UTILISATION OF KNOWLEDGE MANAGEMENT TOOLS FOR LIBRARY OPERATIONS AND SERVICES IN FEDERAL UNIVERSITY LIBRARIES IN NORTHERN STATES OF NIGERIA

BY

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DECLARATION

I hereby declare that this thesis entitled "Utilization of Knowledge Management Tools for Library Operations and Services in Federal University Libraries in Northern States of Nigerian" is my personal research work. It has never been presented anywhere wholly or partly, for the purpose of the award of any degree. All literature consulted and cited were properly acknowledged.

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Signature Date

CERTIFICATION

This thesis entitled "Utilization of Knowledge Management Tools for Library Operations and Services in Federal University Libraries in Northern States of Nigerian" meets the regulations governing the award of the Doctor of Philosophy in Library and Information Science of Ahmadu Bello University, Zaria – Nigeria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated to my father- Alhaji Muhammadu Madi, and Mother- Hajiya Amina Muhammadu.

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LIST OF ABBREVIATIONS

CSD	-	Customer Services Division
DKMO	-	Divisional Knowledge Management Officer
IT	-	Information Technology
ITKMTs	-	Information Technology Knowledge Management Tools
KMTs	-	Knowledge Management Tools
KMS	-	Knowledge Management Systems
KMS	-	Knowledge Management Structure
KSTs	-	Knowledge Sharing Tools
KCTs	-	Knowledge Creating Tools
LKMO	-	Library Knowledge Management Officer
Non- ITKMTs	-	Non Information Technology Knowledge Management Tools
O/S	-	Operations/ Services
RPD	-	Resources Processing Division
RDD	-	Resources Development Division
RBSD	-	Research and Bibliographic Services Division
SSD	-	Serial Services Division
UL	-	University Librarian

ABSTRACT

This study was carried out to investigate the Utilization of Knowledge Management Tools for library operations and services in federal university libraries of Northern States of Nigeria. To do this, five research questions were formulated and three hypotheses were tested. Survey research method was employed in the conduct of this study. The total number of library staff used for the study was 967 (nine hundred and sixty seven), drawn from Federal university libraries in the Northern states of Nigeria. Four hundred and twenty four (424) were drawn as sample for this study from six university libraries. The instrument used for data collection was the questionnaire. The data collected for the study were presented and analyzed using both descriptive statistics and inferential statistics. Frequency distribution tables and percentages were used for the descriptive statistics while ANOVA and Chi square test were used to test the three hypotheses formulated and determined the areas of differences among the university libraries studied. The findings showed that Internet and space for conference/workshops/meeting were the Knowledge Management Tools mostly available and utilized for library operations and services delivery while others were not fully utilized. It was recommended that, Multipurpose Knowledge Management Tool (IT and Non-IT). Should be designed in each unit/division and the library in general considering the operations and services so as the goals of the establishments would be achieved and to encourage collaboration in knowledge creation and sharing for library operations and services etc. Thus, it was concluded that, federal university libraries need to recognize the knowledge of its staff and create an environment (IT and Non-IT) in which the knowledge can be created, valued and share.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Knowledge is required for society, community and individuals to exist, survive and advance so as to cope with the continued challenges of the changing world expectations. This suggests that, efforts should be made by institutions, organizations and systems such as the library responsible for managing information and knowledge to facilitate access, use and re- use of knowledge found to be relevant and appropriate to satisfy the needs of society, community and individuals.

Knowledge can be conceived as any type of understanding, experience, perception of something and learning that can be grasped by mind or acquired directly and/or indirectly during the course of an action or inaction. According to Chowdhury (2012), Knowledge is a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition that provides an environment and framework for evaluating and incorporating new experience and information. Mohammed (2003) viewed "Knowledge as facts; perspectives; concepts; beliefs; judgments and expectations; methodologies; know-how, and much more, acquired during the course of an action and inaction in our time". This can also be seen as a product of man's experience. It encompasses the norms by which one evaluates the existing and anticipated inputs from one's surroundings. Essentially, Knowledge is abstract; it can be transferred through shared practices or experiences. Some scholars believe that knowledge cannot be shared completely, while some believe that it can be shared but piecemeal. Nonaka and Takeuchi (1995) were of the view that, tacit knowledge is hard to access, formalize and difficult to share in the organization but not that it cannot be shared. Despite these issues, librarians create and share knowledge.

Basically, tacit knowledge is hidden knowledge buried in the memories of people including librarians. It includes what is learnt from doing, observation, informal information and even gossip. It is more difficult to recognize, collect, codify, store and distribute. This mostly happened when individuals are engaged in conversation, which may not necessarily be organized talk, planned, and with no limit. Awad (2004) supported this above view that "tacit knowledge is unarticulated and unrecorded. A work group or organization can have tacit knowledge. For a group, tacit knowledge is the shared understanding which underlies practices and behaviour but which is not recorded". Examples are: meetings, conversations, answering queries, teleconferencing, workshops, seminars, and so on. On the other hand, explicit knowledge is the knowledge that is articulated or recorded in a way that enables it to be shared or transferred. It may be recorded in reports, books, technical papers, memos, minutes of meetings, databases, photos, videos, audio recordings and so on. The records may be published or unpublished. Kiehl (2004) pointed out that for knowledge to be transferred, they must be made explicit so that they can be communicated.

Libraries and librarians are mostly engaged in managing explicit knowledge to satisfy their information needs. It has been observed that the modern economy is progressively developing into knowledge and information based. Knowledge will therefore inevitably serve as the driving force to enhance productivity, economic growth and performance. Thus, the basic questions public and private organizations and enterprises need to find answers to in the view of Mohammed (2013) include: How can the process of knowledge creation, codification and sharing be managed?, How can the initiatives to survive in the knowledge-based economy supported and sustained especially through knowledge management?; How can both the public and private enterprises move and catch up with the present knowledge-based economy?

The 21st century has witnessed rapid strides in knowledge and knowledge products which make librarians and information managers to focus their interest on the management of information/knowledge resources for effective and efficient service delivery.

1.1.1 Knowledge Management (KM)

Conceptually, KM is a process that involves identification, generation, codification, storage and sharing of understanding and experiences. It also facilitates access and use of learning learnt and expert insight. As a discipline, KM promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing enterprise's information assets. These assets may include databases, documents, policies, procedures and previously un-captured expertise and experience in individual workers.

Different scholars and disciplines define KM in different ways. Blair and Ghaziri (2004) defined KM as "a systematically and organizationally specified process for acquiring, organising, sustaining, applying, sharing and renewing both the tacit and explicit knowledge to enhance performance and create value to the institution". Essentially, it could be said that, knowledge management covers three main knowledge activities, which are: generation, codification and transfer.

Essentially, KM focuses on access to and utilization of information resources. Thus, the entire process of a library's operation is an important and organic part of knowledge management (Suliman, 2002). At the individual level, the quality of the performance of an individual is based on that person's knowledge foundation. As the main methods of gaining knowledge through reading and learning, it is necessary that there are stores of information and knowledge resources to access. Also, as vast amounts of information in many formats are accumulated in a library, the

staff should provide ways and means to which information will be made easily available in appropriate formats, quantities, packages and styles of representation.

The objectives of KM in libraries are to promote knowledge growth, knowledge communication and knowledge preservation. It also entails managing knowledge resources in order to facilitate access, use and reuse of knowledge. Steels (1993) observed that, "Knowledge management is essentially about getting the right knowledge to the right person at the right time". This in itself may not seem so complex, but it implies a strong tie to corporate strategy, understanding of where and in what forms knowledge exists. Thus, all the varieties of knowledge required for the day-to-day library operations and services need to be generated, codified, transferred and standardised especially using the knowledge management tools.

1.1.2 Knowledge Management Tools (KMTs)

Knowledge Management Tools (KMTs) are important instruments/methods used in a library system, operations and services for identification, organisation, retrieval, and dissemination of information/knowledge. Whereas, Knowledge Management Systems (KMSs) are part of KMTs designed to facilitate knowledge management, they are physical items, such as file cabinets containing project reports, computer programs that contain employee-meeting schedules, or training sessions used to verbally share work practices etc (Zietz, 2006).

It can thus be said that KMT is anything used as a device, means, method or instrument to support/facilitate identifying, acquiring, organizing, sustaining, sharing, retrieving and evaluating the understanding, experience, and wisdom of an individual or groups of individual, to enhance easy access and create value to the information products provided. The KMTs should be seen to be used to help an information user to gather appropriate information when it is

needed rather than require the user to hunt for them through a given data in an attempt to identify something salient.

Different libraries use different methods and tools to manage library operations and services. Thus, professional and para-professional staff in a library system need to be involved in using a variety of KMTs such as: knowledge identification/generation tools, knowledge codification tools and knowledge sharing tools for library operations and services. In support of the above view, an expert team in Asian Productivity Organization (APO) in Singapore (2009) compiled and agreed to use Knowledge Management (KM) Methods and Tools as follows: *Non–IT tools and IT tools.* (a) Non–IT Tools: which are: 1. Brainstorming; 2. Learning and Idea Capture 3. Orientations; 4. Knowledge mapping; and so on (b) IT Tools: 1. Knowledge Bases (Wikis, etc.), 2. Social Network Services; 3. Advanced Search Tools; 4. Expert Locator; and so on.

1.1.3 Library Operations and Services

Depending on the type, the library provides physical and/or digital access to information and information resources, in a physical building or room, or in a virtual space, or both. A library's information resources may include books, periodicals, newspapers, manuscripts, maps, videotapes, DVDs, databases and other forms and formats of information and information resources.

Library operations cover the variety of activities a library is involved in or undertaking to perform its functions to achieve specific and general goals. Such activities include: budgeting, collection, selection, ordering, processing, periodicals and newspapers management, circulation procedures, library supplies, inventory, reading promotion and programs, annual reports, guidelines for visiting, etc.

A typical library is generally known as services centre. Library services can be regarded as any type of assistance given directly or indirectly by the library staff or to a library client/clientele. Therefore, the services rendered by libraries may include: lending, reference, user education, interlibrary loans, short-term loans, bindery, photocopying, database, consultancy services, ask-a-librarian, reserves, printing services, instructional services, media services, request a purchase, digital repository and so on.

Basically, library management tasks include: planning of acquisitions (which is the information resources the library should acquire, by purchase or otherwise); library classification of acquired materials; preservation of information resources (especially rare and fragile records and archival information resources such as manuscripts); accessioning of information resources; facilitating patrons' access to information resources, and installing and managing library computer systems. Other long-term library tasks include planning and construction of new libraries and extension to existing ones, and the development and implementation of outreach services and reading-enhancement services (such as adult literacy and children's programmes).

1.2 Statement of the Problem

The library exists for the benefit of the mind. Its operations cover any activity that supports its functions such as information access and services; resource collection maintenance and support; customers and staff safety and security; facilities management; sustainability and space planning and analysis; and information/ knowledge management among others.

Organizations use the existing and anticipated knowledge and knowledge assets to plan, analyze and strategizes its present and future systems, operations and services. The library as a centre of information resources and knowledge management has a great role to play in facilitating access, use and reuse of the needed information and knowledge, which may be in

tangible and intangible format such as printed and non-printed. Mohammed (2003) observed that traditionally, majority of public and private establishment strategic plans, policies and controls tend to focus more on tangible assets with very little or no emphasis on intangible ones; like information and knowledge. This points to the need for libraries to make the best use of KMTs especially to identify, create, process, store, share, and explore existing and anticipated knowledge to enhance their operations and service delivery effectively and efficiently. In support of the above view, Bernard and Tichkiewitch (2008) pointed out the need for KMTs support staff to have strong desire for learning new things, developing new skills and capabilities.

Also, was observed by the members of Nigerian Library Association: Cataloguing and Classification Section at their conference in 2009 in Lokoja, Kogi State and specifically in Kashim Ibrahim Library, Ahmadu Bello University, Zaria that some library staff overstayed in a single section and become indispensable for the fact that they are the only ones that posses the requisite skills and expertise for some specific tasks such that even after retirement they were given contract job to continue working in the said areas of the library. Moreover, some resist changes including creation and sharing of their knowledge with KMTs on the grounds that knowledge is their property to which they claim ownership. In fact, if such persons are absent or leave the service; the operations and services suffer, because he/she person is the only one that possesses the skills. This sometime leads to the collapse of some services and systems. Would it be attributed to either poor utilization of KMTs or lack of policy for KMTs utilization?

It was observed that, libraries have done little to use organizational information to create knowledge that can be used to improve the functionality of the library. Ratcliffe-Martin, Coakes and Sugden (2000) agreed that: “universities do not generally manage information very well and

do not recognize knowledge as an asset". However, some scholars pointed out that most non-profit organizations (including the library) do create, codify, store and share knowledge, planned or unplanned without the existence of knowledge management structure that facilitates the effective management of knowledge. It therefore calls to question how effective the activities of knowledge management will be. This presupposes that effective access and utilization of information and knowledge continually requires effective utilization of KMTs.

1.3 Research Questions

This study answered the following questions:

1. Which KMTs are available and are being utilised for library operations and services in the Federal University libraries in the Northern states of Nigeria?
2. To what extent are the KMTs being utilised to facilitate library operations and services in the Federal University libraries in the Northern states of Nigeria?
3. To what extent has KMTs utilisation affected library operations and services of the Federal University libraries in the Northern states of Nigeria?
4. To what extent are the library staff satisfied with the KMTs utilised for library operations and services in Federal University libraries in the Northern states of Nigeria?
5. What are the challenges encountered in KMTs utilization for library operations and services in Federal University libraries in the Northern states of Nigeria?

1.4 Hypotheses of the Study

The following null hypotheses answered the stated research questions.

$H0_1$ There is no significant difference among the libraries on the KMTs utilisation for library operations and services in the Federal University libraries in the Northern states of Nigeria.

$H0_2$ There is no significant difference among the libraries on their levels of satisfaction with the KMTs utilised for library operations and services in Federal University libraries in the Northern states of Nigeria.

$H0_3$ The KMTs utilised in the Federal University libraries in the Northern states of Nigeria have no significant effect on the library operations and services among the library staff.

1.5 Objectives of the Study

The general objectives of the study is to discuss the utilisation of knowledge management tools for library operations and services in Federal University libraries of the Northern states of Nigeria. In specific terms, the study has the following objectives namely, to:

1. determine KMTs available and utilised for library operations and survives in the Federal University libraries in the Northern states of Nigeria;
2. examine the extent KMTs being utilised to facilitate library operations and services in the Federal University libraries in the Northern states of Nigeria;
3. determine the extent to which KMTs utilisation affect the library operations and services of the Federal University libraries in the Northern states of Nigeria;
4. examine the extent to which the library staff are satisfied with the KMTs utilised for library operations in Federal university libraries in the Northern states of Nigeria.
5. Determine the challenges of KMTs utilisation for library operations and services in the Federal University libraries in the Northern states of Nigeria.

1.6 Significance of the Study

The goal of this study is to designed a policy for KMTs utilisation for library operations and services which will increase the standard of Nigerian university libraries and assist library staff to benefit from the library system in order to serve their customers better.

It will assist the university library management to provide adequate KMTs facilities and devices that will stimulate and encourage knowledge creation and sharing for library operations and services. In addition, it will give library staff an insight into how to maximize KMTs facilities and devices in building relationships with other members of the staff within and outside the library to improve and compete with the best university library in the world.

Professionals and para-professionals in university libraries would find this study very useful in improving their self-image and making themselves relevant in their work and organisation at large. In addition, KMTs utilisation in the library will assist the library staff in getting easy access and use of information/knowledge asset or product effectively and efficiently.

Thus, the study will be significant to researchers and scholars in library and information science profession in that it will contribute to the body of knowledge in Nigeria, Africa and the world at large.

1.7 Scope of the Study

The study covered some Federal University libraries in the Northern states of Nigeria. The study centred on the KMTs available and used for library operations and services in the respective university libraries in the area of study especially as it relates to IT and non- IT KMTs and concentrated on the knowledge creation and sharing tools. In addition, the study focused on the library staff**.**

1.8 Limitation of the Study

This study is limited to the Utilisation of Knowledge Management Tools for Library Operations and Services in Federal University libraries in the Northern states of Nigeria. The most obvious limitation of this study is the inability to cover the entire Nigerian federal

university libraries because of their spread and numbers; inadequacy of funds required to tour ; time limitation for completing the project; and delay by some research assistants in sending the completed questionnaires.

1.9 Operational Definition of Terms

The following terms were operationally used for this study namely:

Library Operation: daily activities performed within the library system that is tailored towards achieving the mission and vision of the library.

Knowledge: understanding, experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.

Knowledge Management Tools: IT and Non IT technologies, systems, methods or means that enhance or facilitate knowledge generation, codification, and transfer.

Knowledge Management Systems: technologies that enhance and enable knowledge generation, codification, and transfer understanding, experience, or skills.

Knowledge Creation Tools: IT and Non IT technologies, systems, methods or means that enhance or facilitate knowledge generation/identification

Knowledge Sharing Tools: IT and Non IT technologies, systems, methods or means that enhance or facilitate knowledge dissemination/communication.

Tools: technologies, techniques or methods that support and enable the performance of activities or actions.

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CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.1 Introduction

This chapter was presented under the following sub-headings: -

2.2 The Concept of Knowledge and its Principles

2.3 Tacit and Explicit Knowledge

2.4 Theoretical Framework

2.5 The Components of Knowledge Management

2.6. Library Operations and Services

2.7. Knowledge Management in Libraries

2.8. Previous Studies Related to the Study

2.9. Knowledge Management Tools (KMTs) for Operations and Services

2.9.1 Use of KMTs (Social Media) for Operations and Services

2.10. Challenges Encountered in the KM/KMTs Utilization

2.11. Summary of the Review

2.2 The Concept of Knowledge and Principles

Knowledge is formulated in the minds of individuals through experience. “Knowledge can be defined as understanding a clear and certain perception of something, learning and all that can be grasped by the mind, practical experience or skill, cognisance, recognition, organised information applicable to problem solving" (Dalkir, 2005). Knowledge is an assemblage of information context and experience. Context is an individual environment, social values and

culture. However, this means that knowledge goes deeper than mere information, which makes it very important for library operations and services.

Knowledge is defined as what we know, which involves the mental processes of comprehension, understanding and learning that goes on in the mind. However, it also involves interaction with the world outside the mind, and interaction with others.

Kidwell et al. (2000) argued that knowledge starts as *data (*raw facts and numbers) Thus, everything outside the mind that can be manipulated in any way can be defined as 'data'. *Information* is data put into context of relevance to the recipient as when it is placed in context through interpretation that might seek to highlight patterns, causes, or relationships (data placed in context of relevance). Collections of messages, composed in various ways, may be considered as 'information resources' of various kinds - collections of papers in a journal, e-mail messages in an electronic 'folder', manuscript letters in an archive, are regarded as 'information resources'. Information can be shared, captured, and retrieved. When information is combined with experience and judgment, it becomes *knowledge* (i.e. what we know). It includes the insight and wisdom of educators. It is the understanding that develops as people respond to and use the information that is available to them. Knowledge can be described as a belief that is justified through discussion, experience, and perhaps action. Knowledge can be shared with others by exchanging information in appropriate contexts. It may be shared through e-mail “best practices” memos or even sticky notes on a cubicle wall. Once knowledge is acquired, librarians can put it to work and apply it to decision making for operations and services. Through, it is abstract it can be transferred through shared experience tacitly and explicitly.

Chowdhury, (2012) listed out some of the definitions of knowledge as: justified true

belief, information in context, understanding based on experience, the capacity for effective action, understanding of situations, relationships, causal phenomena, theories and rules that underlie a given domain or problem. Out of this plurality, two schools of thought can be identified. The first, which is cognitive epistemology, conceives of knowledge as a *state of cognition* that results from personalized information, or an anchored belief in the overall epistemological structure of the holder. The second school of thought (behavioural epistemology) stresses the *action ability of knowledge* (McDermot, 1999 and Dalkir, 2005). This goes with the knowledge in library operations and services, which brings out the need to identify different principles/characteristics of knowledge. Allee (2001) outlined twelve (12) principles about knowledge, which includes:

1. **Knowledge is messy.** Because knowledge is connected to everything else, you can't isolate the knowledge aspect from anything neatly. In the knowledge universe, you can't pay attention to just one factor.
2. **Knowledge is self-organizing.** The self that knowledge organizes around is organizational or group identity and purpose.
3. **Knowledge seeks community.** Knowledge wants to happen, just as life wants to happen. Both want to happen as community. Nothing illustrates this principle more than the Internet.
4. **Knowledge travels via language.** Without a language to describe our experience, we can't communicate what we know. Expanding organizational knowledge means that we must develop the languages we use to describe our work experience.
5. **The more you try to pin knowledge down, the more it slips away.** It is tempting to try to tie up knowledge as codified knowledge-documents, patents, libraries, databases, and

so forth. Too much rigidity and formality regarding knowledge lead to the stultification of creativity.

6. **Looser is probably better.** Highly adaptable systems look sloppy. The survival rate of diverse, decentralized systems is higher. That means we can waste resources and energy trying to control knowledge too tightly.
7. **There is no one solution.** Knowledge is always changing. For the moment, the best approach to managing it is one that keeps things moving along while keeping options open.
8. **Knowledge does not grow forever.** Eventually, some knowledge is lost or dies, just as things in nature. Unlearning and letting go of old ways of thinking, even retiring whole blocks of knowledge contribute to the vitality and evolution of knowledge.
9. **No one is in charge.** Knowledge is a social process. That means no one person can take responsibility for collective knowledge.
10. **You cannot impose rules and systems.** If knowledge is truly self-organizing, the most important way to advance it is to remove the barriers to self-organization. In a supportive environment, knowledge will take care of itself.
11. **There is no silver bullet.** There is no single leverage point or best practice to advance knowledge. It must be supported at multiple levels and in a variety of ways.
12. **How you define knowledge determines how you manage it.** The "knowledge question" can present itself many ways. For example, concern about the ownership of knowledge leads to acquiring codified knowledge that is protected by copyrights and patents.

It is obviours that, for operations and services in the library to be successful, there is need to create and share knowledge. Thus, considering the characteristics of knowledge listed above,

for any KMTs to work effectively to facilitate operations and services, these principles should be put into practice.

According to Wilson (2003) who outlined, it the knowledge needed to build on an organisation are: knowledge of a particular job, knowledge of who knows what, knowledge of who is the best, knowledge of corporate history, knowledge of how to put together a team etc. However, this can be applied in library operations and services and the goals can be acieved if KMTs were in place and best utilised. In fact, this brings out the need to classify knowledge to ease management.

2.3 Tacit and Explicit Knowledge

There are two fundamental concepts about knowledge, that is the tacit knowledge and explicit knowledge. Wilson (2002) is of the opinion that the concept of 'tacit' means 'hidden', tacit knowledge is hidden knowledge, hidden even from the consciousness of the knower. Thus, this hidden knowledge is inaccessible to the consciousness of the knower, and cannot be 'captured'.

Explicit knowledge means articulated knowledge expressed and recorded as words, numbers, codes or mathematical formulas. This type of knowledge is easy to communicate, store, and distribute. While *Tacit Knowledge* instead is learned by experience and communicated only indirectly, it is hard to access, because it is unwritten, unspoken and hidden knowledge that people carry in their mind. Also, it is hard to formalize and difficult to share in the organization (Nonaka and Takeuchi, 1995). The knowledge in this form can be best utilised for library operations and services if the KMTs are available and fully utilised.

However, Nonaka (1991) and Nonaka and Takeuchi (1995) used the term to denote the particular knowledge (tacit) as difficult to express and difficult to articulate. Tacit

knowledge is difficult to codify but it consists of skills and competencies, experiences, relationships, beliefs and values, and ideas that are useful. It is highly personal and embedded in the individual's mind. According to Ndiaye (2001), tacit knowledge is learning embedded within the minds of the people in an organization. It involves perceptions, insights, experiences, and craftsmanship. Briefly, tacit knowledge is personal, context-specific, difficult to formalize, difficult to communicate, and more difficult to transfer. Therefore, tacit knowledge is of limited representation to learners/information seekers since it is difficult to articulate and codify in documents. As a result, information managers try hard to apply narration, animation and commentary to represent individual knowledge as effectively as they can. Wilson (2002) further argued that Nonaka, Nonaka and Takeuchi's (1995) definition of tacit knowledge could well be termed as 'implicit' knowledge. Implicit knowledge, which is not normally expressed but may be expressed, is that which we take for granted in our actions, and which others may share through common experience or culture. Tacit knowledge of librarians in libraries is to solve problems and improve the effectiveness and efficiency in information management and services delivery. It can be externalised to a large extent with the use of KMTs.

