarian is a factor leading to greater use of KM resources.

6.6 ICT strategies for the support of KM

This section sought to establish strategies used to promote the use of ICT for the support of KM. Respondents were asked which of the following can be seen as best ways to promote the use of ICTs for the support of KM. This question responds to research question four of 'What strategies can promote the use of ICTs for the support of KM in academic libraries of Nigeria and South Africa? Results are presented in table 6.20 below.

Table 6.22: Strategies used to promote the use of ICTs for the support of KM

Information sources ICTs for KM	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Engage in rendering information services	100	88	92	93	100	90	97	96
Motivation through tangible means	95	100	87	94	100	92	89	94
Engage in knowledge network and discussions	96	93	96	95	88	97	95	93
Research, teaching and learning process	100	91	91	94	88	95	100	94
Problem solving and decision making	95	93	90	93	88	92	91	90
Staff management to support external network	93	81	81	85	77	89	82	83
Delegation of responsibilities through competitive initiatives	89	86	83	86	88	92	93	91
Collaborative/team work to support existing structure, competencies, and culture	88	100	90	93	100	92	88	93
Project reviews	89	87	86	87	100	85	85	90
Social networks	93	100	86	93	100	82	82	88
Knowledge audit	100	98	88	95	100	93	90	94
Training	85	93	90	89	88	89	88	88
Community development project	88	96	91	92	100	93	88	94
Publishing of articles, books, and monographs	89	86	89	88	88	95	85	89
Effective monitoring and support through corporate governance	85	93	96	91	100	96	85	94
Provision of efficient and effective KM entities	95	91	91	92	88	95	100	94
Ensure and increase universal access and services of ICTs	92	87	87	87	89	72	91	84
Ensure that ICT infrastructure is accessible, reliable, affordable, and meet the need of KM	95	86	82	88	100	100	85	95
Enhance performance through improving institutional processes	95	86	86	89	82	95	90	89
Average %	95	86	86	91	82	95	90	89
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$

NOTE: Table values are percentages of the sample for each university or country

Result in Table 6.22 indicates that majority of respondents attest to different strategies used to promote the use of ICTs to support KM. This can be categorized into collaborative/team work; competencies in knowledge audit; training and re-training of staff; increase in universal access and services. Comparing the countries' university libraries, UZ in SA appeared to promote the use of ICTs using several strategies, as compared to UI in Nigeria. However, FUT with the rest university libraries showed multiple strategies as well. Notably, the various strategies used have strategically affected the university libraries in terms of their organizational culture, work environment, management support systems, librarians' knowledge, and access to information. Strategies tend to work much better when the right caliber of trained, qualified, experience, skilled, and dedicated teams are ready to foster innovation and growth in their organizations.

6.6.1 Sources of information in updating personal knowledge

In this segment, respondents were asked to indicate which, among the following sources of information, they use for updating their personal knowledge and the entire library house holdings. This question responds to research questions five of 'Do librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs for the support of KM?' The results are presented in table 6.21 below.

Table 6.23: Sources of information in updating personal knowledge

Sources of information in updating knowledge	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Library subscription	48	50	63	54	33	46	22	34
Book vendor	41	50	47	46	33	57	28	39
Search engine	66	75	69	70	78	79	67	75
Open access sources	76	75	56	69	67	79	72	73
Databases	79	69	59	69	89	89	78	85
Internet	93	94	88	92	100	89	83	91
Periodicals	76	81	72	76	56	82	83	74
Research reports	79	81	75	78	67	82	83	77
Conferences and workshop papers	76	88	78	81	78	86	83	82
Average %	70	74	67	71	67	77	67	70
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.23 indicate that the most frequently used source of updating knowledge is internet (91%) followed by conference papers (82%). The least preferred source is the book

vendor (43%), followed by library subscription (44%). Libraries where the update of knowledge is often practiced include UKZN (77%), followed by FUT (74%). The graph in figure 13 shows the inter-country comparison of the sources of knowledge updating. The author of this study noticed, from the results of data collection, that what facilitates librarians' update of knowledge in the various sources mentioned is the exposure to new trends in their work environment.

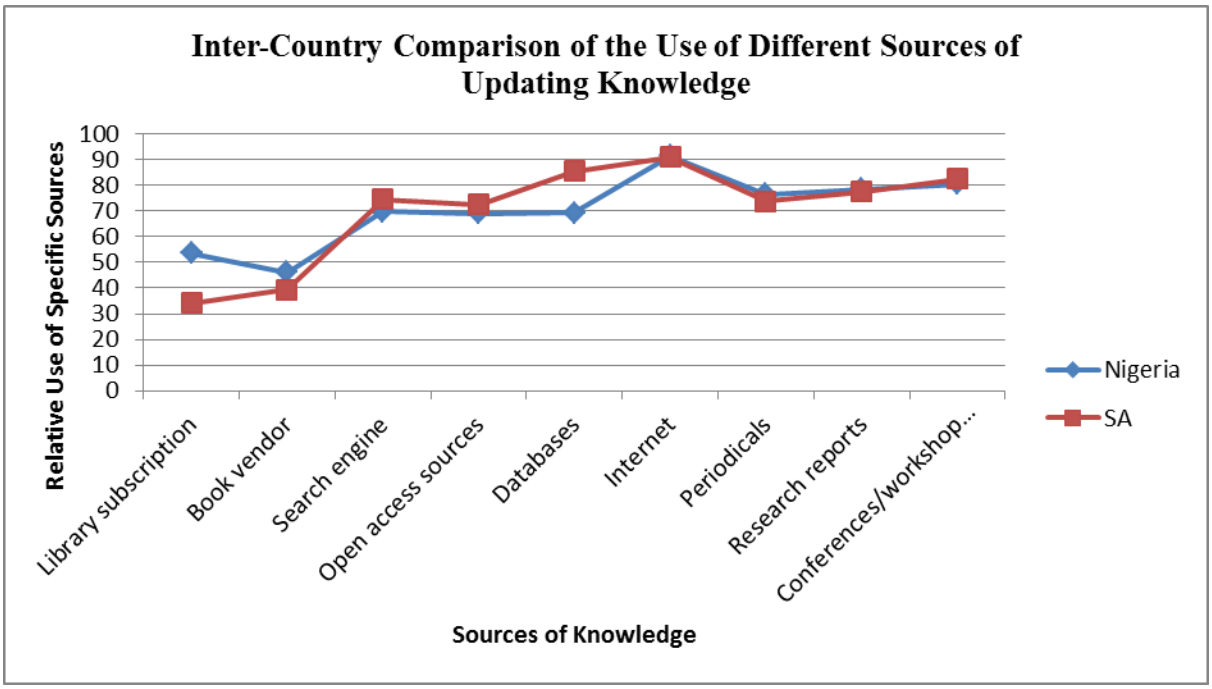


Figure 11: Inter-country comparison of sources of updating knowledge

Figure 12 indicates that at a national level, in the university libraries sampled, there is no apparent difference in the frequency of updating knowledge. The level in Nigeria is 70.4% whilst in South Africa, the level is 69.8%. It was noticed that the graph intersect at sources of search engine, open access, internet, periodicals, research reports, and conferences/workshops. Chi-square test reveals large values with all significance, confirming that the differences in relative level of support are significant. Notably, the present day library information science profession has grown from the traditional methods of access to online which requires librarians to continually update themselves.

6.7 Librarians' knowledge and ICT skills for the support of KM

This segment addresses librarians' knowledge, and ICT skills, that enabled smooth operations of the products and services in the academic library environment. Respondents were asked to

indicate which of the following reflect librarians' knowledge and ICTs skills for the support of KM in the field of librarianship. This question responds to research question five stated in 6.1 of this study. Table 6.24 below addressed librarians' knowledge and ICT skills for the support of KM.

Table 6.24: Librarians knowledge and ICT skills for KM

Librarians knowledge and ICT skills	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Organizational goals	100	75	94	90	78	86	94	86
Working skills	97	88	91	92	100	93	94	96
Assess and evaluate	100	94	100	98	89	96	83	89
Create and store information	100	100	100	100	100	100	94	98
Use of ICT tools properly	100	94	100	98	89	96	89	91
Ability to initiate ideas	100	81	100	94	100	100	89	96
Strategic planning	90	94	84	89	100	89	72	87
Areas for improvement	93	100	91	95	78	100	89	89
Persuade people to work	100	94	84	95	78	89	89	85
Market library product	97	88	84	90	89	100	89	93
Change management	93	88	78	86	89	79	89	86
Broadens subject expertise	100	94	88	94	89	100	94	94
Ability for knowledge creation	100	94	88	94	89	89	89	89
Facilitation skills	97	94	91	94	78	96	94	89
Consensus building skills	97	100	88	95	67	86	89	81
Negotiating skills	83	94	81	86	67	86	83	79
Project management skills	97	94	91	94	78	82	89	83
Technical skills	100	100	97	99	89	100	89	93
Managerial skills	100	100	91	97	89	82	89	87
Average	97	93	91	94	86	92	89	89
Average %	97	93	91	94	86	92	89	89
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.24 indicate that the most predominant knowledge and ICT skills are the ability to create and store information (99%), technical skills (96%), ability to initiate ideas and use ICT tools properly (95%). On the other hand the rarely exhibited skills are negotiating skills (82%), change management (86%), consensus building (88%) and strategic planning (88%). Those skills which are predominant are closely associated with functions that librarians perform. The skills that are rarely exhibited are more closely associated with management skill-sets that are required at senior levels, and acquired based on need and additional training. Librarians in UI have the highest (97%) relative skill levels. The lowest ranked university

library is Zululand (86%). Notably, it is evident that there is no association between training and support provided to librarians on one hand, and librarians' skills, on the other hand. The availability of ICT tools and support system from university management could help staff member to acquire more knowledge required to work independently.

Table 6.25: Inter-country comparison of librarians' knowledge and ICT skills

Librarians' Knowledge and ICT Skills	**Nigeria (%)**	**SA (%)**
Organizational goals	90	86
Working skills	92	96
Assess and evaluate	98	90
Create and store information	100	98
Use of ICT tools properly	98	91
Ability to initiate ideas	94	96
Strategic planning	89	87
Areas for improvement	95	89
Persuade people to work	93	85
Market library product	89	93
Change management	86	85
Broadens subject expertise	94	94
Ability for knowledge creation	94	89
Facilitation skills	94	90
Consensus building skills	95	80
Negotiating skills	86	79
Project management skills	94	83
Technical skills	99	93
Managerial skills	97	87
NOTE: Table values are percentages of the sample for each university or country		

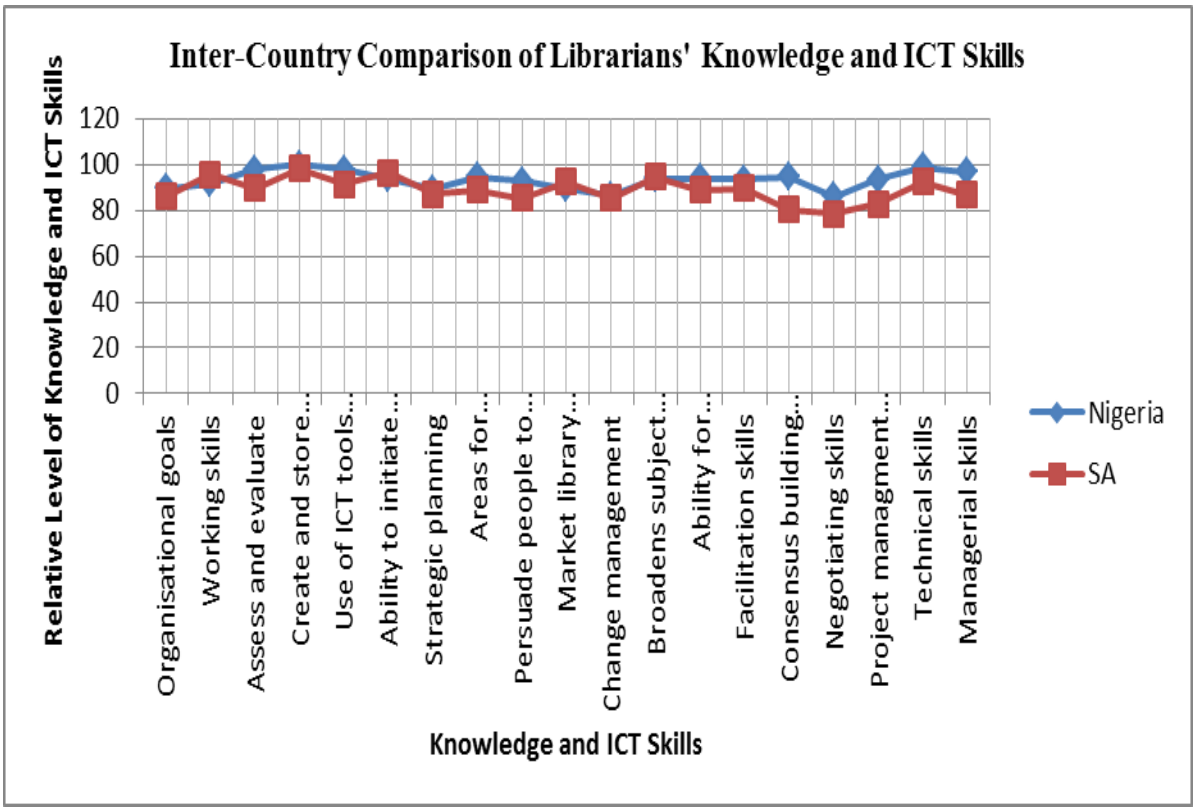


Figure 12: Inter-country comparison of librarians' knowledge and ICT skills

The results in Table 6.25 and figure 13 revealed that librarians in Nigeria have higher relative perception of the knowledge and ICT skills. There appears to be significance within the variables between the two countries. The author of this study noticed that adequate knowledge and ICT skills enhance awareness and foster innovation in rendering information services to users.

6.7.1 Testing research hypothesis II

Ho2: There is no significant difference among librarians with knowledge and skills to use ICTs for the support of KM in academic libraries in Nigeria and South Africa.

In the second research hypothesis, t-test analysis was also carried out. The rationale of applying the t-test was to compare university libraries in Nigeria and South Africa. The comparison is with emphasis to the technical know-how of librarians in using ICTs to support KM on daily basis in the library. The knowledge and skills as required to use ICTs by librarians cannot be limited to the followings: create and store information, organizational

goals, assess and evaluate job performance, having working skills, managerial skills and ability to use ICT tools properly.

Table 6.26: has to do with the t-test analysis of librarian's knowledge and skills to use ICTs for the support of KM in academic libraries in Nigeria and South Africa

t-test analysis of librarians knowledge and skills to use ICTs								
Variable	**N**	**X**	**SD**	**DF**	**t-calculated**	**t-critical**	**Level of Sig**	**Decision**
Nigeria	77	62.91	2.24	130	3.406	1.96	0.05	Significant (Rejected)
South Africa	55	61.00	4.15					

In Table 6.26, the t-calculated value of 3.406 was greater than the t-critical value of 1.96. Hence, the null hypothesis was rejected. This indicates that there was significant difference among librarians with required and adequate knowledge and skills to use ICTs for the support of KM in academic libraries in Nigeria and South Africa. The essence of the differences in knowledge and skills could be context; training need process undergone, preparedness for such training; support systems made available for the librarians; funds to acquire necessary materials and tools; and the environmental factors. This proven evidence is an indication that for librarians to acquire more knowledge and skills, the organization must be prepared to support the staff, irrespective of the culture. Besides, the staff should be willing and prepared to embark on such training.

6.7.2 Librarians areas of expertise in the support of KM

Librarians' areas of expertise are important when it comes to consolidation of library services. In this section respondents were asked to indicate which among the following knowledge/expertise are librarians expected to have for the operations of KM and other academic library services? This question responds to research question five: 'Do academic librarians in Nigerian and South African university libraries have the knowledge and skills to use ICTs for the support of KM? Results are presented in table 7.2 below.

Table 6.27: Librarians' areas of expertise in the support of KM

Librarians' areas of expertise in the support of KM	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Cataloguing and classification	97	100	97	98	89	96	94	93
Online Public Access Catalogue	100	100	97	99	100	100	100	100
Library and information services	97	100	100	99	100	100	94	98
Collection development	97	94	100	97	78	100	100	93
Serial control	100	81	100	94	89	93	89	90
Organizational procedures	100	88	97	95	89	93	89	90
Library software knowledge	97	94	94	95	100	96	100	99
Library websites and internet access	97	88	97	94	100	100	100	100
Entire library holdings	97	94	97	96	78	96	100	91
Knowledge of subject area	100	81	97	93	89	100	100	96
Staff members capacity	93	94	91	93	78	89	100	89
Organizational culture	97	100	81	93	89	93	100	94
Organizational policy	97	100	75	91	89	93	100	94
Shelf reading and re-shelving	100	100	94	98	78	89	89	85
Knowledge of ICT tools	100	100	94	98	89	100	100	96
Supervisory roles	97	88	91	92	78	82	89	83
Average	98	94	94	95	88	95	97	93
Average %	98	94	94	95	88	95	97	93
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.27 indicate that the most predominant expertise of librarians, as mentioned by respondents, are OPAC (100%); library and information services (99%); knowledge of ICT tools (97%); and library website and internet access (97%). The lowest ranked skills are supervisory roles (88%); staff members' capacity (91%); and shelf reading and re-shelving (92%). These skills are advocated for most by librarians at University of Ibadan (98%). University of Zululand comparatively gives the least support for the skills. The author affirmed that work ethics/policy of the institutions expect librarians to possess dual areas of specialization for efficient and effective job performance. Areas of expertise differ from individual to individual based on the ability to harness multi-dimensional clusters of knowledge. Interestingly, professional drift and proliferation of information across disciplines account to having more than one area of expertise in library and information science profession today.

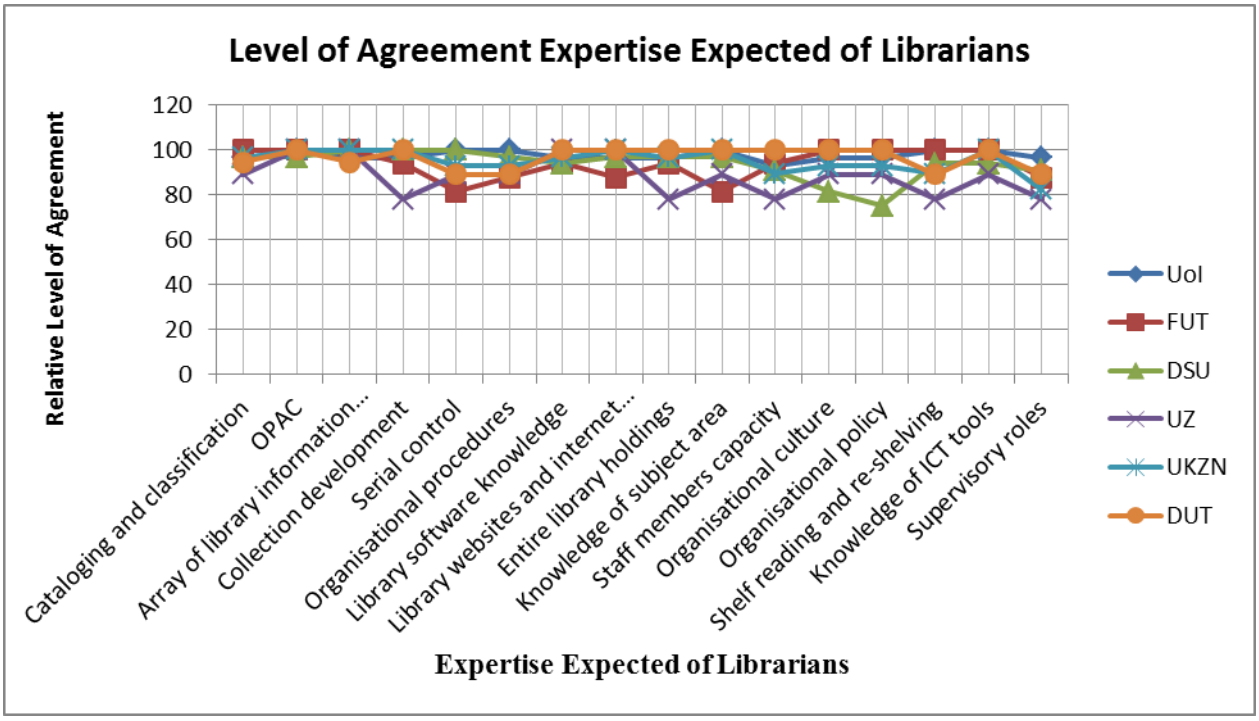


Figure 13: Expertise expected of librarians

Figure 14 indicates that at country level in the university libraries sampled, the listed skills are advocated for most by Nigeria (95%) compared to South Africa (93%). It can be observed in graph that the provision of training support is very necessary for librarians to contribute their effort in quality service delivery.

6.7.3 Extent of adequate knowledge, experience and skills of ICTs for the support of KM

This section sought to establish where respondents were asked to indicate the extent to which they have adequate knowledge, experience, and skills of ICTs for the support of KM? This question responds to research question five of 'Do academic librarians in Nigerian and South African university libraries have the knowledge and skills to use ICTs for the support of KM?.

Table 6.28: Impact performance of adequate knowledge, experience, and skills

Extent of adequate knowledge, experience and skills of ICTs	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
When required to share knowledge	100	100	91	97	100	93	100	98
When searching for information	93	100	94	96	78	100	94	91
When given specific task	100	100	88	96	78	96	100	91
When teaching	100	100	97	99	78	100	100	93
When materials are scarce	93	88	84	88	100	93	100	98
When doing complex research	90	94	81	88	78	96	94	89
When explaining actions	97	88	78	88	89	89	83	87
When the area of expertise is required	97	94	94	95	100	100	89	96
When supervising a project	97	81	88	89	89	86	94	90
When taking a concrete decision	93	88	88	90	78	89	94	87
When providing guidance for others	93	88	81	87	89	93	89	90
Average	96	93	88	92	87	94	94	92
Average %	100	93	88	92	80	94	94	92
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.28 indicate that the impact of adequate knowledge and experience of librarians in this context depends on the extent to which they have more experience in their job profession. It was noticed from findings that such knowledge, experience and skills is felt most when sharing what you know (see Table 6.28). It was also revealed that when teaching and learning processes and where expertise is required is another factor (see Table 6.28). However, least impact of knowledge and experience is felt when explaining actions (see Table 6.28) and when taking decision. The claims of knowledge and experience have less of an impact on concrete decision-making when common perceptions could not address certain difficulty. This confirms that the independence of variables of knowledge, experience, and skills are required at different contexts and job specifications. These have been demonstrated in appropriate content and learning methods in most organizations.

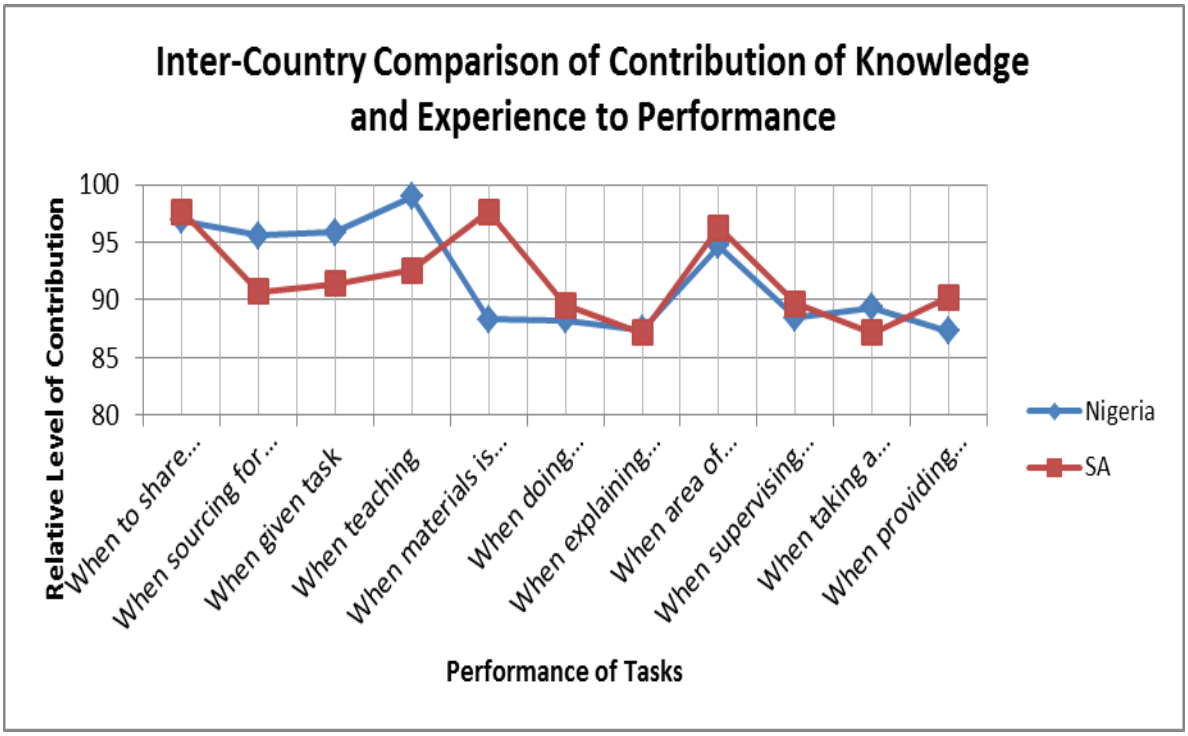


Figure 14: Inter-country comparison of knowledge impact on task performance

Figure 15 demonstrates that views shared across the two countries university libraries as depicted in the graph above. Nigerian university libraries tend to have a much greater impact factor compared to those in South Africa with regards to the contribution of knowledge, experience, and skills required for performance of tasks.

6.8 Librarians training and support for the acquisition of current knowledge and skills in the use of ICTs to support KM

This segment addressed whether respondents were asked which of the following ways librarians are trained and supported in acquisition of current knowledge and skills in the use of ICTs for the support of KM. This question responds to research question six of 'How often are librarians trained and supported for the capacity to acquire current knowledge and skills in the use of ICTs for the support of knowledge management in academic libraries in Nigeria and South Africa?' Results are presented in table 6.29 and figure 18 of graph below.

Table 6.29 Training and support given to librarians

Types of training and support given to librarians	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Formal education	97	100	88	95	88	100	100	96
Informal education	76	81	66	74	89	89	83	87
Delegation of responsibilities sub-ordinate	86	80	75	80	89	82	100	90
Interpersonal development	97	88	97	94	89	100	100	96
Industrial training experience	100	100	91	97	78	86	100	88
Daily work experience	88	90	94	91	89	100	100	96
Re-training	100	94	91	95	88	96	100	95
Induction/orientation training	100	88	97	95	88	100	100	96
Average	97	100	88	95	91	100	100	97
Average %	100	95	98	98	77	94	100	90
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.29 revealed that the support and training most often provided is induction (98%), formal education (98%), retraining (97%), and interpersonal development (97%). The least preferred form of training is informal education (81%). It appears the training and supports that are most often given to librarians are those that librarians do not consider important. The greatest support to librarians is given by DUT (97%) followed by FUT (96%). Notably, training and support types given to librarians are diverse in terms of context (urban and rural), nature of the training (practical, oral, online, visual, experimental, and traditional), paradigm used, friendliness of the training, availability of training resources, complexity of the training and support, as well as comprehensiveness of trainee in most university libraries today. Organizations have continued to attract different caliber of staff across multiple disciplines as a result of training offered to staff. Most university libraries today have benefited equally as a result of the policy that guide several training. The provision of renumeration and services offered is harmonized with learning relationships of colleagues.

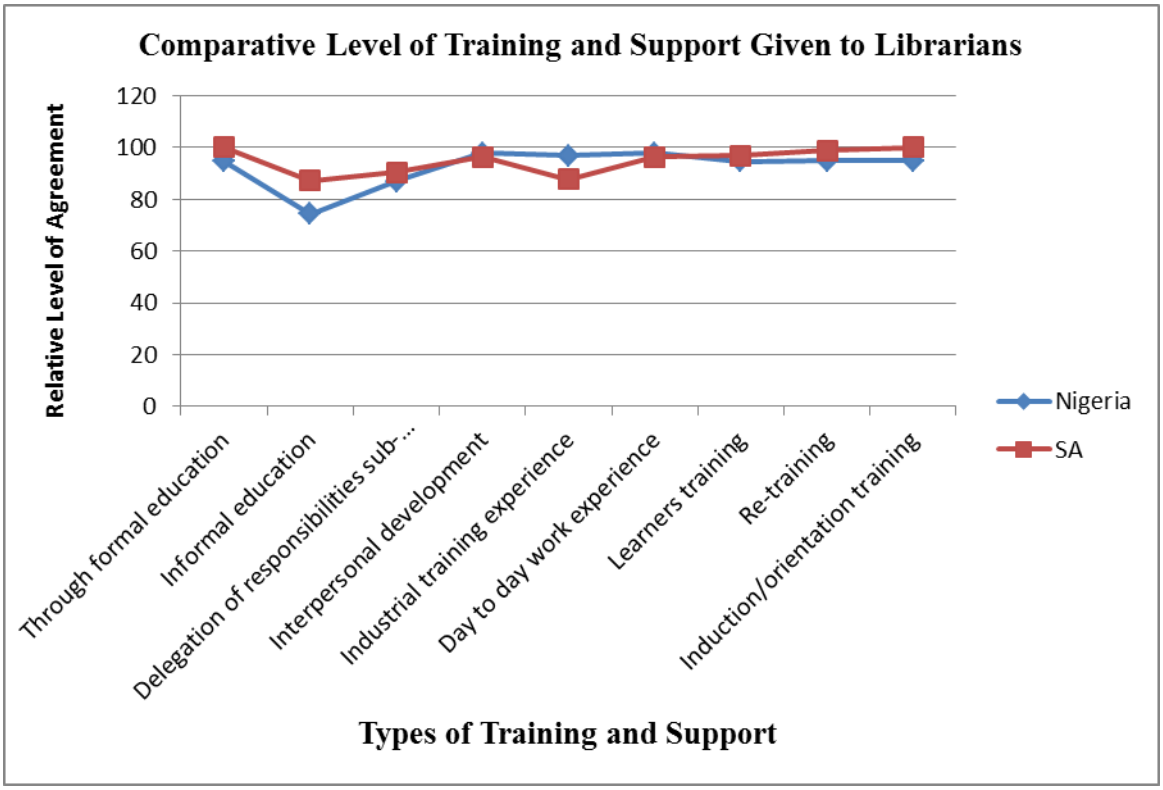


Figure 15: Inter-country comparison of training and support given to librarians

Figure 16 indicates that at inter country level of university libraries; South African universities gave higher support (95%) than Nigeria (93%) at marginal level. It is interesting to note this, despite the fact that librarians in South Africa do not seek advanced studies than Nigerian librarians.

6.8.1 Testing research hypothesis III

Ho3: There is no significant difference in the training and support for acquisition of current knowledge and skills given to librarians in the use of ICTs to support KM in academic libraries in Nigeria and South Africa.

Table 6.30: refers to t-test analysis of the training and support for acquisition of current knowledge and skills given to librarians in the use of ICTs to support KM in academic libraries in Nigeria and South Africa.

t-test analysis of training and support for acquisition of current knowledge and skills								
Variable	**N**	**X**	**SD**	**DF**	**t-calculated**	**t-critical**	**Level of Sig**	**Decision**
Nigeria	77	64.43	3.64	130	1.315	1.96	0.05	Not Significant (Accepted)
South Africa	55	63.51	4.37					

Table 6.30 showed that the t-calculated value of 1.315 was less than the t-critical value of 1.96. Therefore the null hypothesis was accepted. This implies that there was no significant difference in the training and support for acquisition of current knowledge and skills given to librarians in the use of ICTs to support KM in the sampled academic libraries in Nigeria and South Africa. In order words, whether such training and support is given librarians either through formal education, Informal education and Industrial training experience, there are no differences. The practical and theoretical training given to librarians are the same across the globe.

