KNOWLEDGE MANAGEMENT PRACTICES IN UNIVERSITY LIBRARIES IN KENYA

BY

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NOVEMBER 2012
DECLARATION

Declaration by candidate
This thesis is my original work and has not been presented for a degree or diploma in any other university.

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IS/DPHIL/02/05

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ABSTRACT

In many library settings, there is no planned and documented approach to managing the knowledge of the institution and making it available to staff in order to improve information service provision. In academic libraries in Kenya today, librarians have specific duties and ways of performing them. In a number of cases, there is vital knowledge resting with one individual and little is done to tap this knowledge and make it more accessible. In cases of retirement, greener pastures, death, etc., knowledge in performing certain duties can be lost leading to the cost of retraining or hiring someone else for the job. The challenge for many libraries is the lack of good techniques for acquiring, encoding and providing access to crucial knowledge that is in ‘someone’s head’. Despite the growing awareness of the benefits of knowledge sharing, the accessibility of knowledge is still limited because most knowledge resides with individuals or in documents or repositories not readily accessible to others. The purpose of this study was to investigate knowledge management practices in university libraries in Kenya. The specific objectives of the study were to establish KM practices in selected university libraries in Kenya and identify the tools currently used in managing knowledge; establish the extent to which KM practices have improved information service provision; analyze the opportunities of application of KM; establish the challenges affecting the adoption and application of KM; provide practical recommendations and suggest a model to enhance the adoption and application of KM for knowledge sharing and dissemination. The study was informed by the SECI model, the integrated KM model, organizational learning theory and socio-technical systems theory. The study purposively selected university libraries in the country and consulted 60 library staff. Qualitative research was used where data was collected using semi-structured interview schedules. This was complemented by observation and document review. The data collected was analyzed using grounded theory. It was found that in as much as no library has a knowledge management program in place, there are several practices that point towards it. The level of interest suggests that knowledge management needs to be embedded in library and information work. Knowledge management is perceived to enhance the information professional’s work and improve information service provision. However, the confusion, variations and concerns expressed indicate that knowledge management is still a difficult area requiring a lot of development. It is recommended that KM be embedded in institutional programs for it to be effective. As a result, the study has proposed a model to address the specific needs of university libraries in Kenya. It is expected that this study will offer insight into knowledge management practices in university libraries and the benefits that can be gained by embracing the concept for optimum output. The model that has been suggested will hopefully guide university libraries in Kenya towards the application of knowledge management in influencing their information service provision.
DEDICATION

Dedicated to the memory of my dad, the late John Leo Ogola, and my sister, the late Josephine Akinyi who would have been proud of my efforts, to my mum, Phoebe Akomo who is my pillar of strength and to my two sons Cedric Ogola and Chester Bulinda, who make life worth living.
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Most of all I would like to thank the librarians who responded so willingly to requests for interviews. I appreciate your prompt responses and your readiness to avail yourselves to make this work a success.
# TABLE OF CONTENTS

DECLARATION........................................................................................................... ii   
ABSTRACT............................................................................................................... iii   
DEDICATION........................................................................................................... iv   
ACKNOWLEDGEMENTS.......................................................................................... v   
TABLE OF CONTENTS........................................................................................... vi   
LIST OF TABLES..................................................................................................... ix   
LIST OF FIGURES................................................................................................... x   
ABBREVIATIONS AND ACRONYMS..................................................................... xi   
CHAPTER ONE....................................................................................................... 1   
INTRODUCTION..................................................................................................... 1   
1.1 Introduction .................................................................................................... 1   
1.2 Conceptual Setting.......................................................................................... 3   
1.2.1 Knowledge and KM ................................................................................ 6   
1.3 Background information................................................................................. 13   
1.3.1 Knowledge management in university libraries .................................... 17   
1.4 Statement of the problem............................................................................... 21   
1.5 Aim of the study ........................................................................................... 23   
1.6 Objectives of the study.................................................................................. 24   
1.7 Research questions ....................................................................................... 24   
1.8 Assumptions of the study.............................................................................. 25   
1.9 Significance of the study ............................................................................. 26   
1.10 Scope and limitations of the study ............................................................... 28   
1.11 Organization of the thesis........................................................................... 30   
1.12 Definition of operational terms ................................................................ 31   
CHAPTER TWO.................................................................................................... 36   
THEORETICAL FRAMEWORK......................................................................... 36   
2.1 Introduction ................................................................................................... 36   
2.2 Theoretical framework of the study ............................................................. 36   
2.3 Knowledge Management Frameworks and Models ...................................... 39   
2.3.1 The Socialization, Externalization, Combination, and Internalization (SECI) Model ................................................................. 41   
2.3.2 Integrated KM Model ............................................................................. 48   
2.4 Organizational Learning (OL) Theory ........................................................... 52   
2.4.1 Organizational Learning ........................................................................ 53   
2.4.2 Organizational culture ............................................................................ 53   
2.4.3 KM and organizational learning ............................................................. 55   
2.5 Socio-technical Systems (STS) Theory ......................................................... 61   
2.5.1 The Socio-Technical Perspectives of Knowledge Management ............ 62   
2.5.2 Application of STS Theory to the Study ............................................... 64   
2.6 Summary....................................................................................................... 66   
CHAPTER THREE............................................................................................... 68   
LITERATURE REVIEW...................................................................................... 68   
3.1 Introduction ................................................................................................... 68   
3.2 Knowledge management .............................................................................. 68   

3.2.1 Knowledge management defined .......................................................... 69
3.3 Knowledge management, content management and information management .... 73
  3.3.2 Information Management ................................................................. 77
  3.3.3 Innovation for Value ......................................................................... 79
  3.3.4 Knowledge Application ................................................................. 80
3.4 Knowledge life-cycle ............................................................................... 81
  3.4.1 Knowledge Flow ............................................................................ 83
3.5 The Purpose and value of knowledge management ..................................... 84
3.6 Knowledge management in developing countries ....................................... 88
  3.6.1 Knowledge management in Africa ..................................................... 89
  3.6.2 Knowledge management in Kenya .................................................... 106
3.7 KM and universities ............................................................................. 111
3.8 Knowledge management within libraries ................................................. 113
  3.8.1 The Trend in Libraries ..................................................................... 115
  3.8.2 Value of Knowledge Management for Libraries ............................... 116
3.9 The Application of KM in university libraries ........................................ 118
3.10 Challenges to implementation of knowledge management ....................... 123
3.11 The Future of KM in university libraries ................................................ 129
3.12 Summary ............................................................................................. 130

CHAPTER FOUR ......................................................................................... 133
RESEARCH METHODOLOGY .................................................................... 133
4.1 Introduction ............................................................................................ 133
4.2 Research Design .................................................................................... 133
4.3 Study Population ................................................................................... 137
4.4 Sample design ....................................................................................... 137
4.5 Data Collection methods ...................................................................... 139
  4.5.1 Interviewing .................................................................................. 139
  4.5.2 Observation .................................................................................. 143
  4.5.3 Document and records review ....................................................... 145
4.6 Pilot Study and Pre-testing of the Instruments .......................................... 145
  4.6.1 Reliability and validity of the research instruments .......................... 149
4.7 Generalizing of results ......................................................................... 152
4.8 Data analysis procedure ...................................................................... 153
  4.8.1 Grounded theory .......................................................................... 154
4.9 Data presentation .................................................................................... 156
4.10 Procedures and ethical issues ................................................................. 156
4.11 Summary ............................................................................................. 158

CHAPTER FIVE .......................................................................................... 159
DATA PRESENTATION, ANALYSIS AND INTERPRETATION ....................... 159
5.1 Introduction ............................................................................................ 159
5.2 Distribution of the respondents ............................................................... 160
5.3 Human resource and organizational structure issues ............................... 164
  5.3.1 Skills related to knowledge management ....................................... 165
5.4 Adoption and use of ICTs in Knowledge Management ............................ 167
5.5 Knowledge management and library operations ...................................... 169
  5.5.1 Knowledge assets ........................................................................ 170
LIST OF TABLES

Table 1: Differences between explicit and tacit knowledge........................................... 9
Table 2: The SECI model and KM (Frost, 2005)................................................................. 46
Table 3: Categories of knowledge assets .................................................................73
Table 4: Comparing CMSs to KMSs........................................................................... 76
Table 5: Universities & Academic institutions’ Overall Classification, Maingi, 2007.108
Table 6 Details of University Libraries Studied......................................................... 160
Table 7 Summary of the Respondents Interviewed..................................................... 161
Table 8: Staff details.................................................................................................... 162
Table 9 Qualifications of Librarians Interviewed......................................................... 164
LIST OF FIGURES

Figure 1: The SECI Model (Nonaka and Takeuchi, 1995) .................................. 42
Figure 2: Integrated Knowledge Management Model (Frost, 2005) .................. 49
Figure 3: Organizational Learning Process, (Botha, Kourie and Snyman, 2008) .... 56
Figure 4 Socio-technical perspective of knowledge management. Source: Pan and Scarbrough, 1998. ........................................................................................................... 63
Figure 5: Universities overall analysis, Maingi, 2007 ........................................... 109
Figure 6: KM processes. Bouthillier, F. and Shearer, K. Understanding KM and information management: the need for an empirical perspective, Information Research, Vol. 8 No. 1, October 2002 ................................................................. 120
Figure 7: Knowledge sharing mechanisms, Journal of KM Practice .................... 190
Figure 8 Knowledge Audit (adapted from Koulopoulos and Frappaolo 2000) ....... 198
Figure 9: Proposed Model for use in University Libraries in Kenya ............... 235
# ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AACR II</td>
<td>Anglo-American Cataloguing Rules, Second Edition</td>
</tr>
<tr>
<td>CUEA</td>
<td>Catholic University of eastern Africa</td>
</tr>
<tr>
<td>ICTs</td>
<td>Information and Communication Technologies</td>
</tr>
<tr>
<td>IFLA</td>
<td>International Federation of Library Associations</td>
</tr>
<tr>
<td>IK</td>
<td>Indigenous Knowledge</td>
</tr>
<tr>
<td>ILS</td>
<td>Integrated Library System</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>IT</td>
<td>Information technology</td>
</tr>
<tr>
<td>JKUAT</td>
<td>Jomo Kenyatta University of Agriculture and Technology</td>
</tr>
<tr>
<td>KLA</td>
<td>Kenya Library Association</td>
</tr>
<tr>
<td>KLISC</td>
<td>Kenya Library and Information Services Consortium</td>
</tr>
<tr>
<td>KM</td>
<td>Knowledge management</td>
</tr>
<tr>
<td>KU</td>
<td>Kenyatta University</td>
</tr>
<tr>
<td>LIS</td>
<td>Library and Information Science</td>
</tr>
<tr>
<td>LMS</td>
<td>Library Management System</td>
</tr>
<tr>
<td>RFID</td>
<td>Radio Frequency Identification</td>
</tr>
<tr>
<td>SECI</td>
<td>Socialization Externalization Combination and Internalization</td>
</tr>
<tr>
<td>STS</td>
<td>Socio-technical Systems</td>
</tr>
<tr>
<td>UON</td>
<td>University of Nairobi</td>
</tr>
<tr>
<td>USIU</td>
<td>United States International University</td>
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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Knowledge management (KM) is a strategy for managing the knowledge captured, delivering the correct knowledge to the appropriate people at the correct time in order to help the know-how collected from different employees, customers, partners to be used to improve the productivity and performance of the organization. (Nonaka and Takeuchi, 1995; Quintas, 1997; Denning, 2000). In simpler words, KM seeks to make the best use of the knowledge that is available to an organization, creating new knowledge in the process. The ability to generate knowledge and diffuse it throughout the organization has been recognized as a major strategic capability for gaining sustainable competitive advantage (Roth, 2003; Beveren, 2002). Knowledge management (KM) is the process of transforming information and intellectual assets into enduring value. It connects people with the knowledge that they need to take action, when they need it.

KM practices in higher education are actions aimed at improving the internal flow and use of information through knowledge acquisition and knowledge sharing for organizational effectiveness (Kidwell, Vander Linde and Johnson, 2000; Williams et al., 2004). KM practices encompass the capture and/or acquisition of knowledge, its retention and organisation, its dissemination and re-use, and lastly responsiveness to the new knowledge (Mavodza and Ngulube, 2012).
KM is about people and what they know. This knowledge is useful to businesses and institutions because it is this knowledge that is used to support the overall organizational objectives. KM is one of the most important activities that an organization has to adapt (Davidson & Voss, 2002). For it to be effective, it uses only the information that is the most practicable and meaningful.

KM is an ongoing ever-changing process because knowledge is constantly tested, updated, revised, and can even become obsolete when it is no longer practicable. When expertise is pooled together, and ideas are merged, then KM has more value in an organization. This exchange of ideas can be from within or from experts and consultants in other organizations. These experts would be charged with the duty of updating the organization with information on recent trends and developments.

KM is complementary in the sense that it can be integrated with other organizational learning initiatives. The challenge of KM is to determine what information within an organization qualifies as valuable. All information is not knowledge, and all knowledge is not valuable. The key is to find the worthwhile knowledge within a sea of information and document it for future use and in improving services and/or products (Nitasha, 2010).

KM has been advocated and used in the business world for a long time and there have been several attempts to apply it in universities world-wide. Universities are unique institutions, defined by their underlying mission to generate and disseminate knowledge
in all spheres. They are perhaps the only institutions that bring together scientists, artists, writers, etc. to carry out their work themselves and to transmit the values and tools of their fields to the next generation (Kaufmann, 2005). While enormous amounts of new data and information are now available to us, it is currently presented in very complex forms that make it more difficult to access. More does not always mean better and it falls on librarians to sort it out, make sense of and present coherent information to their library users.

In the context of this study KM practices include knowledge generation, knowledge acquisition, knowledge organization, knowledge storage, knowledge transfer, knowledge sharing and knowledge retention (Davenport & Prusak 1998; Jashapara 2005; Rowley 2003).

1.2 Conceptual Setting

In this information and knowledge age, knowledge is one of the most important factors in the long term success of both an individual and organization. In fact, knowledge may soon be the only source of competitive advantage for an organization. Knowledge assets reside in many different places such as: databases, knowledge bases, filing cabinets and people’s heads and are distributed right across the organization (Kim, 2000). All too often one part of an organization repeats work of another part simply because it is impossible to keep track of, and make use of knowledge in other parts (Kim, 2000). Librarians as intermediaries of information need to know what the organization's
corporate knowledge assets are and how to manage and make use of these assets to get maximum return.

KM is not the latest trendy business idea. It is a concept that has been used for the past several years by a variety of organizations in public and private sectors (Burk, 1999). The famous statement “If only we knew what we know …” has prompted the idea of capturing, sharing and applying knowledge all over the organization (Metaxiotis, Ergazakis and Psarras, 2005). KM permeates many activities and should ideally cut across departmental boundaries in any organization. In this information age, knowledge has gained recognition as being a key resource and an asset in institutions, not only in the business arena but also in libraries. Specific KM activities help focus the organization on acquiring, storing and utilizing knowledge for problem solving, learning, strategic planning and decision making. It also protects intellectual assets from decay, adds to firm intelligence and provides increased flexibility. KM practices aim to draw out the tacit knowledge people have, what they carry around with them, what they observe and learn from experience, rather than what is tacitly stated (Kim, 2000).

Davenport and Prusak, (2000) have defined knowledge as a fluid mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. They assert that knowledge originates and is applied in the minds of knowers. They argue further that in organizations, it becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.
This means that knowledge from the business perspective retains characteristics that make it valuable. When knowledge is leveraged in combination with other knowledge, it is capable of producing a higher-valued asset. Knowledge exists within people and is an element of human complexity and unpredictability. It is fluid as well as formally structured. Knowledge is multifaceted and can be used to deal with dynamic complex situations. This is the prime source of its value to business. Davenport and Prusak, (2000) explain that knowledge itself is worthy of attention because it tells firms how to do things and how they might do them better. Consequently, management has come to realize that what an organization and its employees know is at the centre of how an organization functions.

Davenport and Prusak (2000) summarize by observing that knowledge workers produce innovation via such knowledge creating activities as:

- **Comparison** - how does information about this situation compare to other situations we have known?
- **Consequences** - what implications does this information have for decisions and actions?
- **Connections** - how does this bit of knowledge relate to others?
- **Conversation** - what do other people think about this information?

KM can be described in many ways. For purposes of this research, KM may be defined as that knowledge which involves setting an environment that allows college and university constituencies to create, capture, share and leverage knowledge to improve their performance in fulfilling institutional missions’ (Achava-Amrung, 2001).
There are many organizations, which do not have ways of managing knowledge. Examples of these include the long serving member of an institution who knows everyone and everything about an institution including its history, enquiries desk staff who have mastered answering all categories of queries and have ready answers which are hardly ever recorded, security staff who know all staff and clients, registry staff who know all the file numbers and their location, customer service staff who know clients by name as well as their different peculiarities, the well-annotated telephone directory or the corridor meeting. This activity can only be regarded as KM in an informal sense. In most institutions in developing countries such as Kenya, KM has never been a formal part of the normal activity of library and information services, nor has it engaged the attention of senior management in many institutions of higher learning. However, this has changed over the past decade, as the value of knowledge is more widely understood.

1.2.1 Knowledge and KM

While the term KM is relatively new, many of the concepts behind it have roots in a variety of disciplines. For this reason, KM is a difficult concept to define and measure, with as many KM definitions as there are KM writers and practitioners. This situation reflects knowledge managements’ complex and immature state as a business discipline. This lack of a universal KM definition is a challenging proposition for this research. However, several KM definitions will be explored, in order to place it in a context that is useful for conducting this research.
Most KM researchers believe that knowledge is a higher order construct than information, even those who question the validity of the concept of KM share this belief (Keane and Mason, 2006). Its ambiguity causes KM to be dismissed by some and embraced by others as a transforming agent. Despite the vagueness of definition and the healthy skepticism by some, KM is first and foremost, a new way of looking at and understanding old business issues, stimulated by the significant changes in the business environment.

The organization's success depends critically on successful knowledge management. Knowledge assets are the knowledge that an organization owns or needs to own to achieve its goals. Knowledge equals information, extracted, filtered or formatted in some way.

Knowledge can be divided into two types, tacit knowledge and explicit knowledge (Edvinsson and Malone, 1997). Tacit knowledge consists of the hands-on skills, best practices, special know-how, heuristic, intuitions, and so on. The transfer of tacit knowledge is by tradition and shared experience, through for example, apprenticeship or job training. Tacit knowledge in an organization ensures task effectiveness -- that the right things are being done so that the work unit can attain its objectives. It also provides for a kind of creative strength to tackle tough problems that would otherwise be difficult to solve (Kim and Mauborgne, 1999).

Whereas tacit knowledge is implicit, explicit knowledge is rule-based knowledge that is used to match actions to situations by invoking appropriate rules. Explicit knowledge
guides action by answering three questions: what kind of situation is this? What kind of person am I or What kind of organization is this? and finally, What does a person or an organization do in a situation such as this? (March 1994). Explicit knowledge is used in the design of routines, standard operation procedures, and the structure of data records. Explicit knowledge enables the organization to enjoy a certain level of operational efficiency and control. It also promotes equable, consistent organizational responses (Zha, 2006).

These forms of knowledge can be found in any organization. The organization however, is skilled at continuously expanding, renewing, and refreshing its knowledge in all categories. The organization promotes the learning of tacit knowledge to increase the skill and creative capacity of its employees and takes advantage of explicit knowledge to maximize efficiency (Shukla, 2008). In effect, the organization has acquired a third class of knowledge - meta-knowledge- that it uses to create and integrate all its intellectual resources in order to achieve high levels of performance.

KM is not so much the management of tangible assets such as data or information, but the active management and support of expertise (Blair, 2002). Expertise exists in people, and much of this kind of knowledge is tacit rather than explicit (Branin, 2003). Some of it can be expressed so that it can be known by others and some of it is internalized and only known to the individual. The distinction between tacit and explicit knowledge is another important concept in knowledge management. The table below gives a good example of the characteristics of these two types of knowledge.
Table 1: Differences between explicit and tacit knowledge

<table>
<thead>
<tr>
<th>EXPLICIT KNOWLEDGE</th>
<th>TACIT KNOWLEDGE</th>
</tr>
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<tbody>
<tr>
<td>√ Formally articulated</td>
<td>√ Transferred through conversation</td>
</tr>
<tr>
<td>√ Documented</td>
<td>√ Difficult to articulate or unspoken</td>
</tr>
<tr>
<td>√ Stored in responses</td>
<td>√ Held within self, personal</td>
</tr>
<tr>
<td>√ Reports, lessons learned</td>
<td>√ Insight and understanding</td>
</tr>
<tr>
<td>√ Fixed, codified</td>
<td>√ Judgements, assumptions</td>
</tr>
</tbody>
</table>

*From Claire McInerney, JASIST, 2002*

Tacit knowledge is the knowing of things without knowing how you know; explicit knowledge is the knowing of things that you can explain. For example, most people can speak grammatically without being able to explain the rules of grammar. This is tacit knowledge. Explicit knowledge is that answer to a given mathematical equation.

Tacit knowledge is the knowledge your co-worker knows, but isn't codified or written down; while explicit knowledge deals with knowledge that is written down and structured. For example, your co-worker knows how to fix the printer when it choke on an important document; but she is the only one. This is the tacit knowledge that organizations try to root out and codify. Once that knowledge is written down and saved somewhere it becomes explicit.

The differences are further explained below:

- Explicit knowledge can be recorded digitally in documents, records, patents and other intellectual property artefacts. Explicit knowledge is representational and can live and be manipulated within the digital domain. Converting data-to-information, and information-to-knowledge describes a value continuum of
explicit knowledge. The tools and business processes of KM are intended to enhance this continuum of value.

- Tacit knowledge is made up of best practices, experience, wisdom and unrecordable intellectual property that lives within individuals and teams. Since tacit knowledge exists within minds, it cannot be reduced to the digital domain as a material asset, or be manipulated directly. However, it expresses in the social realm as the response ability of individuals (productivity, innovation and initiative), and teamwork (communication, coordination and collaboration).