Thus, we can gather tacit or implicit knowledge but it is difficult to be made 100 percent explicit. Therefore, this difficulty poses problems during the knowledge creation and transfer processes, since most knowledge management theory and practice uses the term tacit knowledge rather than implicit knowledge. Therefore, this work will use the term tacit knowledge, which can as well mean implicit knowledge.

On the other hand, Nonaka and Takeuchi (1995) defined explicit knowledge as knowledge that can be articulated and in formal language including grammatical

statements, mathematical expressions, specifications, and in manuals. In conclusion, explicit knowledge can be transmitted easily and formally across individuals. Choo (2000) agreed that explicit knowledge manifests through language, symbols, objects, and artifacts. It can further be object based, that is, found as patents, software code, databases, technical drawings and blueprints, chemical and mathematical formulas, business plans, and statistical reports, or rule based, i.e., expressed as rules, routines, and procedures. Moreover, Wilson (2003) argued that explicit knowledge is not knowledge but information. Organisations tend to depend primarily on this sort of explicit and articulated knowledge, written down in memos and illustrated with graphs and used in decision-making processes, or institutionalised as operating procedures; Choo (2002) observed that explicit knowledge is formal knowledge that is easy to transfer from staff to staff. It is frequently articulated in the form of syllabuses, study guides, course materials etc. Explicit knowledge is packaged, easily codified, communicable, and transferable (Kidwell et al., 2000). Thus, explicit knowledge is processed, transmitted and stored in databases, documents, diaries etc with relative ease. In fact, for any successful knowledge management scheme, knowledge (tacit and explicit) needs to be converted from one form to another to be able to be useful, protected and serve the purpose of creation, use and reuse.

2.3.1 SECI Model of Knowledge Conversion Processes

The SECI model is a well-known conceptual model that was first proposed by Nonaka (1991 and expanded by Nonaka and Takeuchi, 1995). It describes how explicit and tacit knowledge is generated, transferred, and recreated in organizations. While it was first proposed within the context of business organizations, the model can easily be applied to education, as explored by Lin, Lin, and Huang (2008) and Yeh, Huang, and Yeh (2011). Thus, it is applied in

this study to explain how libraries and librarians can convert knowledge from one form to another for library operations and services. Fig. 1 shows the SECI model

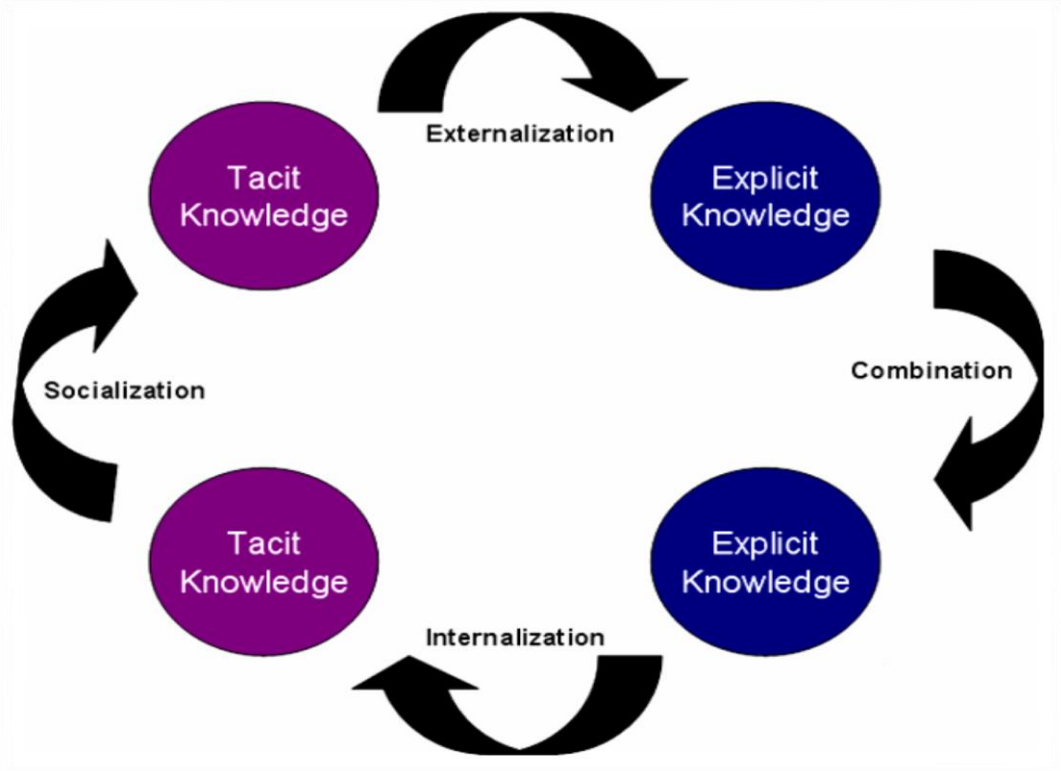


Fig. 1: Knowledge Conversion Processes (Nonaka and Takeuchi, 1995)

A successful Knowledge Management program, on the one hand, needs to convert internalised tacit knowledge into explicit codified knowledge in order to share it. On the other hand, individuals and groups need to internalise the codified knowledge and convert it into meaningful tacit knowledge, once it is retrieved from the Knowledge Management tool. Bellinger, et al (2002) supported that there is a fifth phase: Cognition, which is the application of knowledge that has been exchanged through the other phases:

- **Socialisation**: Transfer tacit knowledge from one person to another person
- **Externalisation**: Translate tacit knowledge into explicit knowledge in a repository
- **Combination:** Combine different bodies of explicit knowledge to create new

explicit knowledge.

- **Internalisation:** Extract the explicit knowledge from a repository that is relevant to a particular person's need and deliver it to that person where it is translated into tacit knowledge.
- **Cognition:** Apply tacit knowledge to a problem.

Blair (2002) argued that success of the transformational process of converting tacit knowledge to explicit knowledge to be internalised as tacit knowledge is very much dependent on the information quality as the medium for the transformational process.

In the context of library knowledge management (KM), the knowledge that needs to be accessed, shared, applied, and developed by others needs to be externalized. However, KM should certainly not be about externalizing and codifying as much knowledge as possible. That would simply be impossible and ineffective. Codifying the knowledge that is considered 'critical' to operations and services would make 'a big difference' to the institution's teaching, learning, and research.

The sharing of knowledge is presented through four different knowledge conversion processes (fig.1) (Nonaka and Takeuchi, 1995). Knowledge sharing processes are converting new knowledge from tacit to tacit (socialization), from tacit knowledge to explicit (externalization), from explicit knowledge to tacit (internalization) and from explicit knowledge to explicit knowledge (combination).

Socialization is sharing experiences between individuals. According to Jashapara (2004) it is much more than "know how" and it can include intuitions, hunches and insights. Socialization is deeply connected to a person's values and beliefs. To develop socialization, people need to have the possibility to share their feelings, emotions and experiences

openly. *Externalization* happens normally through dialogue and the use of figurative language, metaphors, images and inference (Jashapara 2004). The main aspect of externalization is the dialogue between people. To develop externalization in a library, librarians need a possibility to share their mental models and reflect and analyse their own understanding to better operations and services delivery. *Combination* occurs from capturing, collecting, organizing, editing and integrating new knowledge (Jashapara, 2004). This is exchanging and combining knowledge through, for example, databases, groupware tools, networks, applications, documents or conversations. *Internalization* happens usually through learning-by-doing or by training. The space that facilitates internalization is characterized through learning, training and mentoring. (Nonaka and Takeuchi 1995; Jashapara 2004).

As presented above, different kinds of knowledge conversion demand different solutions. The library should define which type of conversion specially needs to be developed. Accessing explicit knowledge is easier than accessing tacit knowledge and that is why many oganisations especially in western countries concentrate on combining explicit knowledge to explicit. However, improvement of knowledge combination is important to libraries and librarians because it creates new knowledge from existing explicit knowledge and it helps to capture and maintain existing knowledge. Nonaka and Takeuchi (1995) claimed that converting tacit knowledge into explicit (externalization) is the key to an organization's success. Therefore, attention should be paid to externalization because tacit knowledge covers most of the relevant knowledge needed for its success.

It is certainly a good idea to first identify the 'key knowledge areas' in the organization that, if better managed, would truly make a big difference to performance. As a guideline, for each key knowledge area identified, it is good KM practice to develop a knowledge base (to

maintain the critical explicit knowledge) and a community of practice or knowledge network around this key knowledge area (to surface and transfer the tacit knowledge).

Tacit knowledge could be shared more openly and in an informal manner through, for example, groupware tools, electrical working places or virtual worlds. These tools help people from different business units, groups or situations to meet each other and interact. People can express their ideas, thoughts and questions in an informal manner that supports interactivity and collaboration (Awad and Ghaziri 2004; Jashapara 2004). This supports the sharing of tacit knowledge that is hard to document. The way to develop the sharing of tacit knowledge is focused on encouraging people to share their knowledge and changing the corporate attitude from knowledge protection or hiding to a culture of knowledge sharing. When the tacit knowledge is shared with other people, it might be converted to explicit knowledge and could be collected by all information seekers/customers freely in wikis, blogs or other interactive channels.

The knowledge and expertise that the library tries to maintain needs to be connected to its success factors. However, all knowledge cannot be collected and should not even be collected. This knowledge and the experts having knowledge related to the success factors are easier to cultivate when there are limited amount of them. Penzi (2002) opined that, there is need to be able to divide different know-hows in different levels and link one person to one prime knowledge. This brings out the issue of knowledge management. In fact, different scholars look at KM in different ways or perspectives. This may be because many fields of study have contributed to it.

2.4 Theoretical Framework

Knowledge management has emerged as an important field for practice and research in information systems. This field is building on theoretical foundations from information economics, strategic management, organizational culture, organizational behavior, organizational structure, artificial intelligence, quality management, and organizational performance measurement. These theories are being used as foundations for new concepts that provide a rationale for managing knowledge, defining the process of managing knowledge, and enabling the evaluation of the results of this process. (Baskerville and Dulipovici, 2006).

For the purpose of this study, two theories form the theoretical framework which are: knowledge organisation theory and knowledge-based system theory. However, knowledge organisation theory deals with the knowledge management processes, which begin with the formulation and implementation of strategies for the construction, embodiment, distribution, and use of organizational knowledge (Quintas et al. 1997). Thus, this work uses only *construction and distribution (creation and sharing)* from the construct. While, knowledge-based system theory is used to explain knowledge management tools; and it aids the human process of creating and applying knowledge. Davenport et al. (1998) supported that, advances in knowledge systems are important because a standard, flexible knowledge structure is one characteristic of successful knowledge management. For example, group support systems provide features like variably structured database storage, workflow programming, and rationale explication that can be use to capture aspects of organizational knowledge; intranets enable organizational access to dispersed explicit knowledge.

2.5 The Components of Knowledge Management

Knowledge management according to Suliman (2002) means obtaining and using resources in order to create an environment in which individuals have access to information and

in which individuals obtain, share and use this information to raise the level of their knowledge. Al-Hawamdeh (2002) defined Knowledge Management as an organizational process for gathering, organizing, analyzing and sharing both, the tacit and explicit knowledge of the employee so that other employees may make use of this knowledge to be more effective and productive. It can also be seen as an organizational process of capturing, organizing, analyzing and sharing of knowledge to create an environment in which the library staff are able to raise the level of their knowledge and may make use of this knowledge to be more effective and productive in operations and services. There is no library whose services will be effective and efficient without utilizing knowledge management processes.

According to Abell (2001), knowledge management is defined as a set of processes that create and share knowledge across an organization to optimize the use of judgment in the attainment of mission and goals. It involves capturing an organisation's goal - related knowledge as well as knowledge of its products customers, competition and processes and then sharing that knowledge with the appropriate people throughout the organization. It seeks to support communities of practice in creating and using knowledge; it accepts the notion that knowledge transmission is primarily a human activity and is the art of creating value from an organisation's knowledge assets (Townley, 2013).

Knowledge management is the systematic management of knowledge, which includes capturing, organizing and disseminating knowledge within an organisation (Ponzi and Koenig, 2002). Knowledge management allows organisations to generate values from their intellectual and knowledge based assets. Knowledge Management is a combination of management awareness, attitudes and practices, systems, tools and techniques to release the power of knowledge (Mohammed, 2003 and Dalkir, 2005). It describes a complicated role of being a

storehouse to contain, classify, and preserve information from where others may create further knowledge. In the process knowledge management synthesises data, information and knowledge to a new role which some have even labeled wisdom. It involves being able to separate the parts when necessary such as defining knowledge from information or into various knowledge management initiatives.

Knowledge Management practices are typically tied to organizational objectives such as improved performance, competitive advantage, innovation, developmental processes, lessons learnt transfer and the general development of collaborative practices. Knowledge management focuses on the management of knowledge as an asset and the development and cultivation of the channels through which knowledge and information flow.

Alavi and Tiwana, (2003) identified four knowledge management processes: knowledge creation, knowledge storage and retrieval, knowledge transfer, and knowledge application. Franco and Mariano (2007) defined knowledge management processes simply as knowledge storage and retrieval. Broadly speaking, knowledge management involves four key steps of creating/ generating knowledge, representing/storing knowledge, accessing/using/re-using knowledge, and disseminating/transferring knowledge (Davenport and Prusak 1998; Markus, 2001; Alavi and Leidner 2001; Wickramasinghe 2004).

Asian Productivity Organization (2010) listed five-steps of KM process, which are: identifying the knowledge, creating knowledge, storing knowledge, sharing knowledge, applying knowledge. However, knowledge management has been presented as the development of intellectual capital in library operations and services. Thus, this study, will adopt APO definition of knowledge management processes supporting creation, storage, sharing and application of knowledge.

In addition, and in support of the above view Watson (2003) outlined the activities of knowledge management as follows: - Acquire knowledge (learn, create, or identify); Analyze knowledge (assess, validate, or value); Preserve knowledge (organise, represent, or maintain) and Use knowledge (apply, transfer or share).Fig. 2 shows the characteristics.

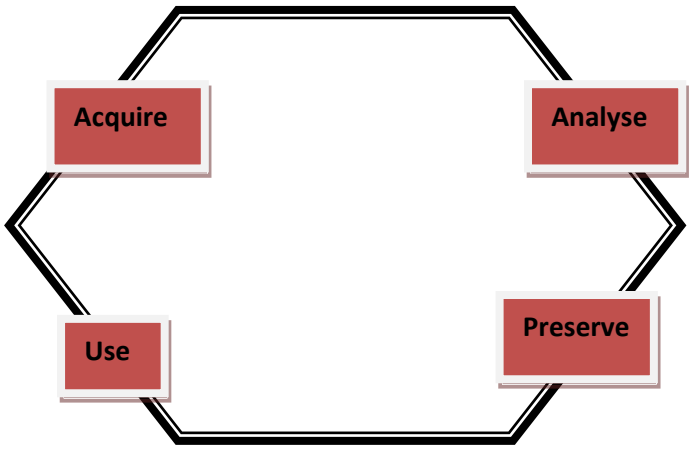


Fig. 2: Knowledge Management Cycle (Watson, 2003)

Knowledge creation, generally accepted as the first step for any knowledge management endeavor, requires an understanding of the knowledge construct as well as its people and technology dimensions. Given that knowledge creation is the first step in any knowledge management initiative, it naturally has a significant impact on the other consequent KM steps, thus making the identification of and facilitating of knowledge creation a key focal point for any organization wanting to fully leverage its knowledge potential.

2.5.1 Key Components in Developing Knowledge Management

The major components of developing Knowledge Management are people, processes/culture and technology. (Liebowitz, 2005) *Technology* is needed to enable communication and to share the knowledge between staff and customers. *People* are the producers and users that manage the knowledge. *The right culture and processes* are needed to

make the managing of knowledge a part of daily working routine. According to Earl (1997) Knowledge Management is divided similarly into knowledge system, networks, knowledge workers and learning organisation. *Knowledge management system* refers to databases, decision tools and capture systems that contain information. *Networks* are important for knowledge capture, knowledge building and sharing. A *knowledge worker* refers to people that have the needed skills for knowledge processing and analyzing. He also opined that, knowledge is maximized if the organization can learn and that is why he defines the *learning organization* as part of Knowledge Management. In general, most researchers agree with Liebowitz (2005) that the managing of knowledge has aspects that deal with people, technology, culture that motivates people to learn and networks that combine people.

Thus, the institution must be able to choose what technology offers the best results to the library in building a better Knowledge Management system. The variety of different technological tools is large and staff competences to use the tools vary. Choosing the right technology for the organisation is sometimes complicated but according to Liebowitz (2005), the most important parts of developing Knowledge Management are the people, process and culture aspects. This means convincing and motivating the employees to use the offered tools and to feel that the tool use will be of benefit to their work.

According to Liebowitz (2005) there should be a recognition and reward structure within the company that supports a knowledge-sharing culture and encourages people to porter ideas, viewpoints and opinion sharing. It is also important that these Knowledge Management processes are closely connected to the daily processes of work so that the use of knowledge sharing tools will not be seen as an extra load or be forgotten.

Furthermore, the World Bank realized that it needs to encourage its employees to share

their knowledge with others. In the World Bank this is done by knowledge and learning sharing proficiencies. This means that each employee is evaluated and rewarded annually based on how they have reached the goals to share knowledge. NASA also rewards people with bonuses or awards for broadly sharing or making knowledge reusable by others. It has even created positions for people whose primary job is to share and distribute knowledge. (NASA Knowledge Management Team 2001 by Liebowitz 2005).

2.5.2 Essence of Knowledge Management

KM caters for the critical issues of organizational adaptation, survival and competence in the face of increasing continuous environmental change ("Kazi, 2002**).** In addition, Knowledge Management is derived from the business world and applied to libraries in building strength through improved exploitation of what the library already knows, mastering change through continuously improving the way of working (best practice) and the quality of library holdings to serve customers better.

A summary from different sources for the need for a successful KM effort include the following:

- KM encourages free flow of ideas, which fosters insight, innovation, and creates new values through new products and services.
- KM improves customer service and efficiency by stream lining response time.
- KM enhances employee retention rate by recognizing the value of employees' knowledge and rewarding them for it.
- KM streamlines operations and reduces costs by eliminating re-use
- KM facilitates better, more informed decisions by reducing uncertainty
- KM contributes to the intellectual capital of organizations.

- KM boosts revenues and enhances the current value of existing products by getting products and services to the market faster.
- KM leads to greater productivity by increasing speed of response.

For library operations and services to be effective and efficient towards achieving mission and vision of establishing library, the essence of KM is very important because it is considered a knowledge-based center. Thus, this is important for this study.

2.5.3 Dimensions of Knowledge Management

Knowledge management is essentially about getting the right knowledge to the right person at the right time. This in itself may not seem so complex, but it implies a strong tie to corporate strategy, understanding of where and in what forms knowledge exists, creating processes that span organizational functions, and ensuring that initiatives are accepted and supported by organizational members. Knowledge management may also include new knowledge creation, or it may solely focus on knowledge sharing, storage, and refinement.



Fig. 3: Dimensions of Knowledge Management (Alan, 2010)

It is important to remember that knowledge management is not about managing knowledge for knowledge's sake.

The overall objective is to create value and to leverage, improve, and refine the firm's competences and knowledge assets to meet organizational goals and targets. Implementing knowledge management thus has several dimensions including:

KM Strategy: Knowledge management strategy must be dependent on corporate strategy. The objective is to manage, share, and create relevant knowledge assets that will help meet tactical and strategic requirements.

Organizational Culture: The organizational culture influences the way people interact, the context within which knowledge is created, the resistance they will have towards certain changes, and ultimately the way they share (or do not share) knowledge.

Organizational Processes: The right processes, environments, and systems that enable KM to be implemented in the organization.

Management & Leadership: KM requires competent and experienced leadership at all levels. There are a wide variety of KM-related roles that an organization may or may not need to implement, including a CKO, knowledge managers, knowledge brokers and so on. More on this is the section on KM positions and roles.

Technology: The systems, tools, and technologies that fit the organization's requirements - properly designed and implemented.

Politics: The long-term support to implement and sustain initiatives that involve virtually all organizational functions, which may be costly to implement (both from the perspective of time and money), and which often do not have a directly visible return on investment (Alan, 2010).

2.6 Library Operations and Services

The library offers a supplement and complement to the curriculum. It offers content essential to the acts of teaching and learning. It provides content that is integral to inquiry, whether the inquirer is a freshman or the most respected professor. Note the word "content." in some senses; it does not matter if the content is in print or virtual. The central purpose of libraries is to provide a service: access to information. Access to a potentially informative document depends on identifying, locating, and having affordable physical access to it. However, for someone to become informed or knowledgeable, requires more: the reader needs to be able to understand and evaluate what is in it. (Nwalo, 2005).

University libraries have been developing various products and services in order to cultivate, build and maintain relationships with their numerous customers. Among these efforts are the introduction of services and products such as current awareness service; selective

dissemination of information; bulletin boards; complaints/suggestion boxes; exhibitions, user education, etc. In addition, many university libraries have embraced the Internet technology by establishing their presence on the web. This has tremendously created another opportunity for them through their websites to reach thousands of customers. In addition, university libraries invest huge amounts of money on collection development, processing and storage of information resources.

University libraries are established to provide information resources and services in order to support the purpose of the university. Information services can be defined as those activities concerned with ensuring the availability, accessibility and use of information by users.

However, with the adoption of Information and Communication Technology (ICT) facilities in the library, university libraries can employ any of its facilities like e-mail facilities, SMS alerts, and online databases and websites to showcase what the library has or provide a platform for linkages with other sister university libraries. For the library to render the best and most effective services; the staff need to share expertise, skill and understanding of operations and services to compete with best practices.

According to Adeyemi (1991), university libraries should provide the following information services in order to remain competitive and relevant in information profession. These information services include the following:

a. Maintenance of adequate stock-monographic and serials

b. Newspaper clipping,

c. Indexing and abstracting services

d. Reproduction and development of reading lists

e. Participation in national and international exchange of information resources.

e. Recruitment of well-trained and dedicated library staff

f. Display and exhibition

It is important to stress that with the dynamics and growth of knowledge and information, university libraries are expected to provide both manual and automated/online information services in order to meet the ever-growing needs of their users, this necessitate for knowledge creation and sharing. Based on this, Fabunmi (2004) cautioned university libraries to work harder to provide information services that is timely in its delivery and easy to understand and use and is delivered by courteous and knowledgeable staff.

In addition, the advent of ICTs has ushered in new dimensions and challenges in library and information services provision in university libraries. Today, many of the major information services that are provided manually are available and accessible on the Internet. Interestingly, library users can now search different databases, both online and offline on CDs as well as library catalogues of other university libraries all over the globe. This facilitates knowledge sharing and creation to improve operations and services.

Similarly, Aina (2004) identified the following information services as major services to be provided by university libraries in its quest to satisfy the information needs of its diverse user groups. These information services are summarized below: lending services, inter library loan services, document delivery service, reservation services, reference services, selective dissemination of information and so on. In addition, Aguolu (1983) suggests that for the university library to meet the research needs of its users in various disciplines, it must promote these essential services, which include: bibliographic services, interlibrary loan services, user education services and creation of special collections. Based on the above views, it is clear that members of the university community would find these essential information services very

worthwhile and relevant in promoting and enhancing teaching, learning, research and community service within and outside the university community.