6.8.2 Technical ICT skills for librarians

This section addressed where respondent were asked to indicate the technical ICT skills believed to be important for the training and support of librarians in today's library environment? This question responds to research question six of 'How often are librarians trained and supported for the capacity to acquire current knowledge and skills in the use of ICTs for the support of knowledge management in academic libraries in Nigeria and South Africa?' Results are presented in table 6.31 and figure 19.

Table 6.31 Technical ICT skills librarians need

Technical skills for librarians	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Online searching	97	100	100	99	100	96	100	99
Social media	97	100	94	97	100	100	100	97
Web maintenance	97	88	88	91	89	96	89	91
Software troubleshooting	97	88	84	90	89	93	83	88
Information management	97	88	97	94	100	89	94	94
Web design	97	81	91	90	89	96	89	91
Hardware trouble shooting	86	75	84	82	78	89	94	87
Programming	90	81	94	88	89	75	78	81
Average	95	88	92	92	92	92	91	92
Average %	97	96	95	90	92	93	92	100
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

The results in Table 6.31 indicate that the most prevalent technical skill among librarians is online searching (99%), social media (99%), and information management (94%). On the other hand the least prevalent technical skills are hardware trouble shooting (84%), programming (85%), and software trouble-shooting (89%). Notably, knowledge and familiarization with different set of skills promotes efficiency and effectiveness in any work environment. It is likely that the availability of ICT tools, the experience and training had, attitudes of librarians, techniques and procedures used in operations facilitates acquisition of these skills.

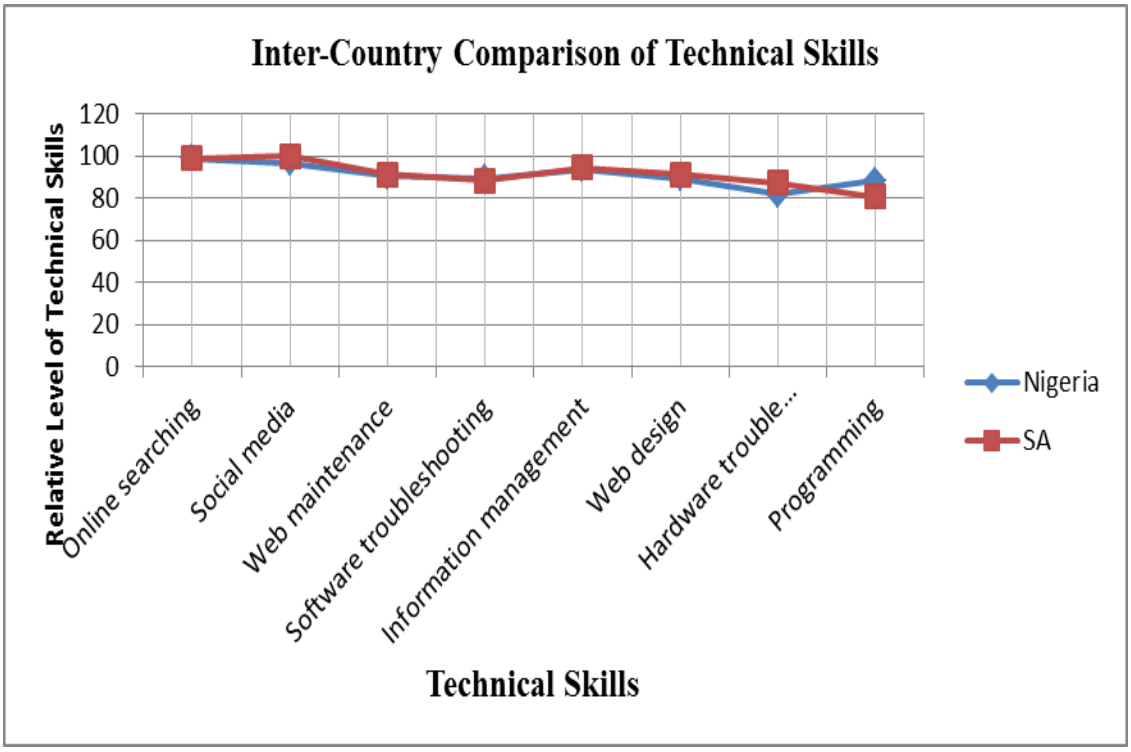


Figure 16: Inter-country comparison of technical skills librarians need

Figure 17 of the line graph indicates that at country level of the various university libraries, technical skills are more prevalent in South Africa than in Nigeria. From the line graph, the variables appear to be closely knit.

6.8.3 General skills for librarians

This section addresses the question where respondent were asked to indicate which among the following general skills you believe is important for training and support of librarians in their work environment? Results are presented in table 6.32 below.

Table 6.32 General skills required of librarians

General management skills for librarians	UI	FUT	DSU	Nig. (Average %)	UZ	UKZN	DUT	SA (Average %)
Mastery of foreign languages	76	75	63	71	67	64	67	66
Negotiating with vendors	86	94	81	87	78	82	78	79
Traditional reference interview	93	69	84	82	78	93	94	88
Assessment of job performance	97	81	94	91	89	86	72	82
Marketing library products	100	88	91	93	78	100	94	91
Search skills	100	88	97	95	78	100	94	91
Cataloguing and classification	100	94	88	94	89	100	89	93
Library ethical issues	100	100	88	96	78	96	100	91
Supervisory experience	97	100	97	98	89	86	94	90
Publishing of papers	100	100	94	98	78	96	100	91
Developing in other areas	93	88	94	92	100	93	100	98
Degree in librarianship	97	88	88	91	100	100	100	100
Ability to mentor other colleagues	100	94	97	97	89	93	100	94
Customer service awareness	97	100	94	97	89	100	100	96
Familiar with online sources	100	100	100	100	100	100	100	100
Average	96	91	90	92	85	93	92	90
Average %	95	97	89	94	91	99	95	95
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

The results in Table 6.32 indicate that several recommendations were made as to the general skills required of librarians. The most recommended are familiarity with online sources (100%), customer service awareness (97%), degree in librarianship (96%), and ability to mentor other colleagues (96%). On the other hand, the least recommended skills are mastery of foreign language (69%), negotiating with vendors (83%), and traditional reference interview (85%). At university level, the general skills are most appreciated in University of Ibadan (96%) followed by University of KwaZulu-Natal (93%). At University of Zululand,

requirement for the general skills are least appreciated (85%). These skills are basic requirements for librarians in university libraries. It was noticed that the educational training had, work environment, adequacy of funds for staff training, policies that guide the products and services of university libraries enhances librarians general knowledge. Interestingly respondents noted that the quality of visibility of research collaboration output have improved due to the possession of some of the general knowledge librarians have in their arsenal. Organisations have continued to amass a wealth of knowledge for the enhancement of productivity of skilled professionals. The inter-country comparison of general skills of librarians is further shown in the table and graph below.

Table 6.33: Inter-country comparison of general skills of librarians

General Management Skills	Nigeria (%)	SA (%)
Supervisory experience	98	90
Marketing library products	93	91
Publishing of papers	98	91
Cataloguing and classification	94	93
Familiar with online sources	100	100
Customer service awareness	97	96
Assessment of job performance	91	82
Search skills	95	91
Degree in librarianship	91	100
Traditional reference interview	82	88
Mastery of foreign languages	71	66
Negotiating with vendors	87	79
Library ethical issues	96	91
Ability to mentor other colleagues	97	94
Developmental skills	91	98
NOTE: Table values are percentages of the sample for each university or country		

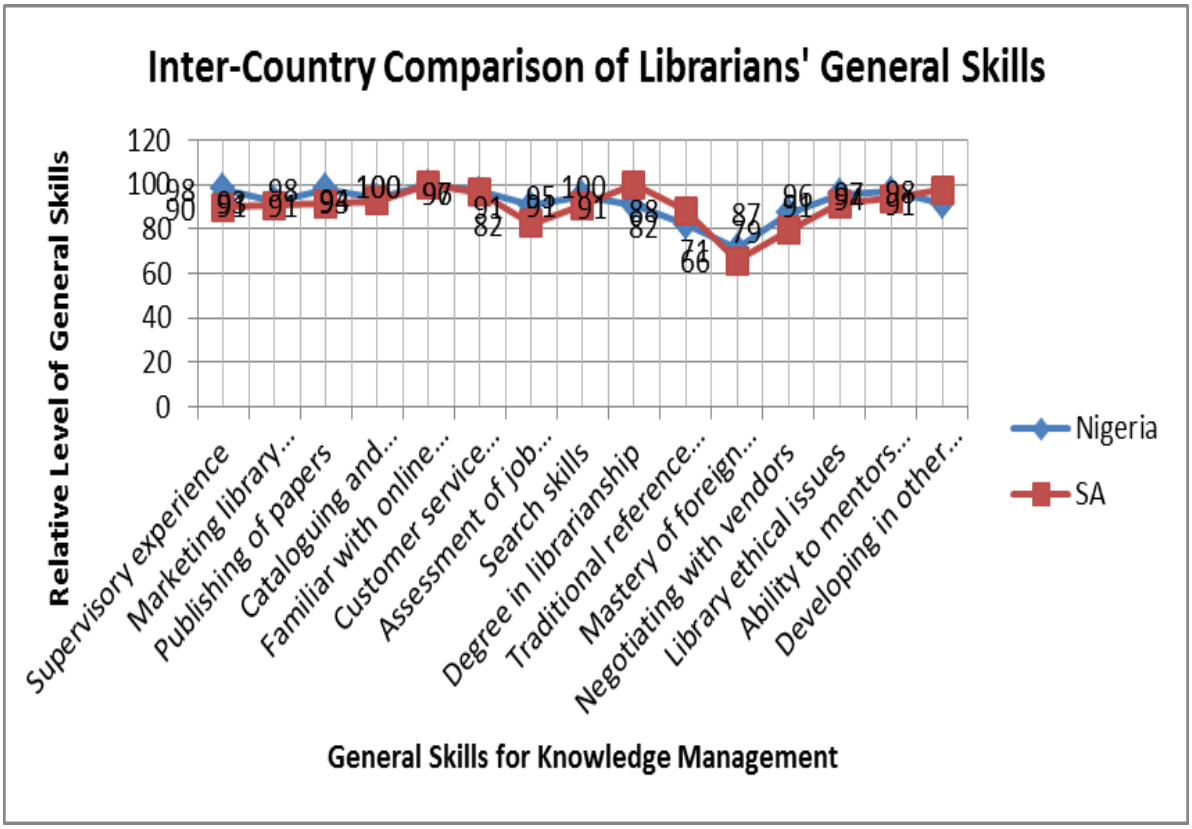


Figure 17: Inter-country comparison of general skills of librarians

Figure 18 indicates that the general skill-level fluctuates between the variables. In most of the variables, Nigeria has a higher appreciation of the need for general skills amongst the librarians. The average relative levels of agreement on the general knowledge needs are 92% in Nigeria and 90% in South Africa.

6.8.4 Personal skills for librarians

This segment addresses the question where respondents were asked to indicate which among the following personal skills they believed were most important for the training and support of librarians' work operations? Results are presented in table 6.34 below:

Table 6.34 Personal skills of librarians

Personal skills of librarians	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
Verbal communication	100	96	92	96	88	93	97	93
Listening	97	96	86	93	88	100	98	95
Approachability	93	93	99	95	79	96	100	92
Adaptability	96	93	96	95	88	97	98	94
Working with teams	93	96	96	95	99	83	92	91
Written communication	97	98	96	97	78	100	97	92
Self-motivation	98	100	93	97	88	92	100	93
Comfortability with instruction and teaching	94	96	96	95	77	90	100	89
Building relationships with colleagues within and outside the organisation	92	96	93	94	78	89	93	87
Organizational awareness	91	87	96	91	77	90	93	87
Sense of humour	98	92	93	94	67	84	88	80
Conflict management	97	93	89	93	67	81	88	79
Stress management	95	97	89	94	77	96	100	91
Ability to work independently without supervision	100	93	86	93	78	89	100	89
Innovative and creativity in approach to issues	100	96	93	96	77	89	100	89
Ability to motivate challenged colleagues	100	93	96	96	88	95	100	94
Average %	96	95	93	95	81	92	97	90
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.34 indicate that self-motivation (89%), adaptability 83%), written communication (82%), verbal communication (81%), and the ability to work with teams (79%) were the personal skills most frequently identified by librarians. However, sense of humor (59%) was rated least among others. When doing a country comparison, it can be noted that librarians at DUT in South Africa have more personal skills to those in UI, Nigeria. It is likely that the acquisition of these skills resulted from programmes or training like conferences/workshop, seminars, orientation, in-house training/mentorship, amongst other events that librarians have attended. Interestingly, the qualification, exposure, computer literacy and its application, and experience in job operations are basic requirements in the attainment of personal skills. Notably, being involved in critical discourse or participation in research, auditing and mapping of routine inventory, and evaluating staff organizational work performance are key components in building personal skills.

6.9 ICT policies for the support of KM

This section addressed the question where respondents were asked to indicate how ICTs policy has helped to ensure sustainability in management of information and knowledge in the library. This question responds to the seventh research question: 'What policies guide the use of ICTs for support of KM in academic libraries in Nigeria and South Africa?' Results are presented in table 6.35 below.

Table 6.35 ICT policies for support of KM

ICT policies	UI	FUT	DSU	Nig (Average %)	UZ	UKZN	DUT	SA (Average %)
ICT resources and facilities are readily available to promote efficient KM in academic libraries	96	92	90	93	78	82	88	83
It guarantees maximum benefits that contributes meaningfully by providing global solutions to challenges of ICTs	96	87	83	89	100	88	83	90
Enhanced planning mechanism and forecasting the development of local and international monitoring of the systems	88	81	83	84	100	88	81	90
It has empowered young trainees in librarianship with ICT skills and knowledge for global competitiveness	92	100	84	92	88	89	88	88
It creates awareness and ensures universal access and accessibility that would diffuse ICTs to all libraries	96	87	90	91	88	85	88	87
It has established new multi-faceted ICT institutions as centres of excellence for international markets	85	67	80	77	80	82	88	83
It has made the defence and law enforcement agencies accept best practices, used in national and international libraries	96	74	74	81	88	71	83	81
Average %	93	84	83	87	89	84	86	86
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Findings in Table 6.35 indicate that ICT policies are applied in diverse ways in the support of KM across university libraries. UZ in South Africa and FUT in Nigeria were superior in terms of the policies used. Creation of awareness and ensuring universal access and accessibility that would diffuse ICTs in all libraries was most significant (90%), followed by guaranteed maximum benefit that contributes by providing global solutions to challenges of ICTs (88%). The least areas where ICT policies have made effect are defence and law enforcement agencies acceptance of best practices used in national and international libraries. The author noticed that human capital development is essential in the application of infrastructure in the various

university library operations. Availability of adequate funds in order to acquire the necessary tools/software and train expert on ICTs application and maintenance culture of the tools are indispensable.

6.10 Those responsible for the formulation and implementation of ICTs policies

In this segment, respondents were asked to indicate those responsible in the formulation and implementation of ICT policies for KM in their library. This question responds to research question seven of 'What policies guide the use of ICTs for support of knowledge management in academic libraries in Nigeria and South Africa? Respondents' views were collated and reported as they were in the questionnaire. Content analysis was used to explain respondents view for better understanding and clarification. This is presented in table 6.36 below.

Table 6.36: Those responsible in the formulation and implementation of ICT policies

University libraries	Those responsible in formulation and Implementation of ICT policies in university libraries	Remarks
University of Ibadan library	• IT experts • Library management staff • Library management team • Library committee • Top library management • Government bodies in charge of policy-making • University librarian • System librarian • Head of units in the library • Representative of the university authorities	From respondents' views, it was observed that IT experts, system librarians and representatives of the university authorities are most concerned with formulation and implementation of ICT policies in university libraries. The writer affirmed that this would help to guide the operations of the use of ICTs
Federal of University of Technology library	• Representative of the university authorities • University librarian • Top management • Senior officers • Library management team • Electronic resources unit • ICT staff in the library • Formulation policy members • University management	The author noticed that electronic resource units/ICT staff in the library and member of university management should be those responsible for such obligations

Delta State University library	• Government officials • University librarian • Head of units/divisions • Library committee • Library management team • NLA (Library association representatives) • Management of the university • ICT staff member	Respondents' attest to heads of units/divisions, ICT staff member, as those responsible for formulation of ICT policies. This became obvious as they are the one with knowledge of what is needed in the formulation and implementation of the policy.
University of Zululand library	• Senior librarian • ICT department • Chief librarian	Respondent attest that those most suitable for the formulation and implementation of the policy are the librarians and ICT departmental staff.
University of Kwazulu Natal library	• IT experts • University librarian • Director of library services • ICT staff members • Head of subject librarians • Campus librarians • Other library staff • Head of section units • Top management	Respondents attest that IT experts, ICT staff members and head of units system are most concerned with formulation and implementation of ICT policies in the University libraries.
Durban University of Technology library	• Top management of the library • Senior Director • Deputy Director • Senior librarian-systems • Senior librarian- user services • IT department in the library	The author noticed that IT department staff, senior librarian-systems, and top management of the library should be those responsible for effecting the operations.

Results in Table 6.36 indicate that there are convergences and divergences of library management staff/team that formulate and implement ICT policies across the libraries sampled. The convergences are more representatives of the university, authorities/top management officials, IT expert/departmental staff, and ICT staff members. The divergence is solely other library staff who accounts for their department as representatives. This became obvious as these set of teams have prior knowledge and expectation of such task. The most viable and responsible personnel in the formulation and implementation of ICT policies varies from one university library to another. The job specifications, and position in the organization, are also factors that ought to be considered when dealing with issue such as this. It was noticed that decision-making and planning requires key roles and knowledge of experts in different subject areas. Identification of key resources is also very crucial in present day library operations.

6.11 Challenges faced in the use of ICTs for support of KM

This segment focused on where respondents were asked to indicate the challenges faced in the use of ICTs for the support of KM. This question responds to research question eight of 'What are the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa. Results are presented in table 6.37 below.

Table 6.37 Challenges faced in the use of ICTs for the support of KM

Challenges faced in the use of ICTs	**UoI**	**FUT**	**DSU**	**Nig (Average %)**	**UZ**	**UKZN**	**DUT**	**SA (Average %)**
Lack of motivation	90	100	91	94	89	89	100	93
Lack of trust	86	88	81	85	89	79	83	84
Inadequate funds	93	100	94	96	89	96	89	91
Knowledge of subject expert	83	94	75	84	78	86	83	82
Drift to other professions	72	56	66	65	67	75	67	70
Lack of infrastructure	93	94	100	96	89	93	83	88
Lack of organizational growth	79	81	78	79	89	86	78	84
Lack of self-development	90	94	91	92	89	82	94	88
Inaccessibility of library resources	86	69	91	82	100	89	89	93
Inability to cope with changes	93	94	91	93	89	82	89	87
Insufficient ability to manage knowledge assets	90	69	91	83	78	82	89	83
Unreliable internet network	90	88	88	89	89	82	89	87
Unreliable electricity	90	100	97	96	89	75	89	84
Insufficient KM sources	90	81	84	85	78	75	89	81
Lack of new current trends	79	75	88	81	78	82	94	85
Language barrier	79	63	59	67	78	71	89	79
Poor KM practices	83	81	91	85	89	82	78	83
Lack of personal computer	83	63	81	76	89	71	94	85
Costs of hardware/software	97	69	84	83	89	86	94	89
Lack of policy implementation	86	81	94	87	100	86	94	93
Lack of adherence to instructions	97	69	72	79	100	96	89	95
Lack knowledge to use ICTs/web	86	75	91	84	89	82	94	88
Lack of knowledge of library holdings	79	69	69	72	89	93	89	90
Inability to understand users queries	93	75	81	83	89	93	89	90
Lack of knowledge production	83	81	78	81	100	89	94	94
Inability to work independently	83	88	63	78	78	64	83	75
Average	87	81	83	84	87	83	88	86
Average %	90	84	87	87	88	87	81	90
Sample sizes	$N_{=29}$	$N_{=16}$	$N_{=32}$	$N_{Nig=77}$	$N_{=9}$	$N_{=28}$	$N_{=18}$	$N_{SA=55}$
NOTE: Table values are percentages of the sample for each university or country								

Results in Table 6.37 indicate that the most voiced challenges are inadequate funding (94%), lack of motivation (93%), and lack of infrastructure (92%). The challenges that were least emphasized are drift to other professions (67%); language barriers (73%) and inability to work independently (77%). These challenges are most pronounced in DUT (88%) and least voiced in FUT (81%). Inadequate funding is expected to have a negative impact on activities of infrastructural development and capacity building. Cross tabulation of inadequate funding with infrastructure revealed no significant impact as presented in the table below. The author of this study noticed that some of these problems are a result of the context (environment), cultural background, lack of maintenance, lack of available infrastructure, and misplacement of organisation priority. Interestingly, management styles applied in running the operations of the library determine how issues with users interface and staff responsiveness to resources and facilities are used to meet the organizational goals.

Table 6.38 Impact of inadequate funding on availability of facilities (computers)

Chi-Square Tests				
University Libraries		Value	Degree of freedom (df)	Sig. (2-sided)
University of Ibadan Library	Pearson Chi-Square	1.694805	2	0.428527
	Likelihood Ratio	1.997711	2	0.368301
	Linear-by-Linear Association	0.601227	1	0.43811
	Number of Valid Cases	29		
Federal University of Technology library	Pearson Chi-Square	.		
	Number of Valid Cases	16		
Delta State University Library	Pearson Chi-Square	0.403927	2	0.817125
	Likelihood Ratio	0.673025	2	0.714257
	Linear-by-Linear Association	0.337047	1	0.561539
	N of Valid Cases	32		
University of Zululand Library	Pearson Chi-Square	.		
	N of Valid Cases	9		
University of KwaZulu-Natal Library	Pearson Chi-Square	.		
	N of Valid Cases	28		
Durban University of Technology Library	Pearson Chi-Square	.		
	N of Valid Cases	18		

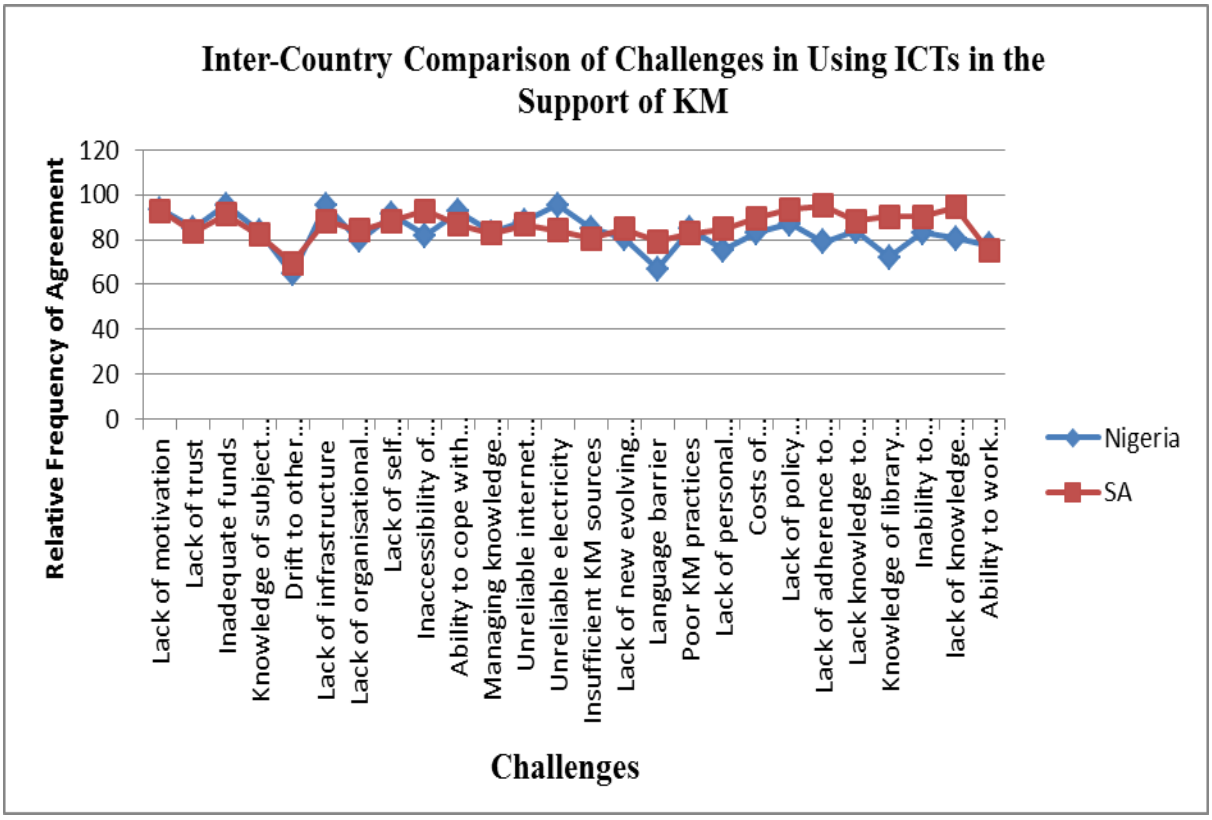


Figure 18: Inter-country comparison of challenges in using ICTs to support KM

Results in figure 19 of the line graph indicate that at a national level (of the university libraries), it appears there are more challenges in South Africa (86%) than in Nigeria (84%), on average. However, inadequate funding and infrastructure challenges are more pronounced in Nigeria. The most critical challenges to handle in the use of ICT for supporting KM are a lack of infrastructure (97%), inadequate funding (96%), unreliable electricity supply (96%) and unreliable internet networks (95%). It can be noticed that the increase in population index of users across disciplines thus leading to inadequate distribution of available resources and facilities.

The next chapter seven considered the information obtained from key informants interviewed, and observation carried out in the library environment. This was to attest to the available resources used by librarians in the two countries' university libraries.

CHAPTER SEVEN

DATA PRESENTATION, ANALYSIS AND INTERPRETATION: INTERVIEW AND OBSERVATION RESPONSES

7.1 Introduction

This chapter presents the analysis and interpretation of the interviews and observations, as research instruments used for the study. The interview questions addressed the questions one to twenty, as presented in appendix B of this research work. This chapter is based on content analysis of the two datasets, obtained from key informants who were interviewed as well as the observations carried out. The chapter is divided into two different sections: interview and observation. Section one presents demographic data (see 7.2.2 and appendix of B of the interview schedule) of respondents in the interviews that were conducted; whilst section two relates to the tools and other working materials, which the researcher saw with his naked eye. The environment, in the sampled university libraries visited, was also presented in the appendix of observations that had been scheduled. The interview schedule was meant to give an insight of current trends of librarians' knowledge and skills with relation to other issues that concern their work; whilst using ICTs to support knowledge management (KM) in the sampled university libraries.

The observation schedule in the sampled university libraries, across the two countries, was meant to help the researcher in evaluating and validating the position of the libraries in terms of physical structure, environment, available, and accessibility to ICTs tools, policy and procedures; used by librarians in their library operations. Pictures were also taken in order to represent the available university libraries; all of which are presented in appendix M. The pictures taken indicate what the researcher observed and evaluated during the course of the visit to the university libraries. The interviews conducted with the key informants showed how the university libraries meet users' diverse information needs and the various ways librarians manage their knowledge in service delivery. The interview questions, and observations guidelines used for this chapter (7), analyses the interpretation of both the researcher and the key informants.

The interview schedule was designated for heads of departments/units in the sampled university libraries across the two countries. It was meant to discover the past, present and future of KM practices through the aid of ICTs' support system services in the university libraries. Of the six sampled university libraries visited in the two countries, one key informant was available to be interviewed at each university. The interviewees (key informants) were from the following university libraries: University Ibadan library (University librarian), Federal University of Technology library (head of unit), Delta State University library (Deputy Librarian), University of KwaZulu-Natal library (senior librarian), Durban University of Technology library (senior librarian) and University of Zululand library (senior librarian). This gave the effort to interview relevant experts a 100% response rate.

7.2 Section one

This segment addressed the responses obtained from the key informants interviewed during the period of the research investigation.

7.2.1 Responses from interviews

This section address the responses of key informants obtained in the variable of demographic of names of institution, department/unit where the librarians are working, current position/designation, years of experience, and years in present position. These are presented below.

7.2.2 Demographic data of the respondents

The demographic data consists of the name of institutions, department or unit where the librarians are working in the library, current position or designation, years of experience, and years in present position; that were referred to in the present study.

This was done to distinguish variance in responses of the different interviews that were conducted. The name of the institutions where the interviewee comes from was in accordance to the first stated reason in the methodology chapter. The reasons are based on first established institutions and university ranking in Africa; technological and innovation-based institutions, as well as rural and government-owned institutions. The department/units, where the librarians are working in the library clarify what they do in those departments. The current

position/designation shows the position the librarians occupy and in what capacity. The years of experience improves the knowledge and skills acquired over the years in doing what they know best and how much they have also contributed towards the organizations. The year spent in the presently-held position is significant of their growth in job performance.

Table 7.1 Demographic data of the sampled university libraries N=6

Name of Institution Library and key informants	**Frequency**
University of Ibadan library	**1**
Federal University of Technology library	**1**
Delta State University library	**1**
University of Kwazulu-Natal library	**1**
Durban University of Technology library	**1**
University of Zululand library	**1**
Department/unit in which the key informants work	
Management	**1**
Technical service division	**1**
Research service division	**1**
Systems unit/ICT	**1**
Cataloguing and classification	**1**
Information service and cataloguing unit	**1**
Current position/designation	
University of Ibadan library (University librarian)	**1**
Federal University of Technology library (Librarian I)	**1**
Delta State University library (Reader's services librarian)	**1**
University of Kwazulu-Natal library (head of Technical)	**1**
Durban University of Technology library (Senior librarian)	**1**
University of Zululand library (Senior librarian)	**1**
Years of work experience	
Seven years	**1**
Two years	**1**
Fifteen years	**1**
Three years	**1**
Ten years	**1**
Eighteen years	**1**
Years in present position	
Seven years	**1**
Two years	**1**
Five years	**1**
Three years	**1**
Two years	**1**
One year	**1**

Results in Table 7.1 indicate that there is no significant difference in terms of the number of key informants interviewed. Although, it can be noticed that department/units, position occupied, nature of work and years of experience of librarians differs in terms of applicability

and methodology used for information service delivery from one university library to another.

7.3 The use of ICTs for the support of KM

Having established the demographic data of respondents in the interview conducted across the six sampled university libraries in Nigeria and South Africa in Table 7.1, this segment seeks to establish respondents' views in the following areas, namely: knowledge management practices (KMP), ICT facilities/infrastructure, utilization of ICT for the support of KM, ICT strategies to support KM, librarians' knowledge and ICT skills for KM, training and support for current knowledge and skills, ICT policies, and challenges faced in the use of ICTs for support of KM. This was aligned with the research question stated. Leedy and Ormrod (2010:148) observed that interviews (qualitative research approach) yield a significant amount of important information that can be useful. This helped researchers to relate to existing phenomenon of conscious rationale for actions, sets of standards of behaviour, present and past behaviours, intentions, feelings of actions, and concrete facts. Gray (2009:369) suggested that certain reasons do apply to research techniques used in examining the essence of attitudes of different categories under research investigation. The interviews enabled the understanding of the perceptions of librarians regarding the use of ICTs for the support of KM at the sampled university libraries. This becomes necessary; as it would help the librarians to harness diverse ways through which the workforce of the library is strengthened whilst still meeting users' expectations. The responses obtained from key informants interviewed were further collated and interpreted through the content analysis method, as is shown below.

7.3.1 Knowledge Management Practices

This segment seeks to represent respondents' comments regarding question six of the interview schedule: Are you aware that certain sections of the library operation falls under the criteria of KM? If yes, what do you have to say about it? If no, are you interested in knowing more about it? This question addresses the first research question namely: 'How are librarians in Nigerian and South African universities libraries practicing KM?' Responses across the six university libraries were presented in table 7.2 below.