The differences between explicit and tacit knowledge are further discussed in the knowledge spiral model in chapter three of this document. KM is often stated to be a process of two different kinds of knowledge, in the words of Nonaka & Takeuchi (1995): a tacit and an explicit form. Tacit knowledge then needs to be translated or converted into explicit knowledge of some form. Explicit knowledge is seen as systematic knowledge, transmitted from one person to another in the form of a formal language (Nonaka & Takeuchi, 1995). The often used knowledge spiral model introduced by Nonaka & Takeuchi (1995) represents knowledge as a spiral process going from tacit to explicit and back to tacit again. It is this dynamic spiral movement that enables knowledge to be created. Tacit knowledge is in turn seen in two dimensions. One is the technological know-how that comes after years of experience. The other is a collection of experiences, values and beliefs that constitutes the framework for perceiving the world in a certain way. Tacit knowledge is also seen as the source of insights and intuition, and may be viewed as our mind in its unconscious
and self-conscious functions. The process of this translation is said to be done through analogies and figurative language. The translation can also be made through identification. The task involved is performed by a master and the student learns by ‘mimicry’.

Going back to the imaginary organization - explicit knowledge could be compared to a manual of how to run a particular machine and then what to do with the product when it is eventually produced. The tacit knowledge is the knowledge workers have about a particular machine and about the product they produce which cannot be explained in words. Suppose one of the workers has worked there for several years and the other is new. The older person will show the new worker what to do and how to do it, and the newer worker will learn by taking after the master, i.e. through mimicry. When the new worker tries to do the same as his master, he will be corrected, in this way the master has to make explicit what he knows implicit and the new worker will have to take it in and make it tacit knowledge. In this way the knowledge spiral starts to spin.

An organization should ideally adopt a holistic approach to KM that successfully combines tacit and explicit knowledge at all levels of the organization. Tacit knowledge is cultivated in an organizational culture that motivates through shared vision and common purpose (Kim and Mauborgne, 1999). Personal knowledge is leveraged with explicit knowledge for the design and development of innovative products, services and processes. Strategic vision and operational expertise are fused in creative action.
Where an organization's performance is heavily reliant on knowledge work, then KM is pivotal. Knowledge work emphasizes the use of professional intellect in activities, which use individual and external knowledge (Broadbent, 1998).

KM involves the identification and analysis of available and required knowledge, and the subsequent planning and control of actions to develop knowledge assets so as to fulfill organizational objectives. KM is not about managing or organizing books or journals, searching the internet for clients or arranging for the circulation of materials. However, each of these activities can in some way be part of the KM spectrum and processes. KM is about enhancing the use of organizational knowledge through sound practices of KM and organizational learning. Thus, KM is a combination of information management, communications, and human resources (Kim and Mauborgne, 1999).

The purpose of KM is to deliver value to organizations. The basic goal of KM is to harness the knowledge resources and knowledge capabilities of the organization in order to enable the organization to learn and adapt to its changing environment (Auster and Choo, 1995). KM practices therefore aim to draw out the tacit knowledge people have, what they carry around with them, what they observe and learn from experience, rather than what is usually explicitly stated. Managing knowledge goes much further than capturing data and manipulating it to obtain information. The KM process is about acquisition, creation, packaging, and application or reuse of knowledge (Singh, 2001). Some examples of each of these types of KM process are:
Knowledge Acquisition: finding existing knowledge, understanding requirements, searching among multiple sources.

Knowledge Creation: research activities, creative processes in advertising, writing books or articles, making movies, and so on.

Packaging: publishing, editing, design work

Applying or using existing knowledge: auditing, medical diagnosis;

Reuse of knowledge for new purpose: leveraging knowledge in product development processes, software development (Haravu, 2002)

1.3 Background information

In recent years, the phrase - KM- has entered the lexicon. For many in the academic world, this is an old concept, a function historically performed by librarians (Hawkins, 2000). However, according to the experts in this field, KM is the process of transforming information and intellectual assets into enduring value. It connects people with the knowledge that they need to take action, when they need it. In the corporate sector, managing knowledge is considered key to achieving breakthrough competitive advantage (LaBranche, 2000).

There are two different types of information necessary to capture the knowledge of process: explicit and tacit. Explicit information is packaged, easily codified, transferable, and communicable. Tacit knowledge, on the other hand, is personal, context-specific, difficult to formalize, and difficult to communicate and transfer (Kidwell, Linde and Johnson, 2000).
Combining these two types of information - using formal and informal information to guide processes - provides the perceived value of knowledge management. The focus is on unraveling individual know-how and applying it to explicitly driven processes so that the right knowledge is available to the right people at the right time (LaBranche, 2000). These interesting concepts are being applied in limited and often modest scale in industrial settings (Hawkins, 2001). The commercial world hopes to capture the efficiencies KM promises in order to gain competitive market advantage. The KM paradigm has even been referred to as the next "killer application" in that it provides organizations with valuable, credible, and insightful information - a tremendous asset and a unique advantage (Brown and Duguid, 1998). So, the question addressed is whether this paradigm is applicable to higher education, and if so, how can it be applied.

The tacit knowledge of a literature may be what characterizes much of the informal, side-conversations at academic conferences, in discussions between graduate students and their mentors, etc. (Hawkins, 2001). It is precisely this type of knowledge that Brown and Duguid (2000) describe as they discuss the value-added dimension of an academic community. However, this information has always been informal, word-of-mouth, and not the province of the library or any other organizational unit.

In commenting on KM in the university context, Cronin and Davenport (2000) suggest that this informal knowledge can be captured by creating a space, and reconstituting the academic village, so that both explicit and tacit information can be combined and shared
by faculty. The challenge is to design a customized, yet flexible infrastructure that supports both individual and collective learning so that the organization, whether a corporation of a university, can adapt to discontinuous change in its operating environment (Cronin and Davenport, 2000).

The academic community has been collecting tacit information for years. It has been known as marginalia or annotation, it has taken the form of bookmarks (either physical or electronic), and it most recently has manifested itself in the form of hot-links that connect related Web sites (Hawkins, 2000). This tacit information is what one person argued was so valuable as the scribblings and notes that one once found on the backs of the physical cards one used in a library card catalog (Baker, 1994). However, for the most part, these have been tools that are created by the individual, and this information is not organized in any way, and certainly not available to the wider university community.

There are many challenges associated with determining which linkages are authoritative and legitimate in scholarly inquiry, and making available all of these other types of tacit knowledge seems overwhelming. Why would one even think of providing this kind of information? The answer lies in the potential increased productivity and innovation that might arise if this information were somehow integrated into the processes of scholarly inquiry. It seems to be this thought that leads to the suggestion that higher education is addressing the wrong problem. The problem, it is argued, is not how to digitize libraries
to deliver information to the desktop and laboratory but how to create flexible organizations that reach beyond the boundaries of the physical campus (Lyman, 2000). KM in an academic setting must encompass the community of scholars in a given discipline and must be able to integrate publications, data sets, tools for manipulating such data, connections to databases of pictures and images, and much more. It should also have potential in an academic environment because of its ability to help us screen and filter information, to hone in on explicit meanings, and to effectively push this filtered information to users.

Much of the focus of KM literature is on competitive advantage, enabling one firm to have a leveraged position over another. In the academic world, however, collegial rather than competitive motivations change the nature and the dynamics of a KM model. While most certainly, the "bragging rights" of having a larger or more comprehensive research library have been used competitively to try to attract better faculty, for the most part, the culture of the academy is based upon the free flow of information, without competitive concerns.

Universities have many opportunities to apply KM practices to support every part of their mission – from education to public service to research. KM should not strike higher education institutions as a radically new idea; rather, it is a spin on their raison d’être (Kidwell, 2000).
1.3.1 Knowledge management in university libraries

University libraries have focused quite effectively on collecting, organizing and making explicit information/knowledge available. Explicit information is difficult to acquire, and tacit information is equally or perhaps more difficult to obtain because it is buried in web-based links to other sites, databases, and publications. In academia, most of the tacit knowledge associated with an area of study lies with the faculty who study it.

It is obvious that for KM practices to be successful, information has to be shared within university libraries, new skills have to be learned, performance reviews have to be applied and the challenge has to be taken up with a lot of enthusiasm. It is important to note that when those who manage knowledge have mastered the art of KM in their own environments, the spill-over of their KM practices will be felt in academic institutions through increased efficiency and improvement in library services. With these changes, libraries may be transformed.

University libraries are experiencing the same kinds of transformational change as their parent institutions. They must therefore learn to adapt by appropriately modifying, supplementing, and discarding services to suit the transformational changes experienced by their parent institutions. The most important mission of university libraries is to expand access to knowledge for their users. Charged with this mission, libraries should aim their KM goal high. There are many opportunities for university libraries to improve their KM in all of the key areas of library services. These are outlined below.
Due to the growth in knowledge in a variety of formats, libraries need to develop their resources access and sharing strategies from printed to electronic and digital resources in line with their missions and visions. Restricted by limited funding, technology, staff, and space, libraries must carefully analyze the needs of their users and seek to develop cooperative acquisition plans to meet these needs. The changing concept from ownership to access should be the goal of a sound resources development strategy.

Going beyond explicit knowledge, libraries should also develop means to capture all that tacit knowledge that is of importance to their users, their organizations, and to the internal operation of libraries. The web site of each library should serve as a portal for all sources of selective and relevant knowledge and information whether explicit or tacit, whether on site or remote, and in all formats. In the current digital and networked knowledge age, the size of information resources on the Web is growing exponentially. No one really knows exactly how many Web pages are on the Internet because new Web pages are added every second. One has to comb the large number of findings in order to find the few relevant pieces of information. Universities and research organizations are themselves knowledge reservoirs. These highly valued intellectual assets, regardless of whether they are explicit or tacit, should be inventoried, archived, indexed, frequently updated, and made accessible in digital form.

In addition, the traditional, time-honored methods of cataloging and classification are barely adequate to handle the finite number of books, journals, and documents, but are inadequate to deal with the almost infinite amount of digital information in large
electronic databases and on the Internet. Other new methods such as data mining, text mining, content management, search engines, spidering programs, natural language searching, linguistic analysis, semantic networks, knowledge extraction, concept yellow pages, and such techniques in information visualization as two-dimensional or three-dimensional knowledge mapping, etc. have been a part of recent developments in KM systems.

Libraries have had a long tradition of resources sharing and networking. These have been greatly expanded by the rapid development of computer, telecommunication, networking, and digital technologies since the 1960s. It is now very common for libraries to be a member of several consortia at the same time for various types of cooperative work and resources sharing. The successes of most of these examples in resources sharing and networking are largely the result of the full cooperation and participation of all member libraries without selfishness. Large and major libraries must take the lead in such endeavours. Experiences indicate that all libraries, regardless of size and specialties, have benefited from and can benefit from library cooperation and resources sharing.

To facilitate the implementation of knowledge management, a well-designed and operational KM system should be in place. IT is important in storage of user information, in the provision of access to electronic resources, in the organization of information for ease of use by library clientele and in the promotion of available resources among others. The latest IT solutions should therefore be used as enablers.
The utmost goal of KM is to provide users with a variety of quality services in order to improve the communication, use and creation of knowledge. As much as possible these services should be tailored to the interest and needs of each user. Information about each user can be obtained by analyzing the records of user registration, surveys, circulation and interlibrary loans, frequently asked reference questions, and the use of e-journal and digital resources, etc. User satisfaction and needs should be collected through periodic users’ surveys. The findings should be used for the planning and redesign of library services. It is very important, however, that user’s privacy should always be protected. Approaches that are library-focused instead of user-focused will be increasingly irrelevant.

University libraries and especially public university libraries in Kenya face many challenges which have arisen from increased student numbers, satellite campuses and stringent budgets. Provision of library services is therefore compromised in an attempt to cater for user needs across all campuses. Private universities strive to meet the Commission of Higher Education standards and guidelines for university libraries and are therefore well equipped and more likely to have the necessary infrastructure, the proper attitude and appropriate work culture. Faced with fewer challenges, it would be easier for private universities to embrace new concepts and adopt them.

KM is not owned by any one group in an organization, nor by any one profession or industry. But if librarians and information specialists want to be key players in the emerging KM phenomenon, they need to understand the multiple perspectives of the
other players. KM requires a holistic and multidisciplinary approach to management processes and an understanding of the dimensions of knowledge work. KM should be the evolution of good management practices sensibly and purposively applied (Broadbent, 1998).

1.4 Statement of the problem

KM is generally understood to mean the sharing of knowledge inside or outside an organization. This sharing of knowledge is taken for granted and most times, the knowledge that is held by individuals leaves when they resign or retire from an organization. In looking at KM, we need to ask ourselves the following questions - Do you know the age profile of your staff and their retirement plans? Can you identify those staff members whose knowledge would be most keenly lost by your organization should they leave? Whose responsibility is the retention of knowledge? Organizations own, acquire and develop assets over time, however, they do not have any direct ownership over employees’ skills, knowledge and experiences acquired in the course of being employed. Such knowledge can become outdated, without the acquisition of new knowledge and can quickly disappear when the employees leave the organization.

With the raising of the official retirement age, there is a strong base of evidence in the country that the average workforce is aging. This will have implications at societal level, but its impact will be felt more immediately by employing organizations. There are many people who are on the verge of retirement. Those with long-term continuous employment linked to good pension funds may well be seeking early retirement.
Coupled with an organizations’ normal staff attrition rate, it seems clear that this is a phenomenon that needs to be addressed. The issue is not just one about losing capacity, but about losing knowledge.

How many times does someone from your organization go to an event, conference, or training without passing on what they have learned? Institutions frequently pay for their staff to be trained in expensive venues only to see them return and not transfer the knowledge to the organization. Knowledge that is acquired outside of the institution frequently remains with the individual because it is not transferred to other employees or retained by the institution to be used in future or as “structural knowledge”. When the employee leaves, the money and time invested in him or her leaves as well.

This is a common problem in many institutions in Kenya and the knowledge gained is not properly applied, shared, or retained within the organization. Part of the problem is the lack of human resource policies and procedures for employees to share the knowledge they acquired outside of the institution. Employees do not typically pass on knowledge from the trainings that they participate in or document the new knowledge they gain from a conference presentation for dissemination to their colleagues. Acquired knowledge should ideally be shared in meetings or through special seminars, discussed, documented, and if necessary utilized to improve programs, policies, or procedures.

In many library settings, there is no planned and documented approach to managing the knowledge of the institution and making it available to staff in order to improve information service provision. In academic libraries in Kenya today, librarians have
specific duties and ways of performing them. In a number of cases, there is vital knowledge resting with one individual and little is done to tap this knowledge and make it more accessible. In cases of retirement, greener pastures, death, etc., knowledge in performing certain duties can be lost leading to the cost of retraining or hiring someone else for the job. The challenge for many libraries is the lack of good techniques for acquiring, encoding and providing access to crucial knowledge that is in ‘someone’s head’. Despite the growing awareness of the benefits of knowledge sharing, the accessibility of knowledge is still limited because most knowledge resides with individuals or in documents or repositories not readily accessible to others.

In recent years, universities have increased student intake, opened up satellite campuses and constituent colleges in many towns in Kenya. The expansion of these institutions has led to high staff turnover with staff moving in search of greener pastures. In Kenya unlike other African countries like South Africa, KM is still a new concept which is yet to be embraced. Some universities already have programs in place, judging by papers that have been presented in past conferences while for others, it is not easy to tell whether or not there is any ongoing program, hence, the need to investigate the current status of KM in university libraries.

1.5 Aim of the study

The aim of the study was to investigate KM practices in university libraries in Kenya, and propose a framework for future improvement.
1.6 Objectives of the study

The specific objectives of the study were to:

1. Establish KM practices in selected university libraries in Kenya and identify the tools currently used in managing knowledge
2. Establish the extent to which KM practices have improved information service provision
3. Analyze the opportunities of application of KM
4. Establish the challenges affecting the adoption and application of KM
5. Provide practical recommendations and suggest a model to enhance the adoption and application of KM for knowledge sharing and dissemination.

1.7 Research questions

In order to achieve the above objectives, the following research questions were formulated:

1. What knowledge assets exist in university libraries? What tools do they use to manage these knowledge assets?
2. Does the current KM practice or lack of it affect the performance of university libraries in Kenya?
3. How prepared are university library staff in adopting KM practices?
4. What skills and knowledge do they require to effectively adopt and utilize KM practices?
5. What problems affect the delivery and sharing of knowledge assets amongst university librarians within their own libraries and how can these problems be solved?

6. What model can be proposed to improve KM practices in university libraries to enhance organizational performance?

1.8 Assumptions of the study

Knowledge, and KM are receiving tremendous interest from both practitioners and academics. Although KM is often accepted as a very useful activity, a number of the assumptions underlying KM have not been examined.

The study was therefore based on the following assumptions:

1. Application of KM practices in university libraries in Kenya is inadequate. In as much as it is difficult to know when KM has been implemented in libraries, it is easy to know if people are doing activities that are geared towards KM.

2. University librarians in Kenya lack awareness of the potential of KM in improving their overall performance. This is assumed to be so because it is not a topic that librarians discuss with as much seriousness as others like, information literacy, institutional repositories, and open access.

3. The limited information on adoption of KM practices hinders university libraries in Kenya in providing effective information services. Information that is available on KM is centered around the developed world where the resources available do not match those in the country. It is therefore not practical to use
them as benchmarks since KM works best when individual programs are tailored to suit the needs of individual users.

1.9 Significance of the study

In order to better understand the challenges and opportunities of KM facing university libraries in Kenya, it is inherent to know the perception of the librarians who are the ‘knowledge managers’. It is with this in mind that this study examined KM practices in university libraries in Kenya. Issues that have been highlighted include the importance and role of KM, challenges, opportunities, tools currently used in managing informal knowledge and vision for coping with the new technologies.

Therefore the study:

- Provided an analysis on the existing KM practices and their effectiveness,
- Identified some of the reasons for the existing gap between expected roles and actual performance.
- Offers some practical solutions to problems facing university libraries in Kenya in harnessing knowledge management.

The results and recommendations will hopefully offer insight into KM practices in university libraries and how this knowledge can be embraced to improve the provision of information services.
This study is significant due to certain factors, which rationalize it as current and timely. KM is a relatively new discipline in the information and library environment, which originated in the early 1990’s in the private sector to help companies survive in an everlasting competitive environment (Feather, 2003). KM has been the core issue in organization development in recent years and has been accepted as a global concept. It is in the interest of libraries and the information environment in general, to support the implementation of the KM culture. If this is the case, then there is a need for a deeper understanding of the many dimensions of KM and its relevance in libraries.

There is limited literature on KM in university libraries in Kenya, considering that it is a relatively new area. It is therefore expected that this study will offer insight into the importance of KM in the running of university libraries and the benefits that can be gained by embracing the concept for optimum output. The study will borrow from existing studies of a similar nature that have been carried out in other parts of Africa. The novelty of KM is that it is not just a consultants’ invention but it is practitioner based making it a practical solution to some of the problems currently faced by university libraries in Kenya.

Discussions about KM have centered, typically, on the private sector. However, the subject is equally important to other social and economic entities, whether profit or non-profit oriented. Such entities include governments, non-governmental organizations, the education sector, research and development institutes and regional and international institutions, all of which also deal with knowledge. This study is a step towards closing
that gap by focusing on university libraries, which fall in the education sector. The changing environment of academic life demands new competencies by academic librarians. As a result, the knowledge and expertise of academic librarians needs to be seen as the library’s greatest asset. The study, in as much as it is exploratory, will be highly educative to the participating institutions to help in highlighting their KM needs.

There is a wide range of literature on KM from the developed world where the situation is totally different from that in the developing world. In recent years however, KM is gaining ground in the developing world and there is a lot of research on KM in various sector. It is therefore necessary for a study of this kind to be conducted in a country like Kenya and in the information sector where it did not initially have a home.

1.10 Scope and limitations of the study

The study focused on four of the seven public universities and four of the six chartered private universities in Kenya. The public universities studied were, University of Nairobi, Kenyatta University, Moi University, and Jomo Kenyatta University of Agriculture and Technology. The chartered private universities were University of Eastern Africa, Baraton, Catholic University of Eastern Africa, Daystar University, and United States International University.

The study was restricted to the university libraries of these institutions and how they manage their knowledge. The main focus was senior librarians and heads of sections. Other library staff were consulted to fill in the gaps. Although the application of
Information and Communication Technology (ICT) in KM was not the main focus, it was used to show the potential of ICTs in improving knowledge sharing and provision of information services by university libraries.

The limitation of the current study is that it was conducted only in selected university libraries. Ideally, it should have been conducted in all university libraries and their affiliated colleges and in all institutions of higher learning in Kenya. The study population was limited to librarians and ICT managers and did not include top management as the policy makers. The issue on the cost of implementing KM was also not considered. Further studies can be conducted to involve and inform this category of respondents and to include the cost implications of implementing KM.

The purposive sampling procedure decreases the generalizability of findings (Creswell, 2003). It will therefore not be possible to generalize the finding to all university libraries. To generalize the impact of the findings, it should be recommended to replicate this study in other libraries, thus gaining a more thorough perspective of how personality characteristics and situational characteristics affect the adoption of KM in university libraries.

Another limitation is the small sample size and the resulting concern that the data may not fully capture the range of factors that interplay in the relationship between KM and library performance. This, when combined with the use of self-report measures for study variables is a limitation because the study reflects the perception of the Librarians
which can either be positive or negative depending on the mood at the time of the interview. During interviews people may not respond truthfully, either because they cannot remember or because they wish to present themselves in a socially acceptable manner. Social desirability bias can be a big problem with self-report measures as respondents often answer in a way to portray themselves in a good light.

1.11 Organization of the thesis

The thesis has been divided into six chapters. Chapter one is the introduction. It covers all the background information, states the research problem, aims, objectives, research questions, assumptions, justification of the study, scope and limitations. At the end of the chapter, there is a section for definition of terms used in the study.

Chapter two covers the theoretical framework of the study and discusses the Socialization, Externalization, Combination and Internalization model, the integrated KM model, organizational learning theory and socio-technical systems theory and their relationship to this study.

Chapter three is a review of literature in the area of knowledge management. This is where KM is defined and its relationship with various concepts established. Other topics covered in this chapter include, the value of knowledge management, KM in universities and within libraries and the challenges faced when implementing knowledge management.
Chapter four discusses the research methodology employed in the study. It highlights the research design, study population, sample and sampling technique, data collection procedure and pilot study. It further explains the development of research instruments, validity and reliability of the instruments, administration of the instruments, methods of data analysis, generalizability and research ethics.

Chapter five presents the results of the data collection effort and is organized and categorized within the KM framework discussed in the research design section of chapter four.

Chapter six provides summaries as per the objectives of the study, draws conclusions, suggests a model to enhance the adoption and application of KM for knowledge sharing and dissemination among university libraries in Kenya.