When modern library service was developed in the second half of the nineteenth century, it was to be characterized by: the idea of library collections being for service; the notion of systematic, purposeful book selection; the adoption of a series of technical innovations, such as relative shelf location (shelving books relative to each other rather than on specific shelves); improved cataloging codes, more systematic approaches to shelf arrangement and subject classification, card catalogs; and sustained efforts at standardization and cooperation; and, Later in the twentieth century, a trend towards self-service, with open stacks and public catalogs.

Library services have two bases: the role of library service is to facilitate access to documents; and the mission of a library is to support the mission of the institution or the interests of the population served. Interpreting these two general statements for any given situation provides the foundation for effective library service. University of Texas at Austin (2010) out lined its services as:

i. ***Borrowing:*** renewing, holding, recalling, returning library materials, appealing fines, confidentiality of library records, summer library privileges etc.
ii. ***Ask the Librarian*****:** email or chat with a librarian - call or visit a reference desk.
iii. ***Reserve:*** finding hard copy and electronic reserve materials - placing materials on reserve.
iv. ***Interlibrary Services*****:** interlibrary loan request - location and hours of services - research libraries cooperative program etc.
v. ***Copier and Printing Services:*** printing from computers, photocopiers, and microform readers requires a copy card.

vi. ***Study space*****:** places to study in groups - places to study alone - carrels – Lockers.

vii. ***Instruction Services:*** online tutorials - library classes & citation management workshops to introduce you research resources and services - faculty services including requesting library instruction for your class.

viii. ***Media Services:*** collections of audiovisual materials - media services for faculty and for visitors.

ix. ***Request a Purchase:*** request that the library purchase a book, journal, musical score, CD, DVD or any other material.

x. ***Digital Repository:*** digital repository accepts, archives, and provides access to the scholarly and research works, as well as works that reflect the intellectual and service environment of the campus. However, this shows that librarian must engage in discussions or interactions with the partners and customers for effective and efficient service delivery.

Matterska (2004) viewed that, redesigning library services can be written on three assumptions:

1. There has been insufficient attention to *strategic* planning, that is, the making of decisions relative to a three to ten year period. We seek to examine the middle ground between the large literature on possible options among the tactical and operational decisions made day-to-day and month-by-month and the sweeping visions of endless, interlinked electronic villages. The latter offer little continuity with present experience and can make those who are dependent on existing services understandably nervous. Some people are enthusiasts for electronic solutions; others want to avoid the high cost of

continuing present operations. Interactions, brainstorming, meetings, discussions etc are the major key to success in any good strategic planning.

2. A disproportionate amount of attention has been paid to new information technology. It is not really that too much attention has been given to it, but rather that not enough critical attention has been given to the characteristics of the familiar technology of paper. Understanding and proper use of new technologies require interactions, discussions, meeting etc
3. There is, in fact, considerable experience on which our strategic planning can be based, more than is generally realized.

Odajemu, and Ibegwam (2006) emphasized that library services have to do with support for learning, both the study of what others have discovered and research to discover what is apparently not yet known. Yet the librarian's role is often very indirect. The librarian's concern, rather than being with knowledge itself, is usually with *representations* of knowledge--with texts and images. Furthermore, much of the time, the concern is not really with the texts themselves, but with text-bearing objects: the millions of books, journals, photographs, and databases that fill our libraries' shelves. Librarians generally assist, not by giving answers directly, but by referring the inquirer to information and information resources. There is need to maintain the underlying concern with how individuals acquire knowledge. Librarians must concern themselves with how individuals use information/information resources (books, journals, etc.) and with how they become informed and knowledgeable.

2.7 Knowledge Management in Libraries

Libraries are under tremendous pressure for increased access and use of information/knowledge resources. External pressures come from stakeholders like employers,

government agencies, international organisations and professional agencies for improved library services. Librarians are also asking themselves difficult questions about improvements in services delivery: for example, how can we improve staff and customers' services?

Libraries must also have the ability to demonstrate enhancement of effectiveness and efficiencies of services delivery. Thus, libraries may find it beneficial to adopt Knowledge Management programs to improve their performances and outcomes (Rolley, 2003). Consider an individual librarian who possesses knowledge on how to improve operations and services. The libraries should convert the knowledge that currently resides in this individual and make it widely and easily available to all staff and customers (Sinotte 2004).

Thus, KM can lead to improvements in sharing knowledge (explicit and tacit) which would subsequently benefit the libraries and organisation as a whole. KM in libraries is a framework or an approach that enables staff and customers within the library to develop a set of practices *systematically* to collect knowledge and share what they know (e.g. skills, experiences, beliefs, values, ideas, etc.), leading to action that improves services delivery (Rowley 2003).

According to Sinotte, (2004) Knowledge management can be built and integrated into the structures and processes of libraries to improve their performance. In addition, it can benefit library in some areas like: customer services, research, policy development, cataloguing and classification, administration, strategic planning, user education etc. In supporting the view, Townley (2001) opined that, "current cataloging practice is based on the knowledge that OCLC can provide; more than 90 percent of the acceptable cataloging information of the items that a typical academic library adds to its collection are from OCLC". This one piece of knowledge has been embedded in the radical redesign of cataloging operations in recent years.

The primary emphasis on knowledge for pedagogical purposes may be for increasing library staff and customers, which requires a feedback loop in which library performance is evaluated, corrective measures are taken, and improvements are made in the knowledge base and practices. The knowledge gained by the staff allows them to make appropriate decisions to ensure that their customers, information services, presentations, meetings, assessments, etc. are updated to improve the library operations and services delivery. Sinotte, (2004) supported the same view.

In order to enable libraries to use and share knowledge more effectively, a knowledge management system brings together three core organizational resources - people, processes, and technologies. (See fig. 4).

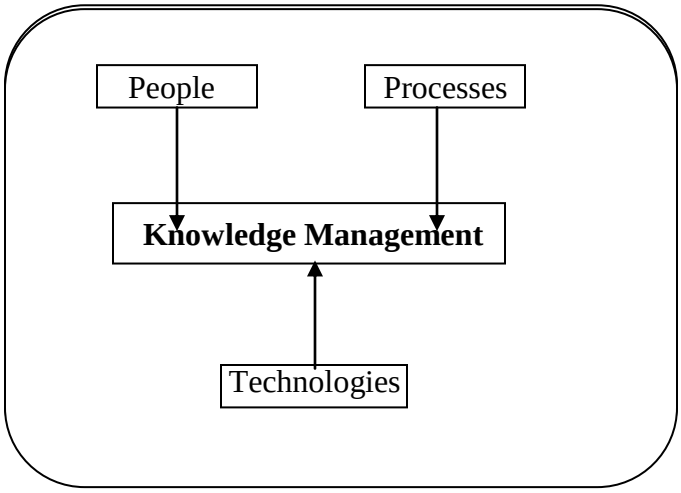


Fig.4: The Key realms of knowledge Management (Petrides & Nodine, 2003)

a. **People:** People manage knowledge. Moreover, people are the originator of knowledge. According to Davenport & Volpel (2001), "managing knowledge is managing people; managing people is managing knowledge". Managing knowledge involves managers developing a set of practices to capture, collect and transfer of relevant knowledge within the organisation of people to improve services, outcomes and performances.

Thus, through collegial and professional teamwork, knowledge management practices

actively encourage and engage people at any levels in sharing with others what they know, and what they are learning. To make library jobs more rewarding and work more effective, working groups of librarians from across divisions, departments or units are persuaded to come together as teams by common need and exchange library operations and services etc. In this process, the teams also build relationships, trust, and expertise and create a shared repertoire of resources, tools, and artifacts that support present and future improvements. In many organizations, these kinds of informal, self- sustaining collegial bodies have been around for a long time. They are called "communities of practice" (CoPs) (Townsley 2013) and have been found to be one of the effective means in managing tacit knowledge within organisations. These CoPs are often at the centre of innovation and energy and have been identified as one of the knowledge management enablers. (Johnson, 2001; Wenger, 1998). Thus, the researcher centers his work towards Community of practice, because knowledge is best shared if people of like minds, that is people of the working interest group, come together.

b. **Processes:** Many work practice processes affect information flow within every organization. These processes include administrative procedures, policy development processes, information sharing patterns, information silos, etc **(**Petrides & Nodine, 2003). Similarly, knowledge management practices enable people to get the information they need, when they need it, as well as to share it with others who may benefit from it and help to promote these processes that lead to more informed decision-making. Especially the processes involved in the creation of quality knowledge and the transfer of knowledge to improve library operations and services.

c. **Technologies:** Technology is a vital and necessary contributor to the effectiveness of the organization. The most effective technologies within a knowledge management framework

should be broadly accessible to target staff and user groups and promote the tracking and exchange of useful information across libraries, departments, or even across institutions (Petrides & Nodine, 2003). Technological tools for knowledge management have been developed to provide for the capture and transfer of knowledge. With the advent of the internet, e-learning, web conferencing, collaborative software, content management systems, email lists, wikis, blogs, and other technologies have become the enablers or facilitators of knowledge management practices in libraries. With library automation system, operations and services are computerised in which the interactions among staff, customers are mediated through technology **(**Kiehl, 2004).

Generally, the use of knowledge management in library is an approach that can inform a wide range of practices within a library operation and services. For educational institutions, however, the full promise of knowledge management lies in its opportunities for improving operations and services. One of the goals of knowledge management in the library is to advance and improve customer services and library operations by creating, and sharing quality knowledge. This goal will become increasingly important in school libraries, college libraries, and university libraries. The ultimate benefit of this is to library customers, staff and the educational community as a whole. Thus, the knowledge management practice can enable the creation and transfer of quality knowledge using knowledge management tools.

2.8 Previous Studies Related to the Study

Aswath and Gupta (2015) discussed in their article titled "Knowledge Management Tools and Academic Library Services" the following: various components of knowledge management process, Intranet as one of the tools of KM, its contents, resources required and advantages as a

tool for KM. In addition, they explored in the study the feasibility of services offered through Intranet services in university libraries studied.

In the same vein, Mphidi and Snyman (2004) concluded from their study entitled "*the utilisation of an Intranet as a knowledge management tool in academic libraries"* that, the intranet emerged as one of today's most effective tools for knowledge management. Also, the article reports on the extent to which three South African academic libraries utilize the Intranet as a knowledge management tool. Based on the literature, knowledge management and an Intranet are briefly defined. The advantages of the intranet as a knowledge management tool as well as the content of an Intranet are discussed. The opinions about knowledge management and the utilization of the Intranet as a knowledge management tool in the three academic libraries are weighed against the findings in the literature. It is clear that a strong awareness exists on the importance of knowledge management and the value of the intranet as a knowledge management tool. However, they observed, the potential of the intranet as a knowledge management tool is not fully utilized.

Ghani (2009) provided a framework for characterizing the various tools and techniques available to knowledge management practitioners, for example: (i) Tools to access knowledge, (ii) Tools for semantic mapping, (iii) Tools for knowledge extraction, (iv) Tools for expertise localization and (v) Tools for collaboration work. It provides an overview of a number of key terms and concepts, describes the framework, provides examples of how to use it, and explores a variety of potential application areas. The stress of knowledge management tools and techniques has been maneuvered to share knowledge through communication and collaboration tools, which specify the shift from process to practice.

Aswath and Gupta (2015) and Mphidi and Snyman (2004) only looked at one IT KMTs (Intranet) leaving others and Non IT KMTs unmentioned. While Ghani (2009) discusses collaboration tools only, which mean that the users were not exposed to the use of other KMTs. This can narrow the spread of sharing and creating knowledge for operations and services delivery and again will denied access and use of the varieties of knowledge that will better the operation and services.

Asogwa (2012) wrote on *Knowledge Management in Academic Libraries: Librarians in The 21st Century. University of Nigeria Nsukka, Nigeria*. He examined the contributions of librarians in knowledge management, and the implications for academic librarians. A review of relevant literature on contemporary issues in libraries and knowledge management was undertaken, and the current developments in knowledge management and the future for libraries, librarians, and information science professionals were discovered. He continued that use of knowledge management in libraries contribute to the improvement of employees' capacity in knowledge creation; it promotes and strengthens relationships and inter-networking between libraries, librarians, and users. It creates enablement to mine and extract the wealth of knowledge in library employees. Information technologies, information explosion, multiple formats of information, changing users' needs and tools have assigned newer roles and responsibilities to academic librarians. It has transformed them from custodians of recorded human intellect to knowledge navigators; they have migrated from librarians to cyberians, knowledge engineers, knowledge gatekeepers, networkers and knowledge brokers. These skills and competencies have to be gripped and imbibed by all knowledge workers or they will become irrelevant in this 21st century.

Wen (2015) who wrote on *Knowledge Management in Academic Libraries: A Pragmatic Approach.* suggested a pragmatic approach to the implementation of Knowledge Management for academic libraries: utilizing the existing staffing, technology, and management structure**.**

Lee (2004) reviewed the development of knowledge management and compares the differences between information and knowledge as well as between information management and knowledge management. He also examined the role of librarians/libraries in knowledge management and suggested that librarians/libraries in the digital and knowledge age should be in charge of knowledge management in their respective organizations in order to leverage the intellectual assets and to facilitate knowledge creation.

Mavodza, (2010) wrote on *Knowledge Management Practices and the Role of an Academic Library in A Changing Information Environment: The Case of the Metropolitan College of New York .He opined that,* academic library services have now significantly developed and are applying some knowledge management (KM) principles in the provision of library services. He maintained that, KM is about enhancing the use of organizational knowledge through sound practices of KM and organizational learning. KM practices encompass the capture and/ or acquisition of knowledge, its retention and organization, its dissemination and re-use, and responsiveness to the new knowledge. He also pointed out that, the focus of this research was on KM principles and practices that may be in place in the Metropolitan College of New York (MCNY) library. And the objective was to find out how knowledge was identified, captured, organized and retained in order to enhance performance and improve the quality of service in the library. There is uncertainty about whether the use of KM principles and tools can partly solve the library's approach to improving its quality of service to its community in the modern information environment. He said KM has been implemented in commercial and business

environments towards operational advantages and financial gains and its survival principles and tools may help the library to improve performance and fulfil its mandate. A mixed methods research methodology encompassing a questionnaire, observation, interviews, and use of institutional documents was used with an action research design for generating new knowledge and understanding of library concerns. The findings of this study indicate that KM concepts were not universally understood at MCNY, and that collaboration of librarians and faculty in creating an educational environment meaningful and relevant for the study programmes offered by the College was essential. The MCNY library practices were not deliberately based on KM but the study established that they are amenable to KM practice through making efforts to share know-how so as to reduce duplication of effort, relying on library staff to identify, integrate, acquire, organize internal and external knowledge for the benefit of the whole College. The recommendation was to perform a knowledge inventory which would help develop appropriate institution-wide policies and practices for proper and well organized methods of integrating work processes, collaborating and sharing (including the efficient use of Web 2.0 platforms), and developing an enabling institutional culture.

However, Asogwa (2012), Wen (2015), Lee (2004) and Mavodza (2010) discussed issues related to knowledge management in libraries but not utilization of KMTs in library operations and services. This means that the issues are not directly related to the study area but can be indirectly relevant because many of the studies were carried out in the library.

Generally, no literature captured KMTs holistically in the library but some literature captured KMTs in profit and business organisations because there are gains attached to the use of KMTs. However, in the case of nonprofit organisation it will only better the services and help achieve the goals of the organisations.

2.9 Knowledge Management Tools (KMTs) for Operations and Services

KMTs play a useful facilitating role in learning organizations/institutions especially the library that deals with the "info-glut or information overload. KMTs do not manage knowledge by themselves, but rather facilitate the implementation of knowledge processes. They promote and enable knowledge processing by identifying, creating, structuring, and sharing knowledge through the use of techniques and information technology in order to improve decision-making (Vacik, et al., 2003).

Tools that currently fall under the KM umbrella have evolved in various phases since the 1980s, starting with IT tools for computation and databases, followed by publishing and communication tools, and then accompanied by sophisticated platforms for collaboration, wireless delivery, search, and network modelling.

KMTs can be technology and non-technology based facilities which enhance and enable knowledge generation, codification, and transfer. However, they ease the burden of work and allow resources to be applied efficiently to the tasks for which they are most suited. It is important to note that **not** all knowledge tools are computer-based, as paper and pen can certainly be utilized to generate, codify, and transfer knowledge. For the purpose of this work however, the tools covered are primarily the IT and non-IT KMTs important for library operations and services.

True KMTs are not data or information management tools. They do different things. Data management tools allow organizations to generate, access, store, and analyze data, usually in the form of facts and figures which can be considered "raw material." (Rowley, 2006) Examples include data warehouses, data search engines, data modeling, and visualization tools.

Information management tools enable the manipulation of information (i.e., data which informs in and of itself). Examples of these tools include automated information search and retrieval agents, basic decision support technologies, many executive information systems, and document management technology. All may be useful for the jobs they do. Nevertheless, such tools do not capture the complexity of context and the richness of knowledge. While KMTs may indeed also handle data and information, the other types are not robust enough to facilitate knowledge management.

Many dimensions are involved in describing KMTs. Ruggles (1997) provides a classification of KM technologies as tools that: enhance and enable knowledge generation, codification, and transfer. generate knowledge (e.g., data mining that discovers new patterns in data), Code knowledge to make knowledge available for others, and transfer knowledge to decrease problems with time and space when communicating in an organization. Rollet (2003) classified KM technologies according to the following scheme: Communication, Collaboration, Content creation, Content management, Adaptation, E-learning, Personal tools; Artificial intelligence etc. However, the categories can also be grouped according to the particular phase of the KM cycle in which they are used. The initial knowledge capture and creation phase does not make extensive use of technologies. A wide range of diverse KM technologies may be used to support knowledge sharing and dissemination as well as knowledge acquisition and application.

Rao (2005) opined that a multi-library consortium with over 650 members, uses KM to increase collaboration and improve the performance of its membership. The consortium uses expertise yellow pages, a consulting knowledge base, and after-action reviews called “hot washes”.

According to Liebowitz (2005), NASA has developed lessons learned in information

system to capture tacit knowledge for the use of the company. This information system contains 1300 experiences about learned lessons. These lessons learned include both successes and failures of project management and systems engineering. NASA has realized that it is not enough to simply capture the experiences: It also requires that all project managers need to collect their experiences and input them to the system as well as use the earlier experiences in their work.

Furthermore, APO (2000) categorized Knowledge Management Methods and Tools into five (5) groups with examples as follows:

1. **Identifying the Knowledge:** APO Knowledge Management Assessment Tool, Knowledge Cafés, Communities of Practice, Advanced Search Tools, Knowledge Clusters, Expert Locator, Collaborative Virtual Workspaces, Knowledge Mapping, KM Maturity Model, and Mentor/Mentee.
2. **Creating Knowledge** : Brainstorming, Learning and Idea Capture, Learning Reviews, After Action Reviews, Collaborative Physical Workspaces, Knowledge Cafés, Communities of Practice, Knowledge Bases (Wikis, etc.), Blogs, Voice and Voice-over-Internet Protocol (VOIP), Advanced Search, Knowledge Clusters, Expert Locator, Collaborative Virtual Workspaces, Mentor/Mentee, Knowledge Portal, Video Sharing
3. **Storing Knowledge:** Learning Reviews, After Action Reviews, Knowledge Cafés, Communities of Practice, Taxonomy, Document Libraries, Knowledge Bases (Wikis, etc.), Blogs, Voice and VOIP, Knowledge Clusters, Expert Locator, Collaborative Virtual Workspaces, Knowledge Portal, Video Sharing
4. **Sharing Knowledge:** Peer Assist, Learning Reviews, After Action Reviews, Storytelling, Communities of Practice, Collaborative Physical Workspaces, Knowledge

Cafés, Communities of Practice, Taxonomy, Document Libraries, Knowledge Bases (Wikis, etc.), Blogs, Social Networking Services, Voice and VOIP, Knowledge Clusters, Expert Locator, Collaborative Virtual Workspaces, Knowledge Portal, Video Sharing, Mentor/Mentee

5. **Applying Knowledge :** Peer Assist, Collaborative Physical Workspaces, Knowledge Cafés, Communities of Practice, Taxonomy, Document Libraries, Knowledge Bases (Wikis, etc.), Blogs, Advanced Search, Knowledge Clusters, Expert Locator, Collaborative Virtual Workspaces, Knowledge Worker Competency Plan, Mentor/Mentee, Knowledge Portal.

Although Rollet (2003) made a distinction between knowledge communication tools (such as telephone and e-mail) and knowledge collaboration tools (such as workflow management), it is very difficult to draw a line between the two. Communication and collaboration are invariably intertwined, and it is quite difficult to establish where one ends and the other begins. Both types of tools have been grouped under the category of groupware or collaboration tools. It is good to make use of communication and collaboration technology for project team work and unit work to facilitate effectiveness and efficiency of library operations and services. The implication of not using this may result in losing some vital knowledge that will improve the quality of operations and services in library.

Communication technologies are integrated with some form of collaboration (planning for collaboration or organizing collaborative work). Collaboration technologies are often referred to as groupware or as workgroup productivity software. However, it is technology designed to facilitate the work of groups. It is also used to communicate, cooperate, coordinate, solve problems, compete, or negotiate (APO 2010). Although traditional technologies like the

telephone qualify as groupware, the term is used only to refer to a specific class of technologies relying on modern computer networks, such as e-mail, newsgroups, videophones, or chat.

In addition, groupware technologies are typically categorized along two primary dimensions: 1.Whether users of the groupware are working together at the same time ("real-time" or "synchronous" groupware) or at different times ("asynchronous" groupware) 2.Whether users are working together in the same place ("collocated" or "face-to-face") or in different places ("non-collocated" or "distance")

Many scholars developed different groupware of KMTs that facilitate collaboration. Gilchrist (2003) developed a taxonomy of groupware that lists twelve different categories of KMTs as follows: electronic mail and messaging; group calendaring and scheduling; electronic meeting systems; desktop video, real-time synchronous conferencing; non-real-time asynchronous conferencing; group document handling workflow; workgroup utilities and development tools; groupware services; groupware and KM frameworks; groupware applications; collaborative internet-based applications and product etc groupware represents a class of software that helps groups of colleagues *(workgroups)* attached to a communication network (Local Area Networks [LANs]) to organize their activities e.t.c. Typically, groupware supports the following operations: scheduling meetings and allocating resources, e-mail, *password protection for documents,* telephone utilities, electronic newsletters, and file distribution.

In addition to the above, the communication technologies mostly used for KM include the telephone, fax, videoconferencing, teleconferencing, chat rooms, instant messaging, phone text messaging (SMS), Internet telephone (voice over IP or VOIP), e-mail, and discussion forums (Gilchrist, 2003). Communication is said to be **dyadic** when it occurs between two individuals

(e.g., a telephone call). Teleconferencing, on the other hand, may have more than two participants interacting with one another in real time. Detlor (2003) opined that videoconferencing introduces a multimedia component to the communication channel as participants can not only hear (audio) but also see the other participants (audiovisual). Desktop videoconferencing is similar but does not require a dedicated videoconference facility. Simple and inexpensive digital video cameras can be used to transmit images. The visual component is especially useful when demonstrations are presented to all participants.

The following are more examples of KMTs used in operations and services in organizations.

Artificial Intelligence (AI) addresses the challenges of capturing, representing, and applying knowledge long before the term *knowledge management* entered popular usage. AI developed automated reasoning systems that make use of explicit knowledge representations in order to provide expert-level advice, troubleshooting, and other forms of support to knowledge workers. Similar AI technologies is applied to analyze and summarize text or to automatically classify content (e.g., automated taxonomy tools) (Franco, 2007). However, many of the automated reasoning capabilities studied in AI research are encapsulated in autonomous pieces of software code, called intelligent agents or software robots ("soft-bots"). These agents act as proxies for knowledge workers and can be tasked with information searching, retrieving, and filtering functions. .

Taxonomy: is a technique that provides the structure to organize information, documents, and libraries in a consistent way. This structure assists people to efficiently navigate, store, and retrieve needed data and information across the organization. It builds a natural workflow and knowledge needs in an intuitive structure. Taxonomy can be considered as a classification

system, i.e., 'The Table of Contents' for an organization's knowledge capital. Taxonomy also provides pointers to human-based expertise and knowledge (Franco, 2007).