Table 7.2: Awareness of KM among librarians N=6

University libraries	Narrations
University of Ibadan library - University librarian	• The respondent said 'yes', that he is aware of what KM is about • He said KM is a process of organising both information resources and human capital of the library for maximum utilization • It is for the purpose of knowledge creation and/or production.
Federal University of Technology library (Head of unit - technical service division)	• The respondent attests to the fact that he is aware that majority of library operations are in the areas of KM. • In fact, librarianship entails KM, in facilitating access to information and knowledge in diverse contexts.
Delta State University library - Readers' service librarian	• The respondent said yes but much explanation was not made • Besides, there was not enough time to engage in much debate on this emphasis
University of KwaZulu-Natal library - Senior librarian	• The respondent said yes and that KM focuses on the objective of the organization • It involves how to improve the organizational performance through organizational learning among colleagues.
Durban University of Technology library Senior librarian - Head of circulation	• Respondent answered yes and that it involves the application of your knowledge or know-how in accomplishing the job specification given to you to do by your boss. • Respondent further stressed that, without such acts, organizations cannot grow
University of Zululand library - Senior librarian	• Yes, it includes everything in the library that we do • The respondent went further to say that, more specifically, gathering and organization of knowledge, access to knowledge, creation of knowledge, dissemination and marketing of that knowledge. • KM encompasses everything that is done in the library.

Results in Table 7.2 indicate that most of the key informants interviewed are aware of what knowledge management of all about. This shows that librarians have knowledge of KM. Notably; the attribution could be as a result of their experience and engagement with in-depth library work.

- **Question seven from the interview**

Respondents were asked to indicate their views of what they understand KM to be: 'In your own way, kindly define KM?' The results were represented as they were from respondents' narratives.

Table 7.3: Understanding of knowledge management N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• The respondent said KM involves the act of organizing both information resources and human capital to maximize utilization of knowledge for job performance. • The understanding starts from what we know and how we apply our knowledge in work performance.
Federal University of Technology library - Head of unit	• KM involves the creation and sharing of information in new and innovative ways • It is aimed in enhancing and facilitating access to knowledge.
Delta State University library - Readers' service librarian	• KM is the process of creating, acquiring, organizing, and sharing information resources. to enable organisation achieve its goals and objectives.
University of KwaZulu-Natal library - Senior	• KM is a variety of strategies

librarian	• It identifies, selects, creates, disseminates and adopts the experiences of others.
Durban University of Technology library -Senior librarian-head of circulation	• KM is creating, sharing, storing, re-using organizational knowledge in order to enable an organisation to achieve its goals. • This act of creating and sharing happens on a day-to-day basis in the library.
University of Zululand library - Senior librarian	• Respondent affirmed that it is concerned with the management of knowledge (human beings) as well as both electronic and print forms of knowledge. • Print and electronic resources, which have different components of existence is KM. • The respondent further stressed that we as librarians are now creator and facilitator of knowledge in the form of training people to also create and disseminate such knowledge

Table 7.3 emphasized that that most of the responses have the understanding of KM based on different clusters. The clusters consists of the following: Information/knowledge- creation, acquiring, organizing, storing, sharing/disseminating, reusing, and managing print and electronic forms of knowledge. However, less response showed slight variance in what we know and how we apply knowledge in work performance.

- **Question eight from interview**

Having known what KM is all about, has your university library practiced KM before? If yes, how is your university practicing it?

Table 7.4: Practices of KM in university libraries N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• Yes. • It is practiced through job specification in relation to processes, operation and activities in the library. • Socialisation. • Collaboration in research with colleagues. • Other ways through which KM is practiced is training/mentorship of staff.
Federal University of Technology library - Head of unit	• The respondent said yes. • He said through creating specialized database • Extracting pool of information from specific areas to help build services rendered to users.
Delta State University library - Readers' service librarian	• The respondent said yes • Constant monitoring and evaluation of staff job performance. • Through training and development of staff. • Socialization among colleagues. • Organization of workshops and seminar within daily work activities in the office. • Enhancing the quality of service delivery to users.
University of KwaZulu-Natal library - Senior librarian	• Yes. • Formation of ICT initiative among groups in the library • Application of staff experience for problem solving within the library environments. • Organizing seminar on training need analysis for students and staff.
Durban University of Technology library - Senior librarian -	• The respondents said that he did not have a full understanding. • By attending to the work assigned to me by my superior.

Head of circulation	
University of Zululand library - Senior librarian	• Respondent answered yes. • The respondents said they are practicing it more now than before in the form of improving their understanding of the diverse roles of librarians. • Through the packaging and dissemination of knowledge. • In-house training of staff. This would help the staff to be able to help themselves and also engage in meeting users' needs. • Diverse roles of librarians. • Attending of workshops, seminars. • Research collaboration among staff. • Communication within the library domain.

It can be observed in Table 7.4 that key informants have practiced KM before. The practices are in various forms/ways in the library environment. This include: socialization; training; mentorship; job specification and processes; day-to-day work experience; organisation of workshop and seminars; ensuring quality service delivery; formation of ICT initiative among librarians; packing and dissemination of knowledge; in-house training of staff; and communication within library domain. One respondent, among the key informants, said not fully. Most importantly, activities like training need analysis of staff; advisory roles of librarians, use of different ICTs and service delivery to users, as well as the management of librarians' knowledge were paramount.

- **Question nine from the interview**

Can you please describe some of the factors that have helped your university library in KM practices?'

Table 7.5: Factors that have helped university library in KM practices N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• Through support in training and mentorship offered by the university administration. • Inclusive management style that allows initiative • Staff monitoring and evaluation of work performance
Federal University of Technology library - Head of unit	• ICT has helped to navigate processes, store and disseminate information to users and staff members. • Regular staff meetings. • Orientation given to new users.
Delta State University library - Readers' service librarian	• Availability and accessibility of ICTs to ease work. • Experienced cataloguers training and mentoring of other younger librarians. • Engagement of facilitator to come train staff quarterly. • Attending conferences and workshops. • Support systems from the university library administration.
University of KwaZulu-Natal library - senior librarian	• Capitalizing on staff special abilities to improve on areas of strength in organisational growth. • Enhancing staff training and development. • Increasing visibility of resources to both staff and students to aid their research work.

Durban University of Technology library - Senior librarian-head of circulation	• Evaluation and monitoring of staff work performance. • Engage staff in scholarly work. • See the need to improve on quality services • Working together as a team. • Individual librarian effort on the need to grow • Communication within the library environment with staff. • Engage staff on regular discourse.
University of Zululand library - Senior librarian	• Specific ideas that was difficult to unravel. • Experience and knowledge of the librarian. • Responsibilities engaged in the office have enhanced the practices. • Research investigation has also exposed me to areas that have never been covered. • Training embarked on help regulates current knowledge. • Subscription of the current print and e-resources. • Partnership with relevant stakeholders (e.g. Research and Innovation office, Research Deans, etc.) • Redesigning package of what we need do to help improve on our services. These have helped us to serve the community much better.

The narration of key informants as represented in Table 7.5 regarding factors that have helped in KM practices are clustered into the following: Support from the university management; availability of ICT/KM tools; training and experience gained from informal education of workshops and seminars; visibility of staff research output through articles, minutes of meetings, et cetera; evaluation and monitoring of work performance of staff; working as a team; partnership with stakeholders and redesigning of organizational structure. Specifically, it was noticed that librarians' initiatives were applied in areas mentioned in the library environment.

- **Question ten from the interview**

The respondents were asked: From your experiences and practices of librarianship, what are the various things you use your knowledge for?

Table 7.6: Various things librarians use their knowledge for? N=6

University libraries/ head	Narrations
University of Ibadan library - University librarian	• Management of human resources. • Strategic planning, policy analysis for target objectives. • Research investigations. • Training and development of other colleagues. • Facilitation of workshops. • Personal work for self-development.
Federal University of Technology library - Head of unit	• Personal development. • Improved decision making and general library practices. • Review of the curriculum of the organizational structure. • Meeting users' information needs through interlib loan services.

Delta State University library - Readers' service librarian	• To support learning, teaching, research and community services. • Research collaboration with other colleagues. • Assistance to internal and other external staff outside the library
University of KwaZulu-Natal library- Senior librarian	• Data capturing and work flow. • File sharing. • Optical curator recognition. • Document and content image solution; • Automation of information and cataloguing
Durban University of Technology library - Senior librarian-head of circulation	• Training of other colleagues; • Training students on how to use library resources • Provision of material that would equip and assist students on skills to work independently
University of Zululand library - Senior librarian	• I use my knowledge for the conduction of research. • Engage in community services. • Facilitate workshop training and development of my staff and users. • We usually run several workshop programmes in this library whereby both undergraduates and post-graduates are exposed to several training on endnote, plagiarism, how to use the library and their resources etc. • Training the trainers.

Findings in Table 7.6 of the narration of key informants indicate that there are multiplicities of activities/operations which the librarians use their knowledge for. These include personal development; management of human and material resources in the library; community services; strategic policy and planning; training and development of staff; facilitation of programmes; workshops and seminar among others.

7.3.2 ICT Facilities and KM Tools available in academic libraries

This section presents the ICT facilities and KM tools available in the university libraries of the two countries that were investigated for the purposes of this study.

- **Question eleven from the interview**

Kindly state the available ICT facilities and KM tools that your university library has.

Table 7.7: Available ICT facilities and KM tools N=6

University libraries/ head	Narrations
University of Ibadan library- University librarian	• Internet facilities • Scanners • Telephones • Dash board • Projector • Television • Micro-phone • CCTV cameras • Digital camera

Federal University of Technology library - Head of unit	• Computers • Photocopier • Scanner • Internet • Digital cameras • Video camera • Printer • CD-ROM et cetera
Delta State University library - Readers' service librarian	• Computers • Internet • Television • CD-ROM • Scanners • Telephones • Flash disc • Network hook et cetera
University of KwaZulu-Natal library - Senior librarian-systems	• Computers, • Internet facilities for access • Scanners, • Television • Editing tools • Adobe reader tool et cetera • CCTV cameras
Durban University of Technology library - Senior librarian/head of circulation	• Modem, • Computer • CD-ROM • Scanner • DVD • CCTV cameras • Internet facilities, • LAN, • Printer et cetera
University of Zululand library - Senior librarian	• Photocopiers, • Scanners • Printers • Computers • 84 databases • Telephones • Wi-Fi • CCTV cameras • Televisions • E-Catalogue

Results in Table 7.7 affirmed that most of the available ICTs and KM tools are hardware and software. These are used for specific and general work performance of library services. The availability of the various ICTs/KM tools could be a result of the policy of acquisition in the several various libraries, inadequacy of funds, lack of availability of trained ICTs/KM expertise, and the operation for which the tools are used. Importantly, the preparedness of library organizations in capacity development determines how well the tools can be available and used in the organisation.

- **Question twelve from the interview**

This section sought to establish how librarians utilized ICTs and KM tools. The respondents were asked to describe how the ICTs and KM tools are being used for KM in your university library? This is presented in table 7.8 below.

Table 7.8: Description of what ICTs/KM tools are used for in university libraries N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• Procurement of library materials and other facilities. • Processing and preservation of knowledge • Dissemination of information. • CCTV cameras for visualization of the library environment. • Delivery of information for knowledge creation • Cabling the bandwidth needed for the improvement of internet connectivity.
Federal University of Technology library - Head of unit	• Computers are used for processing, storing, retrieving knowledge. • Scanners and cameras are used for scanning and photocopying. • Planning and decision-making. • Telephones are used in communication within and outside library. • Projectors are used for display and presentations.
Delta State University library - Readers' service librarian	• Computers are used to access OPAC. • Computer used for cataloguing and classification in databases. • Abstracting and indexing services. • Used for organisation of knowledge. • Preservation of resources in university repositories. • For training and development of users and staff.
University of KwaZulu-Natal library - Senior librarian	• For digitisation of information resources. • Exhibition and display in projector. • Networking among colleagues. • CCTV cameras for monitoring of the library environment. • For resources sharing. • Information processing and record keeping. • Administrative office work. • Acquisition of resources.
Durban University of Technology library - Senior librarian/head of circulation	• E-library services. • CCTV cameras for the library environment and materials. • Processing and storing of information resources. • Used for training of staff in their job performance • Photocopying of documents. • Leading services. • Policy design. • Community service. • Provision of language instruction to disable users.
University of Zululand library - Senior librarian	• Use in teaching and learning processes of students and staff. • Procurement of library materials. • Processing, organization and preservation of information. • Access to resources. • Training and development of staff need. • Community service. • Metadata. • Inter library loan services. • Information services.

	• Cataloguing and classification.

It was noted in Table 7.8 that most of the descriptions made in ICTs/KM tools were in the areas of procurement, processing, access, planning, preservation, training of staff and users, leading and inter-library loan services, and dissemination of information and knowledge to meet users' needs. However, least of all was the areas of abstracting and indexing services, exhibition and display of, networking among colleagues, CCTV cameras for monitoring library environment, Metadata, policy design; community service; provision of language instruction to disabled users. The descriptions of ICTs/KM tools are both generic and specific in the nature of work operation in every library environment.

7.3.3 Utilization of ICTs for the support of KM

This segment deals with the utilization of ICTs by librarians in support of KM in the various university libraries in both countries.

- **Question thirteen from the interview**

The respondents were asked: 'Please comment on the effectiveness of the use of the various ICTs/KM tools available in your library?' This is presented in table 7.9 below.

Table 7.9: Effectiveness of the use of the ICTs/KM tools in sampled libraries N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• The available and accessible hardware and software are effective for the current operations such that they have been continually used in rendering services to users and for the staff development. • The library, being linked with the ICT units, has served other users living very close to the university campus due to the fact that the router extended for service delivery. • It has assisted staff in rendering effective services to users of the library. • It has promoted staff in their training needs analysis. • There were times where there was a need to acquire new books as one could not reach vendor. This lead to the acquisition of online resources. The online resources compliment the print-based resources.
Federal University of Technology library - Head of unit	• The key informant attests that the tools are effective since they were able to perform their functions without much delay. • Enhanced communication among colleagues. • Some are regularly used, while others are seldom. • It led to an increase of library users. • It facilitated the orientation usually organised for students.
Delta State University library - Readers' service librarian	• For the fact that librarians were able to use the tools to do the library operations shows that they are effective. • The effectiveness of the tools is not determined by how much it is being used but with its long life span. • It helped to preserve volumes of resources in institutional repositories.

	• It has enabled easy access and retrieval of resources in library. • Staff have used and continued to rely on this tools
University of KwaZulu-Natal library – Senior librarian	• The effectiveness of the tools helped in processing, storing, retrieving, • Dissemination of knowledge depends largely on the ability of the librarians • Knowledge, skills, attitude and exposure support the use of such tools. • Continuous use of the tools is another factor that will show how effective the too was able to accomplish set goals. • Constant maintenance of the tools builds up their effectiveness.
Durban University of Technology library - Senior librarian/head of circulation	• The tools are fair enough as they afford the time and space required of meeting users library services • It puts librarians ahead of their job performance. • Preparation in order to render good service. • Years of experience in the use of the tools are another factor. • Regular training embarked on by librarians give a guarantee to.

University of Zululand library - Senior librarian	• The tools have been helpful in training over 2,291 1st year undergraduates (February/March 2015) as a part of the Library Orientation programme.
	• There are regular User Education training programmes provided to the UNIZULU community (undergraduates/postgraduates/ academics) in the areas of:
	  • Know your library: An overview of Library services/resources/facilities for postgraduate students and academic researchers: how to use the library and their resources.
	  • Stay Away From: Plagiarism: types of plagiarism and what you need to know to avoid it.
	  • Turnitin: Plagiarism-checker and grammar mistakes software.
	  • e-Resources, tips for searching and more.
	  • UNIZULU e-Catalogue (including e-books), e-Resources (Google Scholar, Ebsco Discovery, Science Direct, ISI Web of Science, etc.), search technique, alerts, etc.
	  • Referencing made easy: End Note, Mendeley and Zotero.
	  • Finding Theses and Dissertations: UNIZULU IR (UNIZULU e-Theses and Dissertations)
	  • South African e-Theses and Dissertations
	  • Current and Completed Research Projects (NRF)
	  • African Digital Repository
	  • Networked Digital Library of Theses and Dissertations (NDLTD)
	  • Inter-Library Loans (ILL): saving time with Pre-request.
	  • Researchers' social networking: Research Gate, Academia.edu and the role of Altmetrics.
	  • Publishing your research.
	  • Peer refereed and accredited journals
	  • Open access, Copyright and use of SHERPA/RoMEO
	  • Visibility counts: Research impact and researcher identity; Author impact factor and Researcher's ID.
	• Staff have been trained and re-trained in order for them to train others.
	• Workshops and instruction classes have been organised through the use of these tools.
	• The tools have facilitated the preservation of the institutional repository (UNIZULU Repository) that we have today.
	• There are 30 computer sets used in the training library computer lab, though we are still seeking a bigger library laboratory to accommodate more students.
	• With the aid of these tools students can easily make photocopies on their own provided there is money in their student cards.

	• The tools have enabled inter-library loaning, to support our users of the materials we do not have at the moment. • Wi-Fi conveniently helps library users with their own devices to access library e-resources and the internet.

Results in Table 7.9 indicate that the effectiveness of the ICTs/KM tools used in the two countries' university libraries were unquantifiable. This was due to the context where the tools are used (various libraries), the products of the tools, the technical know-how and duration of use. Most significantly, the effectiveness of tools results in the availability and accessibility of hardware and software as a driving force; training needs analysis of staff; performance of work operations; and policy guidance. The knowledge of the librarians in application, exposure and experience gained in using ICTs/KM tools determines how effective it can be.

7.3.4 ICT strategies for the support of KM

This segment has to do with the strategies used by librarians in quality control assurance in terms of management of knowledge through the aid of ICTs.

- **Question fourteen from the interview**

The respondents were asked: What ICTs/KM strategies do you use as librarian in content management of knowledge in your university library. This is presented in table 7.10 below.

Table 7.10: ICTs/KM strategies used by librarians N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• Attending workshops and conferences to gain knowledge • Competitiveness among colleagues leads to anticipation • High demands from users thus leading to proffering other alternative • This demand has put us ahead of preparation so as to get ourselves prepared • It is essential to define the real demand. This the librarians does through selective dissemination of information (SDI) • Training need analysis of staff in preparation of task ahead is very important • Availability of adequate facilities to work with • Monitoring and evaluation of staff responsibilities. • Incentives are given to staff in terms has equally helped

Federal University of Technology library - Head of unit	• The advisory role to fellow colleagues is so important. • Constant training and development in current trends is another factor to be considered. • Appraisal of staff still helps to strengthen the work going on in the organisations. • Support systems from the parent body of the library. • Demonstration of knowledge and skills by staff to build the library information service when called upon.
Delta State University library - Readers' service librarian	• During orientations or library week, some of the tools, like OPAC and library catalogues, are used to check the available and acquired books in the library. • Engaging staff on regular monitoring and evaluation of job performance • Acquisition of resourceful staff and facilities • Using knowledgeable and experienced librarians to help users
University of KwaZulu-Natal library - Senior librarian	• Institutional repository has been a major strategy for content management of knowledge in our library • The use of content management systems • University websites have been developed in most university libraries to strengthen content management • Visibility of library resources to assist with users' content management • Enhancing staff training and development is crucial
Durban University of Technology library - Senior librarian/head of circulation	• The training of staff members who will carry out the job without having to contract the work to an external body • The use of snapshots, social media have been a source of alternative content knowledge management through the aid of ICTs • Regular training on how to use the facilities in content management • Openness to one another in the organisation helps staff members to grow • Attending of informal programmes like workshops, seminars, and conferences will expose staff to techniques used

University of Zululand library - Senior librarian	• Continuous use of facilities, like computer laboratories, to train staff and students. • The creation of research common for researchers and postgraduates to improve their research work. • Provision of wireless network in all sections of the library. • Establishment of an info cellar section, in order to improve service delivery to students • There are 16 working computers, as well as wireless access, in the info cellar. • Expansion of the facilities for undergraduates is in the pipeline and will be called the learning commons. • Provision of new smart screens in the library computer laboratory and research commons • Provision of photocopier/printing machines in all units in order to facilitate students and staff needs.

In Table 7.10, it was observed, that the narration of key informant revealed several strategies. These strategies have supported and improve librarian's job performance. The strategies comprises of the following: training need of staff; monitoring and evaluation of staff responsibilities; incentives of tangible and intangible means; advisory roles of librarians; acquisition of resourceful facilities. These among others were used to improve library services in university libraries visited in the two countries. Importantly,, most of the strategies require adequate funds, strategic teamwork in order to meet users' needs. When strategies are well articulated and well applied, it brings about sustainability of the organisation.

7.3.5 Librarian knowledge and ICT skills

In this segment, emphasis was placed on librarians' use of knowledge and ICT skills in the support of KM across the sampled university libraries.

- **Question fifteen from the interview**

The respondents were asked: 'Please enumerate what you do with your knowledge with relation to your areas of expertise in your university library?

Table 7.11: Librarians knowledge and ICTs skills for the support of KM N=6

University libraries/head	Narrations
University of Ibadan library -University librarian	• I use my knowledge to manage the section of library system where I work. • Provision of professional guidance by way of mentoring junior colleagues.

	• I use my knowledge to develop my staff based on the training had. • We also organize workshops and seminar on quarterly basis as a way to waken my staff professionally. • Publishing of research articles to aid their promotion. • For personal self-development • Rendering of quality service delivery • Continuous use of ICTs to facilitate work-flow in the library.
	• Facilitate access to knowledge to aid service delivery. • Create and share useful knowledge. • Participate in community services. • Develop oneself in terms of information sharing processes among colleagues. • Training other users on how to use the library and their resources.
Delta State University library - Readers' service librarian	• Assist my staff and students with their information needs. • Engage in research. • Training and development of fellow staff. • Organising workshops and seminars on current trends in the profession. • Collaboration with other colleagues in research. • Mentorship of younger librarians.
University of KwaZulu-Natal library - Senior librarian	• Create current awareness and literacy programmes services. • Global visibility and accessibility of information resources. • Mentorship. • Assisting users with their information needs. • Acquisition of information resources with ICT tools.
Durban University of Technology library - Senior librarian/head of circulation	• Daily work in the office. • Sharing knowledge with colleagues. • Writing of research articles. • Teaching and learning processes. • Supervision and evaluation of junior colleagues work. • Regulation of policy by decision-makers in the library.
University of Zululand library - Senior librarian	• In house training for trainers. • Addressing specific group needs of staff and students. • Training and equipping users with skills to work independently. • Entrusting librarians with responsibility without reminding them. • For support in teaching and learning given to new users. • Identification of stakeholders who can support the library. • Marketing Library information services by making presentations at the University workshops, faculty board meetings, et cetera.

In Table 7.11, key informants' affirm their opinions on the knowledge and ICTs skills they possess. The areas of such knowledge are majorly LIS, ICTs, research training and development in both countries university libraries. This area which librarians are trained more shows where they use their knowledge, especially in work performance of library operations. Most importantly, experience, technical know-how, and training built on sustainability of the demonstrated knowledge and ICT skills of librarians is a predominant trend.

7.3.6 Training and support for librarian's regarding current knowledge and skills

This segment sought to address the training and support given to librarians in current knowledge and skills in the use of ICTs for the support of KM.

- **Question sixteen from the interview**

Respondents were asked: 'What current trends of the profession, in terms of knowledge and skills, have you been trained and supported with, in terms of the use of ICTs for the support of KM. This is represented in table 7.12 below.

Table 7.12: Training and support for librarians N=6

University libraries/head	Narrations
University of Ibadan library- University librarian	• Strategic policy training, • Attending conferences, • Mentorship of other colleagues, • Capacity building, • In-house training, • Visits to other libraries for experiential knowledge, • Former training, • Vocational training,
Federal University of Technology library - Head of unit	• Teaching and learning in research writing, • Library orientation programmes, • Participation in short terms courses, • Mentorship, • Sabbatical leave for training, • In-house training within and outside of the library,
Delta State University library - Readers' service librarian	• Systematic training in the use of ICT application, • Research seminar and workshops, • Regulating staff on different work shift routines, • Engagement in reviewing staff performance, • Quarterly training of staff in cataloguing and classification,
University of KwaZulu-Natal library- Senior librarian	• Management training on policy issues and application, • In-house training, • Training in obtaining qualification for job performance, • Professionalism in service delivery,
Durban University of Technology library - Senior librarian/head of circulation	• Training on ICT policy and application, • Training on cataloguing and classification, • Management functions application, • Attending conference and seminar, • Mentorship and capacity building,
University of Zululand library - Senior librarian	• It is usually expected that librarians should be having an advanced knowledge and skills as people go to them for their information needs, • Professional training, • In house training, • Product training, • Research writing retreats • Someone is usually sent for training and later on, the person sent will have to train other when they returns, • Organizing orientation and training for undergraduates, postgraduates and academics/researchers in areas of Turnitin, search skills on how to look for resources in the library, etc.

In Table 7.12, the findings noticed from respondents' attest to multifarious training and support

given to librarians working in different areas of specialization. Most importantly, the training and support were classified into the various clusters. The clusters have both similarities and differences in strategic policy; capacity building in training and development (in-house, workshop; seminar, review of staff performance, skills and knowledge development). The formal training through teaching and learning processes coupled with training in research writing/investigation is very essential. This assists staff through support in professionalism and sabbatical leave. The training and support programmes offered have made most organizations essentially productive in recent times. This becomes explicitly of great need in capacity building of staff.

7.3.7 ICT policies for the support of KM

This section addresses the established policies of ICTs and how they are being applied in the library work environment.

- **Question seventeen from the interview**

Respondents were asked: Are there ICT policies in your university library? If there are, what strategic policy have you used in the application of ICTs/KM tools in KM and other library and information services in your university library?' This is presented in table 7.13 below.

Table 7.13: ICT policies for the support of KM N=6

University libraries/head	Narrations
University of Ibadan library - University librarian	• The respondent said there is ICT policy in their library • However, in relation to the strategic policy, trust must be placed on policy used in training and re-training of staff • Attending conferences and library visits within and outside our context is equally bound by policy • Sending staff members to learn new things from foreign countries.
Federal University of Technology library - Head of unit	• ICT policies are married with library policy as used in this library. • Though they have not been reviewed in a long time. • There is reflection of some current issues of the institutions with regards to increases in population (density) of users and acquisition of more recent information resources that were supposed to be addressed in them. • Staff development helps to boost library services. • Creation of awareness campaigns and enforcement of the policy. • Allowing decision-makers of the library to improve.
Delta State University library - Readers' service librarian	• Respondent said that there is specific ICT policy. But recommended the following: • Setting up a standing committee to enhance the policy • Review of management's top official positions • Changes of management styles used in running the university and that of the library as well

	• Enforcement of purchase of new ICT facilities • Regulating reference services to accommodate more users • Decentralizing staff responsibilities to create more access to sources • Regular ICT Budget
University of KwaZulu-Natal library - Senior librarian	• There is no specific ICT policy, but there are policies that guides and regulates the use of the ICT facilities and its maintenance. • Management and libraries policy must be aligned. • The goals of the library must be clearly stated. • Quarterly meetings with professionals on review of issues and need for improvement. • Creation of environment that will motivation staff members to work harder
Durban University of Technology library Senior librarian-head of circulation	• There are different ICT policies in the library that we use today • However, they need to be reviewed since lots of changes have taken place • Empowering staff members with knowledge and skills will advance the use of the tools • Engaging in mentorship with other colleagues
University of Zululand library - Senior librarian	• I am not sure of any specific ICT policy, but there are library policies that help regulate acquisition and maintenance of the various ICT facilities in this library • With relation to the strategic policy, new smart screens have just been requested. • We have 30 new flat screen desktop computers in the library computer laboratory to facilitate training programmes/workshops for both staff and students • There are software programmes available • There are access to library resources within off and on campus • Book policies that help to buy or acquire more books • Libraries also rely on other stakeholders in sensitive areas of service delivery, e.g. the ICT staff (who maintains the computer lab, provides access to the library resources of campus and Turnitin, supplies library ordered ICTs) • At the moment we need well-trained expert of ER librarians who will help manage our electronic resources and computer technician

Table 7.13 showed that, respondents have different views regarding the ICT policies that guide their operations. Most of the two countries' libraries attest that ICTs and library policies are tied together in their university libraries. These regulate one another in service delivery. Most importantly, the policies address the organizational goals, setting up of committee of staff members and review the policy, budgetary allocation of funds, and the acquisition of relevant ICTs facilities. Notably, in every library operations, no policy can work in isolation.

7.3.8 Challenges faced in the use of ICTs for the support of KM

This segment addressed the challenges faced in the use of ICTs for the support of KM.

- **Question eighteen from the interview**

The respondents were asked: What are some of the challenges you encounter while managing knowledge and rendering services to users in your library? This is presented in table 7.14 below.

Table 7.14: Challenges faced in the use of ICTs for the support of KM N=6

University libraries/head	Narrations
University of Ibadan library -University librarian	• The respondent made mention of the unsteady nature of electricity supply. • Dwindling budgetary allocation. • Staff unwillingness to upgrade their qualifications for improved service delivery. • Inadequate facilities of ICTs in others areas. • Inadequate professional staff. • Availability of old books and computer. • Decay of some parts of the university library building
Federal University of Technology library - Head of unit	• Inadequate funds to acquire more facilities and books • Inadequate office space • Poor and old ICT infrastructural development • Inadequate professional staff • Poor support systems from parent body in the work force of the library • Slow growth of staff development
Delta State University library - Readers' service librarian	• Inadequate funding • Inadequate space and facilities for librarians to work with • Most of the training programme is meant for only senior colleagues leaving the junior staff out • Inadequate senior colleagues • Inadequate training programmes for undergraduates and post-graduates in the areas of search skills, how to look for resources in the library, research writing, plagiarism, referencing • Slow promotion given to staff members • Lack of motivation given to staff members
University of KwaZulu-Natal library - Senior librarian	• Inadequate man power (professionals) with required skills and knowledge • Inadequate tools for staff members

	• Inadequate office space
Durban University of Technology library - Senior librarian/head of circulation	• Resistance to change by staff • Lack of motivation from bosses and fellow colleagues • Lack of commitment to work • Increase in users with limited staff needs
University of Zululand library - Senior librarian	• One of the biggest challenges is when you rely on someone to do some work and the person is not committed • The nature of work we perform here also requires qualified senior professionals but we only have two senior librarians • Whenever you made an order of something to use, for example...smart screens, access gates, etc., it takes so long for it to be delivered • There are changes with roles of librarians- this is supposed to be reflected in the organizational structure of the university library • The expanding open access services of electronic resources require a digitization librarian. • Some ICT facilities such as Ipads, printers, scanners, laptops, and projectors are needed in staff personal offices. This can help facilitate and improve the delivery of information services to users. For example, if staff is sent for training in workshops and seminar, it is also expected that such staff should have tools like laptops, Ipads. This would help facilitate preparation and delivery of such programmes. The printer and scanner for example, we only have at central unit. There are no personal printer and scanners in each staff office. It becomes difficult when there is need for urgent work that needs to be done. If you need urgent work sometimes, the queue is usually long, which delays the process. • A bigger computer laboratory is needed in order to accommodate the large numbers of users that we currently have in this institution. • The need of cell phones to communicate/assist users through SMS.

In Table 7.14, the researcher observed that, respondents' interviewed made reference to several challenges. However, the most crucial challenges faced by Nigerian university libraries are inadequate funding, poor and old ICT facilities, and inadequate professional staff. This can be compared to the South African university libraries where key needs is inadequate professional

staff, lack of commitment to work, and increased user needs. Notably, inadequate professional staff was noticed to be common problem in both countries libraries.

7.4 Section Two: Observation

This segment treats the responses from observation from the various university libraries sampled across the two countries.