1.12 Definition of operational terms

*Community of Interest* – A community of people who share a common interest or passion (Wikipedia, 2012)

*Content Management* – is the set of processes and technologies that support the collection, managing and publishing of information in any form or medium (Wikipedia, 2012)

*Community of Practice* - can be defined as "a group of professionals informally bound to one another through exposure to a common class of problems, common pursuit of solutions, and thereby themselves embodying a store of knowledge (Stewart, 2001)."
**Culture** - A combination of organizational history, shared experiences, group expectations, unwritten or tacit rules, ethics, and social interactions that affect the behavior of everyone in the organization. Culture is developed de jure (organizational rules and pronouncements from upper management) and de facto based on shared experience. Culture is a complex social structure.

[http://home.earthlink.net/~ddstuhlman/defin1.htm](http://home.earthlink.net/~ddstuhlman/defin1.htm)

**Data** - unstructured facts and figures that have the least impact on the typical manager (Thierauf, 1999).

**Data Management** – is the development, execution and supervision of plans, policies, programs and practices that control, protect, deliver and enhance the value of data and information assets (Wikipedia, 2012)

**Explicit Knowledge** - Formal codified and systematic knowledge that is easily communicated and shared, (Nonaka, 1991).

**Externalization** - The transfer of knowledge from the minds of its owners to an external repository in the most efficient way possible. Externalization tools help build knowledge maps. They capture and organize explicit knowledge and create bodies of structured knowledge or directories on tacit knowledge. (Koulopoulos and Frappaolo, 1999).

**Information** – Facts or details about something (Hornby, 2005)

**Information Management** - is the collection and management of information from one or more sources and the distribution of that information to one or more audiences (Wikipedia, 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 experiences and information. It originates and is applied in the mind of the knowers. In organizations it often becomes embedded not only in documents or repositories, but also in organizational routines, practices and norms (Gamble and Blackwell, 2001).

**Knowledge Assets** - determine the inputs and outputs of the knowledge-creating process. They include tacit knowledge that is built through shared hands-on experience amongst and between members of an organization or community (skills and know-how of individuals), explicit knowledge articulated through images, symbols and language (product concept and design), systemized and packaged explicit knowledge (specifications and databases) and tacit knowledge that is embedded in the everyday actions and practices of the organization (organizational culture and routines) (Nonaka and Takeuchi, 1995).

**Knowledge Audit** - An assessment of an organization’s current achievement in KM, its potential knowledge behaviour and culture and the mapping of available knowledge resources, (Koulopoulos and Frappaolo, 1999).

**Knowledge Creation** is an interplay between knowledge and knowing, or in other words, putting knowledge into practice (Cook and Brown, 1999).

**Knowledge Management**- is the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical & strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain
and enhance the storage, assessment, sharing, refinement, and creation of knowledge (Frost, 2005).

**Knowledge Management Practices** - encompass the capture and/or acquisition of knowledge, its retention and organisation, its dissemination and re-use, and lastly responsiveness to the new knowledge (Mavodza and Ngulube, 2012).

**Knowledge Retention** is the part of KM that is concerned with making sure that important knowledge assets remain in the firm over time, e.g. when key employees leave the firm or retire (Frost, 2005).

**Knowledge Sharing** - The voluntary act of making knowledge available to others. This should be distinguished from reporting, which is involuntary exchange of information/knowledge on a routine structured basis, (Davenport, 1997).

**Knowledge Transfer** - This is the process of transmitting (presenting or sharing knowledge to a potential recipient) and absorption and use by that recipient:

\[
\text{Transfer} = \text{Transmission} + \text{Absorption (use)}
\]

If knowledge is not absorbed it has not been transferred. The goal of knowledge transfer is to improve the organization’s ability to do things and therefore increase its value, (Davenport and Prusak, 2000).

**Metadata** - Data providing context or otherwise describing information/knowledge in order to make it more valuable as part of the KM system. It’s most often used to connect knowledge in relevant ways to people, business processes and product, (Koulopoulos and Frappaolo, 1999).
**Organizational Knowledge** - When group knowledge from several subunits or groups is combined and used to create new knowledge, the resulting tacit and explicit knowledge can be called organizational knowledge (Hatch, 2010)

**Paradigm** – A disciplines’ general orientation or way of seeing its subject matter (Vogt, 2005).

**Tacit Knowledge** - Highly personal, difficult to formalize and therefore difficult to communicate to others. It is deeply rooted in action and in an individual’s commitment to a specific context (a craft, a particular technology or activities of a team), (Nonaka, 1991).
CHAPTER TWO
THEORETICAL FRAMEWORK

2.1 Introduction
This chapter discusses the theoretical framework on which the study is based. KM has become a critical issue in the performance of organizations. In order to accelerate the research progress in knowledge management, this section has integrated previous KM frameworks into a comprehensive theoretical framework. The theoretical framework gives a clear picture on the why, what and how of knowledge management.

2.2 Theoretical framework of the study
In recent years, KM has become a line of research attracting much interest. It has been the chosen theme for several conferences in the library and information field. This increasing interest might be explained by the fact that it is gaining importance as a source of competitive advantage and as a way of improving organizational performance. In order to know the importance of KM in an organization, it is necessary first to study the theoretical and/or conceptual frameworks that have been applied and developed in previous researches. It will then be possible to come up with the best model that will inform the study on KM and organizational performance. This is quite challenging because as yet, KM does not appear to possess the qualities of a discipline. If anything, it only qualifies as an emerging interdisciplinary field of study. Those involved in the emerging field of KM are still vexed by the lack of a single, comprehensive definition,
an authoritative body of knowledge, proven theories and a generalized conceptual framework (Sutton, 2007).

It is important to look at positivist thinking and knowledge. In order to do this, positivist epistemology emerges. Epistemology is concerned with understanding the origin, nature and validity of knowledge, i.e. positivism. These fundamental assumptions built into the epistemological outlook play a vital role in determining practices with regard to management, organization and knowledge. A major aspect of positivism is the division between subject and object. This means that the outer world is pre-given, ready to be truthfully represented by organizations and individuals. The mind is able to create an inner representation that corresponds to the outer world be it an object, event or state. Translated to knowledge, positivism considers that knowledge exists independent of the human being that uses it, learns it and transfers it.

It has been argued that most approaches to KM do not adequately satisfy the KM needs of organizations, and that there is a lack of cohesiveness across the various approaches (Rubenstein-Montano, Liebowitz, Buchwalter and McGaw, 2000). Rubenstein-Montano, et al., (2000) classify KM frameworks in three categories: descriptive, prescriptive, and hybrid. Prescriptive frameworks provide direction on the types of KM procedures without providing details of how the procedures can or should be carried out. Descriptive approaches describe knowledge management, and identify attributes of KM that can influence the success or failure of the initiative. Finally, hybrid approaches are a mixture of both the prescriptive and descriptive approaches.
Studies on the possible effects of introducing KM in organizations have centered on determining whether it is able to carry out quantifiable improvements. As Davenport (1999) cautions that, although the relationship between KM and performance indicators has been discussed at length, few organizations have been able to establish a causal relationship between KM activities and organizational performance.

Firestone (2001) proposes an intuitive approach to clarify the relation between corporate objectives and benefits. He suggests an abstract model called “benefit global estimation”. To estimate the benefit of a KM program, a conceptual perspective is required, as well as the use of tools and methods, rather than the *ad hoc* use of analytical approaches. To relate KM programs and an organizations performance, an analysis of corporate objectives and work processes is required. In this sense, KM is a process that can help organizations reach their goals. Firestone (2001) argues that a KM program is made up of tasks (T1, T2, … Tn). These tasks have an impact on business processes (P1, P2, … Pn) and are compounded by different attributes which determine their present state. The difference between the present state and the objective state aids the understanding of how the introduction of a KM program influences an organizations performance.

One of the main problems of this model is the excessive simplicity of the effects deriving from the introduction of KM in the organization. There are variables related to human capital that the model does not include, such as the improvement of its capabilities or skills.
Davenport (1999) relates KM activities with some intermediate activities that affect financial results. Progress in KM activities affects intermediate variables such as performance measurement, indicators of the capacity of employees to carry out tasks related to knowledge and finally the generation of ideas and innovations.

The generation of new ideas and innovations in an organization, arising from better use of knowledge can have an effect on the improvement of processes. In the same way, an improvement in processes perfects employees’ capabilities.

2.3 Knowledge Management Frameworks and Models

This section deals with knowledge management frameworks and models. The old saying that a picture paints a thousand words is very much applicable in this case. A good model integrates various elements and shows relationships in a way that is much harder to do in writing.

The first step is to identify the components of a KM framework. At the most basic level, KM consists of the following steps:

- Identification of needs
- Identification of knowledge resources
- Acquisition, creation, or elimination of knowledge related resources/processes/environments
- Retrieval, application and sharing of knowledge
- Storage of knowledge
It is important to note that none of these processes are independent and all of them are affected by countless factors. This is why knowledge management frameworks are typically very different and can be presented in a wide variety of ways.

For instance, some models are sequential, and seek to provide a better overview at the expense of "realism". Other models display overlapping processes in an attempt to simulate what actually occurs inside an organization. The problem with the latter is that they are often hard to grasp and can only convey limited information so as not to become incomprehensible.

As mentioned earlier, since KM is closely related to several disciplines (such as strategy, information management, project management, etc.) and is enabled by a wide range of processes and systems, a model can become very complex indeed. This is why there is no such thing as an integrated and fully detailed knowledge management framework, i.e. one that captures all relevant aspects with appropriate detail. Each model must choose its focus and origin, as well as its limitations. Various models will be discussed at the end of which the one that is most relevant to this study will be incorporated.

Although KM literature has presented no agreed upon guidelines or standards, there are essentially six questions that a KM framework must try to address:

1. "What": refers to the actual processes of knowledge management
2. “When”: refer to time which is very important in today’s competitive world. It also refers to the timing for using one method or another, and is very closely related to "why"

3. “How”: refer to organizational processes, methods, etc.

4. "Why": refers to an indication of the reasons behind using one method or the other

5. "Who": refers to agents responsible of performing KM activities

6. “Where”: refer to the part of the organization where KM activities will take place (Frost, 2005).

The latter four questions are usually tackled by strategic oriented models that take a broader perspective. Whereas, what/how is addressed by process oriented models that mainly focus on management tools and are generally more common. The models that will be discussed are the Socialization, Externalization, Combination, and Internalization (SECI) model, the integrated KM model, the Organizational Learning Theory Model and the Sociotechnical Systems Theory. All these models have been used to inform the study. It is important to note that the integrated KM model is an extension of the SECI model.

2.3.1 The Socialization, Externalization, Combination, and Internalization (SECI) Model

Ikujurio Nonaka presented a model of “knowledge creation” in a series of articles and books dating from the early 1990s. According to this model, knowledge
creation is a spiraling process of interactions between explicit and tacit knowledge. These interactions lead to the creation of new knowledge. The SECI (Socialization, Externalization, Combination, and Internalization) model first appeared in 1991 (Nonaka, 1991a; Nonaka, 1991b; Nonaka, 1994; Nonaka & Takeuchi, 1995) and attained recognition as a useful and rigorous approach to describing the ways knowledge is generated, transferred and re-created in organizations. In brief, the proposed model has the following important aspects:

- An interaction dynamic (transfer)
- Two forms of knowledge - tacit and explicit
- Three levels of social aggregation - individual, group, context
- Four knowledge-creation processes - socialization, externalization, combination and internalization

Figure 1: The SECI Model (Nonaka and Takeuchi, 1995)
The model proposes that a "knowledge-creating organization" consciously promotes the interaction of tacit and explicit knowledge. This is accomplished through systems, structures, and organizational culture, which facilitate the four knowledge-creating processes:

- **Socialization** - *tacit to tacit*: the sharing of tacit knowledge between individuals through joint activities.

- **Externalization** - *tacit to explicit*: to convert tacit knowledge in publicly comprehensible forms.

- **Combination** - *explicit to explicit*: the conversion of explicit knowledge into more complex sets of explicit knowledge for communication and dissemination.

- **Internalization** - *explicit to tacit*: the conversion of externalized knowledge into tacit knowledge on an individual or organizational scale. The embodiment of explicit knowledge into actions, practices, processes and strategic initiatives.

The core behavioral assumption in the model is that knowledge creating organizations continually encourage the flow of knowledge between individuals and groups to improve both tacit and explicit knowledge stocks. The critical knowledge management assumption of the SECI process is that knowledge is created and improved as it flows through different levels of the organization and between individuals and groups. Thus, knowledge value is created through
synergies between knowledge holders (both individual and group) within a supportive and developmental organizational context (Rice & Rice, 2005).

Nonaka, Toyama and Konno (2000, 2001) added a third, more challenging, cultural assumption to the SECI model. They introduced the Japanese concept of “Ba”, a philosophical construct rooted in Japanese society that relates to the physical, relational and spiritual elements of ‘place’, or perhaps more expansively ‘context’. Four different notions of “Ba” are defined in relation to each of the four quadrants of the SECI model which together make up the ‘knowledge spiral’. These are as follows:

- The Originating “Ba”: a locale where individuals can share feelings, emotions, experiences and perceptual models
- The Dialoguing “Ba”: a space where tacit knowledge is transferred and documented to explicit form. Two key methods factors are through dialogue and metaphor creation.
- The Systematizing “Ba”: a virtual space, where information technology facilitates the recombination of existing explicit knowledge to form new explicit knowledge and;
- The Exercising “Ba”: a space where explicit knowledge is converted into tacit knowledge.
“Ba” calls attention to the fact that knowledge is context-dependent: it cannot be separated from its "place" in any meaningful way. Each knowledge-creating process therefore requires a “Ba”, a phenomenal space whose importance should be recognized by the organization. The organization, in fact, should focus significant attention on the development of its “Bas” since more is to be gained by developing the environment around knowledge processes than efforts directed at the processes themselves.

In this model, knowledge is continuously converted and created as users practice and learn. The process should be seen as a continuous, dynamic, swirl of knowledge. Effective KM must therefore take into account the different methods described above, so as to adopt the right strategy in the support of the creation and transfer of knowledge

2.3.1.1 Application of the SECI model

In this model, knowledge is continuously converted and created as users practice and learn. The process should be seen as a continuous, dynamic, swirl of knowledge. The SECI model appreciates the dynamic nature of knowledge and knowledge creation and provides a framework for management of the relevant processes.

A great deal of effort has been put into investigating its practical applicability (with mixed results), but in recent years the applicability of the model has been linked strongly to culture, both organizational and national. The issue is whether culture is
more than just an element in a KM model, i.e. culture-in-the-model, but rather acts as a limiting factor for a model, i.e. culture-of-the-model (Andreeva & Ikhilchik 2011).

Nonetheless, the SECI model remains at the core of knowledge conversion theory within KM, and this almost universal attraction to the model may in itself be an indication that some aspects of it appeal to virtually all cultures (Andreeva & Ikhilchik 2011). The important aspects of the model and its application to this study have been aptly captured in the table below:

**Table 2: The SECI model and KM (Frost, 2005)**

<table>
<thead>
<tr>
<th>Socialization: From tacit knowledge to tacit knowledge</th>
<th>Socialization involves the direct conveyance of tacit knowledge to tacit knowledge. This process attempts to share experience and thereby to create and exchange tacit knowledge. Thus, socialization is used in sharing learners’ experience and know-how with other learners.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Externalization: From tacit knowledge to explicit knowledge</td>
<td>Externalization involves the conversion of tacit knowledge into explicit knowledge. This process attempts to rationalize tacit knowledge and articulate it into explicit concepts and formal models (e.g., to write instruction manuals).</td>
</tr>
<tr>
<td>Combination: From explicit knowledge to explicit knowledge</td>
<td>Combination converts explicit knowledge into more complex and systematic sets of explicit knowledge. This process involves individuals combining and exchanging different explicit knowledge to explicit knowledge with others. Existing learning information in the databases might be integrated to create new knowledge.</td>
</tr>
<tr>
<td>Internalization: From explicit knowledge to tacit knowledge</td>
<td>Internalization is a process of embodying explicit knowledge into tacit knowledge and internalizing the individual experiences gained through the other models of knowledge creation in the form of shared mental models. Through internalization, explicit knowledge created is shared through an online learning community and converted into tacit knowledge by individuals.</td>
</tr>
</tbody>
</table>
As shown by the table, both explicit and tacit knowledge are extremely valuable to any enterprise. Therefore, KM focuses on business processes related to both. Since explicit knowledge can be rendered into digital artefacts that can be communicated, stored and retrieved, a superficial view is that KM is only concerned about software automation which facilitate explicit knowledge. Tacit knowledge can, however, be addressed by software in the following ways:

- Pointing to the people who hold knowledge
- Supporting and catalyzing collaborative processes of exchanging knowledge
- Helping convert a portion of tacit knowledge into explicit knowledge.

Tacit knowledge represents an immense asset of value within an enterprise. There are times that the loss of only a few key people "walking out the door" with their essential knowledge and skills can put at risk the net worth of an entire organization. In the early stage development of an enterprise, key individuals' tacit knowledge embody the vision and mission, as well as the core competencies. Their loss can put at risk the viability or survivability of the corporation. One of the thrusts of KM is to protect and enhance these valuable assets by creating infrastructure and a culture of knowledge sharing.

In the SECI model, movement through the four modes of knowledge conversion is a spiral, not a circle (Nonaka et al., 2001). Having progressed through several cycles, the organisation may find that they have developed sufficiently to be able to document a new set of organizational characteristics.
2.3.2 Integrated KM Model

The integrated knowledge management model (Frost, 2005) attempts to link both process and strategy, while offering specific initiatives at different stages. The model also outlines the relationship of information and information management systems to KM.

The integrated knowledge management model draws upon elements presented by Bukowitz & Williams, 1999; Gamble & Blackwell, 2001; Botha et al, and Nonaka & Takeuchi, 1995. It also includes the concept of organizational memory.
Figure 2: Integrated Knowledge Management Model (Frost, 2005)
The dark gray elements represent KM initiatives, the yellow boxes represent corporate strategy, while the teal boxes depict data and information systems and repositories. The process is initiated from the tactical and strategic considerations, illustrating the way KM strategy goes hand in hand with corporate strategy. The non-bolded elements in the gray oval indicate the knowledge related processes that go on within the organization as it operates, and which management affects/enhances through its initiatives.

The integrated knowledge management model is sequential, offering a simplified view for ease of understanding. The steps as given by Frost (2005) are as follows:

- **Detect & Discover:** This is the process of searching for existing knowledge as well as hidden knowledge within information and data.

- **Organize & Assess:** This involves the organization and assessment of knowledge assets. Knowledge is categorized, evaluated, and presented in a way that makes it easier to access.

- **KM Tactical initiatives:**
  - **Act - Reuse:** If the firm can use existing knowledge to meet a tactical opportunity or threat, the role of KM is to identify this knowledge and enable it to be used. This means that if it is required by a different person/group, then KM is responsible for making it available to all relevant parties. Knowledge reuse thus combines the previous points on detection and organization with a new aspect: knowledge sharing.
  - **Act - Create/acquire:** If the right knowledge resources do not exist, the firm may create or acquire them, assuming the right processes and
systems are in place to support this. For example, the knowledge may be acquired from partners if the right relationships are in place. Knowledge creation depends on the right internal environments that allow for combination and conversion of knowledge assets.

- **Failure to act:** This is not really a KM initiative in itself, but it does have some implications. In the event that an organization fails to act there is still a lesson to be learned. Management must evaluate if this is something that needs to be addressed in the future. This decision is fed back into the loop, affecting future strategic choices.

- **KM Strategic Initiatives:**
  - **Invest:** This refers to the organizational structures, culture, knowledge retention, competencies, external network, and systems that direct, affect, and enable the KM initiatives over a long time period. Strategic initiatives may, for example, involve creating a knowledge sharing culture, restructuring the firm, establishing a beneficial partnership, or implementing a new IT system. If the right environment, system, etc. is already in place, management must make sure to continuously support it. It is important to note that some of these do not fall solely within KM, and they are all fields of study in their own right. However in this case, the interest is solely in the way these broader strategic initiatives shape the focus and direction of KM in the long term.
  - **Divest:** When knowledge assets become obsolete they need to be removed. KM is responsible for maintaining relevant knowledge assets.
2.3.2.1 Application of the integrated KM model to this study

The differentiation between tactical and strategic initiatives should not be seen as categorical, and in reality projects and initiatives will often have mixed goals. The integrated knowledge management model itself should be seen as continuously looping, with new or modified knowledge and information being fed into organizational memory and information repositories each time.

All processes are thus supported by information systems. They play an important role in tracking progress and feeding that information back into the system. This way, each time the integrated knowledge management model is run, it is based on different information, understanding, knowledge, and circumstances than the last time. As with all sequential models, none of this should be taken absolutely literally.

Although this is called an "integrated" knowledge management model, it is not intended to be all-encompassing. Since KM is such a broad discipline, one could continue to add elements until the model was so complex that it had no meaning.

2.4 Organizational Learning (OL) Theory

Universities are the ideal place for knowledge creation and the best place for having a KM system in place. Efficient and effective KM typically requires an appropriate combination of organizational, social and managerial initiatives as well as the deployment of appropriate technology, Marwick (2001).
2.4.1 Organizational Learning
Organizational learning is a process within an organization which modulates and shapes its performance. Organizational learning can be traced back to the beginning of the sixties. It focuses on collective processes affecting an organization. Garvin (1993) defines a learning organization as ‘an organization skilled at creating, acquiring and transforming knowledge, and at modifying its behavior to reflect new knowledge insights. If change is not the result of creating, gaining and sharing knowledge, then ‘learning’ is fairly meaningless. Yuk (2002), states, ‘Organizational learning involves acquiring new knowledge either by discovering it or by imitating the best practice of others.’ The definition of organizational learning adopted here incorporates this thinking: Organizational learning is the process of change in individual and shared thought or action, which is affected by and embedded in the institutions of the organization. When individual and group learning becomes institutionalized, organizational learning occurs and knowledge is embedded in non-human repositories such as routines, systems, structures, culture and strategy (Vera and Crossan, 2005).

2.4.2 Organizational culture
Organizational culture determines values and beliefs which are an integral part of what one chooses to see and absorb (Davenport & Prusak 2000). It includes a shared perception of reality, regarding how things are and how things should be. Furthermore, community and group culture determine the willingness and conditions for knowledge sharing with other members of the organization. Knowledge, and knowledge sharing, are thus inseparable from organizational culture.
Wellman (2009) essentially describes culture as "the way it is around here." Cultural learning can be identified time and again in real world organizations. Wellman points out that at times this can be beneficial and detrimental. Hard wiring a reaction can push the organization into action quickly against a perceived threat. The problem is that this "instinctive response may be inappropriate for the current environment but may be triggered nonetheless" (Wellman 2009).