A taxonomy typically includes: A navigable hierarchy of concepts and terms, and Information "tags" that further identify and categorize content elements. Taxonomy can also include labeling of metadata, which allows the primary data or information to be systematically managed and manipulated. This metadata results in a hierarchical structure, which if done correctly, not only allows mapping by word pieces but also allows mapping by concept and inference.

Traditionally, the company intranet has quite often been the starting point for taxonomy solutions. Organizations have discovered how mission-critical information can be better classified, stored, and retrieved. An organization saves an enormous amount of time when staff are able to quickly search and retrieve information necessary for their work. A search engine cannot provide relevant content or context for a search. It does not conclusively tell users they have all and everything they need (Davenport, 1998). A search engine is most effective in targeted searches against known content or when combined with a taxonomy. Taxonomy facilitates effective retrieval, capturing, and recognition of content that is important to target users. Taxonomy helps users navigate from need to resource consistently and quickly. It provides context for information needs of the users. Taxonomy also provides a common frame of reference for employees.

Intelligent Filtering Tools: is defined as software programs that assist user and act on behalf: a computer program that helps in newsgathering, acts autonomously and on its own initiative, and improving its performance in executing its tasks (Woolridge and Jennings, 1995). These agents are autonomous computer programs, where their environment dynamically affects their behavior

and strategy for problem solving. They help users deal with information. Most agents are Internet based—that is, software programs inhabiting the Net and performing their functions there.

Many knowledge management applications make use of intelligent agents (Detlor, 2004). This range includes personalized information management (such as filtering e-mail), electronic commerce (such as locating information for purchasing and buying), and management of complex commercial and industrial processes (such as scheduling appointments and air traffic control).

A number of the techniques presented here address the phenomenon that can help discover existing valuable knowledge, experts, communities of practice, and other valuable intellectual assets that exist within an organization. The KM tools and techniques have an important enabling role in ensuring the success of KM applications. Techniques and tools developed for or targeted to KM applications, have proved to be quite useful in operations and services.

2.9.1 KMTs (Social Media) Utilization for Operations and Services

KMTs can be divided into four groups based on their functions. These groups are also relevant with social media tools. The four categories of KMTs can be divided into: knowledge capturing tools, knowledge evaluating tools, knowledge sharing tools and tools that can be used to store and present knowledge (Jashapara, 2004). Organizations like the libraries need the tools to be able to manage knowledge effectively.

Many social media tools belong to more than one category of Knowledge Management tools. Blogs, wikis or discussion forums can, for example, be easily used to capture knowledge. At the same time, they can be used to share knowledge. Information and discussions are saved for further use in those tools, so they belong to the category of storing and presenting

knowledge. These tools also work as knowledge evaluating tools because existing knowledge can easily be discussed, analyzed and saved in the new form. Although many Social Media tools belong to all categories, it does not mean that they are the best for each situation. Instant messaging for example can improve the sharing of knowledge if the knowledge is not supposed to be saved. Virtual communities might be a better solution than blogs or wikis for a group of people working together with specific documents.

McGee (2008) opined that the social media tool suitable for each situation depends on the type of communication. The type of communication depends on timing, location and the people attending to it. For example, asynchronous conversation and the sharing of knowledge always requires a tool to even happen. While planning corporate tools, the communication situations and the needs people have in them should be defined to be able to choose the best tool for each situation.

New social media tools are developed all the time. New opportunities for business rise when more and more people start using these tools and technical, IT inventions accelerate the development. Although, social media tools are already widely used in the internet and during free time, there exists a gap between the social media tools used in companies and out on the internet. Some social media tools are:

Blog: A blog is a Website that is usually maintained by one person or in some cases by a group of people. A blog normally contains descriptions about happenings, ideas or events in a chronological order. A key feature of a blog is that people can comment on it easily and that the texts in the blog stay as they were put. In many organizations blogs are used to present managers' ideas to the employees (Otala 2008; Tapscott and Williams 2008).

Furthermore, Dames (2004) opened that blogs are becoming much more common, as businesses, politicians, policy makers, and even libraries and library associations have begun to blog as a way of communicating with their patrons and constituents.

Several librarians publish in blogs that offer a wealth of information about social software and its uses. Blogs not only offer a new way to communicate with customers, but they have internal uses as well. For example, large libraries can use a well-formed blog to exchange ideas and information about reference services, training initiatives, or research issues etc. These questions and answers can be cross-indexed and archived, which helps build a knowledge network among the participating members. Most importantly, the price of setting up a well-formed, secure blog and leveraging it into a knowledge and content management tool is a pittance when compared to the cost of other, proprietary solutions. At present, majority of blogs are published exclusively in text. The next generation of blogs, however, will implement audio and video elements, bringing a sophisticated multimedia blend to the medium.

Another tool used, according to Holmberg (2008) and Otala (2008) is **discussion forum**, which can be a Web page or part of the page where people can discuss freely about different subjects. Discussions are normally categorized under different subjects and old messages are saved to be scanned later on. Discussion forums save all conversations and are functional in asynchronous conversations. They can also be used as information bases although information finding might be complicated if the search is not well developed.

While Otala (2008) di**s**cussed Wiki as KMT**,** which is the collection of linked Web pages that can openly be edited by users; users can add new pages and new links between wiki pages easily. Wiki is an effective tool for sharing knowledge. Free dictionary Wikipedia on the Internet is the most well known wiki. She claims that an internal corporate wiki is like an Intranet except

that it is free and everybody is allowed to edit it. According to Tapscott and Williams (2008), wikis are going to be the standard tools (like e-mail and instant messaging) in workplaces.

Wikis are web-based software that supports concepts such as open editing, which allows multiple users to create and edit content on a website. A wiki site grows and changes at the will of the participants. People can add and edit pages at will, using a Word-like screen, without knowing any programming or HTML commands. More specifically, a wiki is composed of web pages where people input information and then create hyperlinks to another page or new pages for more details about a particular topic. Anyone can edit any page and add, delete, or correct information. A search field at the bottom of the page helps to enter a key word for the information being searched for. Today, two types of wikis exist: public wikis and corporate wikis. Public wikis were developed first and are freewheeling forums with few controls. Corporations have been harnessing the power of wikis to provide interactive forums for tracking projects and communicating with employees over their in-house intranets.

Corporate wikis differ from public wikis in that they are more secure and have many more navigation, usage, and help features. Corporate wikis are used for project management and company communications as well as discussion sites and knowledge databases. A wiki can be established for a particular project for example library automation system, with the project team given access to update the status of tasks and add related documents and spreadsheets. Its central location makes it easy to keep everyone informed and up-to-date regardless of his or her home office, location, or time zone. For security reasons, corporations usually buy wiki software rather than lease space on the Internet, and they set up the wiki behind the company's firewall as part of an intranet or as an extranet if customers or vendors are allowed access. In addition, corporations look for wiki software that have authorization and passwords safeguards, “rollback” versions so

that information can be restored to its former state, and easy upload capabilities for documents and images. Some wikis notify users when new information is added. This is an especially nice feature for corporate projects where fast responses are required.

An example of a wiki is *Wikipedia*, a free encyclopedia written, literally, by thousands of people around the world. Wikis exist for thousands of topics (World Wide Wiki: Switch Wiki). Wikis support new types of communications by combining Internet applications and websites with human voices. That means people can collaborate online more easily, whether they are working together on a brief or working with a realtor online to tour office space in another city. Outside the law office, it means customer service representatives can interact with customers more readily, which should advance e-commerce (Leuf and Cunningham, 2001).

2.10 Challenges Encountered in the KM/KMTs Utilisation

The failure factors are organised into two broad categories: causal and resultant. Causal factors refer to the broad organisational and managerial issues that are required to implement KM successfully. Resultant factors on the other hand deal with specific problems and can be regarded more like the symptoms rather than the disease. The following failure factors are identified and discussed in the work.

a. Causal Failure Factors: 1. Lack of performance indicators and measurable benefits; 2. Inadequate management support; 3. Improper planning, design, coordination, and evaluation; 4. Inadequate skill of knowledge managers and workers; 5. Problems with organisational culture; 6. Improper organisational structure

b. Resultant Failure Factors: 1. Lack of widespread contribution; 2. Lack of relevance, quality, and usability; 3. Overemphasis on formal learning, systematisation, and determinant needs; 4. Improper implementation of technology; 5. Improper budgeting and excessive costs; 6. Lack of

responsibility and ownership; 7. Loss of knowledge from staff defection and retirement (Alan, 2014).

Furthermore, some common pitfalls to avoid that IBM Institute for Knowledge-Based Organizations has identified a number of important roadblocks that organizations typically face when implementing knowledge management programs. These roadblocks are:

- Failure to align knowledge management efforts with the organization's strategic objectives.
- Creation of repositories without addressing the need to manage content
- Failure to understand and connect knowledge management into individuals' daily work activities.
- An overemphasis on formal learning efforts as a mechanism for sharing knowledge
- Focusing knowledge management efforts only within organizational boundaries. (IBM Institute for Knowledge-Based Organizations Research, 2002)

Research conducted in the past few years on knowledge management projects has uncovered a number of difficulties in implementing knowledge management tools. Among these difficulties are the following: insufficient resources are available to structure and update the content in repositories; poor quality and high variability of content quality results from insufficient validating mechanisms; content in repositories lacks context, making documents difficult to understand; Individual employees are not rewarded for contributing content, and many fear sharing knowledge with others on the job; and search engines return too much information, reflecting lack of knowledge structure or taxonomy.

Sen (2013) observed that the major challenges to knowledge management are: sharing and attainment of expertise, handling tacit knowledge, legal issues, etc. One reason why it is

difficult to design successful knowledge management is that ‘knowledge is a slippery object’ (Winter, 1987). If it is difficult to agree on what knowledge means it is of course even more difficult to agree on how to manage it. There have been different attempts to work out what are the most important distinctions between different kinds of knowledge and different taxonomies have been proposed (Lam 2000). Knowledge may be embodied in people or built into artefacts. Much knowledge is collective rather than individual and it may be embedded in organisations or networks (Arrow 1994). Standing alone, it is intangible and difficult to grasp. The very meaning of knowledge differs depending on context.

The analysis of the four kinds of knowledge shows that, information technology increases the stock of codified knowledge and that skill and competencies (tacit and explicit) related to the use of ICT- technologies become increasingly important. But it also follows that the rapid change that is a major consequence of the wide use of ICT gives an even stronger weight to tacit skills. This is one reason why outstanding experts in management, finance and science get even better paid in the learning economy. If their skills can readily be transferred to expert systems it follows then there would be a different development of income distribution. Individual knowledge remains important and attempts to gather it and codify it into data banks to be shared among large numbers of employees will often prove costly and result in information overflow (Bengt-Åke and Peter, 2014).

Reiser (2013) listed ten challenges encountered in knowledge management, namely:

1. **Security:** Providing the right level of security for knowledge management is key. Sensitive information should be shielded from most users, while allowing easy access to those with the proper credentials.
2. **Getting people motivated:** Overcoming organizational culture challenges and developing a culture that embraces learning, sharing, changing, improving can't be done with technology. There is no use in launching a tool if there is no drive to share the knowledge.
3. **Keeping up with technology:** Determining how knowledge should be dispensed and transferring it quickly and effectively is a huge challenge. Constantly changing structures mean learning how to be smart, quick, agile and responsive – all things a KM tool must be able to accomplish.
4. **Measuring knowledge:** Knowledge is not something that can be easily quantified, and is far more complex because it is derived out of human relationships and experience. The focus should be on shared purpose rather than results or efforts.
5. **Overcoming shared leadership:** KM tools allow others to emerge as voices of power within an organization. Workers are given a "voice", which can sometimes cause internal conflict.
6. **Keeping data accurate:** Valuable data generated by a group within an organization may need to be validated before being harvested and distributed. Keeping information current by eliminating wrong or old ideas is a constant battle.
7. **Interpreting data effectively:** Information derived by one group may need to be mapped or standardized in order to be meaningful to someone else in the organization.

8. **Making sure information is relevant:** Data must support and truly answer questions being asked by the user, and requires the appropriate meta-data to be able to find and reference. Data relevancy means avoiding overloading users with unnecessary data.
9. **Determining where in the organization KM should reside:** Does KM fall under HR, IT, communications? This decision will determine what drives knowledge sharing initiative and who will be responsible for maintaining the community.
10. **Rewarding active users:** Recognizing the users who actively participate and contribute to a knowledge database will not only encourage them to continue contributing, but will also encourage other users to join.

Individual factors, e.g. personality traits, organizational factors, e.g. climate and culture, and demographic factors, e.g. education, age, gender, all influence employees' motives and willingness to share knowledge. Since knowledge sharing is highly dependent on people's willingness to share with one other what they know, organizations can only facilitate and promote the process of knowledge sharing through effective knowledge management practices.

2.11 Summary of the Review

It is certainly a good idea to first identify the 'key knowledge areas' in the organization that, if better managed, would truly make a big difference in performance. As a guideline, for each key knowledge area identified, it is good KM practice to develop a knowledge base (to maintain the critical explicit knowledge) and a community of practice or knowledge network around this key knowledge area (to surface and transfer the tacit knowledge).

Literature shows that knowledge can be shared through a variety of tools namely: advanced search tools, knowledge clusters, expert locator, collaborative virtual workspaces, collaborative physical workspace, knowledge café, community of practice, groupware tools,

electrical working places or virtual worlds etc. Thus, these tools help people from different business units, groups or situations to meet each other and interact. In the case of tacit knowledge, people can express their ideas, thoughts and questions in formal and informal manner that support interactivity and collaboration. However, it supports the sharing of tacit knowledge that is hard to document. When tacit knowledge is shared with other people, it might be converted to explicit knowledge and can be collected by all information seekers/customers freely through KMTs (wikis, blogs or other interactive channels).

Literature, have shown how organisations (business outfits) use KMTs in operations and services but to the best of the researcher's knowledge no body has written something on KMTs (IT and Non IT) holistically on Nigeria libraries for operations and services delivery. Thus, this is the focus of the researcher.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter comprises of the following sub-headings: population of the study; sample and sampling techniques adopted; instruments for data collection; reliability and validity of the instruments used and procedure for data collection and analysis.

3.2 Research Method Adopted

Survey research method was adopted for this study. Kerlinga and Baileg (2008) stated that survey research attempts to determine the incidence, distribution and inter-relatedness among sociological variables. It usually focuses on vital facts, beliefs, opinions, attitudes, motivations and behaviours of people. Colorado State University (2009) posited that survey makes measurement easier and the results can be statistically significant even when analysing multiple variables. Survey approach refers to a group of methods, which emphasize quantitative analysis, where data for a large number of organizations are collected through methods such as mail questionnaire, telephone interviews, or from published statistics, and these data are analyzed using statistical techniques (Gable, 1994). It seeks to discover relationships that are common across organizations and provide generalisable statements about the object of study on its relevance, Cohen et. al.(2007) stated that survey method relies on large-scale data conveniently derived from questionnaire, t-test scores and chi square test.

The researcher found this methodology to be relevant for this study because KMTs utilisation in library operations and services require in depth understanding through exploration of data.

3.3 Population of the Study

The population of this study consists of Federal university libraries in the Northern states of Nigeria. According to the National Universities Commission (2015) there are a total of twenty-two (22) Federal universities in the Northern states of Nigeria. The subjects of the study are library staff. The choice of the library staff is informed by the fact that, KMTs utilization for library operations and services in institutions is a collective responsibility of all categories of staff for effectiveness and efficiency of services delivery. It requires the input of all staff.

A survey of the Federal university libraries in the Northern states of Nigeria indicated that there are 967 (Nine hundred and sixty seven) library staff. Below is the breakdown of the number of staff in each federal university library according to geo-political zones:

Table 3.1: Total Number of Library Staff in Federal University Libraries in Northern

North Central	**Year of Est.**	**No of Lib staff**
1. Federal University of Technology Minna Library	1982	54
2. Federal University Lafia Library Nesarawa State	2011	27
3. Federal University Lokoja Library	2011	19
4. Federal University Abuja Library	1988	66
5. Francis Sulemanu Idachaba Library (University of Agriculture, Makurdi)	1988	62
6. University of Ilorin Library, Illorin	1975	42
7. University of Jos Library	1975	118
Total		**388**

North East		Year of Est.	No of Lib staff
1.	Abubakar Tafawa Balewa University Bauchi Library	1988	84
2.	Federal University Kashere, Library Gombe State	2011	16
3.	Federal University Wukari, Library Taraba State	2011	14
4.	Ibrahim Badamasi Babangida Library (Modibbo Adama University of Technology, Yola)	1988	29
5.	University of Maiduguri Library	1975	27
	Total		**170**

North West		Year of Est.	No of Lib staff
1.	Kashim Ibrahim Library, Ahmadu Bello University, Zaria	1962	167
2.	Bayero University Kano Library	1975	94
3.	Federal University Gashua Library	2013	10
4.	Federal University Dutse Library, Jigawa State	2011	27
5.	Federal University Dutsin-Ma Library, Katsina State	2011	46
6.	Federal University Birnin Kebbi Library	2013	18
7.	Federal University Library, Gusau	2013	12
8.	Nigerian Defense Academy Library, Kaduna	1985	27
9.	The Police Academy Wudil Library	2012	8
10.	Abdullahi Fodiyo Library Usumanu Danfodiyo University, Sokoto	1975	63
	Total		**409**
	Grand Total		**967**

Source: University Librarian office, 2014

3.4 Sample and Sampling Technique

For the purpose this study, a proportionate stratified random sampling technique was adopted. According to Fienberg (2003) stratified random sampling is the process of dividing the population into distinct subpopulations called strata, and within each stratum a separate random sampling is selected proportionally. In proportionate stratified random sampling, the size of each stratum is proportionate to the population size of the strata when looked at across the entire population. This means that each stratum has the same sampling fraction. Based on this, six Federal university libraries were selected (two from North Central, two from North East and two from North West). Table 3.2 shows the sample size of library staff.

Also, a total of Four Hundred and Twenty Four (424) library staff were selected randomly as sample size. This figure was considered adequate because it represents more 30% of the library staff. Roscoe (1969) and Nwana in Obasi (2000) of the opinion that a sample of 30% is considered adequate if a population is in many hundreds.

Table 3.2: Sample Size Distribution of Library Staff

Geo-political Zone	Sampled University Libraries	Year of Establishment	No. of Staff
North Central	Federal University of Technology Minna Library	1982	54
	Federal University Lafiya Library Nasarawa	2011	27
North East	IBB Library (Modibbo Adama University of Technology, Yola)	1988	29
	Abubakar Tafawa Balewa University Library, Bauch	1988	84
North West	Kashim Ibrahim Library, Ahmadu Bello University, Zaria	1962	167
	Abdullahi Fodiyo Library,Usumanu Danfodiyo University, Sokoto	1975	63
Total			**424**

3.5 Instrument for Data Collection

The questionnaire was designed essentially for collecting data on KMTs Utilisation for library operations and services in Federal University libraries in the Northern states of Nigeria. Osuala (1993) and Sambo (2005) argued that questionnaire is more economical for reasons of time and funds. In addition, EJorg and Gall (1983) described the adoption of questionnaire as the most common instrument for data collection in survey research. The questionnaire used for collecting the required data provided answers to the research questions and hypotheses raised in the study. The questionnaire is divided into two Sections (Section A: personal data; while, Section B: for research questions) respectively.

In addition, the Likert scale was used the research questions two, three and four in designing the question for the respondents. They are: (a.) Never Almost, Never, Occasionally/Sometimes, Almost every time and Every time (b.) No effect, Minor effect, Neutral, Larger effect and Major effect (c.) Very satisfied, Satisfied, Neutral, Unsatisfied and Very unsatisfied**.**

3.6 Validity of the Instruments

To determine the validity of the instruments used in this study, a pilot study was conducted. Face and content validity was employed to determine the validity of the research instrument. The supervisors and research experts helped in determining the validity of the instrument. This is necessary because the researcher had to make sure that the content and construct of the questionnaire are in line with the ability and experience of the respondents.

3.7 Reliability of the Instruments

In this method, a pilot study was carred out using the Library staff of IBB University, Lapai, Niger State. Leedy and Ormrod (2005) recommended that a researcher may sometimes need to do a brief exploratory investigation, or pilot study, to try out particular procedures,

measurement of instruments, or methods of analysis. They state that a pilot study is an excellent way to determine the feasibility of a study. The pilot study, specifically determines the following: clarity of instructions; time taken to complete the questionnaire; clarity and appropriateness of the questions. The correlation coefficient of the test was computed using Pearson Product Moment Correlation Coefficient (PPMCC) cronbscha's alpha p 0.05. The value for the reliability obtained during pilot testing of the instrument is 0.87. This is reliable because Zinbardo (1976) in Razaq and Ajayi (2000) supported that "coefficients between 0.70 and 0.90 are considered good indications of reliability". And the result obtained is within the figure.

3.8 Procedure for Data Collection

The questionnaire was administered with the help of well-trained research assistants. The researcher solicited for the cooperation of the University Librarians of the selected institutions for the administration of the questionnaire and conduct of the interview with their respective staff where necessary. Four weeks were used for distribution and collection of the research instrument. Subsequent follow up was undertaken to ensure speedy completion and quick return of the questionnaires. In each university, the research assistant sent back the questionnaire by courier/transportation messaging system to the researcher.

3.9 Procedure for Data Analysis

The data collected for this research was presented and analysed using the Statistical Package for Social Scientists (SPSS) in order to obtain answers to the research questions formulated and test the hypotheses respectively. Descriptive statistics were used considering mean, frequency distribution tables, and simple percentages. However, hypothesis one and hypothesis two were tested using ANOVA. While, Chi-square was used to find the effect in the hypothesis three.

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CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter is on the analysis and discussion of the data and is presented in the following sub-headings:

4.2 Response Rate

4.3 Data Analysis and discussion

4.3.1 Descriptive Analysis

4.3.2 Inferential Analysis

4.2 Response Rate

Out of the 424 copies of the questionnaire distributed to the respondents, a total of 332 (78%) copies were returned duly completed and found usable for this study. The high response rate was realized because the research assistants used were library staff in their respective libraries. It can also be attributed to the fact that the respondents were given up to three weeks within which to complete and return their copies of questionnaire. The response rate of library staff according to university libraries is shown in table 4.1:

Table 4.1 Response Rate of the Questionnaire Distributed and Returned for the Study

The Federal University Libraries Studied in the Northern States of Nigeria	Response Rate of the Questionnaire		
	Questionnaire Distributed	**Questionnaire Returned**	**Percentage (%) of the Questionnaire Returned**
IBB Library Federal University of Technology Minna	54	41	76
Federal University Library Lafia, Nasarawa	27	21	78
IBB Federal University of Technology, Yola	29	22	76
Abubakar Tafawa Balewa University Library, Bauchi	84	56	67
Kashim Ibrahim Library, ABU, Zaria	167	129	77
Abdullahi Fodiyo Library, UDU Sokoto	63	42	67
TOTAL	**424**	**332**	**78**

Table 4.1 shows that there are differences in response rate from the libraries studied. It is shown from the table that Kashim Ibrahim Library ABU, ATBU University Library and Abdullahi Fodiyo Library; UDU Sokoto had more respondents than others.

4.3 Data Analysis and Discussion

In this section the data collected for the study are analysed and discussed through descriptive analysis and inferential analysis.

4.3.1 Descriptive Analysis

This involves a descriptive analysis of the KMTs utilised for library operations and services in the Federal university libraries in area of study. Thus, for convenience of the discussion, the researcher adopted the average benchmark of 50% response score as minimum score for acceptance as being significant, between 30-49% scores as being less significant and less than 30% scores as not significant. However, for the table that adopted Likert scale, mean score of 3.0 and above was considered significant while 2.9 below was considered as not significant because the researcher used 5-scale system that agree with this bench mark.