7.4.1 Responses from observation

The purpose of the observation method of data collection is to affirm and validate the results obtained in the two data sets derived from the questionnaires and interviews. The direct and participant observation method was used by the researcher, during visits to the university libraries visited across the two countries. The direct and participant observation was determined, in order to gather information. This was used to strengthen the available tools and other working materials in relation to the use of ICTs for the management of knowledge in the library environment. It was used to verify and validate the responses obtained, whilst the researcher was in the premises where the field research was carried out. The direct and participant observation also showed that the observer (researcher) was present and saw the available tools/facilities. This gave the researcher clear evidence of the working materials used by librarians in library operations in management of knowledge in the various libraries visited

Emphasis was placed on the tools and resources in the offices of key informants, the attitude and appearance of the librarians towards the profession while interacting with them, their level of discourse, the books placed on shelves in their offices, the ICT units, numbers of available computers and the laboratory, tables and chairs, video cameras, CCTV cameras, scanning machine, DVD and telephones, printers, photocopy machines, inside the library buildings where students are studying and having group discussion as form of research, group assignment or study for their examination and research investigations, books and materials in racks for exhibition and display. Attention was also given to the outside environment of the library buildings. This was done through the participant observation method by the researcher. The researcher was busy interviewing the key informants while directly observing the items in the key informants' offices and, after the conduction of the interview, went further by moving round the whole library, from section to section, observing as well as taking pictures. Pictures

of observed items, tools, books, shelf, each section, students studying and other working materials and the library buildings are represented in appendix L.

The validation of using the observation method of data collection affirmed some of the things mentioned in the questionnaire and interview data sets. However, there are other items/areas in the library, which were revealed by the observations. This is a gap that would be covered in the discussion chapter. It is interesting to note that direct observation becomes significant as it suggests a detailed perspective of possible or accurate observable facts. This is why observation methods are used in most research investigations today as the method that focus on specific things, rather than generic phenomenon. The institutions (university libraries) covered were mentioned earlier in table 7.1; which covered the interviewing of key informants. The responses of the observed items/facilities, and other issues, are presented in table 7.15 below. They are categorized according to the following categories: Available ICT facilities, department/units, uses of the available ICT facilities, and the working environment of staff.

Table 7.15: Observation outcomes

Item	Institution (university libraries)	Narrative/observation
Available ICT facilities	University of Ibadan library	• Computers, • Books on tables and shelf, • Journals all placed on shelves, • Projectors, • Internet facilities (like wireless router, LAN, WAN), • Photocopier, • Scanner, • Sign post, • Printer, • Library building, • Camera, • CD-ROM, • CCTV cameras, • Television, • DVD, • Telephones, • Video camera, • Network hook, • Office chairs and tables, • Access to OPAC, • Exhibition and display rack, • Hardware like CPU
Available ICT facilities	Federal University of Technology library	• Computers, • Books on shelves, • Photocopier,

		• Scanner, • Printer, • Video camera, • Journals all placed on shelves, • Projectors, • Internet facilities (like the wifi, router, LAN, WAN)
Available ICT facilities	Delta State University library	• Telephones, • E-library unit, • UPS/stabilizer to regulate power to computer/accessories, • Library sign post, • Video camera, • Network hook for internet, • Office chairs and tables, • Access to OPAC, • Exhibition and display rack, • Computers, • Printer, • Library building, • CD-ROM, • Television, • DVD, • Books on tables and shelf, • Journals all placed on shelves, • Projectors, • Internet facilities (like the wifi, router, LAN, WAN), • Photocopier, • Scanner
Available ICT facilities	University of KwaZulu-Natal library	• Telephones, • Video camera, • Network hook for internet, • Office chairs and tables, • Access to OPAC, • Exhibition and display rack, • Computers, • Printer, • Library building, • CD-ROM, • Electronic security gate, • Television, • DVD, • Books on tables and shelf, • Journals all placed on shelves, • Projectors, • Internet facilities (like the wifi, router, LAN, WAN), • Photocopier, • Scanner.
Available ICT facilities	Durban University of Technology library	• Network hook for internet, • Office chairs and tables, • Access to OPAC, • Exhibition and display rack,

		• Computers, • Electronic security gate, • Printer, • Telephones, • Video camera, • CD-ROM, • Television, • DVD, • Books on tables and shelf, • Journals, • Projectors, • Internet facilities (like the wifi, router, LAN, WAN), • Photocopier, • Scanner.
Available ICT facilities	University of Zululand library	• Telephones, • Video camera, • Network • Office chairs and tables, • Access to OPAC, • Exhibition and display rack, • Computers (old and new ones), • Printer, • Computer laboratory, • Library building, • CD-ROM, • Television, • DVD, • CCTV cameras, • Books on tables and shelf, • Journals in serial sections, • Projectors, • Internet facilities (like the wifi, router, LAN, WAN) • Photocopier, • Scanner, • Machine for writing on spine, • Security gates, • Portrait of government official. • Notice board, • Glass display board, • Work station tables • Reading tables for students, • Stack book, • Broken tables and chairs, • Zulu's collections, • Library conference room, • Research commons room, • Info cellar unit for users, • Seminar room, • Staff office, • Relaxation spot with tables and chairs,

Results in Table 7.15 of observations carried out, indicates that different ICT tools, and other related items/resources, are meant for different specific job descriptions and functions in the university libraries that were visited in the two countries. Notable factors, such as, adequate funding, policy of the library, space to store the facilities, efficient expertise determine what each university libraries; is capable of acquiring.

Table 7.16: Department/units

Items	Institution (university libraries)	Narrative/observation
Department/units	University of Ibadan library	• Cataloguing and classification, • Systems unit, • Administration unit, • Social sciences unit, • Circulation, • Serials, • Digitisation, • Acquisition, • Collection development, • Reference, • Reserve,
Department/units	Federal University of Technology library	• Readers services, • Technical services, • School libraries, • E-resources, • Multi-media, • Administration unit, • Reference, • Research and development, • Bindery unit, • Reserve unit
Department/units	Delta State University library	• Cataloguing and classification, • Systems unit, • Circulation, • Administration unit, • Serials, • Acquisition, • Collection development, • Reference, • Reserve, • Special collection, • Medical college unit, • Law library unit, • Management science library unit, • Agricultural science library unit
Department/units	University of KwaZulu-Natal library	• Cataloguing and classification, • Information services, • Circulation, • Academic reserves, • Architecture,

		• Periodicals, • Digitization, • Bindery, • Finance department unit, • IT Support systems unit, • Administration unit, • LIS unit, • Campbell Collections, • Interlibrary loans, • Dentistry unit, • Collection, maintenance, and processing unit, • E-Resources unit • Documentation Centre
Department/units	Durban University of Technology library	• Cataloguing and classification, • Information services, • Circulation, • Acquisition, • Publication reserve and development, • Midland library, located in Indumiso and Rivers campus, attends to several units/departmental needs, • ML Sultan and Steve Biko, attend to research support and after hours needs of students, • City campus attending to users information needs
Department/units	University of Zululand library	• Cataloguing and classification, • Information services, • Circulation, • Acquisitions, • Inter-library loan, • Serial sections • Education resource centre, • Audio-visual, • Research commons, • Info cellar service unit.

Results in Table 7.16 indicate, that of the observed departments/units across the university libraries visited, there were those which had different capacities in terms of users' needs, population of the students, resourcefulness, adequacy of funds and staff strength, nature of work operation, policy of the institution, amongst others. Interestingly, it was noticed that University of KwaZulu-Natal had more departmental libraries in all the university libraries sampled. This could be as a result of the merging of several campuses into one University. Notably, as university libraries grow, the library size, units/departments, services, resources, and staff equally increases.

Table 7.17: Uses of the available ICT facilities

Items	Institution (university libraries)	Narrative/observation
Uses of the available ICT facilities	University of Ibadan library	• Research training, • Documentation of resources, • Presentation in seminar, • Scanning of documents, • Photocopying of papers, • Recording of meetings, • Cataloguing and classification, • Reference services, • Inter library loan, • Acquisition of resources, • Personal research work,
Uses of the available ICT facilities	Federal University of Technology library	• Reference services, • Inter-library loan, • Acquisition of resources, • Personal research work scanning of documents, • Photocopying of papers, • Recording of meetings, • Cataloguing and classification,
Uses of the available ICT facilities	Delta State University library	• Scanning of documents, • Photocopying of papers, • Recording of meetings, • Cataloguing and classification.
Uses of the available ICT facilities	University of KwaZulu-Natal library	• Research training, • Documentation of resources, • Presentation in seminar, • Reference services to users, • Storage of resources in databases, • Access to OPAC, • Typing of minutes of meetings,
Uses of the available ICT facilities	Durban University of Technology library	• Online acquisition of books, • Inter-library loans, • Research training, • Documentation of resources, • Presentation in seminar, • Referencing,
Uses of the available ICT facilities	University of Zululand library	• Presentation in seminar, • Scanning of documents, • Photocopying of papers, • Recording of meetings, • Cataloguing and classification, • Reference services, • Security guides to library books and gates, • Alarm systems in the library controlled by ICTs.

Results in Table 7.17 of observed available ICT facilities used across the university libraries visited indicates that most of the facilities are used by librarians to render specific and generic

work operations in the libraries for the benefit of the users. However, there are times where the librarians will have to engage in personal work that would facilitate alternative plans prior to assisting users in subsequent times. The use of these tools enables librarians to advance more in their search for more knowledge and skills needed for effective and efficient work performance.

Table 7.18: Working environment of staff

Items	Institution (university libraries)	Narrative/observation
Working environment of Staff	University of Ibadan library	• A large and spacious office with secretary attached, • Adequate facilities, • Writing materials, • Fans, • Air condition, • Office located in four storey building,
	Federal University of Technology library	• Writing materials, • Fans, • Air condition, • Spacious office located in three storey building, • Adequate facilities,
	Delta State University library	• A nice office with secretary and other supporting staff located at the grand floor of the three storey building, • Adequate facilities, • Writing materials, • Fans, • Air condition,
	University of KwaZulu-Natal library	• Smaller offices, • Adequate facilities, • Writing materials, • Air condition, • Tea room, • Quiet environment,
	Durban University of Technology library	• A very big and spacious office, • Adequate facilities, • Writing materials, • Small offices, • Neat environment,
	University of Zululand library	• A very big and spacious office, • Adequate facilities, • Writing materials, • A tea room, • Small office with regards to position of librarians.

As can be observed in the working environment of staff in Table 7.18, it was noticed that the working conditions of staff in Nigerian librarians have more supporting staff, spacious offices located either at the button or top storey-building, who work with their boss in comparison to those in South Africa. Those in South Africa have more sophisticated ICTs, neater environments, and more adequate resources that are needed to improve service delivery, compared to those in Nigeria. Most importantly, having the required tools and good working condition is better to working in more spacious and more attached staff when the required resources are not available. The relationship established among staff is a factor in a well-supported system.

7.5 Summary

The author found the study insightful as it echoed significant observations that correlate with the results of the interview used in the research investigation. The university libraries, across the two countries, were evaluated and validated based on the status of their physical structure, availability and accessibility of ICT tools, and the policy and procedures as used by librarians in their library operations. Most importantly, pictures taken are a clear indication of the evaluation carried out by the researcher during the time of the visit. The study showed a marked increase of research in the domain of KMP, ICT facilities/infrastructure, utilization of ICTs, ICT strategies, librarians' knowledge and ICT skills, training and support for current knowledge and skills, ICT policies, and challenges faced in the use of ICTs. Interestingly, these areas have shown some commonalities and differences in their understanding of expression. The researcher believed that interdependent knowledge in the LIS profession will help to broaden our understanding of how we create and extend help that would improve library operations. Most importantly, the LIS profession is growing at an alarming rate. The growth of the profession has expanded and enabled strong networking, collaboration, capacity building and conducting of empirical research deposited in open access. This novelty is not only seen globally; rather it has its root in local contexts. Since this research is mostly covered in selected Nigerian and South African university libraries, this therefore is the gap, which the research fills.

The contribution made by the observations, as one phase of qualitative research used in present day research investigation, helped to unpack most of the intentions of this study. The

processing of the dataset, obtained or observed, poses a challenge when it is tied along with other variables. This development is an opportunity to generate a wealth of visible and invisible resources that were not noticed by the employee or employer of the organization. Though they might not mean anything to the organization, they are a reflection of what could have happened in the past in the organization. Therefore, a distinction arises across the six university libraries. This shows that there is a gap in terms of infrastructural facilities and resources, as well as support from government to these libraries. This unquantifiable scenario made the university libraries in South African environment more proactive and expanded in scope, services, and research productivity. The most significant point to mention in the observation carried out is the physical/architectural buildings of all the university libraries established in Nigeria. They are gigantic buildings, tall and specious. Besides, the buildings are strategically positioned in the university environment. These among other things were presented in the pictures taken across the various libraries. See appendix M.

The next chapter treats the discussion of the findings obtained in the questionnaire, interviewed key informants, observed library facilities, and environment.

CHAPTER EIGHT

DISCUSSION OF FINDINGS

8.1 Introduction

The previous chapter presented the data analysis and interpretation of questionnaires; presented interviews with key informants; and outlined observations that were obtained from respondents in the sampled university libraries in the two countries. This chapter therefore discusses the results from the three data sets; questionnaires, interviews, and observations. This was supported by literature that addresses the findings made in the previous chapters. The discussions of the findings were drawn from themes in the research questions of the variables and characteristics of respondents as addressed; in 6.1 of chapter six. According to Okon et al (2010:535), a discussion of results is important as it strengthens the researchers' will to address certain issues tied along with specific answers as aligned with the research objectives drawn from the research study.

8.2 Characteristics of Respondents

The characteristics of respondents in the present study cut across gender, age, university affiliation, departments, qualifications, positions/rank of librarians and work experience. The respondents for the study were drawn from six selected university libraries across Nigeria and South Africa. The targeted population from the six university libraries was made up of 171 professional librarians. The 171 targeted librarians were distributed copies of the questionnaire. Only 132 copies of the questionnaire (77.2%, see section 6.2.1) were retrieved. These were used for the study's data analysis. The librarians who completed the questionnaires across the various university libraries consisted of the following (in numbers and percentages): UI library (29; 44.1%); FUTA library (16; 24.4%); DELSU library (32; 58.4%); UNIZULU library (9; 13.5%); UKZN library (28; 42.4%), and DUT library (18; 37.2%). See table 6.1 in chapter six. One key informant (university librarian/unit heads) from each of the six university libraries was interviewed. The six key informants who were interviewed provided responses that were used for the content analysis of the narratives gathered from the respondents (see table 7.2 in chapter seven). The observations made during the visit to the various libraries were centered on the facilities, staff offices and university libraries' environments; and are all represented in tables 7.15 to 7.18 in chapter seven.

The current study revealed that more female respondents participated than male respondents in the overall research investigation (see table 6.1). The age range of librarians revealed that respondents have age differences of ten (10 years) each from one another (see table 6.1 in chapter six). It can be noticed that with age difference, ICT applications are more often attracted to the younger generation. The exposure, background (rich or poor back-round), the context or location (urban and rural area) has much effect towards its' use as well. The findings from key informants interviewed in each of the university libraries revealed that there is no significant relationship between the numbers of key informants interviewed.

It was revealed that the majority of respondents have Bachelors and Masters' Degrees, compared with Honours and PhD degrees. This is the case in both countries' libraries (see table 6.1 in chapter six). Most importantly, Nigerian university libraries appeared to have more PhD holders in comparison with South African university libraries (see table 6.1 in chapter six). It can be noted that Nigeria has many more universities (than South Africa), which offer the opportunity of attaining higher qualifications. It is envisaged that higher positions occupied in most organizations now require higher qualifications with considerable work experience, knowledge, and skills to function better in any given task.

Results of librarians' positions/rank indicate that few respondents were principal librarians, librarians I, and Chief Library Officer; compared to senior librarians and higher library Officers (see table 6.1 in chapter six); from both countries universities libraries. Results of job titles revealed that there were more senior librarians in South African university libraries compared to Nigerian university libraries (see table 6.1 in chapter six). The job titles mentioned above in both countries are determined by the qualifications, position/rank of the librarian and responsibilities assigned to them. This varies in context and also in accord with the specific type of library. Of note was the fact that the vast majority of senior librarians in South African university libraries did not have a PhD degree. Nigerian university policy pegged it that PhDs, as well as a number of research publications, are basic requirements before librarians can be promoted to the position of senior librarian. This is affirmed by Salaam and Onifade (2009:2); Ochai (1998) and the National Universities Commission (NUC) (1993).

Since academic status has been accorded to professional librarians, they are now required to

publish, and possess PhDs, before they can be promoted to the position of senior librarian or offered managerial positions. This was on the basis for librarians to advance in their research skills and ensure quality service delivery to users (Salaam, and Onifade, 2009:2; Ochai, 1998; and National Universities Commission (NUC), 1993). Nevertheless, the reverse is the case of South African university libraries, where PhDs and the publication of research papers, do not matter so much before one is promoted to the position of senior librarian.

Results of work experience in the university libraries demonstrated five (5) years differences from one another. This varied with individual librarians and from one institution to another (see table 6.1 in chapter six). It can be noticed from the findings that only few librarians had worked for over 26 years or more. Most importantly, the availability of technical tools and support system from organizations and resources to work with could have led to the respondents spending lots of years in the organization. The findings obtained regarding librarians department revealed that cataloguing and classification, collection development were the most departments where much volumes of library work and experience of expertise are in much demands (see table 6.2 in chapter six). The findings suggest that every department in the libraries constitutes the entirety of the university library work force that strengthens the information services to users.

The current study also revealed that respondents at Delta State University library was top, followed by University of Ibadan library and University of KwaZulu-Natal library in the university libraries that participated in the survey. University of Zululand library was the lowest among the respondents (see figure 1 in chapter six). Notably, it is likely some academic librarians were on leave, which lead to low turnout from some university libraries. The nature of one's job, academic activities in the institution and support systems from organization determines staff commitments.

8.3 How is KM being practiced by librarians in Nigerian and South African university libraries?

This research question responds to the questionnaire data sets. Findings from questionnaire revealed that respondents had knowledge of KM during their study/training programme in library school/information science department. It was also noticed that most of the respondents

read about it from the internet. Moreover, lessons from their teachers/lecturers were seen to be very important in the two countries university libraries visited (see table 6.3). The findings from questionnaires suggest that attainment of quality education exposes an individual to diversities of knowledge in different environment. The findings further suggest that continuous update in current knowledge in KM within and outside the library environment enforced librarians more practices. Jain (2007:378) support the findings such that advance in continuous creating, acquiring, capturing, sharing, and using knowledge to enhance learning and work performance in the organization promotes KMP. Studies by White (2004), Townley (2001:54) and Jain (2007:379), were of the view that an enhanced knowledge environment brings improved knowledge access through strategic plans of achieve organizational goals and objectives.

The act of knowing KM has been an interesting phenomenon in both organizations and academia. This has led to exploit of the domain to unravel the emerging paradigm through which existing strands of theory and practices have evolved (McAdam and McCreedy, 1999:91). Mostert and Snyman (2007) also gave their view, which supports this finding of the knowledge of KM in the context of how to survive and prosper in a competitive and continuously changing work environment. Another school of thought as revealed by Muhammad, Ibrahim, Bhatti and Waqas (2014:27) was that KM does not only reflect technologies used but the understanding of the people's view and work, brainstorming of groups of people with common interest and how they can share their experience and learn from each other in the organization learning interface and leadership.

This assertion shows that for librarians to have knowledge of KM there could have been instances where interactions and experiences are shared. The sharing of knowledge with people of common interest adds value to the individual and organizations. Findings from interview revealed that respondents have awareness of what KM is all about. Five among the six key informants gave their understanding of the meaning of KM. However, one among the six was not too familiar with KM. It is interesting to note that there is knowledge gap on the awareness/knowledge of KM among some librarians in this present day library operations. The reason could be that the drive to embark in research investigation is not there.

Ocholla and Ocholla (2013:5-6) affirmed that the practical reasons of embarking on research which correlates with librarians awareness or knowing KM include: fulfill learning drive; domestic and career needs, satisfy curiosity; egoistic reason (visibility and recognition); career-related rewards (promotion, permanent or tenure-ship positions); self-development and growth to mention just a few. This is what is expected of librarians to continuously enhance their knowledge drive and skills to remain relevant in their profession. Using Sagsan's (2007) theory of KM life cycle to supports this finding, the theory framework strive to help the knowledge of KM navigate knowledge creation, sharing, structuring, using and auditing what has been known by librarians. Organizations grow and become unique in the product and services they offer within and outside context. This requires knowledge and skills of employees, which in turn transform the process of change. The act of learning and knowing is a normal routine in every organization.

8.3.1 KM practices by librarians in universities libraries in Nigeria and South Africa

This segment responds to questionnaire and interview datasets. Respondents gave their opinions as to the ways through which knowledge management is practiced in their university libraries. The finding revealed different opinion in relation to context. This involves group discussion in communities of practices, apprenticeships, in-house training, socialization, seminars, conferences and workshops. The findings suggest that knowledge management practices (KMP) in academic libraries be promoted. This so because it has improved librarians' routine, procedures, policies, application, knowledge and skills used in managing information and human resources in most organizations (like academic institutions, libraries, research institutes, the politics and legal practice) today. A study by Jain (2007:389) suggests that librarians as information professional need to transform themselves into value adding knowledge professionals that would visualize rapid change. These changes require instantaneous communications that transform the organization from paper based to networked relationships.

In support of this assertion, Singh and Sharma (2011) unveiled that since KMP is where learners analyses organizational culture with the operations of work performance that they are all engaged in, KM framework which rounds knowledge creation, methods and techniques, development, systems thinking, strategy management be set up (Liao, 2003:156). KMP is no

longer a new concept or phenomenon in the academic library world. However, there is still much that need to be done by information professionals to unravel this domain. For example, the ways medical practitioners, media personnel, engineers, legal practitioners among others practice their profession, so librarians are expected to practice the routines of acquiring knowledge and rendering services to users internally and externally. The practices of knowledge management would foster better when the adoption of theoretical, methodological and scientific approach which academic libraries needs in order to understand the management style used for the organization growth.

Results from interviewed key informants revealed that five out of the six key informants have the understanding of KMP, though their interpretations and application differs. They claimed that the basic KMP in their libraries is library routines/operations carried out on day-to-day job specification and sharing of work experience among colleagues. The affirmation of the interviewed responses agreed to some extent, though with slight variance with the results obtained through questionnaire. The findings from interview were clustered into information creation, acquiring, organizing, storing, sharing/disseminating, re-using, what we know and how we apply our knowledge in work performance and to manage human beings and print form of knowledge. Using the Sagsan's theory of KM life cycle to justify the reason for KMP, it is interesting to note that knowledge creation is an essential component in organisation. Without the need to share it, it becomes unnecessary to create knowledge. The shared knowledge goes a long way in restructuring an organization or individual, thus when properly used and audited. The increased efficiency and productivity of the organisation rely heavily on the theory; policy that supports the current research activities of KMP in libraries.

8.4 What are the available ICT facilities and KM tools and services for the support of KM in academic libraries in Nigeria and South Africa?

This question addressed datasets of questionnaire, interview and observation. Evidence of questionnaire results revealed that most available ICT tools vary in job description from one university library to another. This includes computers, CD-ROMs, scanners, projectors, telephones, printers and monitors; which appeared to be the most available tools across the university libraries in the two countries. Apparently, smart board appears to be the least tool. It was noticed at inter country comparison the best resourced libraries are FUT and UZ. UI and

UKZN are almost equal in terms of availability and resourcing of tools. Findings from interviews and observations showed that the dataset obtained agreed with that of questionnaire, although with some disparity in terms of the ICT tools, that include microphones, CCTV and video cameras, WiFi, e-catalogues, 84 databases and telephones. These were not mentioned in the questionnaire dataset that was obtained. Interestingly, it was difficult to ascertain whether all the facilities mentioned and observed are in good working condition.

The only one believed was the computers that the librarians were using. There were some found to be working as well in the computer laboratory that the librarians showed to me. Another clear indication of the tools that was working in the libraries was the OPAC that was used to access information resources across all fields of study. The current study revealed that several working facilities/tools and related materials were observed. This was well elaborated in table 7.15 in the observation section of chapter seven. Take for example, some computers, microphones and projectors, amongst other tools, that were not tested in the researcher's presence in order to see how well they were functioning. Again, even if they were to be tested, there was no regular electricity supply in the entire country to regulate the use of the tools. It is peculiar to have university libraries in a Nation without regular electricity supply. The university libraries sources for alternative measure of standby generator in the use of the tools across the entire Nigeria. This is the reverse with university libraries in South Africa where electricity has been very regular in the use of the facilities across the country. The availability of the various ICTs/KM tools mentioned and observed could be related to the fact that there are policies guiding its acquisition in the libraries, the adequacy of available funds, trained ICTs and KM personnel and the operations for which the tools are used.

The findings suggest that ICT facilities are the engine, or building blocks, behind the operations in diverse contexts in library and information services today. The findings further suggest that ICT tools in academic libraries should be embraced due to advance in constant development and growth in knowledge. Laleye (2015:398) supported this finding by saying, the changes in technology has brought new integration and approaches of instruction and implementation used in university libraries today. This change has brought about different emerging technologies of computer, CD-ROM, educational television, Email, teleconferencing, among others. These are available in the actualization of set goals of educational systems, of

which academic libraries are a part of (Laleye, 2015:400). Studies by Chapman, Slaymaker and Young (2005) also supported the findings such that the available ICT tools in organizations are not only instruments which facilitate the processing and retrieval of information; rather it encompasses different technique used by people to access and use ICTs. This finding concurs with the study by Saleem et.al, (2013:51-52), who argue that the available ICT tools of e-group, e-mail, fax, internet, mobile phone and video conference in academic libraries allow users to have easy and quick access to internet-based resources and services. Without these no library can sustain the high incidence of flocks of users' information needs.

The current study revealed that these available tools are used on a daily basis, for the management of information resources and specific job execution in libraries. The current study suggests that present day library organizations cannot do without these tools. The library needs to enhance and foster work production, through accessed and disseminating knowledge for librarians in decision-making. Using the TAM (Technology of Acceptance Model) developed by Davis (1989) of perceived usefulness and perceived ease of use to inference the findings obtained in the three datasets. Librarians' willingness to perceive the usefulness of the available ICT tools, and decide to use it, is such a difficult task due to lot of factors. One, amongst others, is the technical knowhow and user friendliness. The behaviour of librarians for not using the tools could result from their background influences, experience towards the use of the tools for efficient and effective operations of information services rendered to users in the libraries. Therefore, be as it may, librarians should examine the usefulness and perceive ease of use even though the tool is available. This could also require advance in training to acquire knowledge and skills to enable the usefulness and perceive ease of use be important in consideration of the tools.

8.4.1 Availability of KM tools for the support of KM

This portion responds to questionnaire and interview datasets. Knowledge management tools (KMTs) are essential components used in facilitating the processing, storage and retrieval of tacit and explicit knowledge stored in databases, web portal, and institutional repository among others in university libraries. Findings from this segment revealed that KM tools are used to manage not only print and electronic resources but also tacit knowledge found in librarians' knowledge how. The available KMTs from the questionnaire dataset are the word processor,

search engines, information retrieval tools, databases management systems, web portals, database management systems, electronic document management systems, management information systems, amongst others were found to be available tools in the two countries university libraries visited. The findings from the questionnaire dataset suggest that KM tools are influenced by the nature of library work and the availability of funds to acquire them. The findings from graph of the KM tools also found out that all libraries have some quantities of KM tools but the availabilities vary from one tool to the other and from one library to the other. At university level, the most available tools are word processing and information retrieval. DSU appear to be the least resourced followed by FUT. The best resourced library is DUT. However, SA appears to have more of the facilities and resources in general. Findings from interview revealed that most of the KM tools are software used for specific and general management of knowledge in the library environment.

Study by Kwiecien and Rao (2005:180-183 & 284) which support the findings suggest that available KM tools of web portal, knowledge based-engineering, World Wide Web, data mining, OLAP (online analytical processing), document management system, retrieval systems, search engines among others are used as powerful search algorithms. Another school of thought that deals with non-availability of KM tools is chaotic when it comes to content management of resources in university libraries (Frost, 2014). The non-availability of KM tools result to failure in two factors: causal and resultant. The causal dwells on the organization and managerial issues that implement KM successfully. The resultants specify the problems and symptoms relative to more than the disease. Laleye (2015:399) gave credence as to how his research support this current finding which admits that, technologies available for work operation and educational training improves, modifies and predicts a learning environment readily accessible to users. Another evidence by Muhammad, Ibrahim, Bhatti and Waqas (2014:27) was that KM tools is seen as business intelligence operations used strategically to create the best utilization of information needed for tactical, strategic and operational decision making in organization.

The business intelligence technology (BITs) also known as knowledge management tools (KMTs) in the business world are both terms that uses data warehouse, data mining, extraction transformation loads (ETL) and online analytical processing (OLAP) widely across

organizations today. The KM tools used in university libraries today are the same tools used by business managers to foster and improve on customers' services delivery. That is to say that library information services is business oriented. The TAM (Technology of Acceptance Model) developed by Davis (1989) of perceived usefulness and perceived ease of use was considered suitable for the KM tools. This is due to the underlying structure of the components of the tools in basic activities and maintenance of electronic, print and tacit knowledge application in work performance. The theory's primary function, in lieu of the KM tools, was to explain the usefulness and ease nature of how TAM enabled the harnessed knowledge managed in different web databases. Another factor that fosters the use of TAM regarded the basis of core knowledge of professionalism in KM tools and foundation of TAM-its critical thinking and creativeness. These would help librarians to address and inculcate a high sense of intellectual curiosity of managing knowledge in university libraries.

8.4.2 Availability of tools for KM services

This availability of KM services responds to questionnaire dataset only. Evidence from findings on the tools for KM services revealed that KM services of intranet, WWW-internet, and email were the mostly available and used KM services in the two countries university libraries. Though, fewer services were noticed with video/audio conferencing and text summarizing. The findings revealed that users' diverse information needs affects University libraries and librarians in so many ways to include collaboration in research, increased knowledge and skills in the work environment.

Findings further revealed that all university libraries across the two countries provide the identified services. It was revealed also at a country level that the service provision in KM is with high percentage in South Africa with e-mail and online public catalogue being the best services provided compared to Nigeria. Muhammad, Ibrahim, Bhatti and Waqas (2014:29) were of the view that KM services of Internet and related technologies are used in support of administrative information system, management information systems and decision support systems. Rosenberg (2007) and Brown (2008) suggest that, for technological innovations to be implemented, the support of infrastructure or tools is highly necessary. This indicates that the availability of KM services cannot be quantified.

Opportunity abounds in the ability of organization to select, capture and use the knowledge of the librarian to effect useful decision-making and value judgment. Most significantly; since this study was conducted in two different environments (Nigeria and South Africa) with completely different technological advancements, socio-economic and educational growth trajectories and development; the findings are relatively similar. The similarity is attributed to research methods used (survey, interview and observation) and the subject domain (ICTs in university libraries) under investigation. The Technology of Acceptance Model (TAM) postulated by Davis in 1989 of perceived usefulness and perceived ease of use became important for this study as it considered available tools that can be useful resources in terms of accomplishing the set goals in the organization. Moreover, without the availability of such tools, its perceived ease of use is questionable to both the user and the organization. Most importantly, whatever tools, that were available, are considered suitable as useful and easy to use by librarians in order to meet users' information needs.

8.4.3 Accessibility of tools for KM services

The accessibility of the KM services addressed questionnaire dataset. Evidence from data obtained from questionnaire revealed that the accessibility of KM services, which were available in the various university libraries visited, is high. The findings revealed that University of Ibadan leads in the tools for KM service accessibility, followed by the three universities in SA, all of which have relative mean accessibility of 87% (see table 6.9 in chapter six). The availability of tools for KM services in UI is lower than the availability at SA university libraries (see table 6.9 in chapter six). The findings revealed that availability of services do not necessarily translate to service accessibility, as there is no significant correlation between KM service availability and service accessibility. This made the accessibility higher in SA than in Nigeria with e-mail, text summarizing and online public access catalogue. The findings suggest that since university libraries continue to use these tools to carry out the function of KM services, regular maintenance of the tools should be employed for increased life span and improved productivity of the organization.