All in all, organizational culture can be split into levels (Schein 1992):

- **Artifacts**: These represent the visible elements such as processes, structures, goals, climate, dress codes, furniture, etc. An outsider can see them but may not understand why things are the way things are.

- **Espoused values**: The values espoused by the leaders. They most often are grounded in shared assumptions of how an organization should be run. If there is a significant mismatch between the leadership espoused values and this perception, the organization may be in trouble.

- **Assumptions**: These are the actual values of the culture. They refer to the (often tacit) views of the world itself (e.g. human nature). Again, these assumptions should need to correlate at least to a certain degree to the espoused leadership values for the organization to function smoothly.

The importance of a knowledge sharing culture as an enabler for the transfer and creation of knowledge is directly addressed by such authors as Bukowitz & Williams (1999), Davenport and Prusak (2000), and Gamble and Blackwell (2001). In order to
make knowledge management initiatives work in practice, the employees within the firm must be willing to share their knowledge with others. Leaders must understand the culture both on an organizational and community level. While culture often exists on an organizational level, each community may have its own norms, perspectives, and collective understandings. Their willingness to share and to seek knowledge will be influenced by these collective views.

One major influence to a culture's knowledge sharing willingness is the issue of reciprocity (Davenport & Prusak, 2000). This refers to the individual's need to perceive a current or future return on the knowledge he chooses to share. This could be in the form of direct compensation of some kind; it could be something intangible like enhancing the individual's reputation; but it can also be the knowledge that the favor will be returned the next time he requires assistance. Finally, internal competition is yet another aspect of organizational culture that may interfere with the knowledge sharing and knowledge creation process.

2.4.3 KM and organizational learning

Learning is the way we create new knowledge and improve ourselves. Although there is ample debate regarding the mechanisms and scope of learning, in its simplest form this is no different for organizations. Botha, Kourie and Snyman, 2008, describe the organizational learning process as follows:
Figure 3: Organizational Learning Process, (Botha, Kourie and Snyman, 2008)

It is possible to see from the illustration above that organizational learning is based on applying knowledge for a purpose and learning from the process and from the outcome. Brown and Duguid (1991) describe organizational learning as "the bridge between working and innovating." This once again links learning to action, but it also implies useful improvement.

The implications to knowledge management are three-fold:

- One must understand how to create the ideal organizational learning environment
- One must be aware of how and why something has been learned.
- One must try to ensure that the learning that takes place is useful to the organization
The relationship between knowledge, knowing and learning can be summarized as follows. First, knowledge can be obtained through the mind, that is, learning by reflection and through the body, which is learning by doing. Second, knowledge is accumulated in our minds – what we know and in our bodies – know how. Thirdly, knowing is practice, it is something we do. Knowing is not knowledge used in action, but knowledge that is part of action (Cook and Brown, 1999). Lastly, learning is the change in knowledge and the change in knowing, which involves, changes in cognition and changes in behaviour (Vera and Crossan, 2005). The above shows that learning and knowledge are intertwined – while the process of learning produces new knowledge, knowledge impacts future learning. Two theories, in particular, differentiate between learning processes and learning content. Nonaka and Takeuchi’s (1995) knowledge spiral and Crossan et al.’s (1999) 4I framework of organizational learning.

Using the distinction between tacit and explicit knowledge, Nonaka and Takeuchi (1995) suggest four basic models of knowledge creation – socialization, externalization, internalization and combination – and four types of content: sympathized knowledge, conceptual knowledge, operational knowledge and systemic knowledge. These four modes of knowledge conversion are summarized below:

_Socialization describes the implicit sharing of tacit knowledge, often even without the use of language – for example, through experience._ …_Externalization converts tacit to explicit knowledge, often through the use of metaphors and analysis – special uses of language. Combination combines and passes formally codified knowledge from one person to another._ …_Internalization takes explicit knowledge back to the tacit form, as people internalize it, as in ‘learning by doing. Learning must therefore take place with the body as in the mind_ (Mintzberg et al., 1998).
In their 4I framework of organizational learning, Crossan et al. (1999) argue that learning takes place on the individual, group, and organizational levels and that four sub-processes link these levels, involving both behavioral and cognitive changes. According to this model, the process of organizational learning can be conceived as a dynamic interplay among the organization belief system, the behavior of its members, and stimuli from the environment, where beliefs and behavior are both an input and a product of the process as they undergo change. The four sub-processes embedded in the 4I framework are summarized as follows:

*Intuiting is a subconscious process that occurs at the level of the individual. It is the start of learning and must happen in a single mind. Interpreting then picks up on the conscious elements of this individual learning and shares it at the group level. Integrating follows to change collective understanding at the group level and bridges to the level of the whole organization. Finally, institutionalizing incorporates that learning across the organization by embedding it in its systems, structures, routines and practices (Mintzberg et al., 1998).*

Organizational learning is therefore the acquisition of new knowledge by actors who are able and willing to apply that knowledge in making decisions or influencing others in the organization. If knowledge were unrelated to organizational action or decision-making it would be relevant only to individual learning and not to organizational learning.

Organizational integration endeavours to integrate KM into the organizational structure and facilitate dedicated management of the organizational knowledge base. When pursuing KM strategy and establishing a KM culture, it is important to concentrate on
human oriented practices rather than system oriented practices. The most appropriate approach however, would be some alignment between both orientations. At present it appears that organizations having a KM strategy and actively managing their organizational knowledge focus, as a first priority, on the efficiency dimension because it can be operationalized more easily than the effectiveness dimension (Minonne and Turner, 2009). They go on to suggest that an effective measurement system to assess the effects of organizational KM practices, which includes critical success factors, a mix of financial and non-financial data, and a balance between the four forms of integration is essential, (i.e., cultural, organizational, procedural and methodical).

In order to enhance organizational knowledge, KM must therefore be involved across the entire knowledge spectrum. It must help knowledge development at all levels and facilitate & promote its diffusion to individuals, groups, and/or across the entire firm, in accordance with the organization's requirements. KM must manage organizational knowledge storage and retrieval capabilities, and create an environment conducive to learning and knowledge sharing. Similarly it must be involved in tapping external sources of knowledge whenever these are necessary for the development of the organizational knowledge resources.

The importance of a knowledge sharing culture as an enabler for the transfer and creation of knowledge is directly addressed by such authors as Bukowitz & Williams (1999), Davenport and Prusak (2000), and Gamble and Blackwell (2001). In order to make knowledge management initiatives work in practice, the employees within the
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To a large degree, KM is therefore dependent on the understanding and management of organizational learning, organizational memory, knowledge sharing, knowledge creation, and organizational culture.

From organizational learning theory we can infer the following issues which may affect knowledge management and knowledge management systems:

- OL is dependent on allowing organizational inquiry to take place according to theory-in-use, not espoused theory.
- OL is a complex mechanism, resulting often in the storage of interpretations of past events, rather than the events themselves.
OL can take place on three different levels. While single loop learning comes natural to any individual/organization, special attention must be paid to the double-loop and deutorolearning.

2.5 Socio-technical Systems (STS) Theory

The notion of the STS was created in the context of labor studies by Tavistock Institute in London about the end of the fifties (Emery and Trist, 1960). At the time, technology was considered to be an independent, more or less autonomous variable; the mental and social conditions of human work had to follow the given technical structures and could be improved just marginally in one or other case. The concept of the STS was established to stress the reciprocal interrelationship between humans and machines to foster the program of shaping both the technical and the social conditions of work, in such a way that efficiency and humanity would not contradict each other any longer. The notion of the system on the other hand was used very consciously. So the idea of the STS was designed to cope with the theoretical and practical problems of working conditions in industry.

STS in organizational development is the term for an approach to complex organizational work design that recognizes the interaction between people and technology in workplaces. The term also refers to the interaction between society’s complex infrastructures and human behaviour. In this sense, society itself, and most of its sub-structures, are complex socio-technical systems.
STS refers to the interrelatedness of social and technical aspects of an organization. STS theory is founded on two main principles;

- Interaction of social and technical factors creates conditions for successful organizational performance. This interaction is comprised partly of linear ‘cause and effect’ relationships (the relationships that are normally designed) and partly from non-linear, complex, even unpredictable relationships (the good or bad relationships that are often unexpected). Whether designed or not, both types of interaction occur when socio and technical elements are put to work.

- Optimization of each aspect alone (socio or technical) tends to increase not only the quantity of unpredictable, un-designed relationships, but those relationships that are injurious to the system’s performance (Wikipedia)

2.5.1 The Socio-Technical Perspectives of Knowledge Management

The socio-technical perspective of KM adopts a holistic approach, which highlights the interweaving of social and technical factors in the way that people work. An important function of socio-technical analysis is to understand the organization of social relationships in which knowledge, especially in its tacit form is embedded (Mohayidin et al, 2007). They suggest that knowledge needs to be seen as intrinsic in social interaction rather than as a resource disseminated from one person to another. This means that organizational knowledge is socially constructed and shaped by the reciprocal interaction between technological and organizational elements. The implementation of socio-technical elements on KM could unfold the interaction
between technological, informational and organizational components (Pan and Scarbrough, 1999). The socio-technical components comprise of three major layers of KM:

- Infrastructure – comprises of technical components such as hardware and software that enables the physical and communicational contact between people using a network
- Info-structure – incorporates the formal rules governing exchanges and sense making between people and
- Info-culture – the background knowledge embedded in social relations and work group process (Pan and Scarbrough, 1999).

Figure 4 Socio-technical perspective of knowledge management. Source: Pan and Scarbrough, 1998.
These three factors, which influence the level of success or failure of any KM initiative may eventually determine the university’s overall performance in fulfilling its functions as a knowledge provider.

2.5.2 Application of STS Theory to the Study

Over the years, STS theory has spread to most industrialized nations. In Europe and particularly Scandinavia, STS theory is almost synonymous with work design and employee involvement (Appelbaum, 1997). In Canada and the USA, STS theory has become the major underpinning of efforts involving work design. Wide application of the STS approach is due to its generality. This means that it has the capacity to be adopted with ease to almost any organizational situation…and remains open to continual improvement and revision’ (Hackman, 1980).

Management is often seen to take the view that simply putting in a new piece of technology will solve the observed performance problems. But performance is much more complicated than that. There are many different reasons why things are the way they are. Using the STS framework as an analytical tool will help identify the root causes of performance. This is because, STS design is based on the premise that an organization or a work unit is a combination of social and technical parts and it is open to its environment (Trist et al, 1963). Since the social and technical elements must work together to accomplish tasks, work systems produce both physical products and social/psychological outcomes.
Using STS, work is organized in a way that it is compatible with the organization’s objectives. This leads to a participative process and promotes employee involvement in work design. When employees are involved, only those features needed to implement the work design are specified. Any other features vary according to the technical or social needs of a situation. To facilitate the sharing of information, knowledge and learning, employees who perform related tasks are grouped together. Moreover, information, power and authority need to be vested in those performing the work to reduce time delays in responding to problems and to enhance employee responsibility.

STS is a technique for organizational development. Organizational development can be defined as a ‘long-term system-wide application of behavioural science techniques to increase systems but neither system should operate at the expense of the other. Coordinated and integrated human and technical activities are possible when one system is supportive of the other, (Hackman, 1980). Since all the subsystems are interdependent, changes in one area affect and influence other system elements (Harvey and Brown, 1992). The social system is experienced through the organization’s culture, norms, roles and communication patterns as well as through a network of social relationships and behaviour patterns that develop. The result is a work structure that relates people to the organization’s technology. In any organization, changes arising in the external environment exert influence and must be accommodated by the organization in the least disruptive manner. Sociotechnical information systems can be designed to support storage and distribution of data as a basis for knowledge sharing within an organization. Typical examples are database systems and groupware systems used for knowledge
management, collaborative learning and work, or enterprise content management. Whether these types of systems really contribute to knowledge sharing or not, depends on the corporate culture and on the degree of how well organizational and technical structures are adjusted to one another and how they are integrated (Herrmann, Loser and Jahnke, 2007).

2.6 Summary

Though the above approaches have differentiating factors the most important aspect to be noticed is that organizations possess knowledge in various forms – explicit, embedded, embrained, embodied, encultured, encoded, etc. Therefore, organizations can behave and organize themselves as knowledge-possession, generation and transmission systems. They themselves are cognitive agents – demonstrating or portraying a particular corporate rationality or mindset. Therefore, the ability for an organization to be agile, successful, improve performance and positively impact its internal knowledge culture will determine the true competitiveness of the organization in today’s knowledge economies. The theories that have been highlighted compliment one another in that while the SECI model views knowledge creation as a spiral process which is continuous, the integrated model attempts to link both process and strategy, while offering specific initiatives at different stages and the sociotechnical information systems can be designed to support storage and distribution of data as a basis of knowledge sharing within an organization. By implementing organizational learning mechanisms, organizations can increase the capability of managing and utilizing knowledge. Such mechanisms allow the
organizations to collect, analyze, store, disseminate and use the information that is relevant to the organization.

The models highlight the following issues:

- Knowledge is a resource;
- Knowledge must be shared;
- Knowledge should be transferred throughout the whole organization taking into consideration areas of specialisation;
- Individual knowledge should be integrated into the organization’s knowledge stock;
- Knowledge must be systematized and retained within an organization;
- Knowledge must be represented in databases and repositories;
- Managing knowledge largely depends on policies and structures;
- Management of knowledge requires hybrid solutions of people and technology (Davenport 1998);
- Managing knowledge should be governed by proper classification system to facilitate information exchange and its retrieval;
- Knowledge management leads to organizational learning;
- Knowledge needs space and time for it to be shared and used; and
- Knowledge must be evaluated to assess its value

It is important to note that these theories as well as the research results informed the model that has been proposed in chapter six of this document.
CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter covers the review of literature and seeks to describe, summarise, evaluate, clarify and integrate the content of relevant articles, information and books on KM in general, in libraries and in university libraries. A literature review is not just a summary, but a conceptually organized synthesis of the results of your search. It must:

- organize information and relate it to the thesis or research question being developed
- synthesize results into a summary of what is and isn't known
- identify controversy when it appears in the literature
- develop questions for further research

The main purpose of this literature review is to offer an overview of significant literature published on knowledge management.

3.2 Knowledge management

KM is about storing and sharing the wisdom, understanding and expertise accumulated in an organization about its processes, techniques and operations. It treats knowledge as a key resource. According to Hansen, Nohria and Tierney (1999), there is nothing new about knowledge management. They say that, ‘For hundreds of years, owners of family businesses have passed on their commercial wisdom to children, master craftsmen have
painstakingly taught their trade to apprentices and workers have exchanged ideas and know-how on the job’. They add that, ‘As the foundation of industrialized economies has shifted from natural resources to intellectual assets, executives have been compelled to examine the knowledge underlying their business and how that knowledge is used’.

### 3.2.1 Knowledge management defined

KM is a business activity with two primary aspects:

- Treating the knowledge component of business activities as an explicit concern of business reflected in strategy, policy and practice at all levels of the organization; and
- Making a direct connection between an organization’s intellectual assets - both explicit and tacit - and growth, (Barclay and Murray, 2000).

Considering these two aspects, KM “in practice often encompasses identifying and mapping intellectual assets within the organization, generating new knowledge within the organization, making vast amounts of corporate information accessible, sharing of best practices, and technology that enables all of the above – including groupware and intranets,” (Barclay and Murray, 2000). KM has also been more concisely defined as “the leveraging of collective wisdom to increase responsiveness and innovation,” (Koulopoulos and Frappaolo, 1999). Others have represented KM as “…the process by which the organization generates wealth from its intellectual or knowledge-based assets,” (Bukowitz and Williams, 1999). Holthouse (1998) observes that KM“…is about creating a thriving work and learning environment that fosters the continuous creation,
aggregation, and use/reuse of both organizational and personal knowledge in the pursuit of new business value.”

The usefulness of these definitions is not that they describe KM and establish its purpose but that they illuminate four principles which management must be cognisant of when considering how to manage knowledge. The KM implications common to these definitions are distinguished by Koulopoulos (1999) as follows:

- Knowledge is connected. It is collective wisdom that exists in experiences and perspectives; its usefulness is derived from its contextual relationships and attributes surrounding its content;
- Knowledge is applicable in new environments. Information applied to address a novel situation for which no precedent exists, results in new knowledge, competitive action and growth;
- KM is a catalyst. It is an action. Knowledge is always relevant to environmental conditions and stimulates action in response to these conditions; and
- KM solutions are dependent on a knowledge sharing culture.

KM as a new concept is going through a maturing process that makes it difficult to define precisely. This lack of an encompassing, succinct definition is not important provided there is an understanding of the principles underlying the concept. What does matter is the recent insight that firms can gain tremendous advantage by applying a more structured and consciously planned KM initiative.
Despite differences in diction, these definitions operationalize the concept of KM and communicate the role of knowledge as a necessary constituent for business activities and organizational competitiveness. Furthermore, these KM thinkers have established the framework to conduct an intelligent discussion on the distinction between KM and information management. Such a discussion is appropriate for two reasons: first it presents background for this study and second, it will raise awareness of knowledge management’s role as a strategy tool, as too many organizations have rolled out what they thought was an effective KM system only to be disappointed by the results.

There is a distinction between knowing how to do something and knowing what to do – knowing how is the ability of a person to perform tasks and knowing what is holding pieces of knowledge in one’s mind. Blackler (1995) notes that ‘Knowledge is multifaceted and complex, being both situated and abstract, implicit and explicit, distributed and individual, physical and mental, developing and static, verbal and encoded. He categorizes forms of knowledge as:

- *Embedded* in technologies, rules and organizational procedures
- *Encultured* as collective understandings, stories, values and beliefs
- *Embodied* into the practical activity-based competencies and skills of key members of the organization (i.e., practical knowledge or know-how)
- *Embraced* as the conceptual understanding and cognitive skills of key members (i.e., conceptual knowledge or know-what)
Nonaka (1991) suggests that knowledge is held either by individuals or collectively. In Blackler’s terms, embodied or embraced knowledge is individual and embedded and cultural knowledge is collective. It can therefore be argued that knowledge emerges from collective experience of work and is shared between members of a particular group or community.

Although knowledge means different things to different people, knowledgeable reasoning continues to play a crucial and enabling role in the formulation of winning strategies. While several authors agree that knowledge assets are as important, if not more important than physical and financial assets and that these assets should be incorporated into strategy, it is not obvious how this should be done, or even how this resource should be managed. As an example, Earl (2001) maintains that although organizations accept that knowledge can enhance performance, they often do not know where to start to manage knowledge and is of the opinion that the difficulty of managing knowledge can be attributed to the fact that, as in the case of knowledge itself, KM is extremely difficult to define.

Each institution or organization has its knowledge assets that are unique to its operations. Knowledge learned by one institution or even a department within an institution, is not immediately available to those outside that unit. This collective knowledge cannot be traded but it has value in the services that it can render to insiders. Once this collective know-how has been learned and properly mastered, it can be reused
at no extra cost. The more this know-how is used, the stronger it grows. Below are the categories of knowledge assets as defined by Little and Ray, 2005:

**Table 3: Categories of knowledge assets**

<table>
<thead>
<tr>
<th>Experiential knowledge assets</th>
<th>Conceptual knowledge assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacit knowledge shared through common experiences</td>
<td>Explicit knowledge articulated through images, symbols and language</td>
</tr>
<tr>
<td>• Skills and know-how of individuals</td>
<td>• Product concepts</td>
</tr>
<tr>
<td>• Care, love, trust and security</td>
<td>• Design</td>
</tr>
<tr>
<td>• Energy, passion and tension</td>
<td>• Brand equity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Routine knowledge assets</th>
<th>Systemic knowledge assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacit knowledge routinized and embedded in actions and practices</td>
<td>Systemized and packaged explicit knowledge</td>
</tr>
<tr>
<td>• Know-how in daily operations</td>
<td>• Documents, specifications, manuals</td>
</tr>
<tr>
<td>• Organizational routines</td>
<td>• Database</td>
</tr>
<tr>
<td>• Organizational culture</td>
<td>• Patents and licences</td>
</tr>
</tbody>
</table>

*Little and Ray, 2005*

### 3.3 Knowledge management, content management and information management

KM emerged several years ago just when managers and organizations had finally become comfortable with information management. At the time managers perceived that this new “business fad” was nothing more than terminology inflation, dignifying information management with the term knowledge, (Davenport and Prusak, 2000). In some respects the skeptics are correct, as there is a large amount of information management in knowledge management; however, true KM moves beyond information
management. Content management (CM) on the other hand is the set of processes and technologies that support the collection, managing, and publishing of information in any form or medium. In recent times this information is typically referred to as content or, to be precise, digital content. Digital content may take the form of text, such as documents, multimedia files, such as audio or video files, or any other file type which follows a content lifecycle which requires management. Content management practices and goals vary with mission. News organizations, e-commerce websites, and educational institutions all use content management, but in different ways. This leads to differences in terminology and in the names and number of steps in the process.

For example, an instance of digital content is created by one or more authors. Over time that content may be edited. One or more individuals may provide some editorial oversight thereby approving the content for publication. Publishing may take many forms. Publishing may be the act of pushing content out to others, or simply granting digital access rights to certain content to a particular person or group of persons. Later that content may be superseded by another form of content and thus retired or removed from use.

Content management is an inherently collaborative process. It often consists of the following basic roles and responsibilities:

- Creator - responsible for creating and editing content.

- Editor - responsible for tuning the content message and the style of delivery, including translation and localization.
• Publisher - responsible for releasing the content for use.

• Administrator - responsible for managing access permissions to folders and files, usually accomplished by assigning access rights to user groups or roles. Administrators may also assist and support users in various ways.

• Consumer, viewer or guest - the person who reads or otherwise takes in content after it is published or shared (Wikipedia)

A critical aspect of content management is the ability to manage versions of content as it evolves. Authors and editors often need to restore older versions of edited products due to a process failure or an undesirable series of edits.

Another equally important aspect of content management involves the creation, maintenance, and application of review standards. Each member of the content creation and review process has a unique role and set of responsibilities in the development and/or publication of the content. Each review team member requires clear and concise review standards which must be maintained on an ongoing basis to ensure the long-term consistency and health of the knowledge base.
Information management is important but in an environment that emphasises knowledge capture, the ability to route information to the right individual or teams for verification and approval takes on even more importance. To facilitate this process, organisations need to harness category-based permissions, which allow for authoring and technical reviews based upon pre-assigned skills and specific team member responsibilities (Chakravarti, 2008).