Thus, the data collected with respect to the research questions raised in the study were analysed and discussed as follows:

4.3.1.1 Knowledge Management Tools (KMTs) Available and Utilised for Library Operations and Services

This is to identify the various KMTs available and used for library operations and servives in Federal university libraries in the Northern states of Nigeria. In order to achieve this objective, a list of KMTs (for creating and sharing of knowledge) available for library operations and services were outlined for the respondents to tick as many are applicable. Table 4.2 to 4.5 shows the details of the data collected:

4.3.1.1.1 Knowledge Creation Tools (KCTs) Available for Library Operations and Services in the university libraries Studied

This is to examine the various KCTs available for library operations and servives in Federal university libraries in the Northern States. In order to achieve this objective, a list of

KCTs available for library operations and services were outlined for the respondents to tick as many as are found appropriate. Table 4.2 shows the detailed analysis of the data collected.

Table 4.2 shows the knowledge creation tools available and utilised in library operations and services in the university libraries under study.

Table 4.2: Knowledge Creation Tools (KCTs) Available for Library Operations and Services in the Federal University Libraries Studied.

Knowledge Creation Tools	University Libraries Studied											
	IBBL FUTM		FUTNL		IBBL FUTY		ATBUL		KIL,ABUZ		UDUL	
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%
IT KCTs												
Knowledge Base (Wikis)	23	56.1	4	19	6	27.3	37	48.1	57	44.2	4	9.5
Social Network (Facebook, Blog, Etc.)	8	19.5	9	42.9	4	18.2	42	54.5	65	50.4	27	64.3
Advanced Search Tools	15	36.6	12	57.1	2	9.1	35	45.5	70	54.3	27	64.3
Expertise Locator	7	17.1	0	0.0	6	27.3	27	35.1	13	10.1	20	47.6
Knowledge Transcribing Systems	19	46.3	9	42.9	2	9.1	7	9.1	9	7	4	9.5
Internet	23	56.1	17	81	12	54.5	42	54.5	70	54.3	27	64.3
Intranet/ Extranet	8	19.5	12	57.1	4	18.2	22	28.6	39	30.2	12	28.6
Audio/Visual Recording Systems	14	34.1	0	0.0	2	9.1	30	39	10	7.8	19	45.2
Content Management System	19	46.3	4	19	4	18.2	30	39	14	10.9	20	47.6
Document Management System	14	34.1	12	57.1	2	9.1	16	20.8	24	18.6	8	19
Artificial Intelligence Tools	4	9.8	4	19	2	9.1	7	9.1	14	10.9	4	9.5
Simulation Tools	18	43.9	5	23.8	4	18.2	27	35.1	9	7	19	45.2
Online Computer Library Center (OCLC)	4	9.8	5	23.8	6	27.3	34	44.2	65	50.4	4	9.5
Help Desk Technologies	18	43.9	12	57.1	4	18.2	26	33.8	14	10.9	15	35.7
NON IT KCTs												
Space for Guidance and Counseling	11	26.8	9	42.9	2	9.1	18	23.4	34	26.4	12	28.6
Open Space for Ad-Hoc/ Informal Interaction	4	9.8	21	100	4	18.2	12	15.6	28	21.7	8	19
Space for Team Collaboration	3	7.3	21	100	4	18.2	23	29.9	34	26.4	19	45.2
Space for Photocopying	14	34.1	4	19	12	54.5	33	42.9	19	14.7	19	45.2
Seminar/ Conference/Meeting Room	37	90.2	13	61.9	6	27.3	33	42.9	65	50.4	16	38.1
Space for Debating	3	7.3	0	0.0	10	45.5	37	48.1	10	7.8	27	64.3
Space for Discussion/ Brainstorming	27	65.9	13	61.9	6	27.3	36	46.8	27	20.9	20	47.6
Help Desk	4	9.8	5	23.8	0	0.0	3	3.9	5	3.9	0	0.0
Others	4	9.8	0	0.0	0	0.0	5	6.5	0	0.0	4	9.5

KEYS:

IBBL FUTM: IBB Library, Federal University of Technology Minna

FULL: Federal University Library, Lafia

IBBL FUTY: IBB Library, Federal University of Technology Yola

ATBUL: Abubakar Tafawa Balewa University Library, Bauchi

KIL, ABUZ: Kashim Ibrahim Library, Ahmadu Bello University, Zaria

AFL UDU: Abdullahi Fodiyo Library, Usman Danfodio University, Sokoto

Table 4.2 shows that the IT based KCTs mostly available for creating knowledge in the university libraries studied with 50% and above response scores were: Internet with 56.1%, 81.0%, 54.5%, 54.5% 54.3% and 64.3% response scores in all university libraries studied; Advance Search Tools had 57.1%, 54.3% and 64.3% scores in FULL, KIL ABUZ and AFL UDUL respectively. While, Social Networks and OCLC had 50.4% and 50.4% response scores in KIL ABUZ.

For Non-IT KMTs available for knowledge creation; Open Space for ad-hoc/informal Interaction and Space for Team Collaboration had 100.0% and 100.0% response scores in FULL. While, Seminar/Conference/Meeting Room had 90.2%, 50.4%, and 61.9% response scores in IBBL FUTM, KIL ABUZ and IBBL FUTY respectively. The reason for the high responses may be for the fact that all university libraries in Nigeria always prepare for accreditation and these tools are multi-purpose in utilisation for information and knowledge management. Another reason might be that some universities like to measure up with the standard of best practices of universities in the world in operations and services delivery. Therefore, university libraries that aim at achieving the goal of supporting: teaching, learning and research always go for the best KMTs and utilise them for operations and services.

It is shown from Table 4.2 that IT-KCTs were available to some extent in the university libraries studied with 30% - 49% response scores to include; Audio/Visual Recording Systems and Content Management System with 34.1%, 39.0%, 45.2%, 46.3%, 39.0%, and 47.6%

response scores in IBBL FUTM, ATBU and UDUL. While, Knowledge base (wiki) had 48.1% and 44.2% in ATBUL and KIL, ABUZ respectively. In addition, Intranet/Extranet had 30.2% in KIL ABUZ. This means that, the above KCTs were not highly available for library operations and services in the university studied. It also means that not all staff have the required tools in their working areas. Thus, staff might be missing vital knowledge that should be added to the knowledge base system.

Furthermore, Table 4.2 revealed the IT KCTs in the university libraries studied that were not available with less than 30% scores to include: Artificial Intelligence Tools with 9.8%, 19.0%, 9.1%, 9.1%, 10.9% and 9.5% scores in the university libraries studied**.** Interestingly, social networks had 19.5%, 18.2% and 24.8% in IBB FUTM, IBBL FUTY and KIL ABUZ. While, Online Computer Library Center (OCLC) that should have been highly scored had 9.8%, 23.8%, 27.3%, and 9.5% response scores in FUTM, FULL, IBBL FUTY and UDU respectively.

However, the Non-IT KCTs that showed not available with response score less than 30% in the table to include: Space for Guidance and Counciling and Help Desk in all university libraries studied. In addition, Space for Team Collaboration had 7.3%, 18.2%, 29.9% and 26.4% in IBBL FUTM, IBBL FUTY, ATBUL and KIL ABUZ respectively.

In fact, all universities studied were affected in one way or the other; the reason might be that some university library staff are conservative and not creative to meet the test of best library global best practices. Another reason of non-availability of these KCTs may be that some librarians cannot defend or convince the management for adoption or adaption of these systems, which may be one of the major factors that cause non-availability.

The above analysis, shows that more than 80% of the KCTs are not available for library operations and services, which means that libraries in the studied area have been missing much

knowledge that would have better facilitated operations and services. This may affect the growth of the libraries and librarians in competing with world best practices.

4.3.1.1.2 Knowledge Sharing Tools (KSTs) Available for Library Operations and Services

This is to examine the types of KSTs available for library operations and servives in the Northern states of the Federal university libraries. In order to achieve this objective, a list of KSTs available for library operations and services were outlined for the respondents to tick as many as are apllicable. Table 4.3 shows the detailed analysis of the data collected:

Table 4.3 Knowledge Sharing Tools Available for Library Operations and Services

Knowledge Sharing Tools	University Libraries Studied											
	IBBL FUTM		FULL		IBBL FUTY		ATBUL		KIL ABUZ		AFL UDUS	
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%
IT KSTs												
Knowledge Bases (Wikis)	22	53.7	4	19	2	9.1	25	32.5	41	31.8	19	45.2
OCLC	7	17.1	4	19	6	27.3	26	33.8	10	7.8	19	45.2
Network Forum (Librarians Forum)	25	61	4	19	4	18.2	27	35.1	79	61.2	20	47.6
Social Network (Facebook, Blog, etc.)	41	100	13	61.9	14	63.6	27	35.1	65	50.4	20	47.6
Expertise Locator	3	7.3	0	0.0	0	0.0	12	15.6	5	3.9	12	28.6
Knowledge Portal	0	0.0			2	9.1	14	18.2	0	0.0	12	28.6
Internet	22	53.7	12	57.1	14	63.6	43	55.8	70	54.3	23	54.8
Corporate Telephone System	7	17.1	4	19	0	0.0	15	19.5	23	17.8	12	28.6
Audio/Video Conferencing	14	34.1	0	0.0	2	9.1	7	9.1	10	7.8	4	9.5
Electronic Meeting System	7	17.1	9	42.9	0	0.0	12	15.6	15	11.6	7	16.7
Intranet/ Extranet	15	36.6	12	57.1	6	27.3	24	31.2	33	25.6	12	28.6
Decision Support System	7	17.1	5	23.8	8	36.4	19	24.7	5	3.9	8	19.0
Content Management Systems	13	31.7	0	0.0	4	18.2	13	16.9	15	11.6	8	19.0
Document Management Systems	26	63.4	8	38.1	4	18.2	27	35.1	27	20.9	16	38.1
Artificial Intelligence Tools	3	7.3	4	19	4	18.2	9	11.7	10	7.8	4	9.5
NON-IT KSTs												
Open Space for Ad-Hoc/Informal Interaction	14	34.1	5	23.8	6	27.3	14	18.2	10	7.8	4	9.5
Space for Team Collaboration	4	9.8	4	19	6	27.3	15	19.5	25	19.4	8	19.0
Space for Prototyping	11	26.8	9	42.9	4	18.2	39	50.6	23	17.8	12	28.6
Problem Solving Table	10	24.4	5	23.8	0	0.0	7	9.1	15	11.6	4	9.5
Space for Debating	3	7.3	0	0.0	0	0.0	0	0.0	10	7.8	0	0.0
Space for Guidance and Counseling	11	26.8	5	23.8	8	36.4	20	26.	15	11.6	8	19
Seminar /Conference/Meeting Room	23	56.1	13	61.9	6	27.3	39	50.6	70	54.3	23	54.8
Space for Discussion/ Brainstorming	28	68.3	13	61.9	6	27.3	27	35.1	46	35.7	12	28.6
Help Desk	11	26.8	0	0.0	8	36.4	16	20.8	15	11.6	8	19
Space for Tutorials/ Classroom	8	19.5	0	0.0	4	18.2	21	27.3	10	7.8	16	38.1
Learning Common	12	29.3	4	19	6	27.3	32	41.6	25	19.4	16	38.1
Others	4	9.8	0	0.0	4	18.2	9	11.7	0	0.0	4	9.5

KEY:

IBBL FUTM: IBB Library, Federal University of Technology Minna

FULL: Federal University Library, Lafia

IBBL FUTY: IBB Library, Federal University of Technology Yola

ATBUL: Abubakar Tafawa Balewa University Library, Bauchi

KIL, ABUZ: Kashim Ibrahim Library, Ahmadu Bello University, Zaria

AFL UDU: Abdullahi Fodiyo Library, Usman Danfodio University, Sokoto

Table 4.3 shows the IT based KSTs mostly available for sharing knowledge in the university libraries studied with 50% and above response scores among many include: Internet with 53.7%, 57.1%, 63.6%, 55.8%%, 54.3% and 54.8% response scores in all universities studied. Another KST that showed highly available is social networks with 100.0%, 61.9%, 63.6%, and 50.5% response scores in IBBL FUTM, FULL, IBBL FUTY, and KIL ABUZ. Surprisingly, Document Management system had 63.4% response score in IBBL FUTM. While for Non IT KSTs mostly available in the university libraries studied with 50% and above response score is Seminar/Conference/Meeting Room in all university libraries studied.

In addition, Space for Discussion and Brainstorming had 68.3% and 61.9% in IBBL FUTM and FULL respectively. The reason for this high rating for the IT based knowledge sharing tools might be that the universities in question have Internet facilities, which is the foundation for availability of KMTs. It is clear that almost all the universities studied have seminar/conference/ meeting rooms for knowledge sharing which indicates that the libraries and librarian value coming together to share ideas for operations and services delivery.

Some IT based KSTs that showed no significance (not available) with less than 30% response scores were: Electronic Meeting System, Knowledge Portal, and Corporate Telephone System in all university libraries studied. OCLC as which expectation has been high had 17.1%, 19%, 27.3% and 7.8% in IBB FUTM, FULL, IBBL FUTY and KIL ABUZ, while, Space for

Team Collaboration, Space for Debating and Space for Guidance and Councilling had response scores less than 30% in all university libraries studied.

Space for Tutorials/Classrooms had 19.5%, 0.0%, 18.2%, 27.3%, and 7.8% response scores in IBBL FUTM, FULL, IBBL FUTY, ATBUL, and KIL ABUZ. As it is very few KSTs were available for sharing knowledge for library operations and services in the university libraries studied. It shows a very high percentage of more than 60% were not available. This means that library staff were not collaborating with partner within and outside the library for operations and services delivery using KSTs, which also means that they may be losing a lot of vital knowledge that would have to achieve the dreams of 21st century library operations and services.

4.3.1.1.3 Knowledge Creation Tools (KCTs) Utilised for Library Operations and Services

In order to identify the types of KCTs utilised for library operations and services in Federal university libraries in the area of study, a research question was posed to this effect and respondents were asked to indicate as all the **KCTs** utilised in their respective libraries. Table 4.4 shows the responses:

Table 4.4. Knowledge Creation Tools Utilised for Library Operations and Services

Knowledge Creation Tools	University Libraries Studied											
	IBBL FUTM		FULL		IBBL FUTY		ATBUL		KIL ABUZ		UDUL	
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%
IT KCTs												
Knowledge Base (Wikis)	4	9.8	4	19	2	9.1	7	9.1	24	18.6	4	9.5
Social Network (Facebook, Blog, Etc.)	8	19.5	9	42.9	4	18.2	42	54.5	32	24.8	12	28.6
Advanced Search Tools	15	36.6	12	57.1	2	9.1	7	9.1	70	54.3	4	9.5
Expertise Locator	7	17.1	0	0.0	6	27.3	27	35.1	13	10.1	8	19
Knowledge Transcribing Systems	19	46.3	9	42.9	2	9.1	7	9.1	9	7	4	9.5
Internet	23	56.1	17	81	4	18.2	42	54.5	70	54.3	20	47.6
Intranet/ Extranet	8	19.5	4	19	4	18.2	22	28.6	39	30.2	12	28.6
Audio/Visual Recording Systems	4	9.8	0	0.0	2	9.1	30	39	9	7	19	45.2
Content Management System	14	34.1	8	38.1	4	18.2	30	39	14	10.9	20	47.6
Document Management System	14	34.1	4	19	6	27.3	16	20.8	24	18.6	8	19
Artificial Intelligence Tools	4	9.8	4	19	2	9.1	7	9.1	14	10.9	4	9.5
Simulation Tools	3	7.3	5	23.8	4	18.2	27	35.1	9	7.0	8	19
Online Computer Library Center (OCLC)	4	9.8	5	23.8	6	27.3	34	44.2	65	50.4	4	9.5
Help Desk Technologies	18	43.9	4	19	4	18.2	26	33.8	14	10.9	15	35.7
NON -IT KCTs												
Space for Guidance and Counseling	11	26.8	5	23.8	2	9.1	18	23.4	34	26.4	12	28.6
Open Space for Ad-Hoc/ Informal Interaction	4	9.8	8	38.1	4	18.2	12	15.6	28	21.7	8	19
Space for Team Collaboration	3	7.3	4	19	4	18.2	23	29.9	34	26.4	19	45.2
Space for Photocopying	14	34.1	4	19	6	27.3	5	6.5	19	14.7	4	9.5
Seminar/ Conference/Meeting Room	18	43.9	13	61.9	6	27.3	33	42.9	65	50.4	16	38.1
Space for Debating	3	7.3	0	0.0	10	45.5	37	48.1	10	7.8	19	45.2
Space for Discussion/ Brainstorming	19	46.3	8	38.1	6	27.3	36	46.8	27	20.9	20	47.6
Help Desk	4	9.8	5	23.8	0	0.0	3	3.9	5	3.9	0	0.0
Others	4	9.8	0	0.0	0	0.0	5	6.5	0	0.0	4	9.5

KEYS:

IBBL FUTM: IBB Library, Federal University of Technology Minna

FULL: Federal University Library, Lafia

IBBL FUTY: IBB Library, Federal University of Technology Yola

ATBUL: Abubakar Tafawa Balewa University Library, Bauchi

KIL, ABUZ: Kashim Ibrahim Library, Ahmadu Bello University, Zaria

AFL UDU: Abdullahi Fodiyo Library, Usman Danfodio University, Sokoto

Table 4.4: Shows the IT based KCTs mostly utilised with 50% and above response scores as follows: Internet had 56.1%, 81.0%, 18.2%, 54.5%, and 54.3% response scores in IBBL FUTM, FULL, IBBL FUTY, ATBUL, and KIL, ABUZ. While for Non-IT Seminar/Conference/ Meeting Room had 61.9% and 50.4% response scores in FUTNL and KIL ABUZ). This is highly utilised because they are available in all the university libraries studied. It shows means that many university libraries use it to discuss matters of library operations and services. Also, Raja et al. (2009) agreed with the assertion that the use of Information Technology in Knowledge Management would help to increase libraries' operational efficiency and cater to the ever-increasing needs of staff and clientele

Table 4.4 shows the IT based KCTs averagely utilised with response scores within 30% - 49% in the university libraries studied to include: Internet, 47.6 % response score in UDUL, Audio/Visual Recording Systems, 34.1%, 39% and 45.2% response scores in IBBL FUTM, ATBU and UDUL, while, Social Network had 42.9% score in FULL.

It is shown in the Table 4.4 that IT KCTs with less than 30% response scores are not significant to include: Artificial Intelligence Tools and Expertise Locator in all university libraries studied. Social Network had 19.5%, 18.2%, 24.8% and 28.6% response scores in IBBL FUTM, IBBL FUTY, KIL ABUZ and AFL UDUS. Online Computer Library Center (OCLC) had very low of 9.8%, 23.8%, 27.3%, and 9.5% response scores in IBBL FUTM, FULL, IBBL FUTY and AFL UDUS which indicates very low application.

Non-IT KCTs not much used for library operations and services that score less than 30% were: Open Space for Ad-hoc/ Informal Interaction and Help Desk in all university libraries studied, while, Space for Team Collaboration had 7.3%, 19.0%, 18.2%, 29.9% and 26.4% scores in IBBL FUTM, FULL, IBBL FUTY, ATBUL and KIL ABUZ respectively etc. This is so as, it showed "not available" in the previous table on knowledge creation for library operations and services. It might be taken that libraries and librarians in the area studied were not proactive in updating library's knowledge in operations and services to meet the test of 21st century best practices. Townley (2001) agreed with this view that when he said: "librarians do not manage knowledge about their organizations as they manage their resources. However, the emerging field of knowledge management offers academic libraries the opportunity to create knowledge to improve themselves and their institutions".

Another reason for poor utilisation of KCTs in Federal University Libraries studied might be linked to non-availability of internet facilities in the working table(s) of staff, technical expertise (training), and commitments to utilise the tools to create knowledge for library operations and services. Townley (2001) agreed with the statement that commitment, training, and support are key factors in the transfer of knowledge. If library personnel are not committed to achieving library goals, or if they are not well trained in the use of organizational knowledge, it is likely that efforts to manage knowledge will fail.

4.3.1.1.4 Knowledge Sharing Tools (KSTs) Utilised for Library Operations and Services

In order to answer the question that sought to identify the KSTs Utilised for Library Operations and Services in the university libraries studied; the respondents were requested to indicate their views. The responses collected and computed as were shown in table 4.5.

Table 4.5 Knowledge Sharing Tools Utilised for Library Operations and Services

Knowledge Sharing Tools	University Libraries Studied											
	IBBL FUTM		FUNL		IBBL FUTY		ATBUL		KIL,ABUZ		AFL UDUS	
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%
IT KSTs												
Knowledge Bases (Wikis)	15	36.6	4	19	2	9.1	25	32.5	41	31.8	4	9.5
Oclc (Worldcat)	7	17.1	0	0.0	6	27.3	26	33.8	10	7.8	19	45.2
Network Forum (Librarians Forum)	13	31.7	4	19	4	18.2	27	35.1	50	38.8	20	47.6
Social Network (Facebook, Blog, etc.)	22	53.7	13	61.9	14	63.6	27	35.1	52	40.3	20	47.6
Expertise Locator	3	7.3	0	0.0	0	0.0	12	15.6	5	3.9	4	9.5
Knowledge Portal	0	0.0	0	0.0	2	9.1	14	18.2	0	0.0	12	28.6
Internet	22	53.7	8	38.1	14	63.6	43	55.8	70	54.3	23	54.8
Corporate Telephone System	3	7.3	4	19	0	0.0	15	19.5	23	17.8	12	28.6
Audio/Video Conferencing	7	17.1	0	0.0	2	9.1	7	9.1	10	7.8	4	9.5
Electronic Meeting System	7	17.1	9	42.9	0	0.0	12	15.6	15	11.6	7	16.7
Intranet And Extranet	15	36.6	9	42.9	6	27.3	24	31.2	33	25.6	12	28.6
Decision Support System	7	17.1	5	23.8	8	36.4	19	24.7	5	3.9	8	19
Content Management Systems	13	31.7	0	0.0	4	18.2	13	16.9	15	11.6	8	19
Document Management Systems	15	36.6	8	38.1	4	18.2	27	35.1	27	20.9	7	16.7
Artificial Intelligence Tools	3	7.3	4	19	4	18.2	9	11.7	10	7.8	4	9.5
NON IT KSTs												
Open Space for Ad-Hoc/Informal Interaction	8	19.5	5	23.8	6	27.3	14	18.2	10	7.8	4	9.5
Space for Team Collaboration	4	9.8	4	19	6	27.3	15	19.5	25	19.4	8	19
Space for Prototyping	11	26.8	4	19	4	18.2	9	11.7	23	17.8	12	28.6
Problem Solving Table	10	24.4	5	23.8	0	0.0	7	9.1	15	11.6	4	9.5
Space for Debating	3	7.3	0	0.0	0	0.0	0	0.0	10	7.8	0	0.0
Space for Guidance and Counseling	11	26.8	5	23.8	8	36.4	20	26.0	15	11.6	8	19.0
Seminar /Conference /meeting Room	23	56.1	13	61.9	6	27.3	39	50.6	70	54.3	23	54.8
Space for Discussion/ Brainstorming	10	24.4	8	38.1	6	27.3	27	35.1	46	35.7	12	28.6
Help Desk	4	9.8	0	0.0	8	36.4	16	20.8	15	11.6	8	19
Space for Tutorials/ Classroom	8	19.5	0	0.0	4	18.2	21	27.3	10	7.8	16	38.1
Learning Common	12	29.3	4	19	6	27.3	16	20.8	25	19.4	4	9.5
Others	4	9.8	0	0.0	4	18.2	9	11.7	0	0.0	4	9.5

KEY:

IBBL FUTM: IBB Library, Federal University of Technology Minna

FULL: Federal University Library, Lafia

IBBL FUTY: IBB Library, Federal University of Technology Yola

ATBUL: Abubakar Tafawa Balewa University Library, Bauchi

KIL, ABUZ: Kashim Ibrahim Library, Ahmadu Bello University, Zaria

AFL UDU: Abdullahi Fodiyo Library, Usman Danfodio University, Sokoto

Table: 4.5 shows high response scores on the utilisation of some IT KSTs with 50% and above response to include, Internet in all university libraries studied. Social Network (facebook, blogs etc) had 53.7%, 61.9% and 63.6% response scores from IBBL FUTM, FUTNL and IBBL FUTY. In addition, non-IT KSTs recorded high above 50% score is Seminar/ Conference/ Meeting Room in all university libraries studied. The reason is that, the IT and non IT KSTs with high scores were shown available in previous tables, which mean that they facilitate and support knowledge sharing for operations and services delivery. Again, some staff in the university libraries studied used their mobile system to bridge the gap in Internet connectivity to use social networks to share knowledge for library operations and services.