The current study further suggests that in this technological world of ICT driven, university libraries cannot function without continuous use of these tools and services. The study by Chao (2014:43,) which support this finding of KM services, notes that service provision is enabled

through IT infrastructure of servers, networks and data storage, proper configuration of virtual computing environment be enhanced. This fulfillment requires outstanding operating systems that provide flexible structure of service delivery. Another remark, which supports this finding, was the access to information, which has virtually been available through the medium of internet services using organizational websites, project databases and news in blogs among other things (Addison, 2006). Librarians were found to have access to diverse KM services in their university libraries. An indicator of access to computer and Internet by academic staff in their offices at the Obafemi Awolowo University in Nwezeh (2010) study corroborates with this findings as integral facilitator of KM services in university libraries. The adoption of the TAM theory supports this finding, as it is reliant on the basis of librarians' knowledge of how to use the technology. This results to their willingness to accept that its perceived usefulness and ease of use is most crucial. Factors that would restrain the availability of the tools are the organization itself, policy, high cost of the tools and inadequate funds. Rosenberg (2005:8) notes that availability of online resources supports both users and librarians vis-a-vis the operations of library and information services which they carry out.

8.4.4 Effectiveness of tools for KM services

This section responds to questionnaire dataset. Findings from questionnaire data revealed that ICTs/KM tools for KM services that were most effective in all the university libraries across the two countries are Internet, e-mail, file sharing and text summarizing (See Table 6.6). It was noticed at the university libraries level that UI has the highest service effectiveness followed by DUT. Furthermore, it is noted that KM services are more effective in South Africa than is Nigeria (see Table 6.12). The findings suggest that the effectiveness of KM tools is dependent on the knowledge, skills and practices which librarians have been involved in the organization. The findings further suggest that KM services offered by university libraries to students and staff are guided by sound policy, availability of resources, trained staff, good infrastructural support systems and security. KM effectiveness depends on the tools and services used in library operations. For example effectiveness of OPAC depends on three services (e-mail, internet and online social media). Recent trends in research and development of KM tools have shown its effectiveness both in managing resources and improving staff productivity in organizations.

Chisenga (2004) demonstration made on ICT tools like networked digital resources of online databases, electronic scholarly journals among others which provide users with effective web based application of personalized and adaptive interface support this finding. This also concurred with Chisenga (2006:9) that effectiveness of ICTs/KM services has made library users to access information resources globally without necessarily visiting the physical building of the library. This is proven through Internet facilities and other ICT based resources used in most contemporary homes today. The TAM theory was suitable in supports of this finding because respondents saw that the perceived usefulness and ease of use of the tools facilitated communication made with friends and partners. It eased the business strategies used over their competitors in satisfying their customers/users. It also helps to streamline operations and improves efficiencies of work performance of librarians.

8.5 To what extent are librarians utilizing ICTs to support KM in academic libraries in Nigeria and South Africa?

This question responds to questionnaire, interview and observation datasets. Findings from the questionnaire results revealed that most frequently used ICT/KM tools were largely software that perform highly specialized tasks and which require high expertise. Computer, scanner, printers, CD-ROM, monitor, search engines and information retrieval tools and its peripherals were most commonly used while simulation tools, artificial intelligence, decision support systems, data mining and online analytic tools were the least used (Table 6.13). At the university libraries level, the greatest user of ICT/KM tools is UI, followed by UZ (Table 6.13). The findings from this segment revealed that low application of ICT hardware can be attributed to challenges in getting funding, whilst low utilization of specialized software can be traced to lack of knowledge of use of KM tools. The findings suggest that since the correlation coefficient between adoptions of ICT hardware is low, specialized task software be improved in decision support system. This evidence is seen at inter country level where the uses of ICT/KM tools are slightly higher in South Africa than in Nigeria. Findings from interview revealed that procurement, processing, access, planning, metadata, policy design, community service, abstracting and indexing services; photocopying, scanning and digitization of documents, networking preservation, training of staff and users; leading and inter-library loan services, dissemination of information and knowledge to meet users needs, among others were what ICT/KM tools are used for in the library environment. These are classified into specific

and general work operations. The observation reports that the facilities and other working materials as used by librarians to render work operations in the libraries affirm with the two datasets of questionnaire and interview.

Study by Ofori-Dwumfuo and Kommey (2013:92) support this finding such that, ICTs now uses new device of cell phone, tape recorder, magnetic devices to improved knowledge collection, storage and exchange on a scale which were not practical in the past. This interactive learning domain leads to successful extraction of knowledge meant for organizational growth. This correlates with this finding of where users now places much emphasis on web based resources that meet their satisfaction of information needs at the first point of contact (Ward, 2001). Most importantly, Hooper (2001) supports the current study by saying the use of ICTs is now influenced by age, ethnicity, language, context, background and educational qualifications of the user. Interesting, the usage of ICTs for the support of KM cannot be underestimated. It is on this basis that the researcher clustered them into specific and generic operations based on librarians' job specification and areas of expertise. However, some librarians still continue to struggle with the use of ICTs due to so many barriers with a variety of ages, ethnic diversity and learning computer languages; as some are not English speaking. The findings affirmed with TAM theory by Davis, which reveals that the intervening variable of technological usefulness and extent of ease of use can be determine through various ways through which the tools will be used. The usefulness of the technological tools in rendering information services in libraries has made librarians to adopt it. Arguably, since no organization can do without the use of ICTs, it is expected that issue of policy, personal control influence, funds and cost of the tools be put into serious consideration.

8.5.1 Use of ICTs/KM tools for KM services

This segment responds to the questionnaire dataset. Findings in questionnaire revealed that the use of ICTs/KM tools for KM services is relatively high in UI, moderate in UZ, UKZN and DUT but lowest in DSU followed by FUT while least used services are video conferencing and text summarizing (see Table 6.15 and associated graph). It was expected that the availability of these services should result in high use. Notably, findings also revealed that at inter-country level, the use of the tools for KM services is higher in SA than in Nigeria. The convergence in use is however observed in text summarizing and text messages. The widest gaps are in file

sharing and online public access catalogue. The correlation coefficient of these two variables is weak but significant. The file sharing appears to be between universities and persons outside the university as it correlates higher with Internet than with intranet. This concur with Raju (2014) study that, different ICT tools of social media, mobile devices, tablets and its peripherals, and library virtual space have influenced the expansion of collections and services rendered to users by LIS professionals. A study by Kalusopa (2005:422), which supports this result notes that the provision of current and precise information, systematically collected and repackaged, has opened up new sources and services for users in present day library operations. The KM services rendered to users require skills and competencies that rely on the perceived influence of ICT utilization (Mugwisi, 2002).

8.5.2 Various ways librarians utilize ICTs for in the support of KM

This question addressed the datasets of questionnaire. The finding from questionnaire established that rendering information and administrative services; support for research and curriculum development process; formulation of policies and strategic planning and teaching and learning processes for newly registered users; problem solving and decision-making; in-service development and training for supporting staff; transferring existing knowledge into other parts of the organization; generating new knowledge and filtering old ones were ranked highest percentage in UZ, UKZN, UI, DSU and UZ in the two countries (See Table 6.18). Meanwhile, accessing valuable knowledge and filtering outside sources and minutes of staff management meetings is the lowest incidence when compared to previous ones.

Notably, the findings suggest that since the utilization of ICTs facilitates the job description as well as new innovations, librarians' competencies should therefore surround new exploration in knowledge, continuous training, proper management of the tools and skills application. This corroborates with Ofori-Dwumfuo and Kommey (2013:93-94), who work on the variety of information in portals that has helped to synthesize, retrieve and exchange current and widely used knowledge by workers in the present day knowledge economy and library environments. This finding is new aa it also diversifies into known and unknown areas of ways that exist today in library environment. Reflecting on TAM theory, it was noted that the degree to which ICTs are used, allows librarians to harness different ways to improve on its usefulness and ease of use. Therefore, constant training and specialization of skills are key components for

librarians in service delivery. The usefulness and ease of use of the technology has much effect on attitude of librarians' affection. While it is advisable to utilize ICTs in various aspects of work operations, measures should also be considered to take account of the fast changing nature of the tools and their maintenance. The capability of the technology is matched with tasked assigned to librarians to do.

8.5.3 Information sources that guide librarians in the use of ICT

This section responds to the questionnaire dataset. The study established that library catalogues, theses and dissertations, reviews/journal articles and internet sources were the most preferred sources of information that enable and guide librarians in the use of ICTs for the support of KM (See Table 6.19). Findings further revealed that all of the university libraries across the two countries preferred one information source to another. This was dependent on the specific information need, and purpose for searching for such information, in the present day library operations. Findings suggest that, since recent literature and up-to-date information source in LIS are diverse in nature, librarians should advance the promotion of socio-economic, political, educational, cultural and capital stability of their academic institutions. This achievement can be enhanced through knowledge, experience, qualification and publications acquired over the years from continuous sourcing of materials. This was confirmed in a study by Fillip and Foote (2007:v), that the computer, internet and digital technologies are sources of information access that help to create and share knowledge with one another. Studies by Wachira and Onyancha (2012) and Declan (2011) offer strong recommendations regarding formal and informal sources, electronic and print sources and human sources as used to meet diverse users' information needs.

8.5.4 Users of KM resources

This segment responds to the questionnaire dataset. The majority of respondents that mostly use KM resources cut across students; researchers; librarians; and lecturers. Non-academic staff was not considered that much (See Table 8.2). Most importantly, users of students, researchers, librarians, and lecturers consult information sources more frequently for several purposes on daily basis. Findings suggest that since interaction and discourse of knowledge and research writing are inevitable, sourcing KM resources cannot be overestimated and avoided. The author notes that there are differences of valuable sources that make

organizations more competitive with one another (Bolisani and Scarso, 1999:209). Such resources are directly associated with durability. KM resources involve activities of constructing, embedding, disseminating and using knowledge to generate value in the organization (Bolisani and Scarso 1999: 210). Bolisani and Scarso (1999) and Nonaka and Takeuchi (1995) were of the view that explicit and tacit types of knowledge are generated and exchanged today to solve problems within organizations. As internally generated knowledge is not adequate, continuous external sources are highly recommended (Bolisani and Scarso, 1999; Quintas, et.al 1997; Miller et. al, 1997). This was done in order to establish that KM resources are valuable assets used by individuals for specific purposes of interest.

8.6 What strategies can promote the use of ICTs to support KM in academic libraries in Nigeria and South Africa?

This question responds to questionnaire and interview datasets. Findings established in questionnaire revealed that majority of respondents attest to different strategies used to promote the use of ICT for the support of KM (See Table 6.20). A notable comparison made across the two countries' university libraries was that UZ in SA appeared to promote the use of ICTs more, using several strategies at UI in Nigeria. However, FUT, as with the rest of the university libraries, showed multiple strategies. Findings revealed that the various strategies used have strategically affected the university libraries in their organizational culture, work environment, management support systems, librarians' knowledge and access to information. This result is new as findings suggest that strategies worked much better when the right caliber of trained, qualified, experience, skilled and dedicated team are ready to foster innovation and growth in the organizations.

Findings from interview revealed lots of variances as compared to the questionnaire data. This include training need analysis of staff; monitoring and evaluation of staff responsibilities; incentives of tangible and intangible means; advisory roles of librarians; acquisition of resourceful facilities and use of computer, wireless networks/social media and institutional repository among others. Despite these, there are more strategies that cut across other fields, which can be tied into the know-how of ICTs and KM tools. How these diverging views (result of interview and questionnaire) helped ICTs and KM in library operation is fairly mysterious. We have echoed that good ICT strategies can be used to build external relationship; support

KM practices; knowledge integration; changes in knowledge processing; management initiatives; and widening lifelong learning in organization (University of East London, 2006:11-14). Studies by UN Habitat (2010) and Allen 2012) corroborates this findings that offer a strong argument on new strategies adopted so as to broaden proactive participations among institutional environment. We have observed that building trust among colleagues enhances collaboration, shared understanding and social networks within community level.

8.7 Do academic librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs to support knowledge management?

This question addressed questionnaire dataset only. From this question, respondents were asked to indicate which among the following sources of information they use for updating their personal knowledge and the library holding. The most frequently used source of updating librarians' knowledge is Internet and conference papers. The least preferred source is book vendor and library subscription. Findings revealed that libraries that were updated most often, in terms of knowledge, was UKZN followed by FUT **(**See Table 6.21). Findings further revealed that what facilitates librarians' update of knowledge in the various sources mentioned is the exposure to new trends in their work environment. The Chi-Square test reveals large values significant confirming that the differences in relative level of support are significant. Interestingly, findings suggest that present day librarianship profession has grown from the traditional methods of access to virtual which require librarians to continually update themselves regularly. Study by World Economic Forum (2014) which support findings notes that the use Internet computing tools, metadata, and social media help to track, capture and exchange information without much difficulty. Another affirmation by Ondari and Kitendo (2004:62) remarked on services of web browsing, books and databases, online periodicals among others serve as sources of information to users.

8.7.1 Librarians knowledge and ICT skills

This segment responds to the questionnaire dataset. From the above research question, respondents were asked to indicate which of the following reflect librarians' knowledge and ICTs skills for the support of KM in the field of librarianship? It was established from the questionnaire findings that most predominant knowledge, and ICT skills, is the ability to create and store information. Technical skills relates to ability to initiate ideas and use ICT tools

properly. On the other hand; the rarely exhibited skills include negotiating skills, change management, consensus building and strategic planning. Those skills, which are predominant, are closely associated with functions that librarians perform. Finding the skills, which are rarely exhibited, are more to do with management skills required at senior levels and acquired based on need and additional training.

Librarians at the University of Ibadan have the highest relative skill levels while the lowest ranked university library is Zululand (See Table 7.1). Notably, it is evident that there is no association between training and support provided to librarians on one hand and librarians skills on the other hand. The availability of tools and support system from university management would help staff member to acquire more knowledge to work independently. At the inter-country comparison, librarians' knowledge and ICT skills are interwoven with each other with much significance. This shows a resonance within the variables between the two countries (See Table 6.23 and graph 16).

Study by Seena and Sudhier (2014:137-138) affirmed that LIS professionals should be aware that knowledge of library automation software is essential in the present library operations. The library automation software consists of LBSYS, database management systems, creation of metadata, MS office package, web page design, skills of KOHA, Alice for windows, LIBMAS, digital library (Greentones, E-print, Fedora), OPAC, online journals among others. These are fundamental in today's library operations. This was confirmed in the study carried out by Kumar and Marali (2012). Matthew and Baby (2012) also supported this finding, thus, from the observation made on majority (88.6%) of library professional skilled in operating systems window, management of electronic resources and Web 2.0 technologies of email/instant messages or chat and wikis. Misco and Ocholla (2013) suggested that core knowledge and skills are needed on a regular basis. This would help remind information providers, such that, they could incorporate the various organs of library associations while updating librarians' skills.

8.7.2 Librarians areas of expertise in the support of KM

This portion addressed the questionnaire and interview datasets. The most predominant expertise of librarians as mentioned by respondents in questionnaire dataset are OPAC, array

of library information services, knowledge of ICT tools and library website and Internet access. The lowest ranked skills are supervisory roles, staff members' capacity and shelf reading and re-shelving. Finings revealed that these skills are advocated for most librarians at University of Ibadan. University of Zululand gives least support for the skills. The author affirmed that work ethics/policy of the institutions expect librarians to possess dual areas of specialization for efficient and effective job performance. It is believed that areas of expertise differ from individual to another based on the ability to harness multi-dimensional clusters of knowledge (See Table 7.4). Most importantly, technological drift and proliferation of information across disciplines account to having more than one areas of expertise in library and information science profession today.

Findings from interview differ with that of questionnaire. It can be noticed that areas of expertise overlap. The indicators are majorly on professionalism of LIS, ICTs, research and training in both countries university libraries. The areas of expertise which librarians are trained manifest in work performance in library operations. Emerging concerns about the sustainability as demonstrated in knowledge and ICT skills of librarians is guided by policy of the library operations. Most importantly, what so ever librarians apply their knowledge and ICT skills for results from the experience, technical know-how and training embarked on (See Table 7.11). Basing our observation on the findings obtained from interview and questionnaire, we saw that there are divergence and convergence on the knowledge and ICT skills of librarians. This manifestation is seen on research capacity building in proactive succession plan, networking and support systems from organisation to librarians. CARL Abrc (n.d) study which supports this finding suggests expertise in development of policies, research data management; library-based, preservation, discovery system, access and support among other have enhanced and promoted libraries in recent times. Neal (2012) emphasized on different areas of expertise that could support KM to include e-research, information policy, semantic web, cloud computing, online education, customization/personal web among others. Another remark by CARL (2010) which also addressed this finding was expectation of librarians to possess qualities of academic status in the areas information literacy and ICT skills, functional knowledge, leadership and management, collection development, interpersonal skills, research and vast contribution to the profession.

8.7.3 Extent of Adequate knowledge, experience and skills of ICTs

This segment reports on questionnaire dataset only. Respondents were asked to indicate the extent to which they have adequate knowledge, experience and skills of ICTs for the support of KM? This question was routed from the research question in 8.7 above. Findings established that the impact of knowledge and experience is felt most when sharing knowledge, teaching and specifically in areas where expertise is required. However, least impact of knowledge and experience is felt when explaining actions and when taking a concrete decision (See Table 7.5). Claim of less impact of knowledge and experience on concrete decision-making appears contrary to common perceptions. In this study, it was revealed that, there are connections between negotiation with vendors, processes of decision-making and knowledge impact being significant. The relationship that exists between these three variables (negotiation with vendors, process of making hard decision, and knowledge impact) was based on the adequacy of knowledge, experience and skills to use ICTs among librarians. Findings revealed that the knowledge, experience and skills that are required to work with, differs from context to context, as well as job specification. These have been demonstrated in appropriate content and learning methods in most organizations. In comparison, Nigerian university libraries tend to have much impact factor compared to those in South Africa on the contribution of knowledge, experience and skills required for performance of task.

Owusu-Ansah (2014) reporting on CARL (2010) on academic and professional expertise suggested that it becomes necessary for librarians knowledge, experience and skills intertwined with fundamental understanding of library training and scholarly communications. This concurred with Anyira (2011) view of the need for continuous self-development as key for advance knowledge and supports in the library environment. A clear indication, which supports the finding, was represented by Seadle (2005), who emphasized practical training as a form education for librarians. Study by Sutton (2011) observed the correlation between knowledge, experience, and skills expected of information systems librarians and their curriculum with relation to the support offered to library students at ALA-accredited programs. It was revealed that, very often, the essential knowledge and skills needed for daily work operations are human, organization and communication.

8.8 How often are librarians trained and supported in current knowledge and skills acquisition, specifically in the use of ICTs for the support of knowledge management in academic libraries in Nigeria and South Africa?

This segment addresses questionnaire and interview results. It was established from questionnaire dataset that respondents are trained and supported in induction, formal education, retraining and interpersonal development. The least preferred form of training is informal education. It appears the training support given to librarians is those that the librarians do not consider important. The greatest support to librarians is given by DUT and FUT. Findings revealed that the training and support given to librarians are diverse in context (urban and rural), nature of the training (practical, oral, online, visual, experimental and traditional), paradigm used, friendliness of the training, availability of training resources, complexity of the training and support and comprehensiveness of trainee in most university libraries today. Furthermore, organizations have continued to attract different caliber of staff across disciplines as a result of training need analysis of staff. Findings suggest that most university libraries today have flourished as a result of the policy; renumeration and services offered which harmonize learning relationship of colleagues. Finings further revealed that at inter country level of university libraries; South Africa gives higher support to their librarians than Nigeria. This is surprising; despite the fact that librarians in South Africa do not seek advanced studies more than Nigerian librarians. This may result in low impact of support on service provision.

Findings from interview dataset showed a varied and distinct measure from results obtained in questionnaire. Interviewed informants established that diverse training and support are given to librarians cut across strategic policy; capacity building through training and development (in-house, workshop, seminar, review of staff performance, skills and knowledge development). Formal training through teaching and learning processes; training in research writing; support in professionalism and sabbatical leave. These are applied in different working areas of specialization. Most importantly, it can be noted that the training and support are classified into the various clusters. The clusters have both similarity and differences. Studies by Obasola, Alonge, Eyers and Oladele (2014:171-173) support this finding by suggest that, capacity building likened to training and support given to librarians takes place at both the organizational and individual level. It involves proactive abilities, skills attitudes, principles and practices that facilitate networking across boundaries (Obasola, Alonge, Eyers and

Oladele, 2014). These training and support programmes are most essential in organisation as it addresses explicitly the need of capacity building of staff.

Remarks made by Mabawonku (2005) which concur with this finding unveil that training practices offered to LIS professionals varies from one context and institution to another. They are meant for capacity development as life-long activity. The activities helps to facilitate the support given in teaching, learning and research activities and community development carried out in the library environment. As observed in Obasola et.al (2014) study which corroborates with this findings. The knowledge gained during workshop has much effect if followed up at local level. The followed up mechanism could promotes collaboration and knowledge sharing among colleagues. Obasola et.al (2014) established that the training and support given during the workshop were on emerging technologies. The implications was on how to search and use Google scholar and group, quick response codes, pedagogic skills, IT tools for research, and information literacy. The workshop was also supported with current training materials that would encourage librarians to study on their own after the workshop. However, time and funds were noted to be constraints in organizing the workshop (Obasola, et.al 2014).

8.8.1 Technical ICT skills for librarians

This portion addresses questionnaire dataset. Findings revealed that technical ICT skills were believed to be very important in today's library environment. The most prevalent technical skill of librarians is online searching, social media and information management. While the least prevalent technical skills are hardware trouble shooting, programming and software trouble shooting (See Table 7.7). Notably, knowledge and familiarization with different set of skills promotes efficiency and effectiveness in any work environment. Findings revealed that the availability of ICT tools, experience, training had, attitude of librarians, techniques and procedures used in operations facilitates acquisition of these skills. At inter country level, technical skills are more prevalent in South Africa than in Nigeria.

Patridge, Lee and Munro (2010) recommended transferable skills, interpersonal skills, and attitudinal change (Devi, Vikas and Devi, 2006). Reflecting on Ezema et.al (2014) study on skills required of librarians to maximize cross cutting edge of LIS profession, it was noticed that attainment of technical skills is evident in acquisition of more professional training and re-

training in specific areas of expertise of the librarians. Most especially, the technical skills are knowledge and skills obtained either before or after assumption on duty in the library environment.

8.8.2 General skills for librarians

This portion addresses questionnaire dataset. Findings revealed that the most recommended general skills for librarian are familiarity with online sources, customer service awareness, degree in librarianship and ability to mentor other colleagues. On the other hand, the least recommended skills are mastery of foreign language, negotiating with vendors and traditional reference interview. At university level, the general skills are most appreciated in University of Ibadan followed by University of KwaZulu-Natal. At University of Zululand, requirements for the general skills are least appreciated. These skills are basic requirements for librarians in university libraries. It was noticed that the educational training had, work environment, adequacy of funds for staff training, policies that guide the products and services of university libraries enhanced librarians' general knowledge. Interestingly, respondents noted that the quality of visibility of research collaboration outputs have improved due to the possession of some of the general knowledge that librarians have (Ocholla, and Ocholla and Onyancha, 2013). This affirmed with Ocholla and Ocholla (2014) study on the need to have cataloguing and classification knowledge, in order to function better in the library organizations.

8.8.3 Personal skills for librarians

This portion addresses the questionnaire data set. Findings revealed that self-motivation, adaptability/flexibility, written communication, verbal communication and approachability and working with teams were the most important personal skills identified among librarians. However, a sense of humour was rated least amongst others. At inter-country comparison, librarians at DUT in South Africa have more personal skills than those in UI, Nigeria. The acquisition of these skills could result to training programmes of conferences/workshop, seminars, orientation, in-house training/mentorship, amongst other librarians, have attended. The qualification, exposure, computer literacy and its application, experience in job operations are basic requirements in the attainment of personal skills. This confirmed with Raju (2014) and Muttayya and Mallikarjun (n.d) study.

8.9 ICT policies for the support of KM

This segment addressed the questionnaire and interview datasets. Findings from the questionnaire established that UZ in South Africa and FUT in Nigeria are top-rated, in regard to the policies that are used. The creation of awareness and ensuring universal access and accessibility that would diffuse ICTs in all libraries was most significant, followed by guarantee of maximum benefits that contribute meaningfully by providing global solution to challenges of ICTs. The least was in the areas where it has made the defence and law enforcement agencies accept best practices used in national and international libraries (see Table 7.10). Findings suggested that ICTs policy ensures sustainability in management of information and knowledge in the library environment. Most importantly, the writer noticed that human capital development is very essential in the application of infrastructure in the various university library operations. It was suggested that the availability of adequate funds to acquire the necessary tools/software and train expert on ICTs application and maintenance culture of the tools; are indispensable in the implementation of ICTs policies.

Findings from interviews were distinct to that of the questionnaire. As can be observed in the interview result, the two countries libraries attest that ICTs and library policies are tied together in their university libraries. This help to regulate one another in diverse forms and work function. Most importantly, the policy addresses the organizational goals, the setting up of committees of staff members and different expertise that reviews the policy.

Issues with the budgetary allocation of funds, acquisition of relevant ICTs facilities, staff training and development were addressed. Notably, in every library operations, no policy can work in isolation. Navigating the use of ICTs in the library environment without a proper ICT policy is tantamount to dead living being. Adomi (2008:14) argues that library policy tie into ICT policies in order to help administer the rules, principles and action plans of the procurement, use, manage and maintenance of ICT tools used in the management of knowledge in academic libraries. Most importantly, for ICT policy to be globally standards, stakeholders and expertise of various sectors should validate the models and complexity from which it was formulated and implemented for use in the libraries (Mohamed, Mohamed and O'Sullivan 2010:228). We can deduce, from the above analogy that ICT policy is meant to ensure that ICT services are available, accessible, efficient, reliable and affordable to libraries

and librarians that discharge the services. The policy should also be reviewed as time goes on so as to accommodate new trends in the profession.

8.9.1 Those responsible for the formulation and implementation of ICTs policies

This segment responds to questionnaire datasets. It was established from questionnaire result that the most viable and responsible team in the formulation and implementation of ICT policies are library management staff/team; representatives of the university authorities/top management or university management, IT expert/departmental staff, and ICT staff in the two countries university libraries. Findings suggest that decision-making and planning requires key roles and knowledge of experts in different subject areas. Notably, the identification of key resources is crucial in today's library operations (See Table 7:11).

8.10 What are the challenges faced in the use of ICTs to support KM in academic libraries in Nigeria and South Africa?

This segment focused on questionnaire and interview datasets. Findings from questionnaire results revealed that most voiced challenges are inadequate funding, lack of motivation, and lack of infrastructure. The challenges of least stressed are drift to other professions, language barrier and ability to work independently. These challenges are most pronounced in DUT, whilst they are least voiced in FUT. Findings revealed that inadequate funding negatively have impact on activities of infrastructural development and capacity building. Cross tabulation of inadequate funding with infrastructure revealed no significant impact (see Table 7.12). The researcher of this study noticed that some of these problems result in the context (environment), cultural background, lack of maintenance of available infrastructure, misplacement of organization's priorities. Interestingly, management style applied in running the operations of the library determine how issues with users interface and staff responsiveness to resources and facilities are used to meet the organizational goals. At inter country level of university libraries; it appears there are more challenges in South Africa than in Nigeria on average. However, inadequate funding and infrastructure challenges are more pronounced in Nigeria.

The most critical challenges to handle in the use of ICT for the support of KM are lack of infrastructure, inadequate funds, unreliable electricity and unreliable internet network (See

Table 7.12). Findings suggest that increase in population index of users across disciplines thus lead to inadequate distribution of available resources and facilities in libraries. The work of Ajuwon and Rhine (2008) reflected on inadequate ICT facilities; capacity building in terms of ICT usage, inadequate proper training, and under-utilization of available resources has acted as barriers to the use of ICTs in the support of KM. Study by Ofori-Dwunfuo and Kommey (2013:95-96), negates the findings from questionnaire. It treats lack of policy for organizational learning, limited e-personnel, rapid changes in technology, cyber-crime, and misuse of facilities by staff as well as mismanagement of malware and spyware.

Findings from interviews correspond with the findings from questionnaires. It was established from interview results that the most crucial challenges faced by Nigerian university libraries are inadequate funding, poor and old ICT facilities and inadequate professional staff as compared to the South African university libraries of inadequate professional staff, lack of commitment to work and increased user needs. Notably, inadequate professional staff was noticed to be a common problem in both countries libraries. Observation from the two results shows that some of these problems are common to present day libraries. The issue that is most worrisome is on the ability of the management of the libraries to quickly show concerns towards eradication of these problems. The author note, that studies by Agboh (2015); Fink and Disterer (2006); Jones et al., (2003); Khatibi et. al. (2003); negates this findings. It laid more emphasis to non-support system from government, complex procedure, managerial leadership, cost benefits need analysis, legal issues, turn over, security and human capital deficiency among others.

8.11 Summary

There is no doubt that valuable insights emerged from this chapter. The insight notion was based on shifting the ground of increased mediating factors; that would enhance quality service delivery by librarians in academic present day libraries. Firstly, it was established that the understanding of KM, obtained through training of either formal or non-formal education, results in the attainment of diverse library practices. Secondly, KM is not all about technologies; rather it involves groups of peoples' views and working through brainstorming; as well as how they share their experiences and knowledge with one another in the organization where they work. Thirdly, the analogy of literature revealed that improved

policies, procedures, routines and application of knowledge and skills of librarians have helped in KMP of seminar; conferences and workshops; group discussion; communities of practices; apprenticeship; in-house training and socialization in libraries. Fourthly, old technologies are gradually giving way to new technologies used in present day library organizations. Fifthly, the most available and accessible tools of ICT, KM and services across the selected university libraries in the two countries appeared to be very effective. Sixthly, it was also revealed that several training need analysis of librarians featured.

The extensive knowledge base of ICTs, KM and other sub-titles discussed in literature within this study was anchored on research objectives, questions and hypotheses. The various literature covered were from global perspectives, as seen in chapter one through to nine respectively. Interestingly, it was established that several literature pieces that apply to the relevance of ICTs and KM, were concerned with a global view. Although, Nigerian and South African university libraries have witnessed the application of ICTs in KM; there has been no specific result or evidence found in the use of ICTs to support KM in academic libraries' literature, with specific reference to university libraries in Southern Nigeria (University libraries in Ibadan, FUTA, and Delta State University) and KwaZulu-Natal province (university libraries in Zululand, DUT and KZN).

The coverage of these two areas in methodology, literature, approach and application is the gap that the present study seeks to fill. This novelty is not peculiar to the global setting as it also pertains to local and national regions of Nigeria and South Africa. Another novelty is a contrary view of certain notions of respondents regarding the use of ICTs and KM tools and services' usage in the training and mentorship of both staff and students of the university libraries. This alignment strengthens what respondents found in the course of the present study.

This chapter contributes meaningfully in various ways, as does the study more generally. There is visible potential of the two countries' university libraries to contribute significantly to library and information services. This become feasible through informed policy; adequately trained and qualified professionals; willingness of staff to work; support systems from the parent body of university libraries and availability and accessibility of appropriate technological working tools. These critical success factors would promote and enhance quality service delivery in the library environment.

The extent to which librarians use the technological tools to manage both tacit and explicit knowledge depends largely on the critical success factors that were mentioned earlier. It was established that the two countries' university libraries have proven to flourish in diverse ways that include availability, accessibility, and effectiveness of ICTs, KM tools and services, amongst other mediating factors. Therefore, librarians are required to advance in acquiring current knowledge and ICT skills in the LIS profession. This would alleviate academic libraries' tasks of meeting users' information needs in the wider context. The electronic preparedness of librarians is fundamental in present day library operations. Therefore such preparedness encompasses training and re-training in current trends of LIS, exposure, attitude, knowledge, skills and experience of librarians in the use of ICTs, KM tools, and services to better provide management of the knowledge in academic libraries.