Generations of philosophers have debated what knowledge means but this debate is purely academic in nature, providing little business benefit. Therefore, in order to understand what is managed in knowledge management, it is useful to briefly discuss the relationship between data, information and knowledge. These terms are often substituted for each other in colloquial conversation without serious misunderstanding. However, when attempting to categorize and index data, information and knowledge in a formal content classification system, issues of interpretation often arise.
Data, untabulated facts such as sales figures, are the signals about the organization and human activity and has little value in itself. Data is easy to manipulate and store in repositories. Information is what data becomes when humans interpret it and contextualize it. It is also the carrier we use to express and communicate knowledge. Information has more value than data and is more ambiguous. This is evident from the litany of predictions economists produce from the same economic information. Knowledge is information within people’s minds and is valuable as new ideas, insights and interpretations can be applied to information in an effort to generate competitive power and value (Sihlezana, 2006). From a management perspective, employees’ knowledge is difficult to administer as it is intangible, therefore stimulating its flow for sharing, use/re-use and capturing it in a corporate memory relies on human motivation, an individual’s ability to articulate their knowledge and apply it. In practice, it is difficult to determine when data becomes information and when information becomes knowledge. For practical purposes managers can consider data, information and knowledge, points along a continuum of increasing value and human contribution, (Davenport and Marchand, 2000). Davenport and Marchand (2000); and Stewart (1999), advocate that managers spend little energy on this debate and a lot of energy on adding value to what they have by advancing it along the continuum.

### 3.3.2 Information Management

The rationale for the link between information management and KM is derived from the fact that employees in organizations are constantly transforming knowledge into various forms of information such as memos, e-mails, manuals and reports while they acquire
information from others to improve their knowledge. This perpetual regeneration of knowledge into information and information into knowledge is necessary as people are not always able to share knowledge with others due to constraints such as time, the number of people to be informed and geographical location differences.

KM therefore improves information management by developing easily accessible repositories of information about knowledge. This information guides the employee to the required source of knowledge, whether a document or an expert. Such corporate knowledge maps or expertise directories “… describe a set of knowledge categories, the location of the knowledge and, in some cases, its condition and value”, (Davenport and Marchand, 2000).

The most important knowledge is in people’s heads and the human mind is the primary repository of knowledge. Consequently, facilitating access to it through improved information management via knowledge cartography and employee profiling is an important part of KM, Bukowitz and Williams (1999), Davenport and Marchand (2000), Davenport and Prusak (2000), Nonaka and Takeuchi (1995), Stewart (1999) and Koulopoulos and Frappaolo (1999). In addition, as an organization exists to achieve specific goals and objectives, their members are encouraged to share their knowledge. KM promotes this through enhanced information management regarding where knowledge resides and its use/reuse. What this means is that KM depends less on the amount of information than on the number of connections that link employee to knowledge and employee to information. This dynamic distinction between KM and
information management is a critical distinguishing feature reflecting on the connected aspect of knowledge.

3.3.3 Innovation for Value

Most approaches to KM benefit from the use of information technology (IT) and improved information management practices. However, there are two other aspects of KM that differentiate it from information management and evidences that KM is not completely dependent on IT. These truly distinctive aspects of KM can be classified as the creation of innovative knowledge and the application or use of knowledge to beget added value. Unfortunately, these are knowledge management’s most difficult features and they are the ones that separate successful KM initiatives from not so successful KM initiatives.

Knowledge creation is not a new subject. The works of the philosopher Michael Polanyi (1891-1976) were among the seminal treatises on knowledge creation and its use. Polanyi was the first to identify the difference between tacit and explicit knowledge and he was adamant about the intrinsic value of tacit knowledge, believing it to be the source of all explicit knowledge. His theories are the foundations of Professor Ikujiro Nonaka’s research into knowledge creation process in Japanese organizations. Nonaka and Takeuchi (1995) introduce the “Knowledge Life-Cycle”, a theory on how organizations create knowledge. They believe that if management recognizes and nurtures this process then incremental or radical innovation resulting in business growth is possible. However, as they point out, there are strong cultural messages for organizations wishing to adopt
the “Knowledge Life-Cycle” process as it is focused on externalizing tacit knowledge, making it explicit and then internalizing it, making it tacit again throughout the organization. All KM thinkers agree that this abstract process is one of the most challenging aspects of knowledge management.

3.3.4 Knowledge Application

The other challenging aspect of KM that differentiates it from information management relates to the way employees apply knowledge and use knowledge in contrast to information. Knowledge, like information, is of no value to anyone unless applied to decisions that result in competitive action. Plugging information into a previously encountered situation is not the application of knowledge, as this is easily imitated. This implies that populating electronic and paper-based corporate repositories with information on knowledge (i.e. Enhanced information management) is not KM but the intermediate storage of information en-route between employees’ heads, (Koulopoulos and Frappaolo, 1999). KM is not created unless attention is paid to how employees apply and use their knowledge for generating new ideas for future business, (Davenport and Marchand, 2000). Comprehending this difference is essential for understanding KM as “information management consists of pre-planned responses to anticipated stimuli while KM embodies unplanned responses to surprise stimuli,” (Koulopoulos and Frappaolo, 1999). The significance of this stimulus/response aspect is that knowledge must be internalized to be functional as opposed to information. It must co-exist with human aptitude in order to make intelligent decisions. Successful knowledge internalization should result in actions that reflect a change in human behavior. The way knowledge is
applied and stored in the human mind is a critical difference between KM and information management, one which managers must fully appreciate in order to implement an effective KM initiative. If an organization’s KM initiative is limited to better information management or application of the latest IT without consideration for how knowledge is applied, growth may be limited as the exploitation of collective knowledge to innovate and grow the business is unlikely, (Davenport and Marchand, 2000).

Knowledge creation, application and its use are complex issues determined by corporate culture, reward schemes, structure, strategy, skills, staff, management style, values and the design of processes for knowledge work. The continuous conversion of knowledge into information and information into knowledge is a key element of what organizations must do to develop and apply knowledge successfully. There is no doubt that KM incorporates information management and the use of IT to acquire and map information on knowledge and connect employees to knowledge. However, “if knowledge resides primarily in people and it is people who decide to create, use and share their ideas to attain business results, then KM is as much about managing people as it is about managing information and IT,” (Davenport and Marchand, 2000).

3.4 Knowledge life-cycle

Information is converted into knowledge through a human social process of shared understanding and sense making at both the personal level and the organizational level. Nonaka and Takeuchi (1995) refer to this flow as the “Knowledge Life-Cycle” and it
hinges on the distinction between tacit knowledge and explicit knowledge. Explicit knowledge is formal knowledge that has been captured by the corporate memory. It defines the intellectual assets of an organization independently of its employees, thus it is structural knowledge, (Stewart, 1999).

Tacit knowledge is practical knowledge, know how that produces action, it’s the key to getting things done. It has an important cognitive dimension, consisting of “… mental models, beliefs, and perspectives so ingrained that we take them for granted, and therefore cannot easily articulate them”, (Nonaka, 1991). Tacit knowledge is personal knowledge that is difficult to formulate, measure or value; consequently, management has ignored it in the past. The recent management interest in tacit knowledge can be explained by the fact that it’s deeply rooted in action and individual commitment to specific context, (Nonaka, 1991). Tacit knowledge is difficult to acquire and even more difficult to pass on, but it is also very complicated because it is communicated personally. It is what parents despair of ever teaching their children. People will often forget the explicit knowledge they read in books but hardly ever forget their experiences.

A lot of research on KM is around the capturing of tacit knowledge within organizations and how this knowledge can be made useful to others. The tacit knowledge that an organization’s employees possess is typically the most valuable asset that an organization has. It is tacit knowledge that is needed during times of change or emergencies.
3.4.1 Knowledge Flow

KM that results in action depends on taping the tacit knowledge and subjective insights, intuitions and hunches of individual employees and making these available for testing and use by the whole organization, (Borghoff and Pareschi, 1998), (Brown, 1991), (Bukowitz and Williams, 1999), (Davenport and Prusak, 2000) and (Quinn, Anderson and Finklestein, 1996). The combining of tacit and explicit knowledge improves the use and reuse of current knowledge by developing best practices and creating new knowledge through the revision and destruction of existing knowledge. This flowing of knowledge, according to Carneiro (2000) and Argyis (1998), can result in innovative action that produces competitive advantage. The crux of the “Knowledge Life-Cycle” as espoused by Borghoff and Pareschi (1998) is that knowledge that does not flow does not grow and eventually becomes obsolete.

Powerful KM applications will have no value without willing participants who originate a flow of knowledge; network critical mass is essential for successful knowledge management. This is just not a matter of installing effective IT but nurturing a knowledge sharing culture.

Davenport and Prusak (2000) argue that building communities of interest is an effectual technique for achieving critical mass. Often management just has to identify and support these informal “self organizing groups numbering around 50 to 300 people in large companies, sharing common work interests and passions, usually cutting across an organization,” (Prusak, 2000). Such groups embody a knowledge sharing culture,
resulting in a functional knowledge life cycle where knowledge is converted from tacit to explicit to tacit again on a continuous basis.

“Existing tacit knowledge can be expanded through its socialization in communities of interest and practice and new tacit knowledge can be generated through the internalization of explicit knowledge by learning and training. New explicit knowledge can be generated through the externalization of tacit knowledge, as happens, for instance, when new best practices are selected among the informal work practices of an organization. Existing explicit knowledge can be combined to support problem solving and decision-making, for instance, by matching intellectual capital in the form of patents with marketing data showing customers preferences for new products,” (Borghoff and Pareschi, 1998).

3.5 The Purpose and value of knowledge management

As explained by Blake (1998), the purpose of KM is to capture a company’s collective expertise and distribute it to wherever it can achieve the biggest payoff. This is a resource-based view of knowledge management, which suggests that the source of competitive advantage lies within the firm in the form of its people and their knowledge, not in how it positions itself in the market.

KM is about getting knowledge from those who have it to those who need it in order to improve organizational effectiveness. In the information age, knowledge rather than physical assets or financial resources is the key to competitiveness. This is clearly pointed out by Mecklenberg, Deering and Sharp (1999) when they say that KM allows companies to capture, apply and generate value from their employees’ creativity and expertise.
In an organizational context, data represents facts or values of results, and relations between data and other relations have the capacity to represent information. Patterns of relations of data and information and other patterns have the capacity to represent knowledge. For the representation to be of any use it must be understood, and when understood the representation is information or knowledge to the one that understands. Yet, what is the real value of information and knowledge, and what does it mean to manage it?

Without associations, we have little chance of understanding anything. We understand things based on the associations we are able to discern. If a branch library says that user statistics were 250,000 and have been rising by 20% for the last two semesters, it is very easy to calculate what the current statistics are based on the above figures. However, if one were to be asked what the future statistics are likely to be, the answer would not be so forthcoming because although one has the data and information, they lack the knowledge, since data doesn’t predict trends of data. To be able to estimate the statistics for the next semester, one would need information about the user size, the competition, extent of market saturation, user satisfaction levels associated with current service provision and a whole host of other things.

Once sufficient data and information is amassed to form a complete pattern that can be understood, then there is enough knowledge to estimate the user statistics for the next semester. In this example, what needs to be managed to create value is the data that defines past results, the data and information associated with the organization, its market,
its customers and its competition and the patterns which relate all these items to enable a reliable level of predictability of the future. What I would refer to as KM would be the capture, retention and reuse of the foundation for imparting an understanding of how all these pieces fit together and how to convey them meaningfully to some other person.

The value of KM relates directly to the effectiveness with which the managed knowledge enables the members of the organization to deal with today’s situations and effectively envision and create their future. Without on-demand access to managed knowledge, every situation is addressed based on what the individual or group brings to the situation with them. With on-demand access to managed knowledge, every situation is addressed with the sum total of everything anyone in the organization has ever learned about a situation of a similar nature. It is clear from this that only one approach, the latter, would make an organization more effective.

KM is valuable in many ways and is a useful resource for any organization. The importance of KM is corroborated by various research studies. A survey by Price Waterhouse Coopers International found that 95% of the CEOs who participated saw KM as an essential ingredient for the success of their company (Suresh, 2001).

Several sources (Choo, 2004; OSD Comptroller iCentre, 2002; Library Co-op, 2004) attribute a variety of benefits to a well-planned KM effort, including the following:

- KM encourages the free flow of ideas, which fosters insight and innovation and creates new value through products and services
• KM improves customer service and efficiency by streamlining response time
• KM enhances employee retention rates by recognizing the value of employees’ knowledge and rewarding them for it
• KM streamlines operations and reduces costs by eliminating redundant or unnecessary processes and promoting reuse
• KM facilitates better, more informed decisions by reducing uncertainty
• KM contributes to the intellectual capacity of an organization
• KM boosts revenue and enhances the current value of existing products by getting products and services to market faster
• KM leads to greater productivity by increasing the speed of response

According to Davidson (1996), what is really important is:

• **Mission**: What are we trying to accomplish?
• **Competition**: How do we gain a competitive edge?
• **Performance**: How do we deliver the results?
• **Change**: How do we cope with change?

As such, knowledge management, and everything else for that matter, is important only to the extent that it enhances an organization’s ability and capacity to deal with, and develop, in these four dimensions. The more information we have in our brain the more informed decision we make. It is true that our memory is limited so we cannot know more than what our memory can carry. This means that what we can express through our language determines how much knowledge we have. It follows therefore that the
more we are conversant with our language the more we can express what we know to other people and the more we can be called knowledgeable. Knowing more is not of any use to us if we cannot express what we know. It is important for people to expand their vocabulary so that they can express their knowledge and make informed decisions.

We learn to engage in practical activities through our participation in social practices, under the guidance of people who are more experienced than us. Some of what we know and how we do it is taken for granted until someone asks us about it. ‘Although skilful knowing is ultimately infallible, it nonetheless can be talked about: through reminding ourselves of it, we notice certain important features which had hitherto escaped our attention and can now be seen in a new context. Consequently, we are led to relate to our circumstances in new ways and thus see new ways forward’ (Little, Ray, 2005).

3.6 Knowledge management in developing countries

Managing knowledge efficiently and effectively is considered a core competence for organizations to survive in the long run. The evolution and implementation of KM is still in its infancy stage in most developing countries. Therefore, it is not easy to compose a comprehensive and applicable KM framework. There is a new management job in town, whose job description goes beyond simply managing people and money. It is called knowledge management.
Three conferences have been held in Africa to fine-tune this new management concept—one in Johannesburg, South Africa in 2005, the second in Nairobi on July 2007, and the latest one in Dakar, Senegal in 2009.

It is true to say that any organization that wants to survive the intense competition for innovation must consider hiring knowledge managers, whose job will be to take stock of what each and every member of the organization knows and retain for future use.

### 3.6.1 Knowledge management in Africa

In recent years, mainstreaming KM practices in Africa has assumed increasing importance. This is due to the fact that utilization of indigenous knowledge assets is an important aspect in poverty alleviation strategies. It is therefore necessary for individual governments to create an enabling environment encouraging the adoption of KM practices in Africa. This is aptly described below:

*The successful management of the transition from an agricultural to a knowledge based society, it is argued, should go beyond formulating information communication technology policies to include KM policies as well. The contribution of information and knowledge systems in six key sectors of the national economy is described as vital to kick start the revival and reconstruction of Africa. The sectors identified are: poverty eradication and wealth generation, transfer of technologies and innovations, education sector, agricultural sector, small, medium and micro enterprises, and health sector. The new era of KM challenges information specialists to reinvent and reposition themselves as infomediaries and knowledge managers who can manage efficiently the process of converting data and information into knowledge for development* (Mchombu, 2005)
Africa is termed as a Knowledge Society (Ondari & Minishi-Majanja (2007). Drucker contends that the basic economic source in Africa would no longer be capital or natural resources or even labor but knowledge. This means that Africa is endowed with indigenous knowledge that should be captured, stored, shared and transferred by networking between countries. Indigenous knowledge (IK) is defined as the local knowledge that is unique to a given culture or society and forms the basis for decision making within communities (Ndugo et al, 2007). In a related study, Ahmed, Ghoneim and Kim, 2009 researched on how governments in Africa have incorporated KM in governance and how inclusive the process has been. The discussions were centered around the need to create an enabling environment encouraging the adoption of knowledge management practices in Africa and the utilization of indigenous knowledge assets as an important input in poverty alleviation strategies.

The importance of indigenous knowledge (IK) in efforts towards sustainable development in Africa is gaining ground as seen by the studies that have been recently carried out. The fact that indigenous knowledge and indigenous knowledge systems can contribute to the sustainable development of society is no longer debatable (Den Biggelaar 1991; Maila 2007; Ngulube 2003; Payle and Lebakeng 2006; Shiruma 2004). Increasing attention is being given to indigenous knowledge (IK) in the third world. The impetus behind the “renewed” efforts to manage and preserve IK stems from the fact that (Toong Tjiek 2006: 123):
• West interested in IK more than before;
• Erosion of belief that western knowledge had universal validity;
• Rise of the knowledge economy with its emphasis on the development, production, distribution and use of knowledge and information (Vaile 2000);
• IK still poorly documented;
• Dissemination of IK limited;
• Inadequate policies for managing and preserving IK;
• IK collected in a haphazard manner;
• Need to identify and collect local content; and
• Growing ability of some indigenous people and their organizations to make their voices heard both in the national and international forums (Kalland 2000: 319).

Many scholars and developmental practitioners have turned to indigenous knowledge systems for illumination rather than, as they used to do, western codified knowledge (Ngulube and Lwoga, 2007).

An electronic network has been created to foster connections within Africa to create a ‘knowledge bank‘ that links expertise with demand. Among the knowledge banks is KM Africa (KMA) which has become a knowledge engine that drives appropriate development solutions for Africa, Banhenyi (2007). The mission of KMA is to promote the use of Africa's collective knowledge as a key development resource and establish KM platforms that will create access to existing networks and facilitate the sharing and utilization of knowledge across all sectors.
KMA organizes biennial conferences in different countries to boost the implementation of KM in Africa. The first conference was held in South Africa in 2005. The KMA conference of 2007 was the second biennial conference and it was held in Nairobi and brought together diverse international development finance institutions, sector professionals and civil-society organizations. The conference aimed at synthesizing coalitions of independent and interdependent knowledge networks and practitioners into a conduit for the cooperative pursuit of mutual advantage to rival the countervailing dominance of trade, finance and investment by affluent countries having the muscle of strong, hi-tech economies.

The Third Biennial Conference “Knowledge to Reposition Africa in the World Economy” was held in Dakar, Senegal in 2009. The idea was to come up with ways on how knowledge can be used to re-position Africa in the global economy, particularly with regard to the impact of technology. It was attended by researchers, practitioners, private and public institutions, and civil society organizations seeking to influence the creation of new knowledge communities and networks across political and social borders in the rejuvenation of Africa. Of particular relevance the conference focused on how the application of KM tools and techniques have impacted on development challenges in institutions, communities, civil society or enterprises.
Another organization is the Global Development Network (GDNet) which organizes various workshops in Africa. The most relevant one for this, ‘The Knowledge Sharing for Development: Africa Regional Program’, workshop was held in Cairo-Egypt on 2005. The workshop targeted the following three objectives:

- First, to share experience - explore a range of tools for research communications and knowledge sharing.
- Second, to meet research communication and knowledge sharing challenges – practical solutions and insights
- Finally to build relationships among professionals with similar interests in research, communication and knowledge sharing.

The African Medical and Research Foundation (AMREF) is an organization operating seven country programmes in Kenya, Uganda, Ethiopia, Somalia, Tanzania, South Sudan, and South Africa. With its headquarters in Nairobi-Kenya, AMREF works through Africa's communities, health systems and governments, generating and applying knowledge that contributes to closing the gaps that prevent people from exercising their basic right to health (Ireri & Wairagu, 2007). AMREF’s strategy is to facilitate the development of innovative models for community participation in the improvement of health. It recognizes knowledge as a valuable resource that deserves to be consciously captured and managed to facilitate sharing of experiences and lessons learnt from different programmes both internally and externally. If this can only be implemented in Africa, it will be considered as an advanced big step to the second generation of KM
whereby knowledge must not only be captured and shared but also be produced. In fact Kenya has 83 non profit organizations and 277 registered profit organizations as indicated in the 2007 Business Directory and this offers the need to study whether KM is implemented.

The influence of KM is felt in all sectors, including agriculture, medicine, education, politics, science, to mention a few. It has inevitably been realized that knowledge powers human action and directs all interventions. It is therefore apparent that without knowledge, action is futile. On the basis of the above background, the above theme proves timely in the African context.

Whereas KM and all associated best practices have been well received and embraced by the western world, Africa still seems to have a long way to go. The first step in this endeavour would be to build capacity in knowledge based activities in all sectors of the economy. Knowledge-based capacity building seeks to establish a KM system to make an organization a learning organization driven by continuous improvement.

In this context, a KM system seeks to share as knowledge: skills, experiences, reflections, memoirs, insights, development lessons, technical advice, research findings, case studies, best practices, conceptual frameworks, methodologies, strategies, techniques, tools, instruments, actionable recommendations from workshops, publications, among others. Hence, for example, the application of KM system in the
under-mentioned cases must be done with a view to strengthening performance and quality of service:

- **Educational Sector**: The application of a KM system, including technology infrastructural support, should improve access to education and standardize quality across institutions, e.g., application of e-learning in tertiary education.

- **Public Service Delivery**: The application should improve quality of service through, for instance, knowledge sharing and performance management systems.

- **Policymaking Process**: In this case, it should improve policy and program design and implementation through access to knowledge networks, communities of practices, best practices, etc.

- **Capacity Building Process**: Here, it should provide access to best practices, improved methodologies, strategies and instruments for intervention.

- **Organizations**: While at the level of an organization, it should raise effectiveness and performance through continuous learning and innovation (Ogiogio, 2005)

The increasing pressure to gain and maintain local and international market competitiveness does not allow organizations to repeat mistakes, duplicate work or rely on a few key individuals. Knowledge managers, are especially necessary in the current scenario, where firms are increasingly seeking to maintain a lean working staff while
maintaining quality. Such managers will ensure that employees leaving the organization do not leave with their knowledge, and that existing reserves of this vital resource are not hoarded by any section or individuals within the organization.