This means that staff collaborate on issues of library operations and services. This is a fact because coming together of staff need either virtua or physical space for collaborations to facilitate knowledge sharing. This agrees with the view of Townsley (2013) that, in many standard organizations, people of like minds form teams and build relationships, trust, expertise, tools, and create a shared repertoire of resources, and artifacts that support present and future improvements. In addition Ohnson, (2001) and Wenger, (1998) have similar views that "communities of practice" (CoPs) have been found to be one of the effective means in managing

tacit knowledge within organisations. These CoPs are often at the centre of innovation and energy and identified as one of the knowledge management enablers.

Table 4.5 reveals that IT-KSTs utilised with average response sores of less than 30% in the university libraries studied are: Corporate Telephone System, Artificial Intelligent Tools, Audio/Video Conferencing, Electronic Meeting System, Knowledge Portal, Expertise Locator, Decision Support System and Content Management Systems, while, OCLC had 17.1%, 19%, 27.3% and 7.8% response scores in IBB FUTM, FUTNL, IBBL FUTY and KIL ABUZ. However, it also shows below 30% response scores in non-IT KSTs utilisation to include: Space for Team Collaboration, Problem Solving Table, Space Debating and Space for Tutorials/ Classroom in all university libraries studied.

The reason might be attributed to poor availability and awareness of the KSTs and also lukewarm the attitude of librarians towards creating value for sharing their knowledge for library operations and services. Another reason for poor utilization of these tools might be that libraries and librarians are not aware of the availability of these tools for knowledge sharing and some are afraid to lose their positions if they share their expertise, while some might not be interested in sharing their knowledge because they might feel that there is no benefit attached. Raja, Ahmad and Sinha (2009) remarked that some staff cannot share their knowledge and ideas when they feel there is no benefit in terms of salary increases or otherwise. The implication is that such librarians would not be able to compete with other professional members and cannot fit into the global standard of library practice in terms of acquisition, processing, storage and dissemination of information/knowledge.

Generally, in availability and utilization of knowledge creating and sharing tools in the university libraries studied are scored below average, which means that both IT and non IT

KMTs were not fully utilised for knowledge creation and sharing. It equally means that the libraries and librarians have been losing very important knowledge that would have improved services delivery because the KMTs that facilitate collaborative knowledge creation and sharing are not fully available and utilized. The implication is that, the library will continue to be moving forward and backward and spending a lot of money on training and retraining of staff which will affect short-time and long-time goals.

4.3.2 The Extent of KMTs utilization for Library Operations and Services in the University Libraries Studied

In order to find out the Extent of KMTs utilisation for Library Operations and Services in the university libraries studied; a research question was posed with respect to this and subsequently respondents were asked to indicate as many of the Extent of KMTs utilized for Library operations and services in the university libraries studied. Table 4.6 shows the responses:

Table 4.6: The Extent of KMTs Utilisation in the University Libraries Studied

KMTs	Extent of KMTs utilisation in library studied										
	Never		Almost Never		Occasionally/ Sometimes		Almost every time		Every time		Mean
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	
IT KMTs											
Artificial Intelligence Tools	80	24.1	33	9.9	108	32.5	27	8.1	5	1.5	1.8163
Audio/Video Conferencing	79	23.8	60	18.1	63	19	21	6.3	28	8.4	1.8434
Internet	35	10.5	29	8.7	54	16.3	91	27.4	97	29.2	3.3253
Knowledge Bases (Wiki. etc)	43	13	41	12.3	55	16.6	68	20.5	55	16.6	2.5211
Advanced Search Tools	27	8.1	25	7.5	68	20.5	88	26.5	66	19.9	2.9006
Expertise Locator	56	16.9	59	17.8	55	16.6	25	7.5	40	12	1.9247
Network Forum (Liberians Forum)	93	28	30	9	55	16.6	25	7.5	47	14.2	1.9669
Intranet/Extranet	89	26.8	51	15.4	46	13.9	14	4.2	41	12.3	1.7771
Electronic Meeting System	78	23.5	60	18.1	31	9.3	45	13.6	38	11.4	1.9910
Cooperate Telephone System	82	24.7	48	14.5	44	13.3	45	13.6	28	8.4	1.8976
OCLC	69	20.8	55	16.6	53	16	31	9.3	33	9.9	1.8886
Social Network (facebook, etc.)	48	14.5	29	14.5	49	14.8	82	24.7	61	18.4	2.6687
Decision Support System	94	28.3	57	17.2	26	7.8	52	15.7	5	1.5	1.5633
Content Management System	74	22.3	50	15.1	83	25	70	21.1	9	2.7	2.2530
NON IT KMTs											
Space for Guidance and Counselling	84	25.3	75	22.6	42	12.7	23	6.9	9	2.7	1.7319
Open Space for Ad-Hoc/ Informal Interaction	64	19.3	77	23.2	43	13	32	9.6	20	6	1.9367
Space for Team Collaboration	66	19.9	49	14.8	81	24.4	24	7.2	28	8.4	2.1777
Space for Prototyping	54	16.3	38	11.4	33	9.9	56	16.9	54	16.3	2.5964
Seminar/Conference /meeting room	27	8.1	25	7.5	68	20.5	88	26.5	66	19.9	2.9006
Space for Debating	70	21.1	54	16.3	66	19.9	31	9.3	22	6.6	2.1928
Space for Discussion /Brainstorming	56	16.9	65	19.6	87	26.2	29	8.7	33	9.9	1.6295
Help Desk	69	20.8	42	12.7	68	20.5	16	4.8	24	7.2	1.7108
Problem Solving Table	75	22.6	45	13.6	63	19	36	10.8	14	4.2	1.6506
Space for Tutorials/ Classroom	19	5.7	15	4.5	7	2.1	20	6	16	4.8	1.7319
Learning Common	75	22.6	45	13.6	63	19	36	10.8	14	4.2	1.6506

Table 4.6 shows high response score with mean scores of 3.0 and above on the extent of KMTs utilised in the university libraries studied in the case of IT KMTs to include; Internet with mean score of 3.3253. This may be due to the fact that, people have access to public Internet (Glo, MTN, etc) for operations and services delivery, and also proves that the Internet is important for all collaboration and communication systems that use computer/computing technology.

IT KMTs that showed no significance within mean scores of 2.0 - 2.9 were: Content Management System, Social Network (Facebook, etc.), Advanced Search Tools, and Knowledge Bases (Wiki. Etc). while, for Non-IT KMTs are: Space for Team Collaboration, Space for Prototyping, Seminar/Conference /Meeting Room and Space for Debating respectively. This indicates that some librarians are always not interested or pushy in using what they are not familiar with or what is new.

Furthermore, some IT KMTs showed no significance of below 2.0 mean score on the extent of KMTs utilisation in the university libraries studied, this include: Artificial Intelligence Tools, Audio/Video Conferencing, Expertise Locator, Network Forum (Librarians Forum), Intranet/Extranet, Electronic Meeting System, Cooperate Telephone System, OCLC and Decision Support System, while for the Non IT KMTs are: Space for Guidance and Counselling, Open Space for Ad-Hoc/ Informal Interaction, Space for Discussion /Brainstorming, Help Desk, Problem Solving Table, Space for Tutorials/ Classroom and Learning Common. This indicates that KMTs in the university libraries studied are not being fully utilised to create and share knowledge for library operations and services. This can be attributed to non-availability of the KMTs and non availability of policy for KMTs utilisation.

It can also be concluded that libraries and librarians in the areas of study are not eager to introduce change in their operations and services delivery. The intent is to expand and support the use of knowledge-based judgments to achieve library goals. The response is in contrast to the view of Townley (2001) who stated that librarians are learning to be proactive in their delivery of scholarly knowledge and will need to use many of the same techniques/tools to share operational knowledge within and outside the library. It also falls below the hope of Raja et al. (2009) that use of Information Technology in Knowledge Management would help to increase libraries' operational efficiency and cater to the ever-increasing needs of staff and clientele.

The implication of not utilizing KMTs in the area studied to the fullest for library operations and services in the area studied is poor goal attainment, law assessment for accreditation, delay in or poor operations and services delivery and loss of focus in teaching, learning and research.

4.3.3 The effect of KMTs Utilisation for Library Operations and Services in the University Libraries Studied

In order to determine how KMTs utilisation affects the operations and services in Federal university libraries in the Northern States of Nigeria, a research question was raised, in which the respondents were asked to indicate how the KMTs utilisation affects library operations and services in area studied using Likert Scale. Conprising, five options in order to ease analysis; namely: No effect, Minor effect, Neutral, Larger effect and Major effect. Table 4.7 shows the responses of the respondents.

Table 4.7: The effect of KMTs Utilisation on Library Operations and Services

Utilization of KMTs	Effect of KMTs Utilisation on library operations and services										
	No effect		Minor effect		Neutral		Larger effect		Major effect		Mean
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	
Use to create and edit content	44	13.3	55	16.6	79	23.8	54	16.3	17	5.1	2.0843
apply to communicate between and within staff/people	75	22.6	84	25.3	42	12.7	23	6.9	9	2.7	1.7319
use for open and creative conversation on topics of mutual interest	21	6.3	60	18.1	47	14.2	34	10.2	37	11.1	1.8163
Help to get feedback at the end of an event or activity	75	22.6	45	13.6	63	19	36	10.8	14	4.2	1.6506
generate more ideas and learn faster	33	9.9	28	8.4	75	22.6	52	15.7	71	21.4	2.5361
Turn new learning into better knowledge to share, apply and exploit	44	13.3	43	13	49	14.8	60	18.1	69	20.8	1.8373
Enhance in team conversations, participative discussion and collaborative work.	52	15.7	38	5.4	60	18.1	66	19.9	54	16.3	2.4247
Solicits assistance from peers and subject matter experts regarding a significant issues	75	22.6	45	13.6	63	19	36	10.8	14	4.2	1.6506
Evaluate and capture lessons learned	56	16.9	65	19.6	87	26.2	29	8.7	33	9.9	1.6295
helps in sharing information and knowledge in non-confined ways	24	7.2	51	15.4	57	17.2	75	22.6	67	20.2	3.0331
provide structure to organize information, documents, and libraries in a consistent way	24	7.2	22	6.6	79	23.8	80	24.1	74	22.3	2.6295
Creating, maintaining and accessing knowledge base	94	28.3	57	17.2	26	7.8	52	15.7	5	1.5	1.5633
Share a common area of interest	59	17.8	67	20.2	90	27.1	24	7.2	37	11.1	2.2410
Create, innovate, and disseminate new knowledge	20	6	22	6.6	60	18.1	92	27.7	80	24.1	2.8554
support finding the right people with the right knowledge at the right time	80	24.1	33	9.9	108	32.5	27	8.1	5	1.5	1.8163
enable us to work together, irrespective of location	45	13.6	52	15.7	53	16.0	58	17.5	36	10.8	2.1687
provide an informal interchange of knowledge and expertise between senior and junior staff	39	11.7	40	12.0	82	24.7	58	17.5	61	18.4	2.5813
effective transfer between tacit and explicit knowledge forms	90	27.1	36	10.8	13	3.9	3	0.9	5	1.5	.7169

Table 4.7 shows high significance on the effect of KMTs utilization for library operations and services with mean score of 3.0 and above. The table shows that KMTs assist *in group discussion to share any thought and insights in a very non confined way,* with mean score of 3.0331. The significant score is not surprising because the findings shown in the previous table indicates that Internet and Space for Conferences/Workshops/ Meeting are available and used for knowledge creation and utilisation in the university libraries studied.

Table 4.7 also shows that, the KMTs utilisation have no effect on the library operations and service with the range of mean scores of 2.0 - 2.9. Thus, KMTs utilisation have no effect in: creating and editing contents; generating more ideas and learning faster; enhancing team conversations; participative discussion and collaborative work; sharing a common area of interest; creating, innovating, and disseminating new knowledge; enabling working together irrespective of location; and providing an informal interchange of knowledge and expertise between senior and junior staff. This is so because majority of KMTs are not available and some are not utilised for library operations and services.

Furthermore, the table shows no significance with mean scores of 1.9 below. This means that, KMTs utilisation has no effect in the following: open and creative conversation on topics of mutual interest; getting feedback at the end of an event or activity; turning new learning into better knowledge to share, apply and exploit; soliciting assistance from peers and subject matter experts regarding significant issues; evaluating and capturing lessons learned; support finding the right people with the right knowledge at the right time; creating, maintaining and accessing knowledge base and effective transfer between tacit and explicit knowledge forms etc.

This can be attributed to the attitude of some libraries and librarians not creating value/importance to library knowledge for operations and services and non-availability of libraries' knowledge base system. Moreover, this means that, if a library staff with knowledge leaves or absents from the work, the work will suffer from smooth continuity because the platform that will help to create and share the knowledge is not accessible and utilized properly. The implication is that library operations and services will not be effective and efficient which will affect mission and vision of the library. In addition, some staff feel indispensible in their workstation.

4.3.4 Level of Satisfaction on the KMTs Utilisation for Library Operations and Services

The issue have is to examine the Level of satisfaction on the KMTs utilisation for library operations and services in the Federal university libraries in the area study. In order to achieve this, a list of KMTs utilised for library operations and services were outlined for the respondents to tick as many as possible using the Likert scale to measure the level of satisfaction. Table 4.8 shows the details of the data collected:

Table 4.8: Satisfaction with the KMTs Utilisation for Library Operations and Services

KMTs	Satisfaction on the KMTs utilization for library operations and services										
	Very satisfied		Satisfied		Neutral		Unsatisfied		Very unsatisfied		Mean
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	
IT KMTs											
Artificial Intelligence Tools	82	24.7	48	14.5	44	13.3	45	13.6	28	8.4	1.8976
Audio/Video Conferencing	69	20.8	55	16.6	53	16.0	31	9.3	33	9.9	1.8886
Internet	69	20.8	76	22.9	72	21.7	44	13.3	25	7.5	2.2229
Knowledge Bases (Wiki. Etc)	59	17.8	67	20.2	90	27.1	24	7.2	37	11.1	2.2410
Advanced Search Tools	57	17.2	75	22.6	45	13.6	34	10.2	51	15.4	2.2078
Expertise Locator	94	28.3	57	17.2	26	7.8	52	15.7	5	1.5	1.5633
Network Forum (Liberians Forum)	38	11.4	60	18.1	45	13.6	44	13.3	64	19.3	2.3765
Intranet/Extranet	41	12.3	45	13.6	72	21.7	68	20.5	29	8.7	2.3012
Electronic Meeting System	56	16.9	27	21.7	54	16.3	32	9.6	31	9.3	1.9428
Cooperate Telephone System	75	22.6	45	13.6	63	19.0	36	10.8	14	4.2	1.6506
OCLC	51	15.4	33	9.9	74	22.3	45	13.6	49	14.8	2.3012
Social Network (facebook, etc.)	75	22.6	45	13.6	63	19	36	10.8	14	4.2	1.6506
Decision Support System	19	5.7	15	4.5	7	2.1	20	6	16	4.8	1.7319
Content Management System	45	13.6	52	15.7	53	16	58	17.5	36	10.8	2.1687
Non IT KMTs											
Space for Guidance and Counselling	56	16.9	65	19.6	87	26.2	29	8.7	33	9.9	1.6295
Open Space for Ad-Hoc/ Informal Interaction	69	20.8	42	12.7	68	20.5	16	4.8	24	7.2	1.7108
Space for Team Collaboration	75	22.6	45	13.6	63	19	36	10.8	14	4.2	1.6506
Space for Prototyping	43	13.0	44	13.3	64	19.3	71	21.4	47	14.2	2.5361
Seminar/Conference /Meeting Room	32	9.6	62	18.7	46	13.9	54	16.3	57	17.2	2.3946
Space for Debating	39	11.7	51	15.4	60	18.1	63	19	30	9	2.1777
Space for Discussion /Brainstorming	21	6.3	60	18.1	47	14.2	34	10.2	37	11.1	1.8163
Help Desk	80	24.1	44	13.3	36	10.8	22	6.6	51	15.4	1.8645
Problem Solving Table	75	22.6	84	25.3	42	12.7	23	6.9	9	2.7	1.7319
Space for Tutorials/ Classroom	44	13.3	43	13	49	14.8	60	18.1	69	20.8	1.8373

Learning Common	90	27.1	36	10.8	13	3.9	3	0.9	5	1.5	.7169

The table 4.8 shows the lower level of satisfaction of IT KMTs utilization with mean scores of 2.9 – 2.0 respectively. Thus, the university libraries studied were not highly satisfied with: Internet, Knowledge Bases (Wiki etc), Advanced Search Tools, Network Forum (Liberians Forum), Intranet/Extranet, OCLC and management system. While, for Non IT KMTs were Space for Prototyping, Seminar/Conference /meeting room and Space for Debating.

Also, IT KMTs that showed no significance (very low response scores) in the area studied with the mean score of 1.9 and below include: Artificial intelligence tools, Audio/Video Conferencing, Expertise Locator, Electronic meeting system, Cooperate Telephone System, Social Network (Facebook, etc.) and Decision support system. Moreover, for non IT KMTs were: Space for Guidance and Counseling, Open Space For Ad-Hoc/ Informal Interaction, Space for Team Collaboration, Space for Discussion /Brainstorming, Help desk, Problem solving table, Space for Tutorials/ Classroom and Learning common.

This means that KMTs are not satisfactory as tools for creation and sharing of knowledge for library operations and services. This is because response shown in the previous table indicated that KMTs were not fully utilized for library operations and services. In fact, some university libraries studied are yet to fully embrace internet and intranet facilities. This might affect the satisfaction of the utilisation of KMTs IT.

Non-IT KMTs that should have shown very satisfactory was below average too. It may be because of low attachment of value to collaborative knowledge base in the library. This is important because as Townsley (2013) said “communities of practice” have been found to be one of the effective means in managing tacit knowledge within organisations and have been identified as one of the knowledge management enablers.

This implicates that it might be difficult to transfer a staff that posses some skill and experiences that were not shared with others to another place. Thus, replacement may be difficult or costly if he/she leaves the system.

4.3.5: Challenges Encountered on the KMTs Utilisation for Library Operations and Services in University Libraries Studied

In order to find out the challenges encountered in KMTs utilization for library operations and services in the Federal university libraries in the Northern States of Nigeria, a research question was asked with respect to this and subsequently respondents were asked to indicate as many challenges encountered in the KMTs utilization in their respective libraries. Table 4.9 shows the responses thus:

Table 4.9: Challenges Encountered in the KMTs Utilisation in the University Libraries Studied

Challenges Encountered	University Libraries in the Area Studied											
	IBBL FUTM		FUTNL		IBBL FUTY		ATBUL		KIL ABUZ		AFL UDUS	
	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%	Frq	%
Non availability of knowledge base systems for KMTs utilisation	33	80.5	17	81	14	63.6	43	55.8	114	88.4	26	61.9
Lack of Awareness of the availability and functions of the KMTs	37	90.2	13	61.9	10	45.5	53	68.8	109	84.5	38	90.5
Change and continue innovation in technology and work	31	75.6	4	19	14	63.6	38	49.4	86	66.7	16	38.1
lack of skills and competency in the utilization KMTs	25	61	9	42.9	10	45.5	37	48.1	96	74.4	23	54.8
Poor culture of Sharing knowledge using KMTs	34	82.9	12	57.1	8	36.4	40	51.9	88	68.2	23	54.8
Difficulty in the management of the KMTs	31	75.6	17	81	12	54.5	39	50.6	79	61.2	23	54.8
Lack of interest in the use of the KMTs	27	65.9	13	61.9	8	36.4	28	36.4	70	54.3	12	28.6
Difficulty of expressing tacit knowledge through KMTs	26	63.4	4	19	14	63.6	26	33.8	74	57.4	15	35.7
Unwillingness to manage knowledge using KMTs	20	48.8	12	57.1	10	45.5	41	53.2	73	56.5	26	61.9
Claiming ownership of knowledge	33	80.5	9	42.9	12	54.5	36	46.8	74	57.4	19	45.2
Difficulty of access and storage of knowledge using KMTs	30	73.2	4	19	14	63.6	33	42.9	68	52.7	20	47.6
Lack of KMTs user guide	28	68.3	17	81	14	63.6	41	53.2	57	44.2	23	54.8
Different people with different experience	25	61	5	23.8	12	54.5	37	48.1	57	44.2	19	45.2
lack of policy on the KMTs utilization	41	100	13	61.9	14	63.6	53	68.8	84	65.1	26	61.9
Converting knowledge from tacit to explicit using KMTs	41	100	8	38.1	6	27.3	12	15.6	83	64.3	38	90.5
Others	0	0.0	4	19.0	2	9.1	3	3.9	4	3.1	0	0.0

KEY:

IBBL FUTM: IBB Library, Federal University of Technology Minna

FULL: Federal University of Library, Lafia
IBBL FUTY: IBB Library, Federal University of Technology Yola
ATBUL: Abubakar Tafawa Balewa University Library, Bauchi
KIL, ABUZ: Kashim Ibrahim Library, Ahmadu Bello University, Zaria
AFL UDU: Abdullahi Fodiyo Library, Usman Danfodio University, Sokoto

Table 4.9: shows no challenges encountered in the KMTs utilisations in some university libraries studied with less than 30% response scores. Lack of interest in the use of the KMTs had 28.6% in AFL UDUS, while, Converting Knowledge from Tacit to Explicit using KMTs had 27.3% and 15.6% in IBB FUTY and ATBUL. This means that, these challenges are not significant.

Table 4.9 shows the challenges encountered in KMTs utilization in all university libraries studied with 50% and above response scores to include: Non-availability of Knowledge Base Systems for KMTs Utilization, Difficulty in the Management of the KMTs, and Lack of Policy on the KMTs Utilisation. (This is surprising because the options were identified as challenges affecting the KMTs utilization in the university libraries studied.) This means that the institutions studied do not have knowledge base system and policy for the KMTs utilization for library operations and services. The librarians might not be guided by standard and might do things the way they feel like, not necessarily the way the organization likes. This may not help in achieving the goal and objectives of the organization.

The table also shows high response scores of above 50% on the challenges encountered in KMTs utilisation in IBB FUTM and KIL ABUZ university libraries studied to include: Lack of Awareness of the Availability and Functions of the KMTs, Change and Continued Innovation in Technology and Work, lack of skills and competency in the utilization KMTs, Poor culture of sharing knowledge using KMTs, Difficulty in the management of the KMTs, Lack of interest in the use of the KMTs, Difficulty of expressing tacit knowledge through KMTs, Unwillingness to manage knowledge through KMTs, Claiming ownership of knowledge, difficulty of access and

storage of knowledge using KMTs, Lack of KMTs user guide, Different people with different experience, lack of policy for the utilization of KMTs, and converting knowledge from tacit to explicit using KMTs.

This means that librarians are encountering challenges in the KMTs utilization for library operations and services because more than 75% of the challenges are high in the university libraries studied. Knowledge can be easily created and shared with the use of KMTs be it technology or non-technology based.

It was noted that, policy and knowledge base system constitute very high challenges for KMTs utilisations for library operations and services in the university libraries studied. Librarians need to be encouraged and rewarded constantly for creating and sharing knowledge through KMTs to achieve organisational goals. The intent of this area is to expand and support the use of knowledge-based judgments to achieve library goals. Reiser (2013) pointed out that there is no use in launching a tool if there is no drive to share the knowledge.