The next chapter, which is the final one, presents the summary, conclusion, and recommendations of the study.

CHAPTER NINE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

9.1 Introduction

This chapter provides a summary of the research findings, conclusions, and recommendations of the study. The research objectives were as follows:

1. Establishing how knowledge management is practised by librarians who work in academic libraries of Nigeria and South Africa.
2. Exploring the available ICT facilities, KM tools, and services that can be used for the support of KM in academic libraries in Nigeria and South Africa.
3. Determining the extent to which librarians in Nigerian and South African university libraries utilise ICTs to support KM.
4. Investigating strategies that would promote the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.
5. Determining and comparing librarians' knowledge and ICTs skills for the support of KM in academic libraries in Nigeria and South Africa.
6. Finding policies that guide the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.
7. Examining the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa.
8. Recommending a conceptual model of the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa

Both qualitative and quantitative approaches were used in the study as reflected in chapter five. The outcomes of their application were reported in chapters six, seven and eight. Questionnaires were administered to 171 respondents from six selected universities libraries (University of Ibadan, Federal University of Technology, Delta State University, University of Zululand, University of Kwazulu Natal, and Durban University of Technology) across Nigeria and South Africa. A total of 132 (77.2%) responses were retrieved (see chapter five and six). The total responses consisted of the questionnaires and interviewed six key informants across the six university libraries in both countries (see chapter seven). The method of observation

focused on the availability of ICT facilities and KM tools, uses of the available ICT facilities and KM tools, as well as the departments in the various libraries and working environments of the staff (see appendix K). The reason for using this triangulation approach of data collection was that it allowed the researcher access to a broader variety of views points and information that would help to better address the subject matter of the research investigation.

The researcher administered questionnaires to 171 professional librarians and interviewed six key informants across the six sampled university libraries (University of Ibadan, Federal University of Technology, Delta State University, University of Zululand, University of Kwazulu Natal and Durban University of Technology) all of which are either in Nigeria or South Africa.

The three data sets collected were used for the analysis and discussion of results (See Table 6.1, chapter seven, and chapter eight). On the other hand, the six key informants interviewed in both countries' university libraries were used to augment the data obtained from the questionnaire (see chapter seven and eight). The analysis of the results applied Scientific Packages of Social Sciences, (SPSS) of descriptive and inferential statistics, and content analysis (see chapter six and seven). These were all presented in tables and graphs presented throughout the study (see chapter six and seven). The data and results obtained from the three datasets were supported with literature extracted from the literature review chapter (chapter three), background of the study, theoretical framework, and methodology amongst other chapters (see chapter one, two, three, four, five and eight).

The present study revealed that a majority of respondents were female. This was the case in both countries university libraries (see table 6.1). For an illustration of the respondents' ages see table 6.1 (chapter six). Key informants interviewed showed no significant differences with their numbers (see table 7.1). One each from each university libraries, though what differentiates them is the position they occupy and their years of experiences (see table 7.1). Most respondents have Bachelors and Master's Degrees. This was true for the majority of respondents (see Table 6.1 in chapter six). For the rank of librarians, senior librarians appeared to be more prevalent in both countries' university libraries (see table 6.1 in chapter six). The respondents' work experience ranged from (lowest figure) to (highest figure). Most

respondents worked at the department of cataloguing and classification and collection development; where much of the volume of library work occurs and experience of expertise is required (see Table 6.2 in chapter six). According to where the respondents were coming from (in terms of incidence), Delta State University library was top, followed by University of Ibadan library and University of Kwazulu Natal library, while University of Zululand library was the lowest in the university libraries that participated in the survey (see figure 1 in chapter six).

9.2 Summary of the findings

The summary of the findings is organized based on the research objectives, research questions, and hypotheses that are presented in chapter 1 and section 9.1 of this study. The research hypothesis used for this study was meant to validate, strengthen and demonstrate the relationship between the dependent and independent variables of ICTs and KM, respectively, in the research questions. The three research hypotheses raised in chapter one respond to research question two, five, and six of this study. Other questions raised from the research questions aligned with one another, as is reflected in the questionnaire schedule (see appendix A and B). The following research objectives respond to each of the research questions below.

9.2.1 Objective 1: Establishing how knowledge management (KM) is being practised by librarians in the academic libraries of Nigeria and South Africa

- How is KM being practiced by librarians in Nigerian and South African university libraries?

The present research, built in objective one, revealed that respondents had knowledge of KM from different learning phases of training, and development (see Table 6.3, and 8.3). The majority of respondents in the two countries' university libraries attained their knowledge of KM through the library school that they had attended, through training and reading of more internet sources. Having knowledge about a phenomenon broadens individual exposure attained through quality education at different environments. Emphasis on continuous updating in current knowledge of KM within, and outside, the library environment enhances librarians' practices in the profession. Jain (2007:378) notes that continuous creating, acquiring,

capturing, sharing and usage of knowledge would enhance learning and work performance in the organization.

The question regarding knowledge management practices (KMP) revealed that KMP is operated in the library environment through different procedures and applications that involve every activity of the library and information services (see Table 6.4, Table 7.4, section 8.3.1 and chapter 3). The most commonly used patterns of practices of KM are group discussions/meetings, apprenticeships, in-house training, socialization, and communities of practice. The least common instances of KMP are seminars, conferences, and workshops (see Table 6.4). KMPs is essential in today's library organizations because without it library operations would not have been attained. The aims and objectives of the library establishment are guided by the procedures; policies, techniques, knowledge and skills that are used in the management of information resources. KMP has broadened librarians' understanding in their roles and prepares them in advance with regards to the meeting of current and anticipated users' information needs.

9.2.2 Objective 2: Exploring the available ICT facilities and KM tools and services for the support of KM in academic libraries in Nigeria and South Africa

- What are the available ICT facilities and KM tools and services for the support of KM in academic libraries in Nigeria and South Africa?
- ***Hypothesis one:*** There is no significant difference between the ICT facilities used by librarians for the support of KM in academic libraries in Nigeria and South Africa.

Findings from the present study revealed that different types of ICT facilities were available in the six sampled university libraries. The most availability ICT tools vary in job description from one university library to another (Table 6.5, Table 7.7, Table 7.15 and chapter 6 and 7). ICT facilities are engines or building blocks that make up the operations of every library and information services available in the present day. The availability of tools in libraries is factored into guided policies. Specifically, in terms of the tools acquisition, adequacy of available funds, trained ICTs and KM personnel, and the operation which the tools are meant for.

Results of hypothesis one as reported in Table 6.9 shows that the null hypothesis was rejected. This shows that there was a significant difference on the types of ICT facilities used by libraries in the two countries university libraries. The significance is based on age differences; frequency of computer usage; information literacy skills; attitude and exposure to use; as well as the nature and context of the work for which ICT tools were used. These have a strong relationship with those who uses the tools, as well how well they are used. This means there is a relationship between the types of ICT facilities used by librarians in support of the operations in the library environment. The relationship can only be strengthened if librarians are prepared to adapt to the environmental culture of the library.

Another variable addressed in the research question above was the knowledge management tools (KMTs). The present study revealed that there are different KMTs available in the six university libraries (see Table: 6.6, graphs, section 8.4.1, and chapter 3). Most of the KM tools are software used for specific and general management of knowledge in the library environment. KMTs influence the nature of library work and their availability depends largely on the library's needs as well as the availability of funds to acquire them. KMTs are essential mechanisms that are used to harness and facilitate organizational growth and work performance of librarians. Importantly, South African university libraries were reported to have more of the KMT facilities and resources in general; in comparison with Nigerian university libraries.

Service provision is very important in organizations. The current study established that different KM services were available in the present study samples (see Table: 6.7 and section 8.4.2). The mostly available ICT tools for KM services are intranet, WWW-internet, and electronic email. Service provisions are successful when the availability of facilities and personnel are provided. It can be noticed from findings that the services offered to meet diverse users' information needs depends largely on the university libraries and librarians preparedness. This has made librarians to increasingly collaboration in research to enhance their knowledge and skills in the work environment. The sustainability of the library organization depends on these different tools that are used in present day academic libraries.

Accessibility of ICT tools and KM services cannot be possible if they not available. Therefore, the available tools in the various university libraries visited were accessible, as attested to by respondents. It was revealed that KM services were more accessible in South Africa university libraries than they are in Nigeria with electronic mail; text summarizing and online public access catalogue (see Table 6.9 and section 8.4.3). The accessibility was based on priority placed on information and knowledge by these libraries. The researcher noticed that university libraries have and would continue to use these tools to carry out the functions of KM services. Importantly, the accessibility of the KM services depends on the feasibility of the tools for quality services delivery. Therefore, access to information and knowledge should be given top priority in consideration of the establishment and operations of libraries. For example, when users of libraries visit any of the sample university libraries for variety of relevant materials, but could not found adequate provisions, their expectations and interest would be cut short.

Findings from the study established that the most effective ICTs/KM tools in the two countries' university libraries are internet, electronic-mail, file sharing, and text summarizing (see Table 6.11 and section 8.4.4). The findings further revealed that KM services are more effective in South African university libraries than in Nigerian counterparts (see Table 6.11 and section 8.4.4). The effectiveness of any tool is dependent on its availability and how accessible it is. The effectiveness of ICTs/KM tools depends largely on the knowledge, skills, and practices with which librarians have to use in the organization. Library operations in recent times have flourished in diverse ways through the effectiveness displayed by the use of specific tools and services that are used to meet users' information needs. The satisfaction and expectation placed on libraries, their information and librarians; is evaluated by how well they are able to provide access of the most preferred information.

9.2.3 Determining the extent to which librarians in Nigerian and South African academic libraries utilize ICTs for the support of KM

- To what extent are librarians utilizing ICTs to support KM in academic libraries in Nigeria and South Africa?

The present study revealed that the most frequently used ICTs/KM tools are both old and new tools categorized into different types (see Table 6.13, 7.7, section 8.5 and chapter 3). These were largely software that perform highly specialized tasks and which require expertise. The extent to which the tools met respondents preferred needs determined how long they had been using the tool. Different kinds of tools serve general and specific purposes in the library environment. It is envisaged that low application of ICT hardware can be attributed to challenges in getting funding while low utilization of specialized software can be traced to lack of knowledge of how to use KM tools. The use of ICT/KM tools is slightly higher in South African university libraries than in Nigerian counterparts.

According to Raju (2014) several ICT tools of social media, mobile devices, tablets and its peripherals have influenced the expansion of collections and services rendered to users by LIS professionals. Therefore, based on the researcher's observation in the context of the present study, it was found that the use of KM services is relatively high in UI, moderate in UZ, UKZN and DUT, however lowest in DSU, followed by FUT in terms of the services of video conferencing and text summarizing (see Table 6.15, Table 7.17). The use of recent technological components such as social media platforms has not only transformed the library environment and services. It has also facilitated and advertised library products and services in diverse ways. Presently, libraries display their functionalities in mobile devices where users can access the libraries and their resources without necessarily visiting the physical building of the library.

This section which has to do with various ways librarians utilize ICTs, revealed that different descriptions of the ICT facilities; KM tools and services were used for rendering information and administrative services; support research and development; formulation of policies; strategic planning; teaching and learning processes for newly registered users amongst other things in the two countries; university libraries (see Table 6.18, Table 7.17, section 8.5.2, and chapter 3). It was established that the utilization of these tools facilitated and enhanced job performance, improved the capacity for innovation, increased librarians' competencies and training for proper management of the library activities. The utilization of these tools and services cannot be underestimated. They can be used for training need analysis, perfection of

appropriate experience, as well as the development of knowledge and skills of librarians in library operations.

The present study established that multifarious sources, which were most preferred by librarians in the six university libraries sampled, are library catalogue, theses and dissertations, review/journal articles, and internet sources (see Table 6.19 and section 8.5.3). Presently, all the university libraries across the two countries preferred one information source to another-dependent on their information needs and purpose for searches of such information. One major reason of sourcing for a particular source of information could be factored into easy availability, accessibility, and reliability, as well as cost effectiveness in meeting users' information needs.

Findings from the present study indicated that the majority of users of KM resources are students, researchers, librarians, and lecturers (Table: 6.20 and 8.5.4). It was established that diverse users of libraries and their resources consult information sources more frequently for several purposes on a daily basis. A study by Bolisani and Scarso (1999:209) which reflects on valuable sources of different literature, established that organizations flourish through the competitive advantage of sources of knowledge made available by staff members.

9.2.4 Investigating strategies that would promote the use of ICTs for the support KM in academic libraries in Nigeria and South Africa

- What strategies can promote the use of ICTs to support KM in academic libraries in Nigeria and South Africa?

The present study found that various strategies were used to promote the use of ICT for the support of KM. The strategies affected the university libraries organizational culture, work environment, management support systems, librarians' knowledge, and access to information (see Table 6.20, Table 7.10, 8.6 and chapter 3). These strategies have been used to train and foster innovation and growth in the organizations. Most importantly, UZ's library in South Africa was reported to promote the use of ICTs by using several strategies that were similar to that of UI in Nigeria. Present day library organizations have used different strategies that

include training need analysis of staff; monitoring and evaluation of staff responsibilities; incentives of tangible and intangible means; as well as advisory roles of librarians. These are just a few of the strategies utilized to improves service delivery to users.

9.2.5 Determining and comparing librarians' knowledge and ICTs skills for the support of KM in academic libraries in Nigeria and South Africa

- Do academic librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs to support knowledge management?
- ***Hypothesis two:*** There is no significant difference among librarians with knowledge and skills to use ICTs for the support of KM in academic libraries in Nigeria and South Africa.

- How often are librarians trained and supported in current knowledge and skills acquisition, specifically in the use of ICTs for the support of Knowledge Management, in academic libraries in Nigeria and South Africa?
- ***Hypothesis three:*** There is no significant difference in the training and support for acquisition of current knowledge and skills given to librarians in the use of ICTs to support knowledge management in academic libraries in Nigeria and South Africa.

The present study found that the most frequently used sources in updating librarians' knowledge are internet and conference papers (see Table 7.11 and 8.7). Book vendors and library subscriptions were the least preferred sources. It was established that librarians' exposure to various sources and new trends in the work environment could facilitate and update their knowledge. Notably, respondents in UKZN's library in South Africa showcased updated of knowledge in comparison with FUT's library in Nigeria.

In this study, it was established that the required knowledge and skills offered to librarians across the various university libraries cannot be quantified (see Table 6.27, Table 7.12 and section 8.8). The most predominant knowledge and ICT skills required of librarians to function better is the abilities to create and store information (see Table 6.27). It was revealed at the inter-country comparison that, librarians in South African knowledge and ICT skills are

intertwined with one another. Present day library organizations continue to promote different training programs in order for librarians to attract expertise, for effective and efficient job performance.

Findings from the second hypothesis tested t-test analysis in Table 6.26 of librarians' knowledge and skills to use ICTs shows significant differences. The null hypothesis was rejected. This shows there is significant difference evidence of the type of knowledge and skills required of librarians in order to use ICTs effectively. The indication of the significant differences was factored into varied training need analysis of librarians; preparedness for such training; necessary tools required to access such skills and knowledge; support systems from organizational bodies, just to mention but a few. It was established that the knowledge and skills of ICTs is fundamental in the executions of information services.

Furthermore, it was identified that a number of most predominant expertise of librarians includes online public access catalogues (OPAC), an array of library information services, knowledge of ICT tools, library website, and internet access. This was the kind of knowledge that respondents' possessed. The lowest ranked skills are supervisory roles, staff members' capacity, shelf reading, and re-shelving (Table 6.22, section 8.7.1 and chapter three). The different areas of expertise differ from one individual to another. The willingness to harness multi-dimensional clusters of knowledge is subject to the availability of tools and support system from university management. This shows that staff members can acquire more knowledge that can enable them to work independently, if supported by their institutions.

It was established that findings regarding the extent of adequate knowledge, experience, and skills of ICTs as revealed in the present study was felt most when sharing knowledge, as well as engaging in teaching and learning (see Table 6.26). However, the least impact was felt when explaining actions and when taking a concrete decision. Claims of less impact of knowledge and experience on concrete decision-making appear contrary to common perceptions (see Table 6.26, and section 8.7.3). Respondents in Nigerian university libraries tend to have much more of an impact factor in comparison with those in South African universities, with regards to the contribution of knowledge, experience, and skills required for performance of a task. It is

interesting to note that, knowledge, experience, and the skills required to work with differs depending on context and job specification.

Numerous training and support is offered to librarians. This includes induction, formal education, retraining, and interpersonal development, just to mention a few (see Table 6.27; 7.12 and section 8.8). Interestingly, this training and support varied in context (urban and rural), nature of the training (practical, oral, online, visual, experimental, and/or traditional), paradigm used, friendliness of the training, availability of training resources, complexity of the training, support, and comprehensiveness of training in most university libraries today.

Results of the third hypothesis: The t-test analysis of the hypothesis was accepted. This shows that was no significant difference on the training and support for the acquisition of current knowledge and skills offered to librarians in the use of ICTs. The level of significance on the training and support from one individual to another are usually the same. This is so because, librarianship profession, irrespective of the context, adhere to the same principles, theories and training. However, we can agree that not everyone has the capability to go through rigorous training programmes. Besides, in terms of hierarchy (senior, middle and junior management staff), everyone are offered the opportunity to be trained at the same time. Other factors to be considered are: environment where the training took place; training need analysis; trainer/facilitator of the programme; availability of funds; resources provided by the organizations; and knowlegeability in the field of expertise. Librarians are expected to play a significant role in the organizations in order for them to be supported. It was established that it is the responsibility of the library organisation to support and train their staff (librarians) in order to be more productive and improve on job performance. Emphasis was also placed on areas where staff can be trained and supported. This included embarking on study leave with pay; internships; mentorships; in-house training, as well as group learning.

The result of the present study revealed that the most prevalent technical skill of librarians in the present day library operations are online searching, social media operating, information management, trouble shooting, programming, and software trouble shooting (see section 8.8.1 and Table 6.29). The familiarization of this knowledge and skills has made librarians and library operations eligible for promotion in diverse ways. Present day LIS professions require

that these various knowledge and skills be at the top of priority in their curriculum, in order to prepare the products for the job market.

The present study established that the most recommended general skills for librarians in today's library and information services are subject to change, as the trends in the professions also are subject to change (see Table 6.30 and section 8.8.2). General skills are a basic requirement for librarians in university libraries. Most significantly, the educational training, work environment, availability of funds for staff training, policies that guide the products, and services of university libraries in order to enhance a librarians' general knowledge.

The present study found that an acquisition of diverse personal skills is determined or obtained through training programmes like conferences; workshop, seminars, orientation, and in-house training/mentorship, amongst others (see Table 6.32 and section 8.8.3). Librarians at DUT in South Africa have more personal skills in comparison with those in UI, in Nigeria when compared with one another. Librarians' qualifications, exposure, computer literacy and application, and experience in job operations are basic requirements in the attainment of personal skills.

9.2.6 Finding policies that guide the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa

- What policies guide the use of ICT to support KM in academic libraries in Nigeria and South Africa?

ICT policies ensure the sustainability in management of information and knowledge in the library environment. The present study established that UZ in South Africa and FUT in Nigeria were most highly rated on issue with policies used (see Table 6.33, Table 7.13 and section 8.9). The availability of funds to acquire the necessary tools/software and train experts on ICTs application and maintenance culture is indispensable in the implementation of ICT policies in present day university libraries.

The present study established that those persons responsible in the formulation and implementation of ICT policies are library management staff/team; representatives of the university authorities/top management or university management; IT expert/departmental staff; and ICT staff (see Table 6:34, and 8.9.1). These are the decision-makers and planners and knowledge experts in different subject areas in university libraries.

9.2.8 Examining the challenges faced in the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa

- What are the challenges faced in the use of ICTs to support KM in academic libraries in Nigeria and South Africa?

The present study established that the most voiced challenges that affected the use of ICTs in supporting the management of knowledge in academic libraries in the two countries university libraries are diverse. They include inadequate funding; lack of motivation; lack of infrastructure; the loss of LIS practitioners to other professions; language barriers; and an inability to work independently (see Table 6.35; Table 7.14; section 8.10 and chapter 3). However, inadequate professional staff was also noticed in both countries university libraries. There is no organization where there are no problems present; however, the management styles applied in running the operations of the library and responsiveness of staff to users interface determine how well problems can be minimized.

9.3 Conclusion

Based on the summary of the findings, the study has shown that its aims and objectives were successful. This was proven in the aligned problem statement, which guided the aims, research objectives, questions, and hypotheses. It was established that the pivot of knowledge activities in libraries is centered on librarians' KMPs. Findings revealed that the training experienced whilst on study in library schools, coupled with sourced information from internet and interaction with teachers/lecturers, gave a better understanding of how knowledge is managed. The different ICT facilities, KM tools, and services available in the university libraries sampled demonstrated a significant support for librarians' management of knowledge (tacit and explicit). The support was mainly for specific and general work operations in the university

libraries (see Table 6.5; Table 7.7; Table 7.15, Table 6.13; section 7.7 and 8.5). These ICTs/KM tools, and services, varied from old to new technologies, which require highly specialized knowledge and skills in order to perform any task. The utilization of these tools and services has not only transformed the library environment. It has also facilitated job performance, generated new knowledge, filtered old ones, and improved innovation in diverse forms which-were not possible in the past.

The knowledge, experience and ICT skills required by librarians to work with have brought about the sustainability of library organizations in recent times (see Table 6.26; Table 6.25; Table 7.11; section 8.7.2, 8.7.3; Table 6.22 and section 8.7.1). The acquisition of knowledge, experience and ICT skills was as a result of constant sourcing of information from library catalogue, Theses and Dissertation, review/journal articles, conference papers, and internet sources, among others. It has been established that formulated policies of ICT skills depict librarians' willingness and ability to harness an array of predominant expertise by librarians. These have worked much better in the practices of improved routine, procedures, policies, and the application of knowledge and skills in recent times in libraries.

The field of ICTs and KM in LIS profession coupled with other related subject areas has been dealt with in recent times. The consideration of the different sub-topics of knowledge management practices, ICT facilities used to manage knowledge, the utilisation of ICTs, strategies applied while using ICTs, librarians' knowledge and ICT skills, training and support for current knowledge and skills, ICT policies and challenges faced while using ICTs to support KM in academic libraries became significant as they were more of global perspectives. However, most of the subject areas earlier mentioned was not routed from Nigeria (Southern-university libraries) and South Africa (Kwazulu Natal province- university libraries), rather they were across the globe. It is of importance therefore to address the problem inherent in practical application of these technologies to enhance and facilitate knowledge in academic libraries from the perspective of Africa, specifically Nigeria (Southern part- university libraries) and South Africa (Kwazulu Natal province- university libraries). This is the gap the present study has sought to fill.

Based on the findings of the present study, we conclude on the following: The current study established that KMP is a useful activity in academic libraries. It has helps librarians to advance in their capacity for work performance. With regards to ICT facilities, KM tools, and services, a variety of tools are now being used in the libraries to facilitate and promote several library services. The utilization of these tools cannot be underestimated. High demands from users and users' expectations, based on their different information needs and resources, have increased. Librarians' roles have expanded in scope and depth, thus pushing them to have dual areas of expertise. Librarians' knowledge, competencies, and skills application have increased due to current trends and influx in knowledge growth. Diversity of sources of information now gives room for preference to choose from. Strategies now overlap in order to better monitor and evaluate the advisory roles of librarians. Librarians have been admonished not to remain behind in the twenty first century, but to be strategic in having general, personal, technical knowledge and skills of LIS profession. The knowledge and skills required can be attained through training of formal and informal programmes. The training also ensures laid down policies that are strictly followed. In spite of the useful strategic mechanisms found in the use of ICTs and KM tools and services to manage knowledge (tacit and explicit), several problems were noticed. Most crucial was inadequate staff across the two countries university libraries.

Several short falls/challenges were noticed in the course of this study. First, some of the professional librarians were on leave which almost affected the sample size stipulated for the study. However, the four visits made to each of the sampled university libraries, gave room for further investigation on how to reach some of the respondents that were on study leave. It became necessary to reach the professional librarians, as the sampling technique used was the purpose sampling. The idea that necessitated this was based on the fact that the study focused on professional librarians' who utilizes ICTs in support of KM in academic libraries in the two countries. Second, the quantitative-questionnaire instrument formulated and administered to librarians were so large that some of the respondents complained about them. This was later attended to by reducing some of the questions with the assistance of the supervisor to a reasonable number. Though, the results obtained did not affect the findings of the study. Third, during the course of the interview with key informants, it was noticed that several of them were too busy to pay sufficient attention and be kept for too long while conducting the interview. This led to postponement of the interview with some of the key informants, thus causing delay.

However, the interview was finally conducted. In one of the university library, for example University of Zululand, Kwadlangezwa, South Africa, the university librarian was so busy to the extent that no interview was conducted. The supervisor later advised the researcher to go back and carry out the interview. This allowed the interview results to be complete in both countries' university libraries. In the midst of the challenges and short falls accounted for in the study, major contributions were made.

Based on the challenges and findings of this study, major contributions of this research are as follows: First, in spite of the extent of literature mentioned in the domain of ICTs and KM in academic libraries globally in chapter one to nine, there was knowledge gap in the current literature sourced in both countries libraries. Second, shifting ground of increased mediating factors of knowledge, skills, ICT and KM tools used to improved quality service delivery by librarians. Third, it was established that knowledge management in the present day academic libraries involves the use of tacit knowledge of librarians in order to share experiences and knowledge with one another in the organization. Fourth, old technologies are gradually giving way to new technologies used in present day library organizations. These have brought about easy accessibility to effective information and knowledge used in decision making and planning in library organizations. Fifthly, diverse theories widely used were applicable in recent study, thus, showing their relevance to settings, value systems, technology, people, and institutions. This has strategically promoted its usability in present day library organizations.

Sixth, the research paradigm used for the study were the positivism (quantitative-questionnaire), and interpretivism (qualitative- interview and observation), and content analysis of literature search. This was to unveils new arguments that were not common to the present and other research carried out in the domain of ICTs and KM. Seventh, the triangulations of both the quantitative (questionnaire) and qualitative (interview and observation) approaches were largely used, in order to measured data, information and literature for the discussion of findings. It was established that this result has not been seen in other research work. Eighth, the research context of the university libraries selected in both countries (Nigeria and South Africa) was of unique interest based on the comparison made in both countries university libraries: One, the two leading countries in Africa in terms of education and research development are growing in the field of librarianship profession; two, the study used non-

probability sampling technique to select six universities libraries from the Southern part of Nigeria (University of Ibadan, Federal University of Technology and Delta State University) and Kwazulu-Natal (University of KwaZulu-Natal, University of Zululand and Durban University of Technology) province; three, the University of Ibadan and University of KwaZulu-Natal libraries were selected based on first generations, years of establishment and university ranking; four, Federal University of Technology and Durban University of Technology libraries were selected since they are both technological libraries, and practical oriented. While Delta State University and University of Zululand libraries were also chosen because they are both government owned and located in rural areas.

Ninth, the research instruments of questionnaire, interviews, observations and analysis of SPSS, micro soft-word and excel used played a significant role on the data, information and findings obtained in the present study. Tenth, the demonstrated data and results, cross tabulation and intersect graphs representation in figures, and content analysis of verbal narrations of key informants revealed useful presented in tables. The observable items presented in tables contributed meaningfully to the findings of the study as well. These novelties have not been seen in any research work before. Eleventh, the extensive knowledge based of ICTs, KM, and other sub-titles emphasized in the discussion chapter within this study was anchored on research objectives and questions. The various literature covered were from global perspectives as seen in chapter 1 through to 9 respectively. The Nigerian and South African university libraries that witnessed the use of ICTs to support KM in academic libraries literatures reflected in chapter 1, 2, and 3 were most specification to the study. The university libraries in Southern Nigeria (University libraries in Ibadan, FUTA, and Delta State University) and KwaZulu-Natal province (university libraries in Zululand, DUT and KZN) have not been covered in any recent research in the areas of methodology, literature, approach, and application.

Twelfth, according to the combined theory of TAM by Davis (1989) and Sagsan (2007), the KM life cycle model (see chapter 4) used for this study was distinctive. This gave the researcher an opportunity to integrate both theories in a remarkable way within the same study. The integration of the two theories evoke innovative questions that require changes in the use of ICTs for the support of KM. Thirteen, empirical research studies have shown that new

research methods can be used to undertake the same research problems. This can be proven when the mode of data collection through secondary data, measuring instruments of observation, interview, focus groups, documentary source, grey literature, inferential statistics, ANOVA, T-Test, simple percentages used for the data analysis, sample size are interweave in order to address the same research problems. All these contribute meaningfully to this study. Fourteen, practicing librarians in the two countries university libraries can also strategizes to advance in current trend that requires attitudes, exposure, experience, knowledge and skills for efficient and effective operations of LIS practices. Fifteen, a new conceptual model known as KSTAM (K=knowledge, S= skills, T=Technology, A=Acceptance, M=Model) of ICTs use was formulated from the first theory of TAM by Davis Fred, (1989) for further studies.

9.4 Recommendations

The study thus recommends the following based on the findings stated in chapter eight. The recommendations were discussed with reference to specific research questions.

9.4.1 RQ 1: How is KM being practised by librarians in Nigerian and South African university libraries?

Since Knowledge Management Practices (KMP) involves everything in library organizations (operations); from the acquisition to the dissemination of knowledge to users, with emphasis that surrounds group discussion within communities of practices; apprenticeship; in-house training; visibility of research among colleagues, amongst others. The researcher re-emphasized that, even though KMP is promoted in academic libraries, there is a need to develop more awareness and re-define librarians' routines, procedures, policies and application in the organization.

9.4.2 RQ 2: What are the available ICT facilities and KM tools and services that can be used for the support of KM in academic libraries in Nigeria and South Africa?

The current study revealed that the most available ICT facilities, KM tools, and services varied with respect to job specification, adequacy of funds, and policies guiding its acquisitions. The researcher recommends more purchased/developed advance technologies that can be applied in the library environment since work load has increased in recent time. The acquisition of more

tools will improve easy and quick access as well as better service delivery to users that will enhance operations of library information services.

9.4.3 RQ 3: To what extent are librarians utilizing ICTs to support KM in academic libraries in Nigeria and South Africa?

It was established that the most frequently used ICT/KM tools were meant for specific jobs in the libraries. Therefore, since users of libraries, and their resources, expand in scope and breadth, the work of librarians' increases in multiplicity. Librarians should be trained on a regular basis in order to acquire the knowledge and skills about these different areas of work functions. The researcher further recommends that the use of the tools be continuous as services of libraries are also continual exercise/activities.

9.4.4 RQ 4: What strategies can promote the use of ICTs to support KM in academic libraries in Nigeria and South Africa?

Strategies abound in achieving driven goals of highly competitive organization irrespective of their environments. Based on the strategies that were used to promote the use of ICT for the support of KM, which strategically affected the university libraries, the researcher recommends setting up of monitoring and evaluation committee to study the policy used in training of staff, re-designing framework and plans of services delivery. This could have increase and improve on the strategies provided stakeholder in the community develop and decide on the way forward.

9.4.5 RQ 5: Do academic librarians in Nigerian and South African university libraries have the required knowledge and skills to use ICTs to support knowledge management?

Librarians' attestation to the knowledge and skills of ICTs are diverse and broad. The researcher recommends that since the job market of LIS demands variety of knowledge and skills in ICTs, present day library organization and librarians should advance quickly to embrace the acquisition of these knowledge and skills. This would make them not only to retain their jobs but be relevant, skilled and experienced in their job performance.

9.4.6 RQ 6: How often are librarians trained and supported in current knowledge and skills acquisition, specifically in the use of ICTs for Knowledge Management, in the academic libraries of Nigeria and South Africa?