A recent study by Wamundila and Ngulube (2011) has established that there are knowledge loss challenges arising from staff attrition challenges such as retirements and resignations. These knowledge retention challenges are regarded as a threat to operations (DeLong 2008; McQuade et al. 2007; Padilla 2006; Purdum 2006; Sutherland & Jordaan 2004). The results in the study by Wamundila and Ngulube (2011) show that a number of gaps exist in the current knowledge retention practices at the University of Zambia. With regard to knowledge assessment as an integral dimension of knowledge retention, three techniques, namely organisational capabilities assessment, workforce planning and knowledge auditing, were investigated. The findings with regard to these techniques were not positive. It was clear that very few work processes and tasks were documented. Workforce planning was not practiced and skills and competency inventories were lacking.

Pioneers of the concept in Kenya are of the opinion that Knowledge Managers could be the next big job in Africa. Their job description shall include acting as custodians of the institution’s knowledge and history. The continent is beginning to realise that her vast resources are useless unless she taps as much of her people’s knowledge as possible. What’s more, she needs to spend more money buying knowledge than buying second-hand military equipment from the West.
3.6.1.1 KM Practices that African Institutions Can Adopt

KM practices encompass the capture and/or acquisition of knowledge, its retention and organization, its dissemination and re-use, and lastly responsiveness to the new knowledge (Mavodza and Ngulube, 2012). It is important for an organization to have a clear understanding of what knowledge management (KM) means to its operations if it needs to consider using those KM practices that enhance efficiency and lend value to organizational knowledge. In this way knowledge becomes a strategic resource (Kok 2012).

In order to understand KM and how to implement it, it is important to know the enablers of KM. According to Botha, Kourie and Snyman (2008) these are:

- **Culture:** One which is supportive of knowledge management, and the processes it implies - particularly knowledge sharing.
- **Infrastructure:** Support systems, teams, structures, and collaboration.
- **Measures:** Developing a process and design for managing change.
- **Technology:** Can offer great advantages in certain areas. Similarly, if misused, it can sabotage the KM process. Whether technology deserves its status as an enabler is debatable, but it is nonetheless important.
According to the authors, these aspects are what make KM possible. For instance, KM initiatives implemented in an organization with a competitive culture that shuns knowledge sharing are doomed to fail from the start. IT is also an important aspect, as espoused by the STS theory and an unavoidable part of any modern KM best practices. The KM best practices, which relate to the models as discussed in chapter two of this document, are summarized below and will cover all the categories mentioned:

**A. Knowledge discovery and detection**

This refers to the processes of identifying existing knowledge sources, as well as discovering hidden knowledge in data and information. This knowledge resides both inside the organization and externally, in customers, suppliers, partners, etc. The knowledge that can be discovered or detected can either be in the form of explicit, tacit or embedded knowledge. For explicit knowledge document management, intelligence gathering, data mining, text mining etc. are used. IT is crucial in this respect. For tacit (embodied) knowledge tools and practices such as knowledge surveys, questionnaires, individual interviews, group interviews, focus groups, network analysis, and observation can be used to discover and detect knowledge. Embedded knowledge includes observation, analysis, reverse engineering, and modeling tools to identify knowledge stored within procedures, products, etc.

**B. Knowledge organization and assessment**

This is the process of mapping, categorizing, indexing, and evaluating organizational knowledge assets. This is heavily supported by IT, which can use complex
categorization and retrieval mechanisms to organize knowledge assets in many different ways. The management of tacit (embodied) knowledge is done through the use of focus groups, expertise guides, and knowledge coordinators (Gamble & Blackwell 2001). Tools for the management of embedded knowledge on the other hand include job/workplace design, workflow analyses and performance measures (Gamble & Blackwell 2001).

C. Knowledge sharing

Knowledge sharing is one of the most important process in KM. It plays a determinant role for both knowledge reuse and knowledge creation. The sharing of explicit knowledge depends on articulation of needs, awareness of knowledge, access to knowledge, guidance in the knowledge sharing process, and completeness of the knowledge sources (Bukowitz & Williams 1999). IT systems and content management are extremely important in this process. Tacit (embodied) knowledge depends on socialization, particularly within informal networks. Culture is particularly important in this area. Tacit knowledge can rarely be effectively codified without losing the essence that makes it so valuable to begin with, so the focus should be on supporting work relationships. IT has a secondary supporting role in this context, primarily as an expert finder and as offering support in the socialization process (e.g. through groupware applications). In sharing of embedded knowledge the use of scenario planning, after action reviews, and management training (Gamble & Blackwell 2001) is very important. IT has a role in mapping, modeling, creating simulations, and as an embedded knowledge repository.
D. Knowledge reuse

Knowledge reuse involves three roles, the knowledge producer, intermediary, and consumer (Markus 2001), which are involved in creating, preparing, and actually reusing the knowledge. Two keys elements here are culture and cost - particularly relating to tacit knowledge (where indexing the source rather than the knowledge itself is often more viable). Markus (2001) identifies four reuse situations:

- Shared work producers
- Shared work practitioners
- Expert seeking novices
- Miners of secondary knowledge

The process of knowledge creation depends upon knowledge sharing, collaboration, and access to relevant information and data. Cook and Brown (1999) suggest that knowledge creation is an interplay between knowledge and knowing, or in other words, putting knowledge into practice. The role of management in this process is to:

- Enable knowledge sharing
- Create suitable work related environments: The focus here is on unstructured work environments where experimentation, trial and error, and theory in use are promoted. Self-organizing, semi- or fully-autonomous project teams are identified as one useful tool in this endeavor.
- Provide access to collaborative IT systems: Groupware applications can be used for this purpose. These must support and not interfere with the ideal work
environment. Creating and organizing technology-based knowledge and
knowledge-based networking are essential initiatives for success

- Provide access to relevant data and information: From information systems, data
warehouses, data mining, etc. These can act as building blocks in the knowledge
creation process.

E. Knowledge acquisition

An organization can acquire knowledge externally from customers, suppliers,
competitors, partners, and mergers. The role of KM varies in each process (as does the
type of available knowledge), but at its core its function is to establish the right channels
to transfer relevant knowledge from existing partnerships into the firm, and to integrate
this knowledge as best as possible. To do so, KM can use a wide range of tools
including:

- Common IT systems
- Common projects
- Interaction and socialization
- Involvement of partners in certain organizational processes (e.g. design)
- Cultural alignment (for mergers or joint ventures)
- Setting up the right incentive systems
- Identifying and protecting crucial knowledge assets: when such knowledge
  should not be shared with a partner
F. Organizational culture change

Organizational culture change must be recognized and managed carefully and deliberately. By introducing anomalies that challenge the accepted premises of organizational culture, management can influence organizational members to abandon certain aspects in favor of others (Gardner 1997). Use of incentives and common vision and goals are also effective tools. One of the most important goals is to create a culture where knowledge sharing is perceived as beneficial rather than detrimental to the individual.

G. Knowledge management core competencies

The management of core competencies consists of four processes: identifying, sustaining, building, and unlearning. KM plays a key supporting role throughout this process by:

- Identifying what the organization knows, and what its main expertise is.
- Leveraging knowledge assets across the organization.
- Building the right know-how and expertise to match strategic requirements.
- Isolating and removing/changing obsolete knowledge.

KM systems are used in the sharing, discovery, and creation of knowledge. Failures are generally due to an over reliance on technology, a lack of understanding of the importance of the human factor in managing knowledge, limitations of these systems, improper fit with organizational practices, lack of acceptance, etc. Proper
implementation implies carrying out internal assessment of needs and work practices, cost-benefit analysis, etc., involving the user in the design and implementation, through managerial and technical support, and with product champions, etc. and the encouragement of continued use - a function of perceived attractiveness factors and content management (Gamble and Blackwell 2001).

**H. Knowledge retention**

Knowledge retention is the part of KM that is concerned with making sure that important knowledge assets remain in the firm over time, e.g. when key employees leave the firm or retire. Formulating a knowledge retention strategy depends upon understanding which knowledge is important, which knowledge is at risk and what it takes to keep this knowledge in the organization. Depending upon its knowledge retention strategy a firm may choose to implement one of many initiatives and tools including reward structures, mentoring, interviews, and utilizing knowledge from retirees.

Staff turnover has been for too long thought off as a non-issue, a part of the organizational development process, or something that organizations can do little to prevent. Some institutions feel that those who leave are not loyal and therefore see their exit as good riddance. In reality, staff turnover, especially experienced in agencies or institutions that are knowledge intensive, has huge impact in the ability of the institution to sustain and develop itself. In addition, there are human resource (HR) policies that can help contain the knowledge within the organization, harness the abilities and skills
that staff gain, reduce the impact of knowledge loss, and prevent institutions from losing quality staff.

The following HR policies can be used by institutions to decrease staff loss, increase revenue, increase product and service quality, and improve their return on investment:

- **Link capacity building activities and training policies to institutional vision and mission**
  Institutions need to focus on building the skills of the staff in all areas that will lead to achieving its overall objectives as laid out in its strategic plan. When doing this, it is important to measure whether the training is worth the time and money spent.

- **Protect the knowledge acquired or created within an institution**
  When employees retire or resign, they leave with the knowledge they acquired while in employment. This knowledge should be transferred to the next person in line before the employee leaves. African institutions also have to measure the resources allocated to staff training against the resources allocated to hiring staff who already have the capacity to carry out the work. Sometimes it is cheaper to hire someone who already has the abilities.

- **Invest in worthy employees**
  Institutions should invest in employees who are committed to it. This means that staff development initiatives like conferences, seminars, training, and promotions should only be given to employees who will reinvest in the institution. The government of Kenya loses doctors to the private sector every year. Such occurrences can be prevented by initiating policy changes. One of the policy
changes would be to first make staff responsible for paying for their training. If the institution pays to train an employee, the employee has to pay back the cost of the training in terms of commitment to the organization, e.g. study leave for three years means that the employee gives the institution three years of service before leaving. If an employee was out of work for several weeks attending a training, then what is the ROI to the institution from the time lost? The way around this is to expand the scope of work of the employee, increase his or her measurable outputs so as to help ensure that the ROI is delivered.

- **Reduce staff turnover**

  Staff leave employment for several reasons, the most common being ‘greener pastures’. Employees who have experience and have been trained, should ideally have the ability to perform better and if an employer develops an employee they must be prepared to increase their benefits. Staff development has to be linked to an improvement in the salary to the staff. Some institutions may find this difficult to do, but if they measure the cost of staff development against hiring staff with the “know-how” then they will see the benefits. Employees need to know that after training, they should ask themselves what they can do for their organization with the additional skills and expertise and not only what the organization can do for them.

- **Maintain quality staff and let go those who are not productive**

  Staff turnover and loss of effective staff is one part of the KM-HR equation, the other part is that of ineffective and low quality staff remaining in the institution. A common example is that of an employee who has been employed by the
organization for 30 years, but has lost their motivation, has nothing left to prove, and is doing the same work that a recent graduate can do but is being paid 4 times the salary.

3.6.2 Knowledge management in Kenya

KM is not well understood in Kenya as clearly put in a study by Macharia (2007) and is further corroborated by Mosoti and Masheka (2010: 129), in which, they put forward the following concerns:

Although much literature exists on KM no one has undertaken a research on the KMP in organizations in Nairobi-Kenya. The research did reveal that some organizations do use KMP to some extent. Various ways to create and capture KMP have been identified. Nevertheless, KMP though practiced is not well understood by most organizations within Nairobi. In fact most of the challenges faced by organizations in Nairobi are how to create and implement KMP as part of organizational culture, organizational strategy and organizational leadership. Though most organizations said that they use Technology (web, internet, telephone) there is need for a synergy with other enablers’ factors (organizational culture, organizational strategy and organizational leadership). In the implementation of KMP in organizations in Nairobi, technology is largely used in KMP but does not maximize the use of KM because culture, leadership and strategy are ignored in the process. There is evidence that organizational culture hobbles the effectiveness of KMP in organizations in Nairobi. Organizational politics, ethnicity diversity, emotions, values do not favor organizations in Nairobi to capture tacit knowledge and transform it to explicit knowledge. This lack of tacit knowledge in organizations in Nairobi is very crucial. Most of the challenges faced by organizations in Nairobi, such as organizational culture, organizational strategy and organizational leadership can be overcome by effectively implementing KM.

In his findings, Macharia (2007) noted that there is inadequate application of the concept of KM, no knowledge audits have been conducted and if any KM is done, it is very informal. In his study of Nairobi Hospital, Macharia recognized the fact that KM is not viewed as important in achieving goals thereby negating the chance for recruitment
of a KM officer. He identified some barriers to KM and some barriers to knowledge sharing. The barriers to KM include no email access for all staff, use of part time specialist consultant doctors who do not necessarily belong to the organization and inadequate internet access. The barriers to knowledge sharing include high staff turnover, pressure of work and negative attitudes, among others. The solutions he suggests are an improvement in ICTs and improve communication between departments.

In another unrelated study, Ogara, Jalan’go and Othieno (2010) recommend that there is a need for strengthening of a two-way flow of information within veterinary services department and between related institutions and organizations. They go further to say that, there is need to espouse and implement innovative strategies/address acquisition, adoption of science and technology, by facilitating the creation of an enabling environment that will allow the staff to share knowledge and to experiment. Staff training on KM and communication and the dynamics of the veterinary service provision including indigenous knowledge in local communities must be exploited in the implementation of various animal husbandry practices to ensure sustainability of the projects.

Maingi (2007) studied the KM readiness scores for various organizations in Kenya. In this study, he included some universities as shown in the results below:
The results of the survey are as shown below:

### Universities & Academic Institutions

**Table 1: Egerton University**

<table>
<thead>
<tr>
<th>Area of assessment</th>
<th>Area Relative Score</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Indicator Analysis</td>
<td>48.28%</td>
<td>Category 2</td>
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<tr>
<td>Non-financial Indicator Analysis</td>
<td>24.52%</td>
<td>Category 1</td>
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<tr>
<td>Internal Performance Analysis</td>
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<td>Category 2</td>
</tr>
<tr>
<td>External Performance Analysis</td>
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<td>Category 2</td>
</tr>
<tr>
<td>Project-oriented Analysis</td>
<td>64.42%</td>
<td>Category 2</td>
</tr>
<tr>
<td>Organizational-oriented Analysis</td>
<td>41.54%</td>
<td>Category 2</td>
</tr>
<tr>
<td>Overall Score/classification</td>
<td>43.00%</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

**Table 2: University of Nairobi**

<table>
<thead>
<tr>
<th>Area of assessment</th>
<th>Area Relative Score</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Indicator Analysis</td>
<td>89.66%</td>
<td>Category 3</td>
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<td>Non-financial Indicator Analysis</td>
<td>76.13%</td>
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<td>Internal Performance Analysis</td>
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</tr>
<tr>
<td>External Performance Analysis</td>
<td>72.69%</td>
<td>Category 3</td>
</tr>
<tr>
<td>Project-oriented Analysis</td>
<td>81.60%</td>
<td>Category 3</td>
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<tr>
<td>Organizational-oriented Analysis</td>
<td>64.25%</td>
<td>Category 2</td>
</tr>
<tr>
<td>Overall Score/classification</td>
<td>77.00%</td>
<td>Category 3</td>
</tr>
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</table>

**Table 3: Kabarak University**

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<th>Area Relative Score</th>
<th>Classification</th>
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</thead>
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<td>Financial Indicator Analysis</td>
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<td>Non-financial Indicator Analysis</td>
<td>29.03%</td>
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<td>Internal Performance Analysis</td>
<td>41.58%</td>
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<td>External Performance Analysis</td>
<td>32.26%</td>
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</tr>
<tr>
<td>Project-oriented Analysis</td>
<td>35.58%</td>
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<tr>
<td>Organizational-oriented Analysis</td>
<td>36.64%</td>
<td>Category 2</td>
</tr>
<tr>
<td>Overall Score/classification</td>
<td>38.00%</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

**Table 4: Strathmore University**

<table>
<thead>
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<th>Area of assessment</th>
<th>Area Relative Score</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
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<td>Non-financial Indicator Analysis</td>
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<td>Internal Performance Analysis</td>
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<td>External Performance Analysis</td>
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<tr>
<td>Project-oriented Analysis</td>
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<tr>
<td>Organizational-oriented Analysis</td>
<td>51.80%</td>
<td>Category 2</td>
</tr>
<tr>
<td>Overall Score/classification</td>
<td>62.00%</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

**Table 5: Universities & Academic institutions’ Overall Classification, Maingi, 2007**
For the Universities and academic institutions, there was a mixed outcome as shown in Figure 5 above. Two of the sampled universities were classified as Category 3 whilst the others were in category 2. Generally, the observation is that the University of Nairobi is very ready for KM whilst Strathmore has a little more ground to cover before it can have in place all the measures in readiness for KM. In as much as the study classified Egerton and Kabarak University as being in category 2 they also have a lot to do in order to be ready for KM.

Kabarak scored low on external performance measurement. The external performance measurement methods always compares an organization and benchmarks it with other companies within its industry such as primary competitors, complementors, or organizations that substitute an organization’s goods and services. For example, how well and how often does an organization borrow new and better ways of doing things from others within and without its industry? With benchmarking, best practices are being adopted across industries such that an organization can understand and improve its learning and improvement in a bid to boost its knowledge creation and management
performance and easily move forward. Benchmarking is seen as a tool for identifying, understanding and adopting best practices, in order to increase the operational performance of intellectual capital (IC).

In Kenya today, these are the general observations arising from the studies that have been undertaken in the area of KM:

a). Many people are still not aware of what KM entails or what it means to their organizations. There is need for more awareness and education in this area.

b). KM is mostly driven and pushed by regional companies and multinationals. No local companies and businesses are thinking seriously about KM. Part of the reason for this is that the Kenyan economy is still opening up to competition but slowly such that many businesses still continue to enjoy huge market and industry shares. For most of these organizations, competition is not yet a threat to their operations.

c). Some organizations, still grappling with operational setups don’t believe KM is the solution yet. Most have very unstructured forms of organizations and especially private or family-owned set ups. They believe that their businesses are running and growing well even without KM, and they wonder why they should embrace it. Part of the problem here is cultural. If their survival means learning how to compete, why should they embrace KM, whose main underlying driving force is the sharing of that knowledge and information that makes them competitive?
d). Most global companies that are leaders in KM do not score so well locally i.e. their operations outside their headquarters do not reflect the leadership in this.

e). The continuous and ongoing efforts by the Kenyan government to restructure most of the parastatals and state-owned corporations is bearing fruit as demonstrated by the KM readiness score of the University of Nairobi.

### 3.7 KM and universities

Universities are the ideal place for knowledge creation and the best place for practicing KM (Cronin, 2000). This is because, universities possess modern information infrastructure, knowledge sharing with others is natural for lecturers and the desire of students is to acquire knowledge from accessible sources as fast as possible. Universities have to live up to the expectation of the global society. They must adopt and adapt good practices that emanate from ICT and globalization. Traditionally, the main functions of universities were to create and disseminate knowledge through teaching, research and outreach. The three major missions of universities are:

- **Teaching** - to prepare students to become successful lifelong learners
- **Research** – to expand the frontiers of human knowledge and to promote creativity, and
- **Service** – to serve on communities and in leadership positions within the university and in professional organizations and to participate in outreach
activities that serve the local, national and international communities (Metaxiotis and Psarras, 2003).

The introduction of a KM system would enable universities to share their knowledge, to improve the level of teaching and research collaboration and to improve the working relationships among staff and students and other stakeholders (Mikulecky and Mikulecka, 1999).

To successfully manage KM initiatives in universities, the management need to consciously and explicitly manage the processes associated with the creation of their knowledge assets, and to recognize the value of their intellectual capital to their continuing role in society (Rowley, 2000). However, focusing on the technical side alone, such as increasing the level of computer literacy and providing adequate information and communication infrastructure will not ensure the success of any KM initiative. The management needs to also overcome the more difficult problems related to social and cultural issues in organizational knowledge management.

It is important that all those involved in KM understand that it is essentially an open door policy. KM blurs the line between, departments, sections and operating divisions. Managers have traditionally kept a tight leash on their own department’s data. KM collapses these boundaries and allows people to use information across applications. This dissolution of boundaries is essential because KM cannot work through hierarchies (Mason, 2009).
3.8 Knowledge management within libraries

KM is not a phrase that is routinely used within libraries. In the realm of KM in libraries, Townley (2001) concludes that ‘Special libraries have taken the lead, but some applications are now taking place in other libraries’. Many consider it to be primarily a business activity in which the use and reuse of knowledge creates business value in terms of profits, improved return on investments or some other quantitative measure (Jantz, 2001). Although librarians may not choose to take on a new title such as knowledge manager, there is considerable opportunity for librarians to use their traditional skills to assume a new function of managing knowledge within the library and which would complement the traditional library service function.

Both Kim (2000) and DiMattia and Oder (1997) have stressed the importance of the KM role for librarians. Wiig (1999) cites a key KM objective that applies to both libraries and businesses:

… to leverage the best available knowledge … to make people, and therefore the enterprise itself, act as effectively as possible…

In this context, KM can help transform the library into a more efficient, knowledge sharing organization. To adapt a working definition from industry (Maholtra, 2000), KM within libraries involves organizing and providing access to intangible resources that help librarians and administrators carry out their tasks more effectively and efficiently.

In most libraries, a librarian typically has a subject specialty, and is highly skilled at using various indexes and databases in that subject area to help users find scholarly
material. With the assistance of a librarian, the user can obtain information on a specific subject and, hopefully transform this information into knowledge that can be applied to a specific problem. In providing this service, the librarian uses a variety of approaches and tools including commercial databases, formal guides, informal searching aids, personal notes and much information that is found only in the librarian’s mind. According to Jantz (2001), in an ideal KM framework, the librarian would organize these aids, notes, and tacit knowledge so that other librarians could benefit from this knowledge. This type of KM function can improve the productivity and efficiency of a library by not having to depend totally on one person’s specialized knowledge. Jantz, (2001), continues by saying that, ‘In many library settings, there is no systematic approach to organizing the knowledge of the enterprise, and making it available to other librarians and staff in order to improve the operation of the library.’

Some of the key enablers for access to knowledge through/by libraries and librarians are (Tise, 2009):

- Libraries and librarians must become more user-oriented by bringing libraries and their resources to the user; empower users through information literacy, social networking, enabling access to information and facilitating the full participation of all citizens in societal activities;

- Become active in advocacy by actively promoting libraries through effective communications with stakeholders on library and society matters, facilitating and supporting open access to all, becoming innovative information agent;
• Create partnerships and foster opportunities for convergence with commercial / private enterprises, cultural institution, societal stakeholders such as health workers, teachers;
• Library as a space and place should foster information for all; community knowledge space; gate-openers to information, safe and trusted public space, content in formats that appeal to young and other discrete library user groups.