4.1.2 Inferential Analysis

This involves inferential analysis of the KMTs utilisation for library operations and services in the Northern states Federal university libraries. The statistics was derived from the responses by the respondents. The data collected with respect to the hypothesis raised in the study were analyzed and discussed as follows:

Hypothesis One: There is no significant difference among the libraries on the KMTs utilization for library operations and services in the Federal University libraries in Northern States of Nigeria

Table 4.10: Multiple comparison of One-way ANOVA test on the Six Federal University Libraries

(I) name of the university library	(J) name of the university library	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
KIL, ABUZ	FUNL	-.52234	.33023	.776	-1.6293	.5846
	IBBL FUTY	.14433	.45569	1.000	-1.3832	1.6719
	IBBL FUTM	-.00201	.25558	1.000	-.8588	.8547
	AFL UDUS	-.42710	.25343	.724	-1.2767	.4225
	ATBUL	-.37875	.21993	.705	-1.1160	.3585

Table 4.10 presents the comparative results (Library-by-Library) and the level of significant difference between university libraries. The first row that compares KIL ABUZ library operations and services to each of the remaining universities library operation and services shows that there is no difference between KIL ABUZ and the other five universities as shown in the multiple comparison test (.776, 1.000, 1.000, .724 and .705) which are greater than

0.05 respectively. This implies that none of the Federal University libraries utilised KMTs more than others. Therefore, Scheffe post hoc test was carried out to know the subset mean for the federal university libraries as shown below.

Table 4.10.1: Scheffe test

name of the university library	N	Subset for alpha = 0.05
		1
IBBL FUTY	10	3.0000
KIL, ABUZ	97	3.1443
IBBL FUTM	41	3.1463
ATBUL	65	3.5231
AFL UDUS	42	3.5714
FUNL	21	3.6667
Sig.		.670

Table 4.10.1: shows the output for the Scheffe post hoc test and presents the results of mean difference which lists the Federal University libraries in order from the lowest to the highest mean (IBB FUTY = 3.0000, KIL ABUZ = 3.1443, IBB FUTM = 3.1463, ATBUL = 3.5231, AFL UDUS = 3.5714 and FUNL = 3.6667). This indicates that there is no significant difference in the utilization of KMTs for library operations and services in Federal University libraries and this is the same result that was obtained from the first table. For more details,

see Appendix V

Hypothesis Two: There is no significant difference among the libraries on their levels of satisfaction with the KMTs utilized for library operations and services in Federal University libraries in Northern States of Nigeria

Table 4.11 Multiple comparison of One-way ANOVA test on the Six Federal University Libraries

(I) name of the university library	(J) name of the university library	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
A.B.U Zaria	FUNL	.63787	.30802	.325	-.2043	1.4800
	IBBL FUTY	1.48661*	.33489	.000	.5840	2.3892
	IBBL FUTM	1.05107*	.21839	.000	.4200	1.6822
	AFL UDUS	.51042	.21656	.223	-.1161	1.1369
	ATBUL	.74674*	.18635	.001	.1987	1.2947

The table 4.11 presents the results of the comparison library-by-library and the level of significant difference from each federal university library to another. The first row compares KIL ABUZ library operations and services to each of the remaining university libraries' operations and services, which shows that there is no difference between FUNL and AFL UDUS with (.325 &.223) which are greater than 0.05; while the remaining libraries are IBBL FUTY, IBBL FUTM and ATBUL (.000, .000 & .001 scres) which are less than 0.05 respectively. This means that the satisfaction of the utilization of KMTs for library operations varies from one federal university library to the other. FUNL, AFL UDUS are not satisfied with KMTs utilized for library operations and services while IBBL FUTY, IBBL FUTM, ATBUL and KIL ABUZ are satisfied with KMTs for library operations and services. This implies that level of satisfaction is based on

knowledge management tools available and utilised for library operations and services in federal university libraries. Therefore, Scheffe post hoc test was carried out to identify the subset mean for the university libraries studied as shown below.

Table 4.11.1 : Scheffe test

name of the university library	N	Subset for alpha = 0.05		
		1	2	3
IBBL FUTY	14	1.8571		
IBBL FUTM	41	2.2927	2.2927	
ATBUL	67	2.5970	2.5970	2.5970
FUNL	17	2.7059	2.7059	2.7059
AFL UDUS	42		2.8333	2.8333
KIL, ABUZ	96			3.3438
Sig.		.083	.696	.201

Means for groups in homogeneous subsets are displayed

The output for the Scheffe post hoc test presents the results, thus: The first column list of the federal university libraries in order from lowest to highest mean (IBBL FUTY = 1.8571, IBBL FUTM = 2.2927, ATBUL = 2.5970, FUNL = 2.7059, AFL UDUS = 2.8333 and KIL ABUZ = 3.3438 score). Columns 2 and 3 that overlap each other shows significance difference while the overlaps libraries across the 3 columns shows highly significant difference. This indicates that there is significant difference among the library staff from different university libraries on their level of satisfaction with KMTs utilised for library operations and services and this is the same result that was obtained from the first table. See appendix VI

Hypothesis Three: *The KMTs utilised in the Federal University libraries in Northern States of Nigeria have no significant effect on the library operations and services.*

Table 4.12: Chi square test on KMTs Utilised in the University libraries have no effect on the library operations and service

Variables	N	X^2-Cal	X^2-Crit	DF	Sig.
KMTs utilization in university libraries	332	1.0674		1980	.000
Library operations and service among library staff	332				

N=Number of Respondents, X^2-Cal=Chi-square-calculated, X^2-Crit= Chi-square-critical, DF=Degree of Freedom, Sig.=Probability value.

The Table 4.12 revealed that there were 332 library staff. The calculated chi-square was 175.992 which is greater than the critical Chi-square which was 26.296. The observed level of significance in the test is .000 (P< 0.05). This indicated that the null hypothesis that on the KMTs utilised in the federal university libraries in Northern States of Nigeria have no significant effect on the library operations and services was therefore, rejected.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

In this chapter is presented the summary of the study, summary of findings, conclusion and recommendations.

5.1 Summary of the Study

This study was carried out to investigate the KMTs Utilisation for library operations and services in federal university libraries of Northern States of Nigeria. To do this, five research questions were formulated and three hypotheses were tested. Review of relevant literature was also conducted in which it was established that libraries and librarians have realized the need for the holistic utilisation of knowledge management tools (KMTs) for library operations and services in federal university libraries of northern states of Nigeria in order to remain competitive and relevant in the profession for effectiveness and efficiency of operations and service delivery.

Survey research method was employed in the conduct of this study. The total number of library staff used for the study was nine hundred and sixty seven (967) drawn from readers' services division, collection development division, reference division, serial division, ICT unit/division and research and bibliographic services division of each library and four hundred and twenty four (424) were drawn as sample for this study from six university libraries. The, six selected University libraries were: IBB Library, Federal University of Technology Minna ;Federal University of Library, Lafiya; IBB Federal University of Technology Yola; Abubakar Tafawa Balewa University Library, Bauchi; Kashim Ibrahim Library, Ahmadu Bello University, Zaria and Abdullahi Fodiyo Library, Usman Danfodio University, Sokoto. The instrument used for data collection was the questionnaire.

The data collected for the study were presented and analyzed using both descriptive statistics and inferential statistics. Frequency distribution tables and percentages were used for the descriptive statistics while t-test and Chi square test were used to test the three hypotheses formulated and determine the areas of differences among the university libraries studied.

5.2 Summary of the Major Findings

Based on the data collected and analyzed for this study, the following are the major findings:

1. The KMTs available and use for library operations and services in the area studied are: Internet and Seminar/Conference/Meeting Room. While, Electronic Meeting System, Knowledge Portal, Corporate Telephone System, Expertise locator, Artificial intelligence tools, Audio/Video Conferencing, Decision Support System and Content Management Systems Online Computer Library Center, Open space for ad-hoc/ informal interaction, Space for team collaboration, Help desk, Space for Team Collaboration, Problem Solving Table in all university libraries studied were shown as not significant.
2. That the *Internet* is being utilized often for operations and services in the libraries studied followed by *Seminar/Conference/Meeting Room* as Non IT KMT, while, Artificial Intelligence Tools, Audio/Video Conferencing, Knowledge Bases (Wiki. etc), Advanced Search Tools, Expertise Locator, Network Forum (Librarians Forum), Intranet/Extranet, Electronic Meeting System, Cooperate Telephone System, OCLC, Social Network (facebook, etc.), Decision Support System ,Content Management System, Space for Guidance and Counselling, Open Space for Ad-Hoc/ Informal Interaction, Space for Team Collaboration, Space for Prototyping, Space for Debating,

Space for Discussion /Brainstorming, Help Desk, Problem Solving Table, Space for Tutorials/ Classroom and Learning Common were not significant in the area studied.

3. The KMTs utilisation has effect on library operations and services in *helping to share information and knowledge in non-confined way.* Also KMTs utilization shows no significant effect in: *creating and edit content; generate more ideas and learn faster; enhance in team conversations; participative discussion and collaborative work; provide structure to organize information, documents, and libraries in a consistent way; Share a common area of interest, Create, innovate, and disseminate new knowledge; and provide an informal interchange of knowledge and expertise between senior and junior staff* e.t.c.

4. The satisfactory level of KMTs utilization for library operations and services in the university libraries studied were not significant in: *Artificial Intelligence Tools, Audio/Video Conferencing, Knowledge Bases (Wiki. etc), Internet, Advanced Search Tools, Expertise Locator, Network Forum (Liberians Forum), Intranet/Extranet, Electronic Meeting System, Cooperate Telephone System, OCLC, Social Network (facebook, etc.), Decision Support System, Content Management System, Space for Guidance and Counselling, Open Space for Ad-Hoc/ Informal Interaction, Seminar/Conference/Meeting Room, Space for Team Collaboration, Space for Prototyping, Space for Debating, Space for Discussion /Brainstorming, Help Desk, Problem Solving Table, Space for Tutorials/ Classroom and Learning Common.*

5. The challenges encountered to the KMTs utilization for library operations and services in the area studied are Non-availability of Knowledge Base Systems for KMTs Utilisation, Difficulty in the Management of the KMTs, and Lack of Policy on the KMTs Utilisation

etc while, AFL UDUS had no challenges in *Lack of interest in the use of the KMTs*. And IBB FUTY and ATBUL had no challenges in Converting Knowledge from Tacit to Explicit using KMTs.

6. That there is no significant difference among the federal university libraries on the KMTs utilised for library operations and services in the Federal University libraries in Northern states of Nigeria.
7. That there is significant difference among the federal university libraries on their levels of satisfaction with the KMTs utilised for library operations and services in Federal university libraries in the Northern states of Nigeria.
8. That the KMTs utilised in the University libraries in the Northern states of Nigeria have significant effect on the library operations and services.

5.3 Conclusion

Based on the findings of the study, it is concluded that the Federal university libraries in the Northern states of Nigeria have realised the need for KMTs utitlisation in library for knowledge creation and sharing in order to promote operations and services to meet up with the world best practices.

However, the Federal university libraries do not explore to a large extent, the advantages and opportunities opened by the utitlisation of KMTs for operations and services which include knowledge creation and sharing using IT KMTs and Non- IT KMTs for collaboration. In effect therefore, the low level of utilization of KMTs for library operations and services in the Federal university libraries may be attributed to lack of availability and policy to guide the utilisation.

Knowledge management tools is a viable means for federal university libraries to improve their operations and services and become more responsive to the needs of customers,

staff and the communities they serve. People gain knowledge from their experiences and their peers' expertise with the use of tools (IT and Non IT KMTs). Federal university libraries need to recognise the knowledge of its staff and create an environment (IT and Non IT) in which the knowledge can be created, valued and shared.

5.4 Contribution to Knowledge

This study was presented on utitlisation of knowledge management tools by conducting a survey on the operations and services by the library staff. Thus, were the following major contributions to the body of knowledge:

1. Knowledge management tools utilization policy was designed and recommended for adoption in the federal University libraries. See appendix I.
2. KM structure for KMTs utilisation on library operations and servic**es** was designed for federal University libraries. See Appendix II
3. Knowledge base for KMTs utilization on the library operations and services was designed and recommended for adoption for the federal university libraries. See Appendix III

5.5 Recommendations

Arising from the findings of this study, the following recommendations are:

1. Knowledge Management Tools (IT and Non IT) specifically like: Artificial Intelligence Tools, Audio/Video Conferencing, Knowledge Bases (Wiki. etc), Advanced Search Tools, Expertise Locator, Network Forum (Liberians Forum), Intranet/Extranet, Electronic Meeting System, Cooperate Telephone System, OCLC, Social Network (facebook, etc.), Decision Support System ,Content Management System, Space for Guidance and Counselling, Open Space for Ad-Hoc/ Informal Interaction, Space for

Team Collaboration, Space for Prototyping, Space for Debating, Space for Discussion /Brainstorming, Help Desk, Problem Solving Table, Space for Tutorials/ Classroom and Learning Common should be identified and applied to all library operations and services in; units, divisions and library at large to facilitate knowledge creation, gathering and sharing with fellow professionals within and outside the library community.

2. Multipurpose KMTs (IT and Non IT) should be designed in each unit/division and the library in general considering the operations and services so that the goals of the establishments would be achieved; which will encourage collaborative knowledge management (creation and sharing) for library operations and services.
3. Federal University libraries in the Northern States of Nigeria should establish knowledge management Structure i.e. (KM Office, KM Officer etc) that will help in knowledge workflow on the KMTs utilization for effectiveness and efficiency of services delivery.
4. Information literacy skills with emphasis on the proper KMTs utilization for library operations and services should be taught by knowledge management officers to all library staff to be able to use the tools to create and share knowledge in the area studied. This will help to eliminate lack of KMTs utilization for library operations and services.
5. Knowledge management tools policy should be formulated and recommended for adoption in the federal university libraries in the area studied. This will strengthen the KMTs utilisation for library operation and servives (See appendix I).
6. Knowledge base structure on the library operations and services should be designed and recommended for adoption for the federal university libraries in the Northern states of Nigeria; to ease knowledge creation and sharing for operations and service. See Appendix III

7. Library management should support staff on the funding and provision of KMTs facilities (IT and Non-IT) that will support collaborative knowledge management processes (creation, sharing etc) for library operations and services.
8. It is obvious that the environment in which academic libraries operate is changing. It is faced with both challenges and opportunities, hence they need to respond to these challenges in order to better serve the needs of the entire academic community. One way of doing that is engaging in knowledge management activities (creating, capturing, sharing and utilizing) to achieve the library goals. This is possible if knowledge management tools are maximally utilized.

5.6 Suggestion for Further Study

Based on the findings and conclusion of the study, the following titles have suggested for further studies.

1. Utilisation of Knowledge Management methods/techniques for library services in University libraries in Nigeria.
2. Adoption of Knowledge Management Practices for customer satisfaction in Nigerian University Libraries
3. Analysis and design of Knowledge Management System for Information Service Delivery in Nigerian University Libraries

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APPENDIX I

A Proposed Utilisation of Knowledge Management Tools Policy for Nigerian University Libraries

1.0 Introduction

University libraries are delivering a wide range of services that are improving people's lives and create innovations to meet the customers' information needs. It is believe that, the library is aware of where knowledge exists to improve library's operations and services but this knowledge needs to be more easily accessible and shared. Thus, the need to develop and implement an appropriate KMTs Policy that fosters utilization of the tools that will allow libraries and librarians to use effectively its intellectual capital becomes very necessary.

The intellectual capital of the library depends largely on all the persons who are part of it, but it also depends on its operational and organizational structures and on internal and external relations with all stakeholders.

In most organizations and the library inclusive, there are two types of knowledge assets. The first is information that the organizations hold and this can include reports of different projects, researches, different types of databases. The second is the knowledge, skills and experience that is in the heads of employees, which is often the most valuable asset that an organization holds. The major difficulty with unlocking this value is to work out effective methodology/tools to recognize, generate, share and manage that knowledge.

1.1 Policy Statement

KMT is anything used as a device, means, methods or instrument for identifying, codifying, sharing and storing the understanding, experience, and wisdom of an individual or groups of individuals, to facilitate easy access to knowledge and create value to the

information/knowledge products provided. The KMTs should be used to help library staff to gather appropriate information when it is needed rather than require the library staff/user to hunt for them in an attempt to identify something salient. The University library should therefore regard KMTs to be fundamental to good management practice and a significant aspect of its corporate governance. Effective management of knowledge will enhance the realization of the library's strategic and operational objectives and goals.

Utilisation of KMTs must be an integral part of the library's decision making, routine activities, continuous, management driven, inclusive, transparent, value-based, broadly focused and process driven activity. The University library recognises that the knowledge gathered from staff operations and services like: cataloguing, classification, verification of books on the catalogue, labeling of books, charging and discharging of books, customer's registration, provision/maintenance of in-progress file and on processed file, ordering of information resources, maintaining of statistics, etc. However, the library accepts its corporate responsibility to provide the highest and superior quality operations and services that are in line with the world best practices. As such, Utilisation of KMTs is considered as an indispensable way and means to maintain and improve satisfaction and confidence of library staff in library operations and services delivery.

3.0. Purposes/Objectives of the Policy

The purposes of Federal University Libraries KMTs Utilisation Policy are to facilitate:

- Use of appropriate KMTs for identification and analysis of available and required knowledge, and the subsequent planning and control of actions to develop knowledge capital so as to fulfill library and university objectives;

- Systematic attempts to store and use knowledge assets with the appropriate KMTs in a way to perfect the performance of the libraries, librarians and university at large.

The KMTs utilisation policy will seek to enable and support effective achievement of the University mission and meet the following principles:

- use of appropriate KMTs to ensure knowledge assets are identified, available, shared, preserved and managed to maximize effective operations and services of the library
- ensure explicit knowledge (i.e. reports, presentations, etc.) and tacit knowledge including both know-how and key skills are created and shared using an appropriate KMTs
- to ensure that appropriate KMTs are used to promote a learning culture and its role as a key differentiator in achieving objectives of the library operations and services
- encourage the use of appropriate KMTs to increase innovation by creating an open and transparent environment with good practice and documentation managed and shared appropriately.

4.0 Scope

The policy shall be a reference document containing the minimum principles and procedures of basic use of KMTs processes to assist the various organs of the library and adopt a consistent approach to use of appropriate KMTs. The policy shall apply to all the library's branches, divisions, sections/units, operations, functions, staff, and services.

5.0 Duties and Responsibilities

All the professional and Para professional Library staff have role to ensure effective KMTs utilisation for library operations and services. All staff shall actively participate to identify potential KMTs to the Library's operations and services in their respective branches, divisions, sections and units and contribute to the implementation of appropriate KMTs.

5.1 Library Management Committee (LM C)

There shall be a LMC, which shall have fundamental roles to play in the overall Knowledge management in the University Library. The LMC roles include:

- Set the tone and inculcate the culture of knowledge management principles within the Library by communicating the library's approach to knowledge capturing and sharing and determine the library's Knowledge base;
- Approve major decisions concerning the library's knowledge management profile or exposure.

5.2 University Librarian (UL)

The UL shall perform the following duties:

- The overall responsibility of all Knowledge management issues shall rest with the University Librarian. However, with the general philosophy of delegation of responsibilities in the library, every staff (librarian) shall be accountable for the management of knowledge(tacit and explicit) within their designated posts;
- university librarian shall ensure that knowledge management initiatives are embedded in the library's work processes with the use of KMTs;
- The roles, responsibilities, competencies and incentives by staff to use knowledge management tools, processes and practices be supported by UL;
- Implement the knowledge management decisions approved by the LMC;
- Appointment of the Chief Library Knowledge Management Officer to coordinate;
- Knowledge management activities and utilization of KMTs in all the library systems

5.3 Deputy University Librarian (DUL)

The DUL shall perform the following duties:

- He shall perform any duties related to knowledge management processes and particularly KMTs utilization as assigned to him by the University Librarian.

- He shall also take and approve decisions concerning KMTs utilization for library operation and services in the library on behalf of the University Librarian.
- Ensure that appropriate KMTs are allocated in the Library on the recommendation of the LMC and KMC and approved by the UL

5.4 Knowledge Management Committee (KMC)

The membership of the committee shall consist of all the Branch/Divisional Knowledge Management Officers (B/DKMOs) drawn from all the branches and divisions of the University Library. The committee's primary responsibilities shall be to:

- Oversee all matters concerning knowledge identification, codification, storage, and sharing with the use of appropriate tools and make recommendations to the Library Management Committee headed by the University Librarian.
- Implement policies on KMTs utilization and internal control.
- Identify and evaluate the library KMTs and knowledge base of the Library for consideration by the Library management Committee (LMC)
- Provide adequate information in a timely manner to the LMC and its sub- Committees as the case may be on the status of knowledge management practices in the library.
- Develop and conduct training on the principles of knowledge management, use of KMTs and on how to implement KMTs effectively and efficiently.
- Meet and discuss the outcome of the use of KMTs issues with the University Librarian at least once every month.

5.5 Heads of Branches/Divisions

Branch/Divisional heads shall be responsible for;

- overseeing proper utilisation of knowledge management processes and tools in sections/units under their respective branches and divisions. They shall be charged with the overall supervision of proper utilisation of knowledge management processes and tools; issues ranging from creation, codification and sharing of knowledge for operation and services.
- ensure the smooth implementation of proper utilisation of knowledge management processes and tools decisions approved by the LMC in their branches and divisions on the approval of the UL
- Appointment of Branch/Divisional Chief Library Knowledge Management Officers (B/DCLKMOs) to coordinate the utilization of knowledge management tools related to their divisions
- Preside over all meetings and proceedings in their respective Branches and Divisions.
- Hold branch/divisional meetings regularly at least once every month in order to ensure smooth and effective creation and sharing of knowledge through appropriate knowledge management tools.

5.6 Heads of Sections and Units

Sectional and Unit heads shall:

- Adapt the policy to soothe his/her work areas and processes in the library.
- Complying with all the library's rules, regulations and instructions
- Report to head of division weekly on the new knowledge created and shared. And also the new KMTs discovered

- Shall enforce collaboration of creation and sharing of knowledge using KMTs

5.7 Library's Knowledge Management Officer (LKMO)

The office of the LKMO for the University Library shall be created for the effective implementation and monitoring of knowledge management processes and tools in the library. The officer shall be a professional Librarian with any other relevant training and expertise in knowledge management, knowledge management systems or information seeking behaviour to be appointed by the University Librarian. He shall perform the following functions:

- Coordinate the development and maintenance of knowledge management tools policies, procedures and standards for the University library.
- Liaise with all the Branch/Divisional knowledge Management Officers (B/DKMOs) to ensure smooth and effective management of knowledge created and shared for operations and services in the library,
- Monitor and assess the effectiveness of the utilization of knowledge management tools and ensure corrective actions are taken to improve controls where practical;
- At least quarterly, compile and present a comprehensive library's knowledge management profile report to the University Librarian who shall present it to the LMC for deliberation and endorsement as the case may be.
- Quarterly, write a brief to the University Librarian on the successes and failures of the utilization of knowledge management processes and tools in the library for consideration and further necessary action.

5.8 Branch/Divisional Knowledge Management Officers (B/DKMOs)

There shall be the office of Knowledge Management Officers in all branches and divisions of the University Library to supervise the implementation, utilization and monitoring of:

- Ensure that utilization of knowledge management tools assessments are performed at least once quarterly on all library operations and services.
- Understand and implement the policy on utilisation of knowledge management tools within their respective areas of responsibility.
- Submit the assessment results of the utilization of KMTs and some new ones identified for creation and sharing of knowledge in the library to Divisional Knowledge Management Officer (DKMO) for review. Knowledge management tools treatment plans shall include specific actions with expected completion dates.
- Supervise the collaborative Knowledge management tools under their control. Preside over all meetings and proceedings in their respective sections and units.
- Hold sectional and unit meetings regularly at least once every month in order to ensure smooth and effective knowledge creation, sharing and management with proper use of KMTs.

5.9 Library Staff

Every staff in the library shall:

- understand that knowledge management (creation, storage and share) are key parts of the Library's culture
- collaborate with other staff members within and outside the library with the use of KMTs for library operations and services daily, weekly and monthly as the case may be

- report systematically and promptly to senior management any time new knowledge or tools are perceived or have challenges with the existing tools
- be committed and dedicated to his/her assigned responsibility in the library;
- Be responsible for and have accountability for adherence to the principles outlined in this policy;

For utilization of Knowledge management processes and tools in the respective branches and divisions, there shall be library staff (academic, non-teaching) with high sense of commitment and responsibility to be assigned by the University Librarian to perform the following specific duties:

- Ensure the utilization of KMTs at their branches, divisions and units for operations and services are identified, assessed, monitored and used for knowledge management processes(creation, codification, storage and shared)
- Ensure that appropriate and timely actions are taken to address issues on utilization of KMTs identified;
- Compile comprehensive branch or divisional use of KMTs profile for further necessary action.