The training offered to librarians whether formal education, retraining, and/or interpersonal development are not adequate. Several training and support of strategic policy and capacity building should be encouraged most specifically to younger librarians in the profession as most of the older librarians will retire in the nearest future. Besides, some of those working in the library are those with other qualifications. Therefore, when such training has been organized, responsibilities be given to such trained staff in order for them to masters the knowledge and skills acquired. This would help to evaluate or appraise the staff if whether what was taught is reflective in the attitudes and actions exhibited by librarians.

9.4.7 RQ 7: What policies guide the use of ICT to support KM in academic libraries in Nigeria and South Africa?

Policies ensure proper guidance and application of set goals in universal access and accessibility of resources. Therefore, it is was recommended that management of the libraries should set up staff member committee to review and evaluate policies on yearly or once in two years basis in order to embrace current trends and best practices used in national and international library standards.

9.4.8 RQ 8: What are the challenges faced in the use of ICTs to support KM in academic libraries in Nigeria and South Africa?

Challenges are bound to occur in any organization and especially in transitions between different phases of the organizations life. The challenges noticed in the present study are not new to any organization. Therefore, the ones that concern university libraries can be best handled locally. While those that require parent bodies and financiers of the libraries, need be specified and reported to those stakeholders. This would help to streamline follow up mechanisms, rather than leaving the whole problems for government to handle.

9.4.8 RQ 9: What is the recommended conceptual model of the use of ICTs for the support of KM in academic libraries in Nigeria and South Africa?

9.4.8.1 A proposed conceptual model for the use of ICTs to support KM

The current study was informed by models of Technology Acceptance Model (TAM) by Davis (1989) and Sagsan Knowledge Management Life Cycle Model (2007) which was presented in chapter four (theoretical framework) of this study. They addressed specific research problems on the use of ICTs to support KM in academic libraries in Nigeria and South Africa. The eight objectives stated in chapter one and nine of this current study were meant to develop and expand the ICTs model that harnesses the use of technologies by librarians in academic libraries. The rationale behind a proposed conceptual model was based on empirical findings from other related ideas observed in the models chosen for this study. It was established that the Technology Acceptance Model (TAM) by Davis (1989) used for the current study lacks some variables such as 'skill' and 'knowledge'. The expansion of TAM to incorporate 'skill' and 'knowledge' was as a result of its robustness and flexibility. 'Skill' and 'Knowledge' are fundamental in order for librarians or other users to practically utilize the models in any work operations. The most commonly featured variable; that would enable the use of information systems or ICTs seen in TAM is PU (perceived usefulness) and PEOU (perceived ease of use).

Having established the perceived usefulness (PU) and perceived ease of use (PEOU) of ICTs in the operations of library services or any work environment, the researcher observed from his experience of the application of tools that, though that technologies can be of great usefulness or significant and perceived to be easy to use. However, the certainty of how someone perceived tools to be useful as well as the ease of its use, is concerned with the basic 'knowledge' and 'skills' that are applied. This was what the researcher found out. From the researcher's understanding of knowledge and skills, knowledge is an invisible, intangible asset that cannot be directly observed (Hunt, 2003:101). It is a belief that is true and justified, measured by methods that rely solely on the correctness of answers. Therefore a correct or incorrect answer is interpreted such that the person knows or does not know any particular thing (Hunt, 2003:100). For example, if a computer analyst is asked about his/her knowledge of the use of the computer, the person's answer and self-assessment would provide

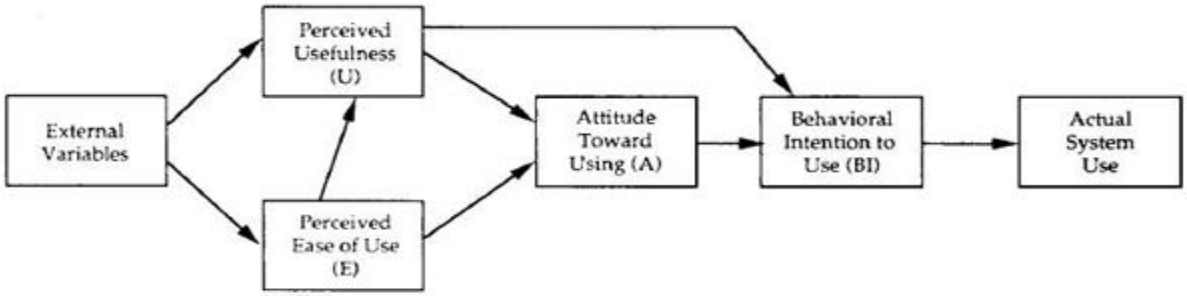
multidimensional scores about the person's knowledge whether the remedy is correct or deficient of the knowledge assessment.

Kidwell et. al (2000); Asogwa (2012) and Arora (2011) believed that knowledge is a mixed of fluids acquired from different sources, which are embedded in the human brain. Knowledge is often embedded not only in documents or repositories, but also in organizational routines, practices, norms and the mind of the people (Davenport and Prusak, 1998). Polanyi (1966, 1969); Nonaka and Tekauchi (1995) gave instance of two type of knowledge which is the explicit and tacit knowledge forms. The explicit forms are those found in books or documents which can also be accessed with ease and transferred among individuals, while the tacit form is hidden on individual capacities, insight and experiences (Turner and Minonne, 2010). It is the tacit knowledge that enables the work performance in the organization. Another example that can be used to illustrate what knowledge entails is what Ackoff (1999) argues that through the example of elementary school children that memorize or amass knowledge of the "time-table", the "four figure table", "the months and days in the week", "the numbers of chapters in the holy bible" and so on. Situations could warrant where individuals retain all the information in their brain, and can recite it over and over again, have amassed knowledge.

Skill has to do with ability or capabilities in physical and psychological attributes of an individual acquired and mastered through the activity of related approaches of professional and non-professional training (Petersen, et al. 2005). It involves content and context through the formation of insight that provides a framework for evaluation.

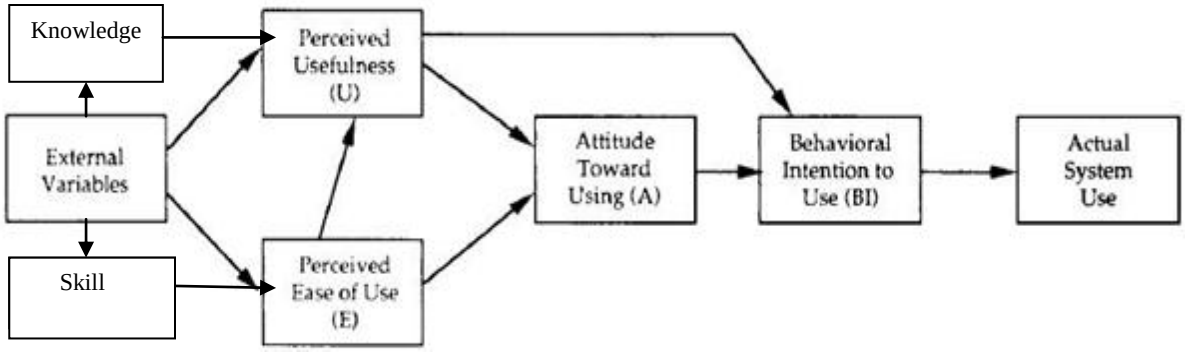
Therefore, the proposed ICTs model expanded from TAM is known and called 'KSTAM' theory. Where K represents knowledge, S is skill, T=technology, A=acceptance and M=model (K+S+T+A+M=KSTAM). The former theory of TAM (see Figure 1 below); which has some complexity for use by some users has now been simplified through the acquisition of knowledge and skills before adaptation. The new theory or model (KSTAM) now requires basic knowledge (know-how and) and skills of ICTs or systems with certain human behaviour in order to navigate and manipulate the techniques to achieve results.

Fig 19: Former: Technology Acceptance Model 1989



Source: Fred Davis 1989 TAM version 1

Fig 20: New: Knowledge Skill Technology Acceptance Model 2015 (KSTAM)



Source: Developed by Fred Davis 1989 and expanded by Rexwhite T. Enakrire 2015 (KSTAM)

9.5 Suggestion for further studies

The present study compared selected university libraries in Nigeria and South Africa with a specific focus on the use of ICTs for the support of Knowledge Management. This study became necessary, as present day library services cannot flourish without the use of these tools and techniques. Additionally a vast array of knowledge and skills of LIS professionals is needed to address the increasing information needs of varied users in the two countries. The influx of diverse users and resources in both countries in the areas electronic and print format made the researcher to suggest that this same research of the use of ICTs and KM tools to support management knowledge be extended to other academic institutions of polytechnics and colleges of education in both countries in Africa.

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APPENDICES

APPENDIX A: QUESTIONNAIRE FOR LIBRARIANS

UNIVERSITY OF ZULULAND

Faculty of Arts

QUESTIONNAIRE FOR LIBRARIANS

The Use of Information and Communication Technologies (ICTs) for the Support of Knowledge Management in Academic Libraries in Nigeria and South Africa

Department of Information Studies,
University of Zululand, P/Bag X1001,
Kwadlangezwa, 3886, South Africa

Dear Respondents,

I am a PhD student of the above named department conducting a research on the use of Information and Communication Technologies for the support of Knowledge Management in academic libraries in Nigeria and South Africa. The purpose of this research is to find out the understanding librarians have towards knowledge management as it revolves round application of ICTs in academic libraries in the two countries.

I kindly ask for your time to complete the questionnaire based on your knowledge, experience and operations in the field of librarianship and return at your earliest convenience. Your frank feedback will be taken as an important contribution to this research. I assure you that the information provided will be kept confidential and solely for the purpose of this study.

NB: Technical terms appearing in the questionnaire are explained using footnotes.

Thanking you in advance for your time.

Yours sincerely,

Rexwhite T. Enakrire

Researcher/PhD Student

enakrire@yahoo.com; +27710213926; 0748097011

NB: Knowledge is the ability of a person to understand a concept and act effectively. A situation whereby an individual reads and understands, then digest what he or she has read or knowledge gained through experience or practice. Knowledge management refers to the processes of creating, storing, sharing and re-using organisational knowledge or know-how to enable an organisation achieve its goals and objectives. Also, it involves the experiences of individual workers and groups within an organization. Knowledge can be divided into two broad areas: Explicit and Tacit. Explicit has to do with information or knowledge found in books or documents. While tacit is the knowledge found in the human brain that enables individual action leading to creativity and innovation. Thus, it is what the knower knows. KM (knowledge management) refers to the processes of creating, storing, sharing and re-using organisational knowledge or know-how to enable an organization achieve its goals and objectives.

SECTION A: BIO-DATA

Please tick where appropriate in each of the following questions

1. **Gender:** Sex: Male [ ], Female [ ]
2. **Age:** 20- 29yrs [ ]
   30- 39yrs [ ]
   40- 49yrs [ ]
   50- 59yrs [ ]
   60 and above [ ]
3. **University Library affiliated to:** University of Ibadan Library, Ibadan, Nigeria [ ]
   Federal University of Technology Library, Akure, [ ]
   Delta State University Library, Abraka, Nigeria [ ]
   University of Zululand Library, Kwadlangenwa, SA [ ]
   University of KwaZulu-Natal Library, Durban, SA [ ]
   Durban University of Technology Library, Durban, SA[ ]

4. Department/Unit in the library ……..

5. Please indicate your Highest Academic Qualification: (e.g. Bachelor of Library & Information Science, Masters of Library and Information Science and PhD .....

6. Position/Rank: Please indicate.....

7. Work Experience: How long have you served in this university library?

(i) 1-5yrs [ ]

(ii) 6-10yrs [ ]

(iii) 11-15yrs [ ]

(iv) 16-20yrs [ ]

(v) 21-25yrs [ ]

(vi) 26yrs and above [ ]

SECTION B: The USE of ICTs FOR THE SUPPORT OF KNOWLEDGE MANAGEMENT

Please tick where appropriate ( ) in any of the following responses ranging from section I to section VIII. For example- SA (strongly agree), A (agree), D (disagree), SD (strongly disagree).

Part I: KNOWLEDGE MANAGEMENT PRACTICES

This part is on knowledge management practices in academic libraries

8. How did you get to know about Knowledge Management through the sources below?

(1) Colleagues [ ]

(2) Friends of the library [ ]

(3) While in library school for training [ ]

(4)Read about it in librarianship books and the Internet [ ]

(5)Teachers/Lecturers [ ]

(6)While attending conferences, seminars/workshops [ ]

Others, please specify…….

9. KM is practiced in academic libraries in the following ways

S/N	KM Practices	SA	A	D	SD
1	Group discussion/meetings				
2	Apprenticeship-mentoring				
3	In House-training				
4	Routine documentation				
5	Communication network within library				
6	Socialisation				
7	Seminar/Conferences/Workshops				
8	Story telling				
9	Communities of Practice				

Others, please indicate .....

Part II: AVAILABILITY OF ICT FACILITIES AND KM TOOLS AND SERVICES FOR THE SUPPORT OF KM

10. Which of the following ICT facilities and KM tools and services are not available/available in your university library? NA (Not available), AV (Available)

S/N	ICT facilities/KM Tools and services	NA	AV
1	Computer		
2	CD-ROM		
3	Multi-media tools		
4	Projector		
5	Scanner		
6	Modem		
7	Telephone e.g digital, analog		
8	Printer		
9	Monitor		
10	Smart board		
	Knowledge management tools		
11	Decision support systems tools		
12	Online analytical tools		
13	Semantic web		
14	Artificial intelligence tools		
15	Simulation tools		
16	Data mining		
17	Information Retrieval tools		
18	Electronic Document Management systems		
19	Database mangement systems		
20	Data warehouse		
21	Content management systems		
22	Management information systems		
23	Web portals		
24	Site maps		
25	Bar code reader		
26	Indexing and abstracting tools		
	Services		
27	Intranet		
28	World Wide Web- internet		
29	Email		
30	Extranet		
31	Video/audio conferencing		
32	Text summarising		
33	Online/Social media e.g Wikis,blogs,facebook, podcasts twitter,tagging, bookmarks, RSS,Youtube, & linkedin		
34	Online public access catalogue		
35	Text messages		
36	Web publishing		
37	Filesharing		

Others, please specify…….

11. How would you rate the accessibility of these ICTs/KM tools and services in your university library?

S/N	ICT facilities/KM Tools and services	Very accessible	Accessible	Less accessible	Not accessible
1	Computer				
2	CD-ROM				
3	Multi-media tools				
4	Projector				
5	Scanner				
6	Modem				
7	Telephone e.g digital, analog				
8	Printer				
9	Monitor				
10	Smart board				
	Knowledge management tools				
11	Decision support systems tools				
12	Online analytical tools				
13	Semantic web				
14	Artificial intelligence tools				
15	Simulation tools				
16	Data mining				
17	Information Retrieval tools				
18	Electronic Document Management systems				
19	Database mangement systems				
20	Data warehouse				
21	Content management systems				
22	Management information systems				
23	Web portals				
24	Indexing and abstracting tools				
	Services				
25	Intranet				
26	World Wide Web- internet				
27	Email				
28	Extranet				
29	Video/audio conferencing				
30	Text summarising				
31	Online/Social media e.g ikis,blogs,facebook, podcasts, twitter,tagging, bookmarks, RSS,Youtube, & linkedin				
32	Online public access catalogue				
33	Text messages				
34	Web publishing				
35	Filesharing				

Others, please specify.....

12. Which of these ICTs/KM tools and services do you consider most effective for KM in library operations?

S/N	ICT infrastructure/KM Tools and services	Very effective	Effective	Less effective	Not effective
1	Computer				
2	CD-ROM				
3	Multi-media tools				
4	Projector				
5	Scanner				
6	Modem				
7	Telephone e.g digital, analog				
8	Printer				
9	Monitor				
10	Smart board				
	Knowledge management tools				
11	Decision support systems tools				
12	Online analytical tools				
13	Semantic web				
14	Artificial intelligence tools				
15	Simulation tools				
16	Data mining				
17	Information Retrieval tools				
18	Electronic Document Management systems				
19	Database mangement systems				
20	Data warehouse				
21	Content management systems				
22	Management information systems				
23	Web portals				
24	Indexing and abstracting tools				
	Services				
25	Intranet				
26	World Wide Web- internet				
27	Email				
28	Extranet				
29	Video/audio conferencing				
30	Text summarising				
31	Online/Social media e.g Wikis,blogs,facebook, podcasts, twitter,tagging, bookmarks, RSS,Youtube, & linkedin				
32	Online public access catalogue				
33	Text messages				
34	Web publishing				
35	Filesharing				

Others, please indicate.....

Part III: UTILIZATION OF ICTS FOR THE SUPPORT OF KM

13. Which among the followings ICTs/KM tools and services are mostly used for the operations of library and information services and KM in your university library?

S/N	ICT facilities/KM Tools and services	Mostly Used	Used	Less Used	Not Used at all
1	Computer				
2	CD-ROM				
3	Multi-media tools				
4	Projector				
5	Scanner				
6	Modem				
7	Telephone e.g digital, analog				
8	Printer				
9	Monitor				
10	Smart board				
	Knowledge management tools				
11	Decision support systems tools				
12	Online analytical tools				
13	Semantic web				
14	Artificial intelligence tools				
15	Simulation tools				
16	Data mining				
17	Information Retrieval tools				
18	Electronic Document Management systems				
19	Database mangement systems				
20	Data warehouse				
21	Content management systems				
22	Management information systems				
23	Web portals				
24	Indexing and abstracting tools				
	Services				
25	Intranet				
26	World Wide Web- internet				
27	Email				
28	Extranet				
29	Video/audio conferencing				
30	Text summarising				
31	Online/Social media e.g Wikis,blogs,facebook, podcasts, twitter,tagging, bookmarks, RSS,Youtube, & linkedin				
32	Online public access catalogue				
33	Text messages				
34	Web publishing				
35	Filesharing				

Others please indicate.....

14. The following are various ways through which librarians utilize ICTs for the support of KM

S/N	Use of ICTS for the support of KM	SA	A	D	SD
1	Rendering information and administrative services				
2	Support for research and curriculum development process				
3	Formulation of policies and strategic planning				
4	Teaching and learning processes for newly regsitered users				
5	Problem solving and decision making				
6	Minutes in staff management meetings				
7	In-service development and training for supporting staff				
8	Transferring existing knowledge into other parts of the organisation				
9	Generating new knowledge and filtering old ones				
10	Accessing valuable knowledge from outside sources				
11	Storing content documents in databases				

Others, please specify

…….....

15. The following are different information sources that enable/guide librarians' use of ICTs for support of KM?

S/N	Information sources that guides librarians use of ICTs for the support of KM	Very Impotant	Important	Not Important
1	Library materials			
2	Library catalogue			
3	Newsletter			
4	Professional meetings/ interactions			
5	Pamphletes/leaflets			
6	Sources from workshops/conferences and seminars			
7	Theses and dissertations			
8	Rview/journal articles			
9	Face to face conversations with collegaues			
10	Discussion for a			
11	Emails/list serve			
12	Internet sources			
13	Research/ technical reports			

16. Who are the users of the information resources of KM?

(i) Students [ ]
(ii) Researchers [ ]
(iii) Librarians [ ]
(iv) Lecturers (academic staff) [ ]
(v) Non Academic Staff [ ]
(f) Others, please mention

……
……

Part IV: ICT STRATEGIES FOR THE SUPPORT OF KM

17. Which of the following strategies can be seen as best ways to promote the use of ICTs for support of KM?

S/N	Strategies to promote the use of ICTs for KM	SA	A	D	SD
1	Engage in rendering information services				
2	Motivation through tangible means				
3	Engage in knowledge networks and discussions				
4	Research, teaching and learning processes				
5	Problem solving and decision making				
6	Staff management to support external network				
7	Delegation of responsibilty through competitive initiatives				
8	Collaborative/team work to support existing structure, competencies and culture				
9	Project reviews				
10	Social networks				
11	Knowledge audit				
12	Training				
13	Community development project				
14	Publishing of articles, books and monographs				
15	Effective monitoring and support through corporate governance mechanism				
16	Provide efficient and effective oversight to KM entities				
17	Ensure and increase universal access and services of ICTs				
18	Ensure that ICT infrastructure is accessible, robust, reliable, affordable and secured to meet the needs of why KM is practiced by librarians				
19	Enhance departmental performance through improving institutional processes and mechanisms				

Others, please specify …….

Part V: LIBRARIANS KNOWLEDGE AND ICT SKILLS FOR THE SUPPORT OF KM

18. Which of the following sources of information do you use for updating your personal knowledge and the library holdings?

(1) Library subscription [ ]

(2) Book vendor [ ]

(3) Search engines [ ]

(4) Open access sources [ ]

(5) Databases [ ]

(6) Internet [ ]

(7) Periodicals [ ]

(8) Research Reports [ ]

(9) Conference/workshop papers [ ]

S/N	Librarians knowledge and ICTs skills for KM	SA	A	D	SD
1	Driving force of the organisational goals at heart				
2	Communication and flexibility team working skills				
3	Patten to assess and evaluate information and document effectively				
4	Ability to create record and store information effectively				
5	Ability to use ICT tools properly				
6	Capability to train, educate users and intiate ideas to fellow staff				
7	Strategic planning ability				
8	Ability to analyse roles and identify areas for improvement.				
9	Ability to persuade people to work and move them along				
10	Ability to market library's product and services				
11	Change management skills				
12	Broad knowledge of subject areas/expertise and working tools				
13	Understanding of business knowledge and processes				
14	Facilitation skills				
15	Consensus building skills				
16	Negotiating skills				
17	Project management skills				
18	Technical skills				
19	Managerial skills				

20. Which of the following reflect librarians' knowledge and ICTs skills for KM in the field of librarianship?

Others, please specify ……

21. Based on your experience and knowledge since you have been working in this library, what strategies have you used to manage information and knowledge in your university library?.....

…….

22. Which among the following knowledge/expertise are librarians expected to have for the operations of KM and other academic library services?

S/N	Librarians knowledge for KM	SA	A	D	SD
1	Knowledge of Cataloguing and Classification to include shelf reading and re-shelving				
2	Online public access catalogue (OPAC) knowledge				
3	Array of all library and Information services				
4	Collection Development -acquisition				
5	Serial control				
6	Structure and process/procedures used in the organisation				
7	Library software knowledge				
8	Library website and internet access				
9	Available information resources in the catalogue and entire library holdings				
10	Broad knowledge of subject areas/expertise and working tools				
11	Knolwedge of staff memebrs of different capacity and their area of expertise				
12	Knowledge of the organisation culture and what they do				

13	Culture of the organisation and policy (how things are done/rules that guide it)				
14	Knowledge of ICT tool use CD-ROM, DVDs, E-Mail, HTML, HTTP, Internet, TCP/IP network components like Hub, Router, Intranets, ISDN (Integrated Service Digital network), LAN, WAIS				

23. To what extent can you tell you have adequate knowledge, experience and skills of ICTs for KM?

S/N	Extent of adequate knowledge,experience and skills of ICTs for KM	SA	A	D	SD
1	When required to share knowledge				
2	When sourcing for information				
3	When given a particular task in the office that needs urgency				
4	When teaching and learning processes is taking place				
5	When necessary materials to work with in your own field are scarce				
6	When doing research in a complex environment that you are not familiar with				
7	When asked to explain the philosophy behind your action				
8	When technological development in your area of expertise is required				
9	When made to supervise a project that is time bound				
10	When in the middle of taking a concrete decision that require your initiatives				
11	When everyone in an organisation is looking up to you for every thing				

Others, please indicate .....

Part VI: LIBRARIANS TRAINING AND SUPPORT FOR CURRENT KNOWLEDGE AND SKILLS

24. Which of the following ways through which librarians are trained and supported in acquisition of current knowledge and skills in the use of ICTs for the support of KM?

S/N	Training and support for librarians in acquisition of skills and knowledge	SA	A	D	SD
1	Through formal education				
2	Informal education				
3	Delegation of responsibilities to sub-ordinate				
4	Interpersonal/staff development skill				
5	Industrial training experience or practice				
6	Experience gained on a-day-today basis at work				
7	Learner training				
8	Retraining				
9	Induction /Orientation Training				

Others, please indicate ……

25. Which among the following technical ICT skills you believe is important for the training and support of librarians?

S/N	Technical ICT skills for knowledge manager	SA	A	D	SD
1	Online searching				
2	Social media--blogging,Twitter,Facebook, MySpace, Linkedin, Youtube, flicker				
3	Web maintenance				
4	Software troubleshooting				
5	Chat/information management				
6	Web design				
7	Hardware trouble shooting				
8	Programming				

Others, please indicate .....

26. Which among the following general skills do you think is important for training and support of today's librarians?

S/N	General skills for knowledge managers	SA	A	D	SD
1	Supervisory experiene				
2	Marketing library and information products				
3	Research/publishing of papers				
4	Knowledge of cataloging and classification				
5	Familiarity with search online reference sources				
6	Customer service awareness				
7	Familiarity with paper base information resources				
8	Assessment and evaluation of job performances and employee				
9	Search skills				
10	Degree in library and information science- general knowledge of librarianship				
11	Traditional reference interview				
12	Mastery of foreign languages				
13	Negotiating with vendors				
14	Knowledge of teaching new users about the library ethical issues and materials				
15	Ability to mentor other colleagues				
16	Developing oneself in other areas of specialization				

27. Which among the following personal skills do you think is important for training and support of today's librarians?

S/N	Personal ICT skills for librarians	SA	A	D	SD
1	Verbal communication				
2	Listening				
3	Approachability				
4	Adaptability/flexibility				
5	Working with teams				
6	Written communication				
7	Self-motivation				
8	Comfort with instruction/teaching				
9	Building relationships with colleagues within and outside in the same organisation				
10	Organisational awareness				
11	Sense of humour				
12	Conflict management				
13	Stress management				
14	Ability to work independently without supervision				
15	Innovative and creative in approach to issues				
16	Ability to motivate challenged colleagues				

Others, please indicate ……

Part VII: ICTs POLICIES FOR THE SUPPORT OF KM

28. How has ICTs policy for KM helped to ensure sustainability in the management of information and knowledge in your library?

S/N	ICTs Policies for KM	SA	A	D	SD
1	It ensures that ICT resources and facilities are readily available to promote efficient KM in academic libraries				
2	It guarantee maximum benefits that contributes meaningfully by providing global solution to challenges of ICTs				
3	It enhance planning mechanism and forecasting the development of local and international monitoring of the systems				
4	It has empowered young trainee in librarianship with ICT skills and knowledge for global competitiveness				
5	It has created awareness and ensure universal access and accessibility that would promote diffusion in all libraries				
6	It has established new multi-faceted ICT institutions as centre of excellence for international markets				
7	It has made the defence and law enforcement agencies accept best practices used in national and international libraries				

Others, please specify ……

29. In what ways do you think ICTs policies can be improved for the readiness of KM in your library?……

……

……

30. Who are those responsible in the formulation and implementation of ICTs policies for KM in your library? …….

……

Part VIII: CHALLENGES FACED IN THE USE OF ICTs FOR THE SUPPORT OF KM.

31. The following are challenges faced in the use of ICTs for the support of KM

S/N	Challenges faced in the use of ICTs for the support of KM	SA	A	D	SD
1	Lack of motivation for KM practices among librarians				
2	Current culture of the organisation does not encourage knowledge sharing due to lack of trust				
3	Inadequate fund allocation to academic libraries to acquire ICTs resources and other knowledge materials				
4	Challenges of being excellent skilled knowledge managers as subject experts				
5	Librarians drift from their profession to other professions				
6	Lack of appropriate technological infrastructure to detect the pace of KM practice as well as work collaboration within IT experts				
7	Lack of importance to organisational growth				
8	Lack of motivational factor and self development among librarians				
10	Challenge of digitising library resources for easy access				
11	Challenge of developing ability to cope with change management in terms of use of ICTs				
12	Challenge of managing knowledge asset				
13	Unreliable network/internet bandwidth				
14	Unreliable power supply in some countries leading to non supply of electricity to univerisities				
15	Insufficient KM sources				
16	Lack of preparedness by librarians to learn new envolving trends				
17	Language barrier among colleagues in academic libraries				
18	Lack of recognition from organisation leading to poor KM practices in academic libraries				
19	Lack of personal computer for use at convenience				
20	High cost of hardware/software needed for use of the ICTs				
21	Lack of implementation of ICTs policies for use in KM				
22	Lack of coopeartionn from users in adhering to instruction of use of facilities in the libraries				
23	Lack of knowledge to use ICTs to access the web among some librarians				
24	Indepth knowledge of the library holdings and geographical map of the organisation				
25	Inability to understand the graphical user interface of ICTs and its functionality				
26	No concrete drive among librarians on knowledge production				
27	Lack of ability to work independently without supervision				

32. What recommendations do you propose to improve on the challenges faced by librarians in the use of ICTs for support of KM? …….

.....

……

……

……

Part VIII: ICT/KM MODEL FOR THE SUPPORT OF KM

33. Which of the ICT and KM model do you know?

……

……

……

34. Which is the appropriate ICT/KM model to use for the support of KM in your university library? ……

……

……

……

THANK YOU VERY MUCH FOR PARTICIPATING AND HELPING TO COMPLETE THIS QUESTIONNAIRE

APPENDIX B: INTERVIEW SCHEDULE FOR KEY INFORMANTS (LIBRARIANS)

UNIVERSITY OF ZULULAND

Faculty of Arts

Department of Information Studies

INTERVIEW SCHEDULE FOR LIBRARIANS

THE USE OF ICTs FOR THE SUPPORT OF KM

This interview schedule is designated for head of departments/ units in the sampled university libraries across Nigeria and South Africa. It is meant to find out the past, present and future occurrence regarding KM practices in university libraries with the aid of ICTs.

1. General Information: Name of institution……..

2. Department /unit where you are working in the library……

3. What is your current position/designation ……

4. How long have you been working in this library……..

5. How long have you been in your present position…….

Section B: The Use of ICTs for the Support of KM

Part I: Knowledge Management Practices

6. Are you aware that some part of library operations is in the areas of KM? if yes what have you to say about it but if no, are you interested in knowing much about it? .....

…….

……

7. In your own word, kindly describe how you understand KM to be? .....

…….....

…….……..

.....

8. Having known what KM is all about, has your university library practiced KM before? If yes, how are they practicing it? …….....

……..

……..

……..

9. Can you please describe some factors that have helped your university library in KM practices?.....

.....

.....……...……

……..…

……......

10. From your experience and practice of librarianship, what are the various things you use your knowledge for? .....

.... …….....

.....

……..…….

…….....……

ICT Facilities and KM tools

11. Kindly state the available ICT facilities and KM tools that your university library has?

.....

.....

……

13. Can you please describe how the ICTs/KM tools are being used for KM in your university library? .....

…….....

……..

……..

Utilization of ICTs for the support of KM

13. Comment on the effectiveness of the use of the various ICTs/KM tools available in your library?.....

……....

.....

…….....

ICT strategies for the support of KM

14. What ICTs/KM strategies you use as librarian in content management of knowledge in your university library?.....

…….

……

……..

Librarian knowledge and ICT skills

15. Enumerate what you do with your knowledge with relation to your areas of expertise in your university library?.....

.....

……..

….....

Training and support for librarian on current knowledge and ICT skills

16. What current trends of the profession in terms of knowledge and skills are you trained and supported while using ICTs for the support of KM?.....…….

……..

…….....

ICT policies for the support of KM

17. Is there ICT policy in your university library? ……

.....

……...

18. What strategic policy have you used in the application of ICTs and KM tools in KM and other library and information services in your university library?.....

.....

……

Challenges faced in the use of ICTs for the support of KM

19. What are some of the challenges you encounter while managing knowledge and rendering services to users in your library?.....

.....

……

……..…

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS INTERVIEW

APPENDIX C: SCHEDULE FOR OBSERVATION

UNIVERSITY OF ZULULAND

Faculty of Arts

Department of Information Studies

Section D: Observation Method

The researcher, during the visit to the selected academic libraries in Nigeria and South Africa observed the followings in the library environment:

A. The available ICT facilities and KM tools

i. Find out if the tools are available

ii. Uses of the available tools in the library

iii. How are they being used (ICT facilities/KM tools)

B. Department in the various libraries

C. Working environment of staff

i. Working environment

ii. Conduciveness

iii. Working tools: tables, chairs, writing materials, cataloguing/classifying materials, and so on.