3.8.1 The Trend in Libraries

The literature review reveals that within libraries, public services are taking the lead in the research and implementation of knowledge management. Jantz (2001) examined important issues of KM within libraries and how reference librarians can become more effective as information intermediaries. In reference to this, Stover (2004) points out that no matter how knowledgeable a reference librarian may be, it is impossible for him/her to be an expert in all disciplines. Ideally, the reference desk should be staffed with all subject librarians at all times. In reality, few, if any libraries, can afford that kind of staffing at the reference desk. So a reference librarian has to answer questions in all subject areas. Therefore, he stresses the need ‘for reference librarians to make explicit and codify their tacit knowledge base if reference services are to be provided efficiently and effectively.’

Branin (2003) surveyed the field of collection management over the last fifty years and discerned an evolutionary path from collection development to collection management and now to knowledge management. In that sense, he echoes Corrall’s (1998) assertion
that KM when applied to libraries, often becomes how to manage recorded knowledge, that is, library materials.

KM has been actively applied in digital libraries. Rydberg-Cox, et al. (2000) equate KM to the new document delivery and KM tools in a digital library. This is in contrast with the operation of the technical services, where there are very few related articles on knowledge management.

### 3.8.2 Value of Knowledge Management for Libraries

KM is essential – that is a fact that is undisputed in the literature. If libraries use and share knowledge, it will improve their services. According to Maholtra (2000) KM enables libraries to organize and provide access to intangible resources that help librarians and administrators to carry out their tasks. Shanhong (2000), believes that KM injects new blood into the library culture, which results in mutual trust, open exchange, studying, sharing and developing the knowledge operation mechanisms of libraries. To qualify this, Dillon (1999), states that KM has value in the sense that it emerges as a powerful focal point for exploiting technology to add value to many information-processing environments. This is particularly true for universities and libraries.

If KM is applied in libraries, personal knowledge may be turned into corporate knowledge that can be widely shared throughout the library and applied as necessary. KM can help employees to tap into their skills, talents, thoughts and ideas, so that decision making is improved. KM also benefits internal communication: while
employees share their expertise with each other, they simultaneously learn from each other to fulfill the needs of their clients (Mphidi and Snyman, 2004).

Libraries often have a poor image; they are not visible to their parent organization and work in isolation. The ultimate aim of KM is to achieve an organization’s mission. Therefore, all parts of an organization (including libraries) must ensure that KM contributes towards the realization of the organizational mission and vision. Adoption of KM could assist library and information professionals in meeting user needs aligned with the organization’s strategic goals and objectives. In addition, KM provides libraries with the opportunity to collaborate with other units in their organizations and hence become more integrated into corporate operations and enhance their overall visibility within the organization (Sarrafzadeh, Martin, & Hazeri, 2010). KM endows academic librarians with various platforms to collaborate with academia, such as playing a leading role in electronic and open access publications by providing guidance on copyright issues, and self-archiving published articles in institutional repositories (Jain, 2007). All these activities improve the visibility of academic libraries.

Another force for adopting KM in academic libraries is the promotion of existing library practices and better services for clientele (Roknuzzaman & Umemoto, 2009). Due to the rapid advancement in information technology and changing needs of customers, there is an increased need for a more improved approach to library service delivery at the academic libraries. KM enables librarians to capture, store, organize, share and disseminate the right information to the right customer at the right time.
Customers are paramount and knowledge about them is important for all organizations; no organization can survive without them. The “availability of sophisticated ICT infrastructure combined with emerging business processes such as various service orientation configurations, constitute major characteristics of many of today’s libraries in western universities” (Daneshgar & Bosanquet, 2010) and around the world.

3.9 The Application of KM in university libraries

University libraries are information centers established in support of the mission of their parent institutions to generate knowledge, and people equipped with knowledge in order to serve the society and advance the well-being of mankind (Wen, 2005). In the digital age, university libraries face challenges both within and without. To prove their relevance and value, they must strive to provide the right amount of information to the right clientele at the right time with a right expense of financial and human resources. With a stagnant or dwindling library budget, university libraries have to increase their operational efficiency in order to meet the challenge. One management tool that can help in this regard is KM (Wen, 2005).

KM is a key notion for academic libraries involved in the efficient and effective collection, organization, access and dissemination of tacit or intangible knowledge. While corporations may be concerned with utilizing their intellectual capital to maximize profits, academic libraries should aim at meeting the needs of their users in the best possible way. There is considerable opportunity for librarians to use their traditional skills to assume a new function of managing knowledge within the library and which
would complement the traditional library service function. In serving diverse user groups, academic libraries continually face the challenge of trying to bridge the gap separating users from the information they seek, a pursuit that has become more complicated and chaotic with the exponential growth of Web resources. The multi-dimensional implications of KM to academic libraries involve such processes as: identification of knowledge needs, discovery of existing knowledge, conversion of tacit knowledge into articulated knowledge, acquisition and creation of new knowledge, organization and structure of knowledge for efficient storage and retrieval, sharing of knowledge and application of knowledge. This is illustrated in the figure below:
Formulating an understanding of these processes and further realizing their application to the various roles and functions throughout the library, library staff can work collectively to better serve users. Some examples of library activities that involve KM include:

- **Library Managers** who implement incentives to promote knowledge creation, sharing, collaboration and use
- **Reference librarians** who serve as information intermediaries or ‘infomediaries’, work collaboratively to share tacit knowledge that draws from their subject specialties and work experiences

Figure 6: KM processes. Bouthillier, F. and Shearer, K. Understanding KM and information management: the need for an empirical perspective, *Information Research, Vol. 8 No. 1, October 2002*
• **Instructional librarians** who teach users how to critically evaluate information and incorporate selected information into their knowledge base

• **Cataloguers** who use authority control principles in database management systems to provide ready access to information and tacit knowledge.

KM in libraries should be focused on effective research and development of knowledge; creation of knowledge bases; exchange and sharing of knowledge between library staff and users; training of library staff; speeding up explicit processing of the implicit knowledge; and ensuring that it is shared. Human resource management is the core of KM in libraries.

In the knowledge economy era, libraries need to attach importance to vocational training and lifelong education of library staff to raise their scientific knowledge level and ability of acquiring and innovating knowledge. This is because one of the main objectives of KM in libraries is to promote knowledge innovation. KM in libraries is meant to promote relationships in and between libraries, between the library and its users, to strengthen knowledge internetworking and to quicken knowledge flow.

As a completely new method of management, KM in libraries leaves a lot to be desired, in its theoretical system. Most organizations do not see KM as an issue related to external knowledge acquisition. They view it as predominantly concerned with the utilization of internal knowledge. External information provision sits with the library, market research and information service providers. This may explain why this area has not been one in
which library and information professionals have taken the lead. Their remit appears, as yet, to be largely unaffected by the growing interest in knowledge management.

It is likely that, as intranet technology develops, internal and external knowledge analysis and provision will be integrated. But librarians and information service professionals may still be hampered by the perception that their role is to acquire information, not to analyze and contextualize it.

Academic libraries are learning organizations; if KM occurs within these libraries, it can be of great value for creating and maintaining a learning culture (Mphidi and Snyman, 2004). They go on to say that ‘…the sharing of knowledge can help libraries with the improvement of the quality of their service as well as the creation and maintenance of a learning culture’. They also identify intranets as ‘one of today’s most effective ways of sharing information and knowledge in organizations. Intranets as a KM tool provides people the opportunity to be more informed and to be able to make better and faster decisions,’

University libraries have always been part of the wider university and its organizational structure. With the coming of the information age, and with the increased need for universities to excel, the role of the academic library is changing to provide the competitive advantage for the parent university.
3.10 Challenges to implementation of knowledge management

There are numerous debates about the use of the term knowledge management. One of the most vehement of these is by Wilson (2002). His complaint is that knowledge, because it resides within people, cannot be codified, captured, retained, searched and accessed, and therefore it cannot really be managed. However, considering the wide coverage of KM this view is very limited. It cannot also be dismissed as a passing trend because the first mentions of KM concepts began in the mid 1980s and it is still possible to find hundreds of articles currently being written about knowledge management. The growing awareness of the importance of knowledge is however complicated by the difficulty of capturing knowledge. This is especially true of tacit knowledge, if it cannot be expressed, it cannot be captured. That is why facilitating processes for sharing knowledge has grown so important. These processes include things like mentoring, chat rooms, conferences and other ways in which face-to-face contact are encouraged.

One of the challenges to successful implementation of KM is barriers that arise due to organizational culture. Some of the key issues here are trust and motivation. In the past, as it is now in many organizations, knowledge is power, and giving up power can put individuals and groups in vulnerable positions. If keeping your job and advancing within the organization are based on the value placed on your knowledge and expertise, why would you risk sharing that knowledge? Therefore, sharing knowledge and information is seen by many as reducing the employee’s leverage, that asset which assures them of continued employment. Therefore, it is important that employees feel that they are valued for sharing and contributing their expertise as much as they are for possessing it in the
first place. White (2004), observes that information technology has provided us with a number of possible solutions for sharing recorded human knowledge via email, intranets and knowledge bases. The human factor drives the process of sharing knowledge, experience and wisdom. As people and culture are the keys for any successful knowledge sharing activity, KM programmes generally fail if there is no knowledge-sharing culture in place.

Another aspect of trust deals with an employee’s ability to trust the information they receive through enabled technologies. Often this second-hand information is not perceived to be as that which is received face to face (Ellis, 2001). Dealing with explicit knowledge that has been captured by technologies can be frustrating as well because sharing knowledge in face to face communication is much faster as you can ask the questions that you have instead of reading over hundred pages before you finally find the one answer that you are looking for. In other words, face-to-face access to knowledge, or real time equivalents such as chat rooms, allow for dynamic and responsive searching, while accessing a database is static and tends to be rather one-sided.

A third, and extremely critical barrier is time constraint. The effective implementation of KM initiatives often involves some extra effort on the part of the employee. If this is not officially recognized as a requirement of the job, then there is little motivation for employees who are already under time pressure, to participate. In fact, if one is trying to participate in KM initiatives and a colleague is spending more time on business activities that are rewarded, there is a potential that those involved in KM will be seen as non-
performers. In essence, a positive organizational attitude towards sharing knowledge provides better results than external reward systems.

It is essential to point out that KM initiatives should be designed to work with the current corporate culture rather than trying to change corporate culture to work with a KM initiative. It only makes sense that trying to work with what already exists will meet with less resistance than trying to change things completely. It is also important for these changes to be implemented gradually.

There are certain factors within organizational cultures that affect knowledge creation. These include, first, that culture and subcultures shape assumptions about the value or worth of any given knowledge. This refers to the fact that information from certain sources or people is privileged over others. Secondly, culture defines who controls knowledge including who is expected to share and who is not. Thirdly, organizational culture determines the contexts for social interactions, in other words it defines the opportunities to share knowledge. Fourth, culture determines the ways in which people adopt or create new knowledge or not. This refers to the existing tendencies to embrace change, and the support inherent in an organization for innovative ideas.

In other studies Hariharan and Cellular (2005) and Dixon (2000) identify some addition pitfalls of KM which are also related much to management or culture issues, for example:

- Treating KM as a "nice to have / OK not to have" initiative
- Inability to focus on the vital areas of business goals
• Building up a large repository without relevance to business goals
• No measurement of KM plans
• Lack of robust process for knowledge sharing – leaving it to chance
• Staff unwilling to share or "copy"
• Knowledge champions do not have time
• Heavy reliance on technology
• Treating KM as replacement for people
• Unwillingness to invest in KM specialists / CKO
• "Build it and they will come" strategy
• Belief in "technology can replace face-to-face"
• Emphasis on first creating a learning culture.

KM literature (Jain, 2007, Raja, Ahmad, Sinha, 2009; Roknuzzaman & Umemoto, 2009; Guru et al, 2009; Fagbola, Uzoigwe, and Ajegbomogun, 2011; Mavodza and Ngulube, 2012) establishes the following major impediments to incorporate KM into library practice:

• *Reluctance of library practitioners:* According to (Roknuzzaman & Umemoto, 2009), the response of LIS practitioners to KM is comparatively slow and they are reluctant to incorporate KM into library practice because of their traditional mind set. Some librarians do not take any initiative for positive changes in their libraries.
• **Lack of incentives:** Incentives are the biggest motivators. In the absence of proper incentive plans, academic librarians observe reluctance towards KM activities.

• **Inadequate staff training:** The success of KM projects are dependent on adequate training plans in all the activities of KM process, e.g. training in knowledge capture, organization, dissemination, and use of new technology skills.

• **Insufficient tools and technologies:** This refers to libraries not being well-equipped with KM enabling technologies.

• **Lack of sufficient budget / funds:** Budget is a two-way issue. On one hand, librarians are adopting KM to solve financial problem by producing more with less. On the other hand, due to budgetary constraints libraries are not well-equipped with essential infrastructure for KM, e.g. new technology, training, incentives.

• **Misunderstanding of KM concepts:** Many academic library managers do not understand the concept of KM properly; hence, they are not able to appreciate and support KM project fully.

• **Lack of a centralized policy for KM:** It is the first step in any KM initiative however most academic libraries lack a centralized policy for KM initiatives.

• **Intellectual challenge:** to manage tacit knowledge and pull the relevant information from the overflowing reservoir of information is another big challenge in the academic libraries.
• **Cultural challenge:** Developing the right culture and environment for capturing, sharing and creating knowledge is a limitation to knowledge adoption in academic libraries. Particularly, librarians are not familiar with capturing and sharing tacit knowledge embedded within the experience, talent, and intuition of the library staff.

• **Managing central knowledge repositories:** Increasingly, all organizations are developing institutional repositories for the parent organization. There are difficulties in generating contents for knowledge repositories, especially in the beginning. Mandatory self-archiving policies are found to be a good solution, but wide implementation of such policies is a challenge (Xia, 2009).

• **Digitization of library resources:** Not all academic libraries are well-equipped with the necessary infrastructure, such as, technology, staff expertise in digitization, copyright issues.

• **Lack of collaboration:** The success of any KM project depends on strong collaboration and partnership within and without the library. On an internal basis collaboration is required between senior and junior staff, teaching faculties and students, human resource and IT staff units. External collaboration is strong partnerships with other libraries or allied corporate organizations. Often such collaborations are lacking and this becomes an obstacle to KM success. As observed by Roknuzzaman & Umemoto (2009), generally the junior staff are reluctant to share their knowledge and ideas with their seniors, because they feel that there is no benefit of it. Traditionally librarians were not used to working
with IT departments, however due to the emergence of the digital age and knowledge economy today librarians have to work hand-in-hand with IT experts.

- Change management: Academic librarians often find it difficult change their mind-sets to become knowledge managers from traditional librarians.

3.11 The Future of KM in university libraries

The transformation from librarian to knowledge manager is clearly underway; however, a deeper look at the direction that the internet is taking business reveals the possibility of more far-reaching changes. As many business processes (transactions, supplier-customer interactions) move to the internet, the use of information will become integrated with these processes. In this environment, information as a distinct function or resource may no longer exist. To adjust to these more far-reaching changes, information professionals must search beyond current boundaries e.g. librarian, information, knowledge management, and think in terms of benefits to their organizations. Right now, information can be used to enhance competitiveness and productivity. These same benefits will remain in the future, no matter what the role involves. If information is to be integrated with transaction processes, then someone must scope out work-related behaviors to ensure that it is done in the most efficient and effective manner. And, if equal information and technology is available to everyone, then competition rests on the ability to interpret and apply these tools. This impending shift to KM represents an exciting change for librarians, in as much as it requires a great deal of preparation, and a new way of thinking.
Librarians are generally driven by a desire to provide access to information sources and match this desire with values that assume information sharing is a good thing. Librarians are involved in a continuing search for excellence in organizing and codifying information sources. This is embodied in efforts to make access to electronic publications intelligible and accessible. The second fact is that the library and information profession rests on a bedrock of solid and long term values. Both of these attributes are important for the practice of knowledge management. But they are not sufficient. They need to be harnessed in two directions: towards specific organizational objectives that provide greater value to customers and clients; and, second, in the way in which library and information services are themselves managed.

KM is not owned by any one group in an organization, nor by any one profession or industry. But if librarians and information specialists want to be key players in the emerging KM phenomenon, they need to understand the multiple perspectives of the other players. In conclusion, KM requires a holistic and multidisciplinary approach to management processes and an understanding of the dimensions of knowledge work. KM should be the evolution of good management practices sensibly and purposively applied.

3.12 Summary

Is KM really necessary? Organizations have come to the realization that talented people are assets to be developed for a global 21st century. Partly as a reaction to downsizing, some organizations are now trying to use technology to capture the knowledge residing in the minds of their employees so it can be easily shared across the enterprise. No longer
will institutions have to worry that employees will walk out the door with valuable knowledge that it no longer has access to. Although many individuals may come and go, their learning is embedded for future use. Knowledge, when locked into systems or processes has higher inherent value than when it can ‘walk out the door’ in people’s heads. Access to knowledge and making sure it is available provides value. The challenges are to facilitate access to the right content at the right time and place, be content rich and navigation lean, manage regulations and copyrights and provide flexibility and ease of access.

Libraries do not exist in a vacuum. Society is rapidly changing and one does not need to pick up a current newspaper without finding references to the Internet, Intranet technology, etc. Networking developments mean that internal and international communications are possible from the library, the wider campus and on individual desktops. These advances have management and organizational implications which must be dealt with if they are to be exploited effectively and if library professionals are to fully embrace the KM concept.

Libraries are applying innovative technology as a natural part of the library’s traditional mission of effectively linking faculty and students with information resources. It is therefore inconceivable for the librarians not to link themselves up using technology in their KM initiatives.
KM has become yet another well-known business tool and as the risks and benefits become more and more apparent, senior managers will be faced with the task of distributing KM responsibilities. Then in will step the librarians, hopefully ready and able to slot KM into their ever-expanding portfolio of skills.
CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the research methodology employed in the study. It discusses the research design, study population, sample and sampling technique, data collection procedure and pilot study. It further explains the development of research instruments, validity and reliability of the instruments, administration of the instruments, methods of data analysis, generalizability and research ethics.

4.2 Research Design

The study investigated KM practices in selected university libraries in Kenya. Since the study involved getting in-depth information on library operations, it was appropriate to use the qualitative research method. Qualitative research involves the studied use and collection of a variety of empirical materials – personal experience; introspection; life story; interview; artifacts; cultural texts and productions; observational, historical, interactional and visual texts – that describe routine and problematic moments and meanings in individuals’ lives (Denzin and Lincoln, 2000).

Qualitative research was the most appropriate for this study because it permitted research to go beyond the statistical results usually reported in quantitative research and was used to explore and understand people’s beliefs, experiences, attitudes, behaviour and interactions. The focus of this research was to investigate the process,
implementation and effects of KM on library performance making qualitative research the most appropriate method.

The type of qualitative research used for the study was the inductive research design. With the inductive approach, theory emerges from data collection and analysis. This is different from the deductive approach whereby a researcher starts with what is known in a particular domain and of theoretical considerations in relation to that domain, and deduces a hypothesis that must then be subjected to empirical scrutiny (Bryman, 2003). The inductive approach is practical in researching knowledge management, as the subject is in its infancy; consequently, an overarching theory of KM has yet to emerge, perhaps because the practices associated with managing knowledge have their roots in a variety of disciplines such as cognitive sciences, expert systems, organizational science, business strategy, IT groupware development and library science, to mention a few. As KM is a relatively new business topic with much debate and little empirical data it is appropriate to generate data, analyze the data and reflect on the themes suggested by the data comparing and triangulating these themes to the KM practices being offered at various institutions.

The inductive approach allows for the treatment of librarians/knowledge workers as humans whose behaviour in a managed knowledge-sharing environment is a consequence of the way they perceive their work experience, rather than as research objects whose behaviour can be predicted by circumstances. Furthermore, as the inductive approach does not construct a rigid methodology, alternative explanations of
how KM influences library performance are permitted. This is not to say that alternative explanations are not permitted by the deductive approach, however such alternatives are within the limits of the highly structured deductive research design, (Saunders, Lewis, Thornhill, 2000). The flexibility of the inductive approach enables an understanding of how humans interpret their environment, facilitating the development of an explanation or explanations of complex behaviour. In this sense, there will be no air of finality regarding the conclusions and recommendations.

Choosing the inductive approach for this study was appropriate as it is concerned with explaining why something is happening rather than describing what is happening. Determining how KM influences library performance requires an exploration of why top library management and KM thinkers believe KM to be an effective corporate strategy. This exploration is primarily concerned with explaining why managers feel that library performance is or is not influenced by KM and how this happens, providing insight into knowledge management’s potential as a strategy tool. Furthermore, as all organizations compete, an inductive exploration of knowledge management’s influence on performance within a small sample size provides a contextual study that management can draw inferences from. This is an advantage as a deductive study may be too generalized to produce a conclusion that accommodates universal, flexible inferences and logical projection of explanations across organizations.
A final and practical argument supporting the choice of the inductive approach is that “research using the inductive approach would be particularly concerned with the context in which such events were taking place” (Saunders, Lewis, Thornhill, 2000). Therefore, a sound academic study is possible with a small sample. This is a pragmatic solution to limited access to primary data sources.

Survey research was the chosen strategy as this is a proven method for explaining why and how something is happening. Its great advantage is that it is flexible, meaning views on knowledge management’s influence on library performance could be changed as a result of new data that appeared during the research. The method also provides the opportunity to conduct a thorough, and detailed examination and analysis of the research problem so that findings can be applied directly to the object of inquiry. Although other research methods were considered they were found to be inappropriate when applied to this kind of study.

The survey research was used because, among the tools that KM now deploys to assess its state of development are those surveys which determine current practice, establish benchmarks and offer a qualitative description of what occurs in reality. The premise of this study is that a competent analysis of survey research in any domain opens a window on the thinking that the field has on itself. This type of research is very relevant for this kind of study because it is concerned with describing, recording, analyzing and interpreting conditions that either exist or existed. This means that the researcher does not manipulate the variable or arrange for events to happen. Surveys are only concerned
with relationships or conditions that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing (Kothari, 1990).

### 4.3 Study Population

The study covered eight university libraries that constituted four public university libraries, and four chartered private university libraries.

The study was confined to all professionally qualified librarians and heads of section in the selected universities. They were selected because the researcher viewed them as being in a position to know something about knowledge management, to provide information relating to library management, policy issues and were seen to be the decision makers who are able to implement new concepts. This group constitutes the library management and they were chosen specifically because of their experience in issues relating to the running of the library. KM is of importance to all libraries and to institutions as a whole especially with the proliferation of new campuses all over the country. This population was targeted because informed on the running of the various libraries visited and was able to offer valid and fairly informed responses and opinions relevant to the objectives of the study.