6.0 Utilisation of Knowledge Management Tools

Specific ways in which individual staff members of the university libraries are encouraged to participate in knowledge management processes with the use of tools are outlined below;

- When developing new ideas and interventions, staff members should always consider local knowledge, practices, and related tools that will help to extract the knowledge from

local communities and other stakeholders (reports, researches and other products of other organizations);

- The library should use KMTs essential to build on what they already have, integrate, learn and make adjustments and improvements;
- KMTs (IT and non-IT) shall be identified, developed, installed and purchased as the case may be
- Federal university libraries staff members are also that encouraged to seek out ideas with the use of KMTs from best five world ranked libraries and their programmes not run in Nigerian University libraries especially those that enhance smooth operations and services;
- When recruiting staff to use KMTs, skills and expertise shall be considered as overall needs for building knowledge in the university library to improve operations and services.
- Training shall be planed within team(s) on monthly, quarterly, or yearly basis, with synergies ensured and experiences shared wherever possible. Collective opportunities for training in tools for knowledge and learning shall be particularly supported;
- The rotation of staff in different posts shall be practiced as far as possible.
- Each unit/division shall establish non-IT e.g. Space for discussion and brainstorming for creating and sharing knowledge for library operations and service.
- The library will notify and train all staff for new KMTs identify and introduce for operations and services

- Staff members who participate in a significant training, seminar, workshop, etc. shall share the knowledge learned with others. The knowledge should be shared through KMTs(IT and Non IT)
- Staff members should participate in internal/external interaction or collaborative discussions (including staff meetings, union meetings, membership meeting, online and off line meeting etc) to share ideas and experiences to other members;
- Team-work or Community of Practice technique shall be used for creating and sharing knowledge through KMTs;
- Opportunities for thematic and methodological creating and sharing of knowledge within offices/teams should be regularly created;
- The university library web site shall be emphased as one of the link to IT- KMTs for creating and sharing knowledge and shall be updated regularly.

6.1 Reword/Acknowledgement

- Staff shall be recommended for national/international workshop, conference, training for using KMTs frequently for library operations and services.
- Any staff member that makes the library known to national and international communities for participating in creating and sharing of knowledge using KMTs for operations and services shall be acknowledged by the University Management.
- Staff shall be acknowledged by the UL for creating and sharing new knowledge that is useful for operations and services
- Staff shall be promoted, if frequently participated in creation and sharing of knowledge with KMTs for library operation and services.

- Staff shall be sent out for training if he/she frequently creates/shares knowledge with fellow staff members using KMTs for library operations and services

6.2 Sanctions

There shall be sanctions on the lapses by staff, on the utilization of KMTs for knowledge creation and sharing. The sanctions shall include:

- Any suppliers or vendors that supply faulty KMTs, the supply shall be rejected and the victim shall be banned from any supply.
- As the case may be, library staff shall be charged monetary compensation equivalent to the damages inflicted on the library KMTs
- As much as possible, postings/deployments of library staff shall strictly based on merit, competence and expertise in using KMTs.
- Prescribed sanctions shall be meted on the library staff who was caught to have abused, misused or abated the abuse of knowledge management systems, facilities and services in form of theft; deliberate moving from one place to another, destruction etc. The library shall treat the matter as prescribed in the University Laws and Statutes.
- Any staff that refuses to create and share knowledge within and outside the library within a year shall not be recommended for promotion, workshops, training, etc

6.3 Definition of Key Terms

Knowledge Management Tools: is anything used as a device, means, methods or instrument facilitates identifying, acquiring, organizing, sustaining, sharing, retrieving and evaluating the understanding, experience, and wisdom of an individual or groups of individual, to

	enhance easy access to information and create value to the information products provided.
Knowledge Management Process:	is the system of identifying, creating, codifying, Storing and sharing of expertise and skills
IT Knowledge Management Tool:	is any electronic system used as a device, means, and methods or instrument for identifying, acquiring, organizing, sustaining, sharing, retrieving and evaluating the understanding, experience, and wisdom of an individual or groups of individual.
Non-IT Knowledge Management Tools:	is any non-electronic device, means, methods or instrument use for identifying, acquiring, organizing, sustaining, sharing, retrieving and evaluating the understanding, experience, and wisdom of an individual or groups of individual.

9.0 Review of Policy

The University Library's Knowledge Management Committee shall review the KMTs utilization and effect changes whenever necessary to improve effectiveness and efficiency of library operations and services provision on an annual basis.

10.0 Implementation and monitoring

The Knowledge Management Committee (KMC) in collaboration with all library stakeholders shall be responsible for coordinating the implementation of this policy and for providing guidance on the interpretation of specific policy requirements. The KMC in conjunction with the LKMO and B/DKOs shall monitor the implementation of the policy.

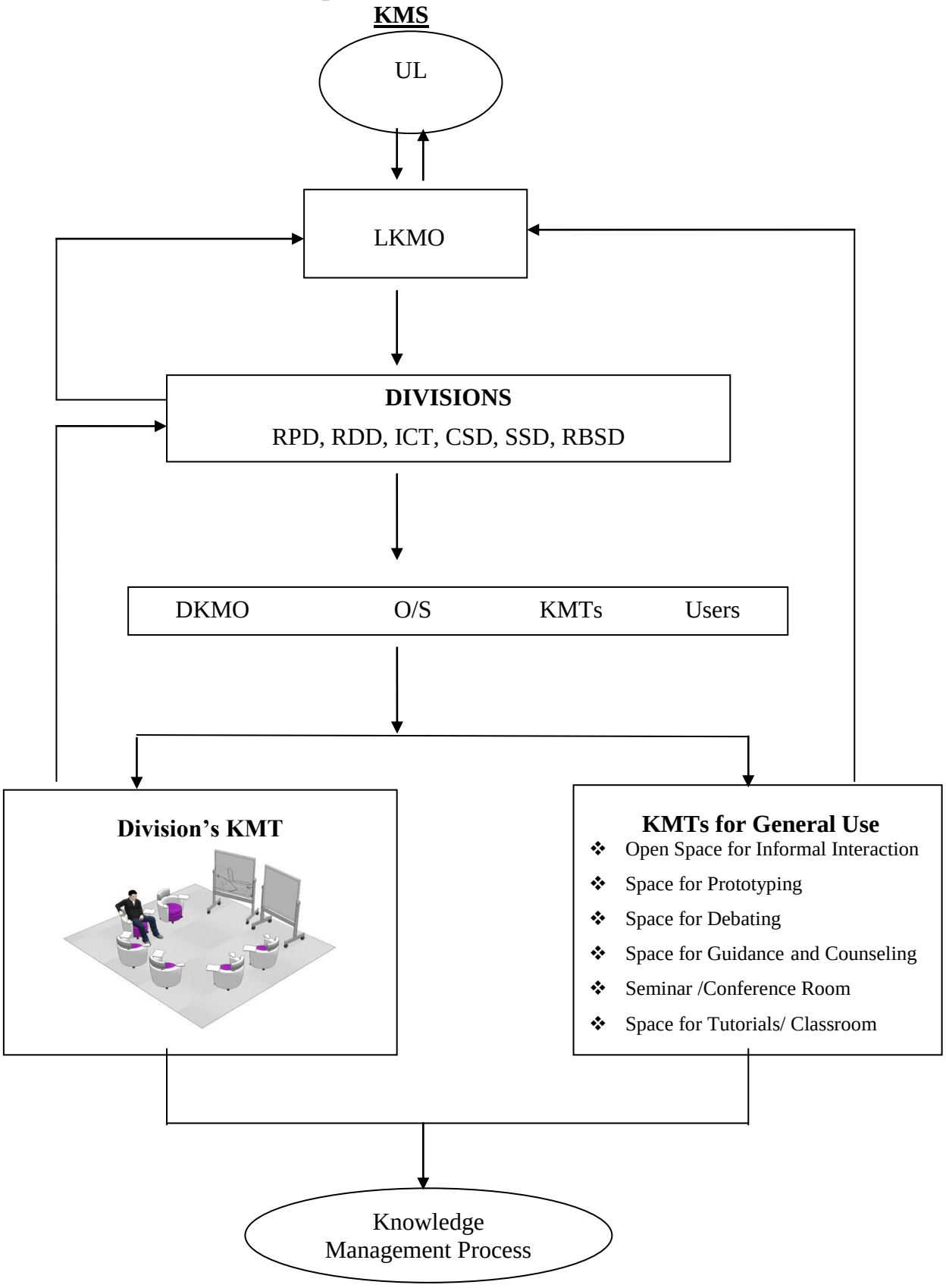
11.0 Related Documents

This Policy shall be read and applied in conjunction with the following library documents:

- Library policy
- Library Manual
- University Laws and Statutes and
- Code of Ethics Policy

APPENDIX II

Flow Chart on KM structure for KMTs Utilisation on Library Operations and Services



APPENDIX III
PROPOSED KNOWLEDGE BASE FOR KMTs
UTILISATION IN LIBRARY OPERATIONS AND SERVICES

Operations and Services in Divisions of the Library

APPENDIX IV

Department of Library and Information Science,

Ahmadu Bello University,

Zaria.

7th October, 2015.

To whom it may concern

Dear Sir/Madam,

REQUEST FOR COMPLETION OF QUESTIONNAIRE

I wish to solicit your assistance in collecting necessary data required in the investigation into **Utilisation of Knowledge Management Tools (KMTs) for Library Operations and Services in the Federal University Libraries of Northern States of Nigeria.**

I am a PhD student of the Department of Library and Information Science Ahmadu Bello University, Zaria. Moreover, requesting your assistance to complete the attached questionnaire and your comments will be treated confidential**.** Thanks for understanding and cooperation.

Yours Truly,

MOHAMMED, Habibu

QUESTIONNAIRE

PERSONAL DATA

Please kindly tick (/) and fill the space provided

(1) Name of the University Library----------

(2) Which section of the library do you work

a. Cataloguing/classification section [ ]

b. Acquisition/ collection development section [ ]

c. Technical Services Section [ ]

d. ICT/computer technical services section [ ]

Others (Please, specify)……

(3) Working Experienced

(a)1-5 years ( ) (b) 6-10 years ( ) (c)11-15 years( ) (d)16-20 years ( ) (e)21-25 years (f) 26 and above ( )

QUESTIONS FROM RESEARCH OBJECTIVES

Section A: Knowledge Management Tools (KMTs) Available and utilised for Library Operations and Services

4. Are you aware of the availability of KMTs in your library for operations and services?

Yes [ ] No [ ]

5. Which of the following knowledge creation tools are available for library operations and services in your library? (Tick as many as applicable)

IT KCTs

Knowledge base (wikis)( ) Social Network (Facebook, Blog, etc.) ( ) Advanced search tools ( ) Expertise locator( ) Knowledge transcribing systems( ) Internet( ) Intranet/ Extranet ( ) Audio/visual recording systems( ) Content management system( ) Document management system( )Artificial intelligence tools( ) Simulation tools( ) Online computer library center (OCLC) ( ) Help Desk Technologies( )

NON IT KCTs

Space for guidance and counseling( ) Open space for ad-hoc/ informal interaction( ) Space for team collaboration( ) Space for photocopying( ) Seminar/ conference/meeting room( ) Space for debating( )Space for discussion/ brainstorming( )Help desk ( )

Others (Please, specify)……

6. Which of the following knowledge sharing tools are available for library operations and services in your library? (Tick as many as applicable)

   IT KSTs

   Knowledge Bases (Wikis) ( ) OCLC (worldcat) ( ) Network forum (librarians forum) ( ) Social Network (Facebook, Blog, etc.) ( ) Expertise Locator( ) Knowledge Portal( ) Internet( ) Corporate Telephone System( ) Audio/video Conferencing( ) Electronic meeting system( ) Intranet and Extranet( ) Decision Support System( ) Content Management Systems( ) Document Management Systems( ) Artificial Intelligence Tools( )

   NON-IT KSTs

   Open Space For Ad-Hoc/Informal Interaction( ) Space for Team Collaboration( ) Space for Prototyping( ) Problem solving table( ) Space for Debating( ) Space for Guidance and Counseling( ) Seminar /Conference/meeting Room( ) Space for Discussion/ Brainstorming( ) Help Desk ( ) Space for Tutorials/ Classroom( ) Learning common( ) Others (Please, specify)……

7. Which of the following knowledge creation tools are utilised for library operations and services in your library? (Tick as many as applicable)

   IT KCTs

   Knowledge base (wikis)( ) Social Network (Facebook, Blog, etc.) ( ) Advanced search tools ( ) Expertise locator( ) Knowledge transcribing systems( ) Internet( ) Intranet/ Extranet ( ) Audio/visual recording systems( ) Content management system( ) Document management system( )Artificial intelligence tools( ) Simulation tools( ) Online computer library center (OCLC) ( ) Help Desk Technologies( )

   NON IT KCTs

   Space for guidance and counseling( ) Open space for ad-hoc/ informal interaction( ) Space for team collaboration( ) Space for photocopying( ) Seminar/ conference/meeting room( ) Space for debating( )Space for discussion/ brainstorming( )Help desk ( ) Others (Please, specify)……

8. Which of the following knowledge sharing tools are utilised for library operations and services in your library? (Tick as many as applicable)

IT KSTs

Knowledge Bases (Wikis) ( ) OCLC (worldcat) ( ) Network forum (librarians forum) ( ) Social Network (Facebook, Blog, etc.) ( ) Expertise Locator( ) Knowledge Portal( ) Internet( ) Corporate Telephone System( ) Audio/video Conferencing( ) Electronic meeting system( ) Intranet and Extranet( ) Decision Support System( ) Content Management Systems( ) Document Management Systems( ) Artificial Intelligence Tools( )

NON-IT KSTs

Open Space For Ad-Hoc/Informal Interaction( ) Space for Team Collaboration( ) Space for Prototyping( ) Problem solving table( ) Space for Debating( ) Space for Guidance and Counseling( ) Seminar /Conference/meeting Room( ) Space for Discussion/ Brainstorming( ) Help Desk ( ) Space for Tutorials/ Classroom( ) Learning common( ) Others (Please, specify)……

Section B: **KMTs utilized to facilitates library operation and services**

9. To what extent do the KMTs utilized have being facilitating library operations and services in your library?

Key: 1= Never, 2=Almost never, 3= Occasionally/Sometimes, 4= Almost every time 5= Every time

S/N	**KMTs utilised to facilitate library operations and services**	**1**	**2**	**3**	**4**	**5**
	IT KMTs					
a.	Artificial intelligence tools					
b.	Audio/Video Conferencing					
c.	Internet					
d.	Knowledge Bases (Wiki. Etc)					
e.	Advanced Search Tools					
f.	Expertise Locator					
g.	Network Forum (Liberians Forum)					
h.	Intranet/Extranet					
i.	Electronic meeting system					
j.	Cooperate Telephone System					
k.	OCLC (Worldcat)					
l.	Social Network (Facebook, etc.)					
m.	Decision support system					
n.	Content management system					
	NON- IT KMTs					
o.	Space for Guidance and Counselling					
p.	Open Space For Ad-Hoc/ Informal Interaction					
q.	Space for Team Collaboration					
r.	Space for Prototyping					
s.	Seminar/Conference /meeting room					

t.	Space for Debating					
u.	Space for Discussion /Brainstorming					
v.	Help desk					
w.	Problem solving table					
x.	Space for Tutorials/ Classroom					
y.	Learning common					
z.	Others (Please, specify)					

Section C: Effect KMTs Utilisation on library operations and services

10. To what extend has the KMTs utilisation have effect on the operations and services in your library?

Key: **1: not effect; 2= minor effect; 3= Neutral; 4= larger effect; 5= Major effect**

ID	**How KMTs affect library operations and services**	**1**	**2**	**3**	**4**	**5**
(a)	Use to create and edit content					
(b)	apply to communicate between and within staff/people					
(c)	use for open and creative conversation on topics of mutual interest					
(e)	Help to get feedback at the end of an event or activity					
(f)	generate more ideas and learn faster					
	Turn new learning into better knowledge to share, apply and exploit					
(g)	Enhance in team conversations, participative discussion and collaborative work.					
(i)	Solicits assistance from peers and subject matter experts regarding a significant issues					
(j)	Evaluate and capture lessons learned					
(l)	Assists in group discussion and share any thought and insights in a very non confined way					

(m)	provide structure to organize information, documents, and libraries in a consistent way					
(o)	Creating, maintaining and accessing knowledge base					
(p)	Share a common area of interest					
(q)	Create, innovate, and disseminate new knowledge					
(s)	support finding the right people with the right knowledge at the right time					
(t)	enable us to work together, irrespective of location					
(u)	provide an informal interchange of knowledge and expertise between senior and junior staff					
(v)	effective transfer between tacit and explicit knowledge forms					

Section D: Satisfaction on the KMTs utilization for Library operations and services

11. To what extent are you satisfied with the KMTs **utilization** in your library?

Key: 1.Very satisfied; 2. satisfied; 3 Neutral; 4. Unsatisfied; 5. Very unsatisfied

S/N	**KMTs utilized to facilitate library operations and services**	**1**	**2**	**3**	**4**	**5**
IT KMTs						
a.	Artificial intelligence tools					
b.	Audio/Video Conferencing					
c.	Internet					
d.	Knowledge Bases (Wiki. Etc)					
e.	Advanced Search Tools					
f.	Expertise Locator					
g.	Network Forum (Liberians Forum)					
h.	Intranet/Extranet					
i.	Electronic meeting system					
j.	Cooperate Telephone System					
k.	OCLC (Worldcat)					
l.	Social Network (Facebook, etc.)					
m.	Decision support system					
n.	Content Management system					
NON- IT KMTs						
o.	Space for Guidance and Counselling					
p.	Open Space For Ad-Hoc/ Informal Interaction					
q.	Space for Team Collaboration					
r.	Space for Prototyping					
s.	Seminar/Conference /meeting room					
t.	Space for Debating					
u.	Space for Discussion /Brainstorming					
v.	Help desk					

w.	Problem solving table					
x.	Space for Tutorials/ Classroom					
y.	Learning common					
z.	Others (Please, specify					

Section E: Challenges Encountered in the Utilisation of KMTs for Library Operations and Services

12. Identify as many as possible the challenges encountered in the use of KMTs for library operations and services in your library. (Tick as many as applicable)

Non-availability of knowledge base system for KMTs utilisation ( ) Lack of Awareness of the availability and functions of the KMTs( ) Change and continue innovation in technology and work( ) lack of skills and competency in the utilization KMTs( ) Poor culture of Sharing knowledge using KMTs( ) Difficulty in the management of the KMTs( ) Lack of interest in the use of the KMTs( ) Difficulty of expressing tacit knowledge through KMTs( ) Unwillingness to manage knowledge using KMTs( ) Claiming ownership of knowledge( ) Difficulty of access and storage of knowledge using KMTs( ) Lack of KMTs user guide( ) Different people with different experience( ) lack of policy on the KMTs utilisation ( ) Converting knowledge from tacit to explicit using KMTs( ) Others (Please, specify)……

APPENDIX V

(I) name of the university library	*(J) name of the university library*	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
KIL ABU-Z	*FUNL*	-.52234	.33023	.776	-1.6293	.5846
	IBB FUTY	.14433	.45569	1.000	-1.3832	1.6719
	IBB FUTM	-.00201	.25558	1.000	-.8588	.8547
	AFI UDUS	-.42710	.25343	.724	-1.2767	.4225
	ATBUL	-.37875	.21993	.705	-1.1160	.3585
FUNL	*IKL, ABUZ*	.52234	.33023	.776	-.5846	1.6293
	IBB FUTY	.66667	.52715	.901	-1.1005	2.4338
	IBB FUTM	.52033	.36818	.849	-.7139	1.7545
	AFI UDUS	.09524	.36669	1.000	-1.1340	1.3245
	ATBUL	.14359	.34439	.999	-1.0109	1.2980
IBBL FUTY	*KIL, ABUZ*	-.14433	.45569	1.000	-1.6719	1.3832
	FUNL	-.66667	.52715	.901	-2.4338	1.1005
	IBBL FUTM	-.14634	.48390	1.000	-1.7685	1.4758
	AFT UDUS	-.57143	.48277	.924	-2.1898	1.0469
	ATBUL	-.52308	.46606	.939	-2.0854	1.0392
IBBL FUTM	*KIL, ABUZ*	.00201	.25558	1.000	-.8547	.8588
	FUNL	-.52033	.36818	.849	-1.7545	.7139
	IBBL FUTY	.14634	.48390	1.000	-1.4758	1.7685
	AFL UDUS	-.42509	.30122	.850	-1.4348	.5847
	ATBUL	-.37674	.27363	.863	-1.2940	.5405
AFL UDUS	*KIL,ABUZ*	.42710	.25343	.724	-.4225	1.2767

	FUNL	-.09524	.36669	1.000	-1.3245	1.1340
	IBBL FUTY	.57143	.48277	.924	-1.0469	2.1898
	IBBL FUTM	.42509	.30122	.850	-.5847	1.4348
	ATBUL	.04835	.27163	1.000	-.8622	.9589
ATBUL	*ABUZ*	.37875	.21993	.705	-.3585	1.1160
	FUNL	-.14359	.34439	.999	-1.2980	1.0109
	IBBL FUTY	.52308	.46606	.939	-1.0392	2.0854
	IBBL FUTM	.37674	.27363	.863	-.5405	1.2940
	AFL UDUS	-.04835	.27163	1.000	-.9589	.8622

APPENDIX VI

(I) name of the university library	(J) name of the university library	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
KIL ABU-Z	FUNL	.63787	.30802	.325	-.2043	1.4800
	IBB FUTY	1.48661*	.33489	.000	.5840	2.3892
	IBB FUTM	1.05107*	.21839	.000	.4200	1.6822
	AFI UDUS	.51042	.21656	.223	-.1161	1.1369
	ATBUL	.74674*	.18635	.001	.1987	1.2947
FUNL	IKL, ABUZ	-.63787	.30802	.325	-1.4800	.2043
	IBB FUTY	.84874	.42247	.496	-.3972	2.0946
	IBB FUTM	.41320	.33768	.970	-.5612	1.3876
	AFI UDUS	-.12745	.33649	1.000	-1.0973	.8424
	ATBUL	.10887	.31789	1.000	-.7824	1.0002
IBBL FUTY	KIL, ABUZ	-1.48661*	.33489	.000	-2.3892	-.5840
	FUNL	-.84874	.42247	.496	-2.0946	.3972
	IBBL FUTM	-.43554	.36235	.972	-1.4704	.5993
	AFT UDUS	-.97619	.36125	.079	-2.0065	.0541
	ATBUL	-.73987	.34399	.286	-1.6916	.2119
IBBL FUTM	KIL, ABUZ	-1.05107*	.21839	.000	-1.6822	-.4200
	FUNL	-.41320	.33768	.970	-1.3876	.5612
	IBBL FUTY	.43554	.36235	.972	-.5993	1.4704
	AFL UDUS	-.54065	.25699	.422	-1.2994	.2181
	ATBUL	-.30433	.23210	.953	-.9846	.3759
AFL UDUS	KIL,ABUZ	-.51042	.21656	.223	-1.1369	.1161
	FUNL	.12745	.33649	1.000	-.8424	1.0973
	IBBL FUTY	.97619	.36125	.079	-.0541	2.0065
	IBBL FUTM	.54065	.25699	.422	-.2181	1.2994
	ATBUL	.23632	.23038	.995	-.4394	.9120
ATBUL	ABUZ	-.74674*	.18635	.001	-1.2947	-.1987
	FUNL	-.10887	.31789	1.000	-1.0002	.7824
	IBBL FUTY	.73987	.34399	.286	-.2119	1.6916
	IBBL FUTM	.30433	.23210	.953	-.3759	.9846
	AFL UDUS	-.23632	.23038	.995	-.9120	.4394