APPENDIX D: LETTER OF INTRODUCTION OF THE RESEARCHER BY THE SUPERVISOR

UNIVERSITY OF ZULULAND

10th April, 2013

University Librarian,

Delta State University,

Abraka, Delta State,

Nigeria.

Dear Sir/Madam,

Permission to conduct Research in your university

The bearer Mr Rexwhite Tega Enakrire is a registered PhD student in the Department of Information Studies, University of Zululand, KwaDlangezwa, South Africa. He is conducting a comparative study on the use of Information and Communication Technologies (ICTs) for support of Knowledge Management in Academic Libraries in Nigeria and South Africa.

He has identified your University Library among the six (6) university Libraries across Nigeria and South Africa to be included in the study. Mr Enakrire would like to administer a questionnaire to the academic staff and also conduct a number of face-to-face interviews on the above subject matter with the Librarians in your university Library.

We kindly request that you give the researcher permission to carry out the study, and for any other assistance that he may require.

Your response in this regards will be appreciated.

Thanks.

HEAD OF DEPARTMENT
INFORMATION STUDIES
UNIVERSITY OF ZULULAND
SIGNATURE:
DATE: 11/04/2013

Prof D.N Ocholla

Head of Department of Information Studies

OchollaD@unizulu.ac.za; 035 902 6484

Web: http://www.lis.uzulu.ac.za

"restructured relevance"

APPENDIX E: PERMISSION LETTER TO EMBACK ON THE RESEARCH/FIELD WORK –ACCEPTANCE LETTER FROM UNIVERSITY OF IBADAN LIBRARY

UNIVERSITY OF IBADAN, IBADAN, NIGERIA

Office of the University Librarian
KENNETH DIKE LIBRARY

University Librarian:
B.A. OLADELE, BLS (ABU), MLS; Ph.D. (Ib.)

Telephone: IBADAN (02) 8101100-8101119
Mobile: 08033487015,
Direct Lines: (02) 8103118
Fax: (02) 8103118
E-mail: librarian@mail.ui.edu.ng

01 August, 2013

Professor D.N. Ocholla
Head
Department of Information Studies
University of Zululand
Kwadlangezwa
South Africa

Dear Sir,

RE: PERMISSION TO CONDUCT RESEARCH IN YOUR UNIVERSITY

Your letter of 10 April, 2013 on the above subject refers.

By this letter I am confirming that your doctoral student, Mr. Rexwhite Tega Enakrire was at the Kenneth Dike Library of University of Ibadan to administer his questionnaire on a cross section of our Library.

Arising from a discussion with Mr. Enakrire, I realized that you were expecting a reply from our Library conveying approval for the student to administer his questionnaire. This we did not do because in Nigeria students would often come along with the letter as opposed to your system that seeks for prior approval before the arrival of the student. This mix-up or gap in approaches is highly regretted.

I thank you for making our Library one of the subjects of your student's research.

With very warm regards.

Yours sincerely,

UNIVERSITY OF IBADAN
UNIVERSITY LIBRARIAN
– 1 AUG 2013
KENNETH DIKE LIBRARY

Dr. B.A. Oladele
University Librarian
University of Ibadan
+2348033487015

Our Vision:
To be a world-class institution for academic excellence geared towards meeting societal needs.

Our Mission:
To expand the frontiers of knowledge through provision of excellent conditions for learning and research.
To produce graduates who are worthy in character and sound judgement.
To contribute to the transformation of society through creativity and innovation.
To serve as a dynamic custodian of society's salutary values and thus sustain its integrity.

APPENDIX F: ACCEPTANCE LETTER FROM FEDERAL UNIVERSITY OF TECHNOLOGY, LIBRARY, AKURE

THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

OFFICE OF THE UNIVERSITY LIBRARIAN

University Librarian:
Mr. Femi Z. Oguntuase
B. A. Eng./Educ. (Ife); M. LS (Ibadan); MBA (FUTA); PGDCS (FUTA)

P.M.B. 704, Akure,
Ondo State - Nigeria
Tel:08036710445, 07064016252
E-mail: oguntus@yahoo.co.uk
Futa Website: www.futa.edu.ng
Futa Library Website:
www.futa.ng/administration/library.php

31st July, 2013

Professor D.N. Ocholla,
Head,
Department of Information Studies,
University of Zululand,
Kwadlangezwa,
South Africa.

Sir,

RE: PERMISSION TO CONDUCT RESEARCH IN YOUR UNIVERSITY

Your letter dated 10th April, 2013 on the above subject matter refers.

I write to inform you that Mr. Rexwhite Tega Enakrire a Ph.D student in your department has been granted permission to conduct research and administer questionnaire with the Librarians in the different units of the University Library.

Thank you for making us one of the chosen university libraries.

UNIVERSITY LIBRARIAN
Fed. Univ. Of Tech. Akure

Dr. F.Z. Oguntuase Sign..... Date.....
University Librarian

APPENDIX G: ACCEPTANCE LETTER DELTA STATE UNIVERSITY LIBRARY, ABRAKA

DELTA STATE UNIVERSITY, ABRAKA, NIGERIA

Office of the University Librarian

University Library

Dr. (Mrs) Rose B. Okiy
B. Ed. (Benin), MLS, Ph.D (Ibadan), CLN, MNLA
FNLA, MCLIP(UK), ALA(USA)
E-mail: rosebini@yahoo.com

P. M. B. 1, ABRAKA,
DELTA STATE, NIGERIA.
E-mail: delsulibrary@yahoo.co.uk

1st August, 2013

Professor D.N. Ocholla,
Department of Information Studies,
University of Zululand,
KwaDlangezwa,
South Africa.

Dear Professor Ocholla,

PERMISSION TO CONDUCT RESEARCH IN DELTA STATE UNIVERSITY LIBRARY

We acknowledge receipt of your letter dated 10th April, 2013 in which you requested us to grant Mr. Rexwhite Tega Enakrire permission to conduct his Ph.D research in our University Library.

With pleasure, we hereby grant Mr. Enakrire our permission to carry out his research on *'Use of Information and Communication Technologies (ICTs) for Support of Knowledge Management in Academic Libraries in Nigeria and South Africa'* in our University Library.

Thank you.

Yours faithfully,

DR.(MRS) R.B. OKIY
University Librarian

APPENDIX H: ACCEPTANCE LETER FROM UNIVERSITY OF KWAZULU-NATAL LIBRARY, DURBAN

UNIVERSITY OF
KWAZULU-NATAL

Professor D N Ocholla
Head
Department of Information Studies
University of Zululand
Kwadlangezwa
South Africa

23rd August 2013

Dear Professor Ocholla,

PERMISSION TO CONDUCT RESEARCH IN YOUR UNIVERSITY

Mr Rexwhite Tega Enakrire has been given permission to conduct research and administer questionnaires at the University of KwaZulu-Natal Library.

Yours sincerely

Dr Nora Buchanan
Director of Library Services : UKZN

Director of Library Services

Postal Address: Howard College Campus, Durban 4041, South Africa

Telephone: +27 (0)31 260 2317 **Facsimile:** +27 (0)31 260 2051 **Email:** webster@ukzn.ac.za **Website:** www.ukzn.ac.za

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

APPENDIX I: ACCEPTANCE LETER FROM DURBAN UNIVERSITY OF TECHNOLOGY LIBRARY, DURBAN

DUT
DURBAN
UNIVERSITY OF
TECHNOLOGY

02 September 2013

Professor DN Ocholla

Head: Department of Information Science

University of Zululand

KwaDlangezwa

Dear Sir

RE:PERMISSION TO ADMINISTRATING THE QUESTIONAIRE ATDURBAN UNIVERSITY OF TECHNOLOGY LIBRARY

By this letter I am confirming that your Doctoral Student, Mr Rexwhite Tega Enakrike was at the Durban University of Technology Library to administer his questionnaire.

Arising from a discussion with Mr Enakrire, I realised that your are especting a reply from our Library conveying approval for the student to administer the questionnaire.

Thank you for making our Library one of the subjects of your student's research.

Your sincerely

Mr. SN Radebe

Manager: Library Sites

APPENDIX J: Work plan

Item	Activity	Timeline												
1		**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	
2	Registration													**2012**
3	Development of RP													**2012**
4	Submission and defense of Research Proposal													**2012**
5	Devt, submission and correction of Chpt 1: Introduction and background of the study													**2012**
6	Devet & submission of chapter 2: Information and communication technology application for knowledge management in university libraries in Nigeria and South Africa													**2012**
7	Devt and submission of chapt 3: Conceptualization of literature according to research questions													**2013**
8	Devt and submission of chapt 4: Theoretical framework													**2013**
9	Devt, correction and submission of chapt 5: Research methodology													**2013**
10	Compilation and correction of research instrument													**2013**
11	Research field work													**2013**
12	Devt, correction and submission of chapt. 6: data presentation, analysis and interpretation: questionnaire responses													**2013**
13	Continuation of chapt 6													**2014**
14	Devt, correction and submission of chapt. 7: data presentation, analysis and interpretation: interview and observation responses													**2014**
15	Development, correction and submission of Chpt 8: Discussion of findings													**2014**
16	Devet, and submission of Chapter 9: Summary, conclusion, recommendations													**2014**
17	Correction of completed chapter 1													**2014**
18	Correction of completed chapter 2													**2014**
19	Correction of completed chapter 3 and 4													**2015**
20	Correction of completed chapter 5 and 6													**2015**
21	Correction of completed chapter 7 and 8													**2015**
22	Correction of completed chapter 9													**2015**
23	Correction of fist draft for editing													**2015**
24	Correction and submission of fist draft to supervisor													**2015**
25	Submission of final dissertation for examination													**2015**
26	Submission of final bound dissertation to examination section													**2015**
27	Graduation													**2016**

APPENDIX K: University of Zululand Research Ethical Clearance Certificate

UNIVERSITY RESEARCH ETHICS COMMITTEE
(Reg No: UZREC 171110-30)

UNIVERSITY OF ZULULAND
Website: http://www.unizulu.ac.za

Private Bag X1001
KwaDlangezwa 3886

Tel: 035 902 6645
Fax: 035 902 6222
Email: ViljoenD@unizulu.ac.za

ETHICAL CLEARANCE CERTIFICATE

Certificate Number	**UZREC 171110-030 PGD 2013/24**							
Project Title	**Comparative study of the use of Information and Communication Technologies (ICTs) for knowledge management in academic libraries in Nigeria and South Africa**							
Principal Researcher/ Investigator	TR Enakrire							
Supervisor and Co-supervisor	Prof. D.N Ocholla							
Department	Information Studies							
Nature of Project	Honours/4th Year		Master's		Doctoral	x	Departmental	

The University of Zululand's Research Ethics Committee (UZREC) hereby gives ethical approval in respect of the undertakings contained in the above-mentioned project proposal and the documents listed on page 2 of this Certificate. Special conditions, if any, are also listed on page 2.

The Researcher may therefore commence with the research as from the date of this Certificate, using the reference number indicated above, but may not conduct any data collection using research instruments that are yet to be approved.

Please note that the UZREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the documents that were presented to the UZREC
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UZREC in the prescribe format, where applicable, annually and at the end of the project, in respect of ethical compliance.

Page 1 of 2

The table below indicates which documents the UZREC considered in granting this Certificate and which documents, if any, still require ethical clearance. (Please note that this is not a closed list and should new instruments be developed, these may also require approval.)

Documents	Considered	To be submitted	Not required
Faculty Research Ethics Committee recommendation	X		
Animal Research Ethics Committee recommendation			X
Health Research Ethics Committee recommendation			X
Ethical clearance application form	X		
Project registration proposal	X		
Informed consent from participants	X		
Informed consent from parent/guardian			X
Permission for access to sites/information/participants	X		
Permission to use documents/copyright clearance			X
Data collection/survey instrument/questionnaire	X		
Data collection instrument in appropriate language		Only if necessary	
Other data collection instruments (interview schedule)	X		

Special conditions: Documents marked "To be submitted" must be presented for ethical clearance before any data collection can commence.

The UZREC retains the right to

- Withdraw or amend this Certificate if
  - Any unethical principles or practices are revealed or suspected
  - Relevant information has been withheld or misrepresented
  - Regulatory changes of whatsoever nature so require
  - The conditions contained in this Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project

The UZREC wishes the researcher well in conducting the research.

Professor Rob Midgley
Deputy Vice-Chancellor, Research and Innovation
Chairperson: University Research Ethics Committee
18 March 2013

PROF. JR MIDGLEY
DEPUTY VICE-CHANCELLOR
RESEARCH & INNOVATION

.. U MAR 2013

UNIVERSITY OF ZULULAND
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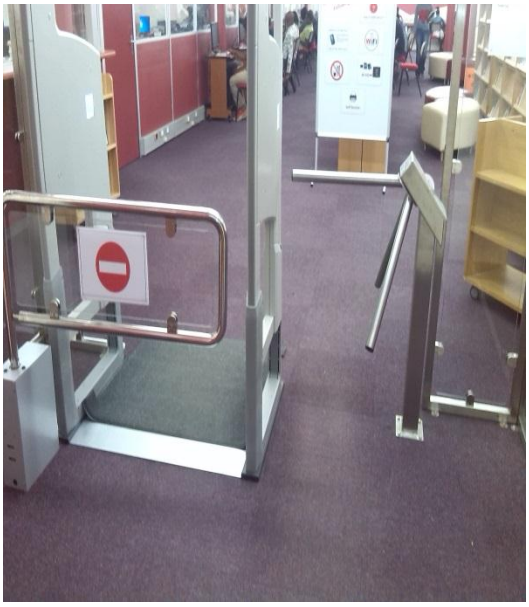
KWADLANGEZWA, 3886

APPENDIX L: Map of the two countries showing the areas, where the research was carried out (Nigeria-southern part and South Africa-kwazulu-natal province)

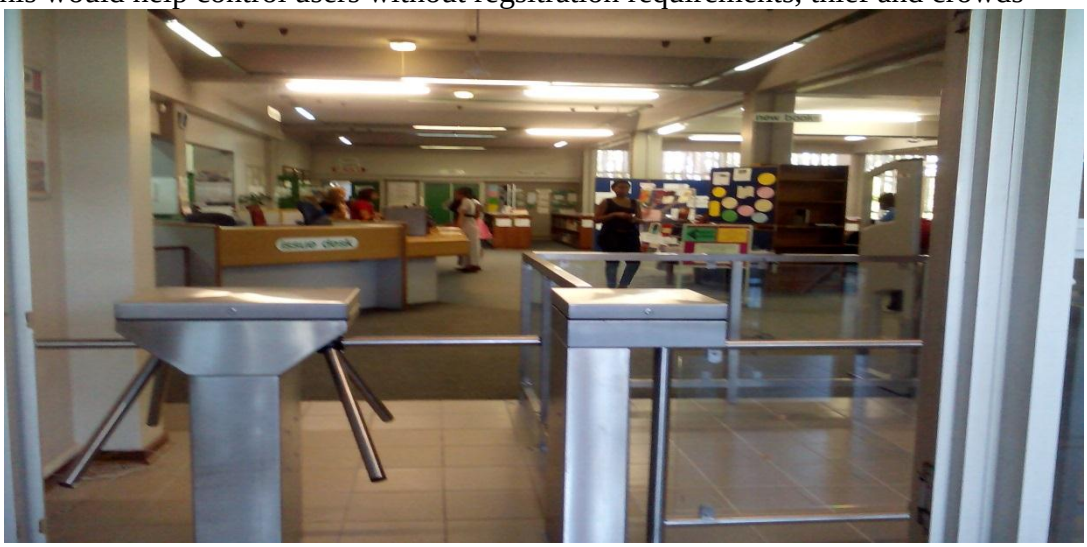
APPENDIX M: Observation section showing pictures of the univerity libraries visited and their facilities

This section shows evidence of the six university libraries visited in the two countries of Nigeria and South Africa. The things observed consists of the followings: working tools of ICTs, tables, chairs, writing materials, internet connectivity-Wifi, cataloguing/classifying materials, library environments, offices of librarians and other materials the researcher felt is mportant to be included in this study. The picture are categorized into the following: facilities, Wifi connectivity amonst other things observed in the university libraries in both countries.

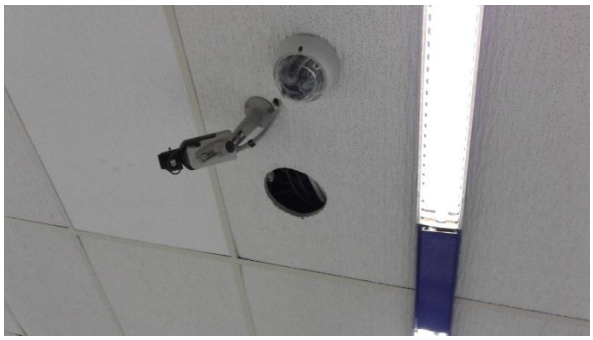
Picture showing the university library having security control with ICTs facilities in South Africa. Without electricity, and users access either with students or staff identity card, accessing the library at this point will be difficult. However, most university libraries in Nigeria do not have this.

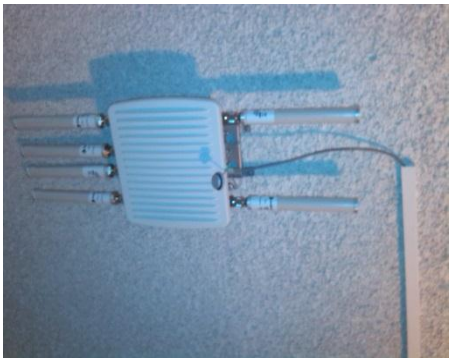


This would help control users without regsitration requirements, thief and crowds



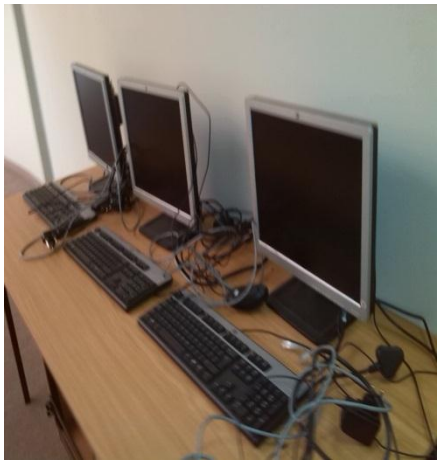
Digital cameras/CCTV used for security control as well as different Wifi (connectivitiy of internet (components of ICTs) used for accessibility of information by students and staff that was observed by the researcher



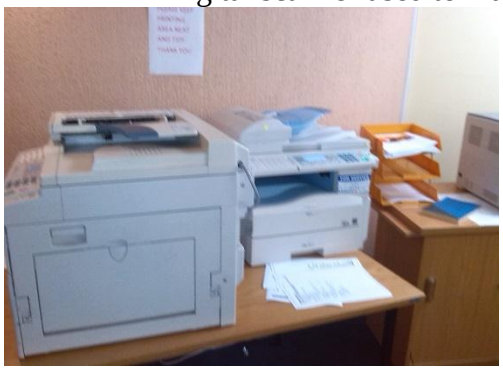


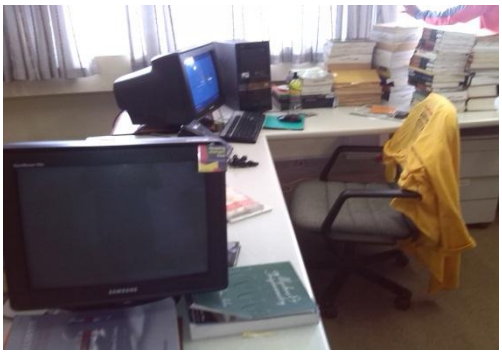
Some of the ICT facilities availabe and used to support KM in university libraries

Machine used to write at the pine of books



Digital scanner used to manage print to electronic resources

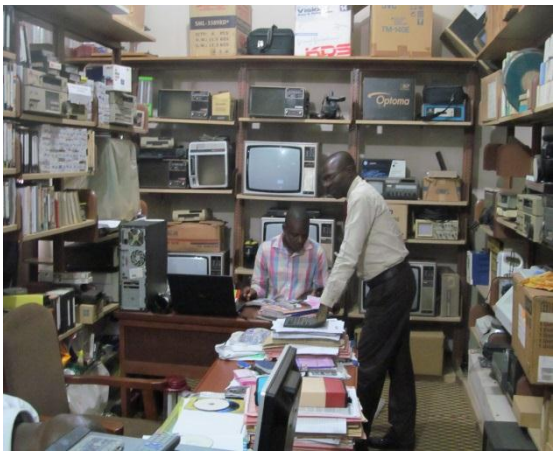


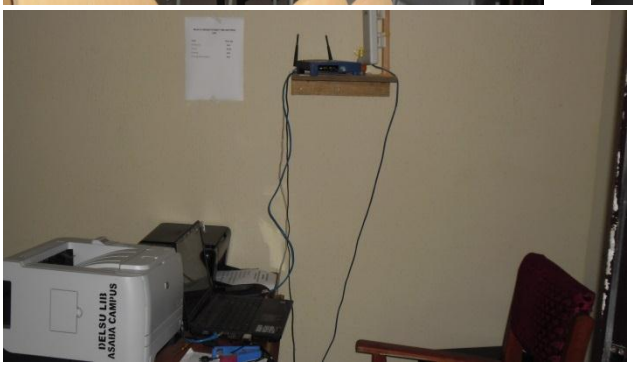


Printers

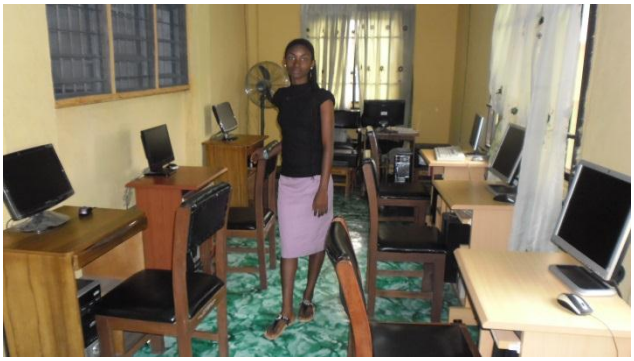
Computers


Evidence of digital printer, photocopier, video cameras, and other related ICT tools found and used to manage knowledge resources in the university libraries visited



Evidence of digital printer, photocopier, video cameras, and other related ICT tools found and used to manage knowledge resources in the university libraries visited



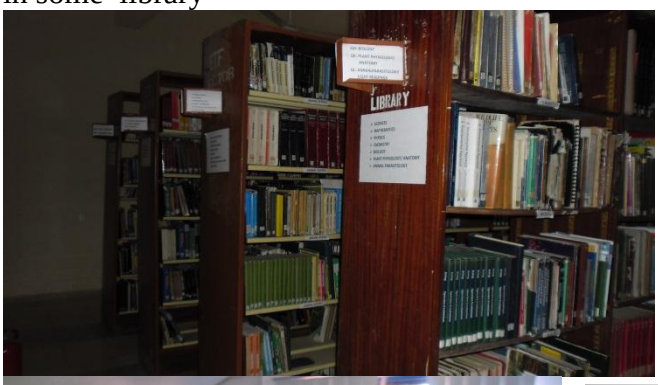
Computer kept aside that is no more in use

Other faciliites available and used in the various libraries, in oredr to support explicit and tacit knowledge

Shelves


DVD used to manage knowledge and some of information resources not shelved


Information resources and tables and chair not well organized. Catalogue cabinet is still in use in some library





Explicit knowledge arrnged on wooden and metal shelves.

Faces of government. It shows the library is current about the political activities in the country

Exhibition and display of information resources and library activities

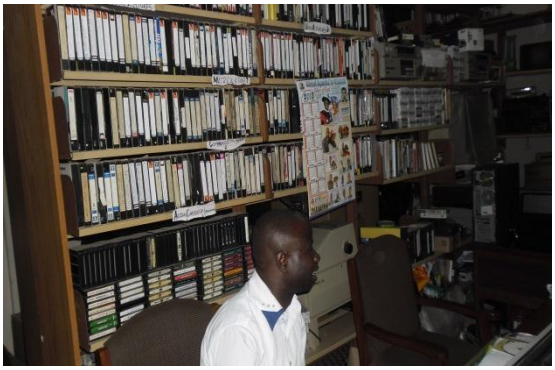
Evidence showing indigenous knowledge resource collections. Indigenous knowledge resources/system are part of knowledge management (tacit and explicit) being managed in libraries today.



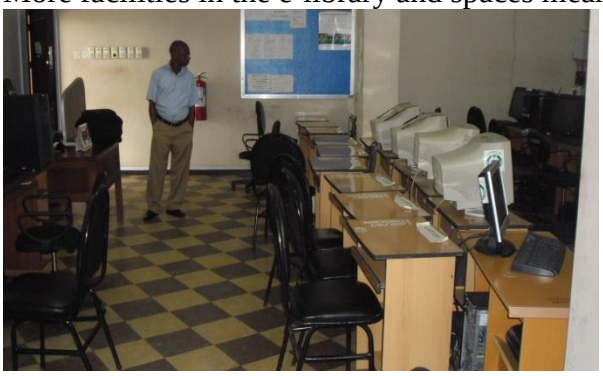

Evidence of digital printer, photocopier, video cameras, and other related ICT tools found and used to manage knowledge resources in the university libraries visited

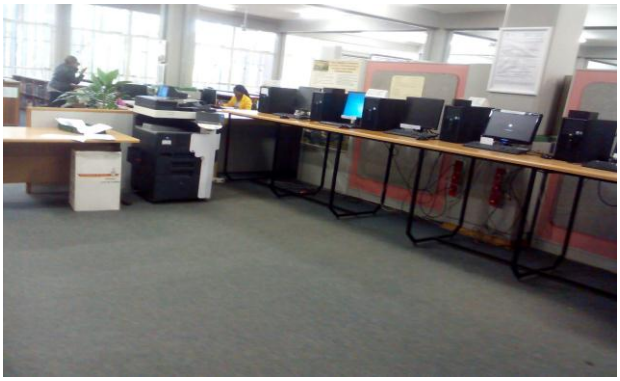
The e-library the researcher examined in some of the libraries in Nigeria



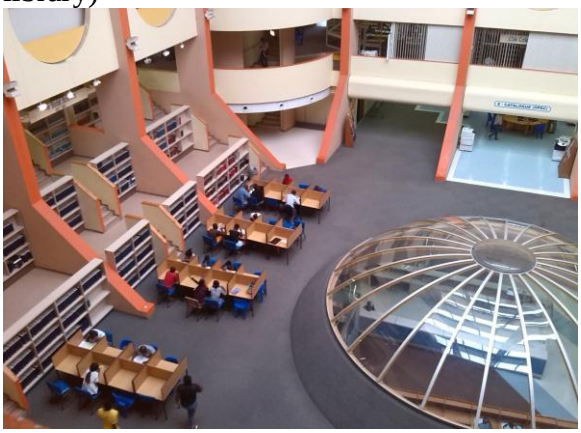


More facilities in the e-library and spaces meant for students to read and do their work



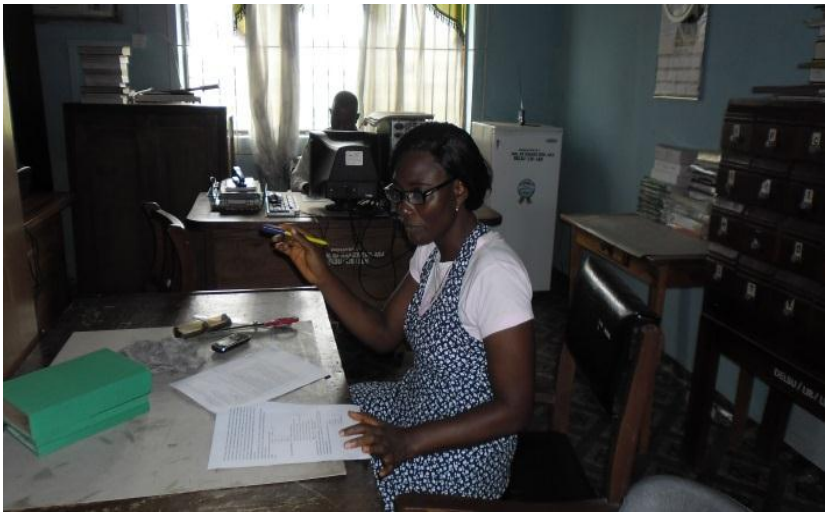

Views of one of the library showing different sections for reading/studying (well equipped library)




Some students enjoying the Wifi connectivity. This shows that there is access to internet every where in the library

Seminar or board room where students can engage in discussion for their school work.

Interesting to note, there are some library that have relaxation, where staff could take their lunch or tea (see picture of table and chair on the right side).



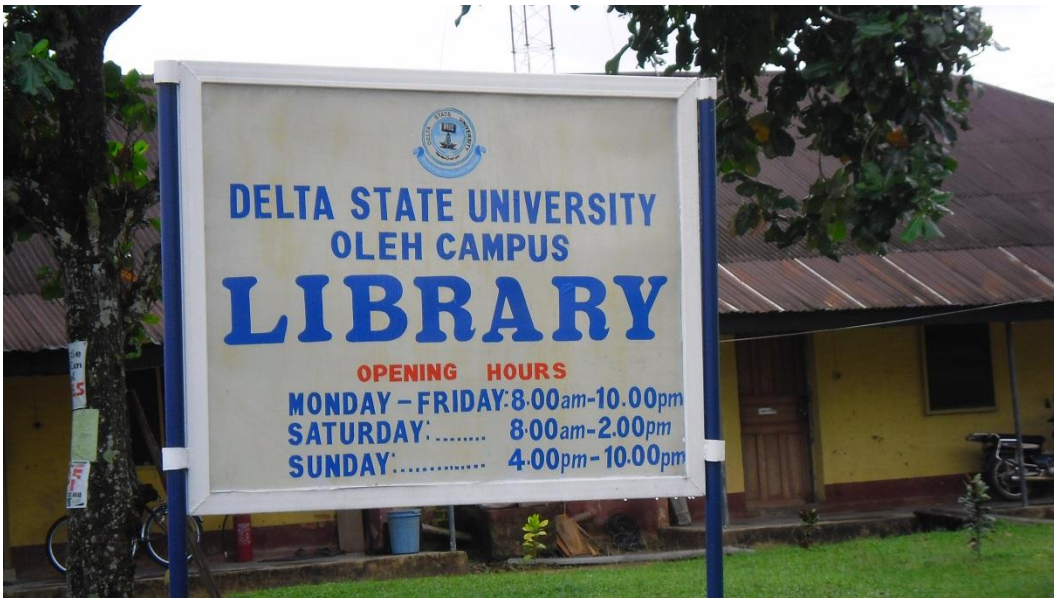
One of the professional librarian attending to the questionnaire adminsitered to her by the researcher while her office is being obserevd

UKZN library visited, showing the environment of the library building

University of Ibadan library front view estbalished in 1948

Delta State University library building Asaba campus.

During the visit, it was obseved that most of the libraries in Nigeria have sign post, while those in South Africa do not. Besides, some of the library are named after some people (see below)



Federal University of Technology library, Akure building

Front view of the Federal University of Technology library, Akure building

The University of Zululand library, South Africa, where the researcher embark on this study is one of the sampled library

Picture of the researcher with Dr B. A Oladele, the University librarian of the University of Ibadan library, during the research visit to conduct interview on the use of ICTs to support KM

Picture of the researcher with Dr Unomah, the Deputy University librarian of Delta State University library and one of his staff, Mr Martins.

Researcher with some of the librarians at the Delsu library, Asaba Campus

Researcher with university librarian, Dr Femi, Z. Oguntuase, of the Federal University of Technology, Akure, and staff memebrs (professional librarians) of the library.

Inter library loan section were users and staff interface with users information needs

Staff members sharing knowledge in office (KM)