### 4.4 Sample design

Rather than aspiring to statistical generalisability or representativeness, (Harding, 1998) qualitative research usually aims to reflect the diversity within a given population (Kuzel, 1992). In the past qualitative research often relied on convenience samples,
particularly when the group of interest was difficult to access. Purposive (or theoretical) sampling, however, offers researchers a degree of control rather than being at the mercy of any selection bias inherent in pre-existing groups (such as clinic populations). With purposive sampling, researchers deliberately seek to include “outliers” conventionally discounted in quantitative approaches (Barbour, 1999). It allows for such deviant cases to illuminate, by juxtaposition, those processes and relations that routinely come into play, thereby enabling “the exception to prove the rule” (Barbour, 1999; Frankland, 1999).

The university libraries were purposively selected based on their size and their ability to represent fairly the libraries in Kenya. These universities were chosen because as well as being the oldest universities in the country, they are well-established, have the appropriate infrastructure and have an edge over the recently established smaller universities. A purposive non-probability sampling technique was employed. Purposive non-probability sampling is congruent with the inductive approach and exploratory research strategy allowing the researcher to perform a sound study on a small sample selected purposively to provide an information rich qualitative context to answer the research questions and meet objectives. With this method, sample selection criteria is based on maximum participant variation. This was achieved by selecting a sample that includes four of the public university libraries, that is, University of Nairobi, Kenyatta University, Moi University, and Jomo Kenyatta University of Agriculture and Technology and four of the chartered private universities, that is, University of Eastern Africa, Baraton, Catholic University of Eastern Africa, Daystar University, and United
States International University. The researcher views this variation as a strength of the research strategy as patterns that emerge in the data across organizational boundaries are of great value. The target was 10 librarians per institution but due to the low number of staff in private universities, a total of 60 librarians were interviewed and not 80 as was originally intended. The difference in staff numbers between private and public universities might be due to the variance in student numbers and branch libraries. As a result, the population sample was made up of more respondents from public libraries.

The data that was collected is qualitative in nature and its validity and the understanding to be gained from the data are more to do with the researchers interpretation skills and analytical skills, than the size of the sample.

4.5 Data Collection methods

In view of the in-depth nature of the study, data was collected using face-to-face interviews, observation during interviews as well as documentary evidence. These three methods are complimentary and have resulted in the collection of comprehensive and reliable data. The interview schedule was semi-structured to allow for flexibility so that questions could be answered fully.

4.5.1 Interviewing

An interview is a person to person verbal communication in which one person – or a group of persons – asks the other questions intended to elicit information or opinions. The purpose of the interview is to collect information that cannot be directly observed
or are difficult to put down in writing. The interview also allows the researcher to obtain historical information and to gain control over the line of questioning. In an informal unstructured interview, it is possible to penetrate behind answers, follow up unexpected clues, redirect the inquiry into more fruitful channels on the basis of emerging data, and modify categories to provide for a more meaningful analysis of data (Nsubuga, 2000).

The researcher chose this method because interviewing allows us to enter into other peoples perspective. Qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable and able to be made explicit (Patton, 2002).

The collection of primary data was done using semi-structured interviews with senior library managers responsible for their organization’s KM initiative (see Appendix B). The semi-structured interview schedule was used to ensure that the same basic lines of enquiry were pursued with each person interviewed. A list of questions to be covered was derived from the objectives and the research questions. The structure of the questions allowed the researcher to build a conversation within a particular area, to word questions spontaneously and to establish conversational style but with the focus on a particular subject that had been predetermined. Interviews were conducted both in person and over the telephone when further clarification was required. Data was collected by a combination of note taking and tape recording and in one or two cases, the respondents requested for time to verify some answers to the questions and the follow ups were conducted via email.
All 60 respondents were interviewed in isolation and this allowed for very frank and open discussions and also indicated the level of confidentiality. The face to face interviews allowed the researcher to judge:

- The non verbal expression
- The gesture and the body language and
- The feeling of the respondent

Using the semi-structured interview questions as a guide, it was possible to probe in greater detail about KM in the library and about the respondent’s work than can be achieved with other models. It was also possible to explain any points that the person had misunderstood and they could answer any questions and repeat or rephrase them.

Semi-structured interviewing was chosen as a data gathering method because of its many advantages. The researcher was able to adapt the questions as necessary, clarify doubt and ensure that the responses were properly understood, by repeating or rephrasing the questions. The researcher was also able to pick up nonverbal cues from the respondent. Any discomfort, stress and problems that the respondents experienced were detected through frowns, nervous taping and other body language, unconsciously exhibited.
Through the face-to-face interview, the researcher was able to:

- Establish rapport with the respondents that allowed for further interaction for more information or clarifications
- Observe as well as listen
- Ask more complex questions and explain them to the respondents for easier understanding
- Capture the complexities of individual perceptions and experiences

Since the interviews were highly personalized, it was not possible to hire the services of research assistants. The interviews were therefore very time consuming and expensive. The respondents were all interviewed in their work places since the researcher was interested in observing them in their environments where they are most comfortable. This resulted in a very relaxed atmosphere for the interviews. In some cases however, the respondents got carried away and information that was not necessary for the study had to be discarded. This was done at the time of categorizing and coding. In this way, only the important facts were documented.

To determine the reliability of the instrument, the test-retest method was used to estimate the degree to which the same results could be obtained with repeated measure of the same concepts. The interview schedule had simple statements and questions to direct the interview in a way that maximum information was obtained in the minimum time.
4.5.2 Observation

One of the most common methods for qualitative data collection, observation is also one of the most demanding. It can either be through direct or participant observation. For this research, direct observation was used. “Direct observation is distinguished from participant observation in a number of ways. First, a direct observer doesn't typically try to become a participant in the context. However, the direct observer does strive to be as unobtrusive as possible so as not to bias the observations. Second, direct observation suggests a more detached perspective. The researcher is watching rather than taking part. Consequently, technology can be a useful part of direct observation. For instance, one can videotape the phenomenon or observe from behind one-way mirrors. Third, direct observation tends to be more focused than participant observation. In this instance, the researcher observed certain sampled situations and people as per the observation schedule in Appendix C rather than trying to become immersed in the entire context. Finally, direct observation tends not to take as long as participant observation. For instance, the researcher observed interactions between different sections of the library as the interviews were being conducted, looking especially for the nonverbal cues being used” (Trochim, 2006).

Since knowledge is shared through personal interactions, the observation method was employed to observe the participants in their natural work environment and to actually see how they go about their day-to-day work. This provided first hand information regarding interpersonal relations and the culture of sharing and consultation. The process of observation assisted in the collection of objective information by observing
issues such as the organizational culture, personal interactions, types of information resources, ICT facilities and infrastructure, etc. The observation method therefore overcomes the limitations of the self-reporting method of data collection by verifying and confirming stated facts. Observation schedules were used to record observations during data collection.

The researcher observed the types of information available in the various libraries, the infrastructure and accessibility of resources. Computers for users were easily observed as well as the information systems in place. The researcher was given a chance to use the computers for accessing email thereby providing a chance to know and find out more details on intranets, management information systems and relevant IT issues related to the study. Unlike participant observation, direct observation tends to be more focused, as the observer is only observing specific occurrences, rather than the whole behavior (Trochim, 2006).

KM in the library requires interaction between staff in various sections. The researcher chose this method because of its inherent advantages in a studying phenomena that is directly observable. When walking around the various libraries, it was easy to note the ICT facilities available, the infrastructural capabilities and the information resources and the way they are accessed by staff. Through direct observations the inquirer is better able to understand and capture the context within which people interact (Patton, 2002).
4.5.3 Document and records review

All organizations leave trails composed of documents and records that trace their history and current status. Documents and records include not only the typical paper products, such as memos, reports and plans, but also computer files, tapes and other artifacts. These documents and records were used to get the necessary background of the situation and insights into the dynamics of everyday operations.

4.6 Pilot Study and Pre-testing of the Instruments

Pilot testing involves conducting a preliminary test of data collection tools and procedures to identify and eliminate problems, allowing programs to make corrective changes or adjustments before actually collecting data from the target population (Pratt, 2008). A pilot test usually involves simulating the actual data collection process on a small scale to get feedback on whether or not the instruments are likely to work as expected in a "real world" situation. A typical pilot test involves administering instruments to a small group of individuals that has similar characteristics to the target population, and in a manner that simulates how data will be collected when the instruments are administered to the target population.

Pilot testing provides an opportunity to make revisions to instruments and data collection procedures to ensure that appropriate questions are being asked, the right data will be collected, and the data collection methods will work. Programs that neglect pilot testing run the risk of collecting useless data.
Pilot testing provides an opportunity to detect and remedy a wide range of potential problems with an instrument. These problems may include:

- Questions that respondents don't understand
- Ambiguous questions
- Questions that combine two or more issues in a single question (double-barreled questions)
- Questions that make respondents uncomfortable (Pratt, 2008).

Pilot testing can also help programs identify ways to improve how an instrument is administered. For example, if respondents show fatigue while completing the instrument, then the program should look for ways to shorten the instrument. If respondents are confused about how to return the completed instrument, then the program needs to clarify instructions and simplify this process.

Teijlingen and Hundley (2001) note that:

- The term 'pilot studies' refers to mini versions of a full-scale study (also called 'feasibility' studies), as well as the specific pre-testing of a particular research instrument such as a questionnaire or interview schedule.
- Pilot studies are a crucial element of a good study design. Conducting a pilot study does not guarantee success in the main study, but it does increase the likelihood.
Pilot studies fulfil a range of important functions and can provide valuable insights for other researchers. There is a need for more discussion amongst researchers of both the process and outcomes of pilot studies.

The researcher found it necessary to conduct a pilot study. The reasons for this (Teijlingen and Hundley, 2001) included:

- Developing and testing the adequacy, capability and reliability of research instruments
- Assessing the feasibility of a full-scale study
- Assessing whether the research was realistic and workable
- Identifying logistical problems which might occur using proposed methods
- Estimating variability in outcomes to help determining sample size
- Collecting preliminary data
- Determining what resources (finance, staff) are needed for a planned study
- Assessing the proposed data analysis techniques to uncover potential problems

Apart from the above observations, it was also important that the validity of the interviews be enhanced. This was done to determine whether the instruments would yield the data needed, identify problems which the participants might encounter in responding to the questions and to find out if the questions were clear or ambiguous. The respondents were also asked to give comments on each item about the clarity and suitability of the language used and the content therein. The researcher then analysed the items, responses and comments given by the informants and accordingly improved
the scope, comprehensiveness and content of the instruments. This enhanced the reliability of the instruments.

Pre-testing involved face-to-face interviews with a sample of four librarians from Maseno University and the Great Lakes University in Kisumu, that is, two from each library. It should be noted that the procedures used in the pilot study were identical to those used during the actual study. To improve the validity of the interview schedule, the researcher carried out the following procedures:

- Conducted interviews to pilot subjects in exactly the same way as it was to be administered in the main study
- Asked the subjects for feedback to identify ambiguities and difficult questions
- Recorded the time taken to complete the questionnaire and decide whether it is reasonable
- Discarded all unnecessary, difficult or ambiguous questions
- Assessed whether each question gives an adequate range of responses
- Established that replies could be interpreted in terms of the information that was required
- checked that all questions were understood and answered
- Re-worded any questions that had not been answered as expected
This enabled the researcher to have meaningful observations and revealed that the analytical techniques were appropriate. The results of the pilot study were used to refine the conceptual framework and methodology for the subsequent phases of the main fieldwork.

4.6.1 Reliability and validity of the research instruments

Reliability refers to the stability, accuracy and precision of measurement while validity has to do with whether a measure of a concept really measures that concept (Bryman and Bell, 2003). It is the freedom from measurement (or random) error (Vogt, 2005). It boils down to the consistency or stability of a measure or test observation from one use to the next. If a research tool is consistent and stable and hence predictable and accurate, it is said to be reliable. The greater the degree of consistency and stability in an instrument, the greater is its reliability (Kumar, 2005). Reliability is the proportion of variance attributable to the true measurement of a variable and estimates the consistency of such measurement over time (DeVellis, 1991). It is a measure of the degree to which a research instrument would yield the same results or data after repeated trials (Mugenda, 2008). Researchers have come to define validity as the accuracy, truthfulness and meaningfulness of inferences that are based on the data obtained from the use of a tool or a scale for each construct or variable in the study (Mugenda, 2008).

Findings should be subjected to the question ‘how do I know this to be true?’ “The answer of course is that you cannot know,” (Saunders, Lewis and Thornhill, 2000); all that can be done is to reduce the possibility of getting the answer wrong. This is where
sound research design that pays attention to reliability and validity is important. Subject bias is a potential problem. Interviewing library managers who are charged with KM initiatives and consequently have career interest in KM can bias their response about knowledge management’s influences on library performance. To alleviate such subject bias, anonymity of respondents was ensured, allowing respondents to speak freely.

Interview error is another issue that can affect reliability. Different interviews were conducted and there were different opportunities to elicit answers in potentially different styles. This can raise concerns about the consistency of quality regarding questioning technique, diction and syntax. Inconsistency in questioning can skew the research data. This situation is difficult to deal with, as interviews are semi-structured increasing the probability for inconsistency of quality. Since measurements are never totally free of error, we must identify potential sources of error and then control or lessen their impact (Grinnell, 2001).

A final threat to reliability is observer bias. The secondary data collected during the literature review allowed the researcher to develop a competent level of knowledge on knowledge management. This situation means that the researcher can develop a cognitive KM framework that can have an influence on primary data interpretation. In order to mitigate the influence of one particular KM researchers’ hypothesis and thoughts an in-depth literature review was conducted.
According to Saunders, Lewis, Thornhill (2000), any contamination of the respondents’ answers will reduce the data’s reliability. Possible sources of contamination are uninformed responses and discussing the answers with others. Due to the researcher’s limited resources, the following were used to minimize the above effects:

- Careful design of individual questions;
- Proper flow of interview questions
- Clear explanation of the purpose of the interview;
- Consultation with the researcher’s academic supervisors; and
- A small pilot test.

“Validity is concerned with whether the findings are really about what they appear to be about,” (Saunders, Lewis and Thornhill, 2000:101). It is a term to describe a measurement instrument or test that accurately measures what it is supposed to measure. Validity requires reliability but the reverse is not true (Vogt, 2005). Essentially, validity has to do with meaningfulness of specific inferences made from test scores (Craighead and Nemeroff, 2004).

Possible threats to validity include history, data collection methods and ambiguity. History surrounding the organization, KM and library performance may have an effect on data collected. For example, participants may feel that the Japanese experience with KM may be adequate evidence for them to draw conclusions about the effect it has on their respective organization’s performance. While semi-structured interviews and
documentary reviews were used to explore KM issues, this data collection technique could possibly ask the wrong questions to determine how KM influences library performance. Ambiguity is a particularly difficult issue. In this study ambiguity refers to the fact that many variables affect library performance in relation to knowledge management. When reviewing the conclusions proposed by this study it should be considered that unidentified extraneous variables might also provide an alternative explanation for knowledge management’s influence on library performance. Is it fair and correct to assume that KM is responsible for improving performance or does the data associated with KM reflect another reality behind improved library performance?

4.7 Generalizing of results

The objective of the inductive approach is to explore and explain what is happening in a contextual manner. This means the results of this study are not academically relevant if they are generalized to other research settings or across the population engaged in KM for improved performance. The task of this study is not to prove or disprove a general KM theory but to explain how KM influences library performance in the participating organizations by identifying themes and patterns in the data and comparing them with the writing of KM thinkers. However, it is perfectly acceptable to make rationale and logical inferences across the whole KM population based on the results of this study and future studies in similar research settings to test if the strength of the studies’ conclusions is also worthwhile.
4.8 Data analysis procedure

This section deals with the organization, interpretation and presentation of collected data. It is a postulate of how the data was analyzed. Data collection methods and data analysis are determined by the theoretical propositions. In the absence of theoretical propositions, a descriptive framework can be used. This is useful where the researcher has found gaps in the current literature, and used that to formulate the research questions, so that the data collection methods and research strategies are derived from the research questions and objectives. Data analysis is the process of bringing order, structure and meaning to the mass of information collected (Mugenda and Mugenda, 1999). In qualitative research, data analysis is sometimes ambiguous and time consuming. Qualitative data analysis seeks to make general statements on how categories or themes of data are related. In qualitative research, data is in the form of text, materials, photographs, etc., which describes events and occurrences. Data collection and analysis in qualitative research go hand in hand and are done simultaneously.

Leedy and Ormrod (2010) suggest steps for data analysis. They are the logical arrangement of the details of the study being conducted, categorization of data, the examination of bits of data for their relevance towards the research, analyzing the data for underlying themes and patterns, and lastly the synthesis of results and generalizations arising thereafter. According to Leedy and Ormrod (2010), the researcher must look for convergence (triangulation) of the data: many separate pieces of information must all point to the same conclusion.
This being a qualitative study, the data collected was analysed using qualitative methods. Hence, data analysis continued during and after the field work. During field work, the responses to the interviews were examined and categorized according to the themes in the schedule. The data collected was organized and categorized and the relationship between the categories established. Themes and categories were generated using the classifications provided in the interview schedule.

Grounded theory was the mode of analysis selected because it is in line with the inductive design that formed the backbone of this research.

4.8.1 Grounded theory

Grounded theory is a research method that seeks to develop theory that is grounded in data systematically gathered and analyzed. According to Martin and Turner (1986), grounded theory is "an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data." The major difference between grounded theory and other methods is its specific approach to theory development - grounded theory suggests that there should be a continuous interplay between data collection and analysis.
Grounded theory was used to understand the phenomenon of KM practices in university libraries and how it affects library service provision. It fits well with the aims of the study, which were to investigate KM practices in university libraries in Kenya, and propose a framework for future improvement. Due to the complexity and range of issues amongst a group of participants who had similar problems, as well as the fact that KM is still under scrutiny in libraries in Kenya, grounded theory was thought to be the most salient form of analysis.

Grounded theory also fits well with the chosen data collection methods used. The analysis took place during the data collection period, and was thoroughly integrated in all aspects of it, including an analysis of every interview and observation directly after they were given. In this way, each step of the data collection could feed in to the analysis. Data collection consisted of three strands that utilized mixed methods, mainly qualitative, and these were triangulated for the sake of rigor; observations balanced out the things people said during interviews and either confirmed or contradicted their spoken viewpoints.

Grounded theory is good for analyzing data in exploratory studies, and in this case, KM practices in university libraries. Grounded theory was used to provide insight into the factors influencing the adoption of KM, knowledge sharing, knowledge retention, knowledge application and networking. Grounded theory relies on the production of theoretical perspectives deriving from data (Strauss and Corbin 1998). In this respect, the researcher focuses on the ‘ground’ – the data - and inductively generates more
abstract concepts. To accomplish this, the researcher(s) needs to be flexible’ and ‘open to helpful criticism (Strauss and Corbin 1998), whilst portraying appropriateness, authenticity, credibility, intuitiveness, receptivity, reciprocity, and sensitivity (Strauss and Corbin 1998). This style of research calls for creativity, closeness to the respondents and their claims, immersion in the field and an ability to interpret situations and statements (Strauss and Corbin 1998). Through ethnographic research and interviews, the participants discussed issues surrounding knowledge skills and assets, knowledge sharing, knowledge retention, opportunities for KM, challenges relating to adoption of KM and ways that these challenges can be addressed. The use of grounded theory allowed for the establishment of themes in the data collected thus underlining the crucial issues, such as the importance of knowledge sharing, knowledge retention and knowledge creation in KM.

4.9 Data presentation

The data was summarized into a compact, concise and logical order and presented qualitatively and descriptively in the reporting of the findings. The researcher then evaluated the usefulness of information in answering research questions. Presentation of results was through written descriptions, numerical summarisations, and figures. According to Creswell (2009), this involves creating codes and themes qualitatively, and then counting the number of times they occur in the text data.

4.10 Procedures and ethical issues

A research permit was applied for before proceeding with the data collection. All participants were made aware of research intentions and design by an introduction letter
followed by an email. The researcher used a system of ethical protections to protect better the right of respondents. The principle of voluntary participation was followed and respondents were not coerced into participating in the research. Closely related to the notion of voluntary participation is the requirement of informed consent. Essentially, this means that prospective research participants were fully informed about the procedures and risks involved in the research and they were only interviewed after they gave their consent to participate.

Almost all research guarantees the participants’ confidentiality -- they are assured that identifying information will not be made available to anyone who is not directly involved in the study. Findings were treated with the utmost confidentiality and will only be used for purposes of this research. No source, whether individual or organization has been correlated with specific findings or comment attributed without the express permission of the originator or organization. All discussions remained confidential in relation to other organizational participants and during the reporting of findings.

In reporting the findings, the researcher did not use language or words that are biased against persons because of gender, sexual orientation, racial or ethnic group, disability or age.
4.11 Summary

This chapter focussed on research methods and the methodology used in the study. A mixed methods research methodology was used. Triangulation was seen to be a multifaceted concept that can be explained from different stages in the research process. Literature that supports or refutes use of the processes was analysed. Data was obtained from some institutional documents, and face-to-face interviews and through observation during the conducting of the interviews. Purposive sampling was used since it was the most appropriate for the study. The scope and limitations of the study is an acknowledgement that the research is open to comment, and/or improvements. The process of going through grounded theory systematically was useful for raising consciousness amongst the researcher about similar issues that have arisen in similar KM studies elsewhere.
CHAPTER FIVE
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

5.1 Introduction

This chapter presents the results of the data collection effort and is organized and categorized within the KM framework discussed in the research design section of chapter four. The starting point in data analysis was to convert primary or raw data into a form that would make it easy to understand and interpret. This was done using descriptive analysis and includes a summary that characterizes the observations and the variables. In this study, the analysis was used to describe the demographic profile of the respondents, to determine their KM practices, their skills and knowledge or lack of it in adopting KM practices, the challenges they face and the steps that can be taken to improve KM practices in university libraries to enhance organizational performance.

For ease of analysis, the collected data was grouped and presented in the following thematic areas:

- Human resource factors and organizational structure issues,
- ICTs and knowledge management,
- KM and library operations
- Challenges in adopting KM practices
- Knowledge creation, sharing, preservation and application
- KM and performance measures.
5.2 Distribution of the respondents

The respondents in the study were drawn from university libraries in Kenya. They were distributed among four public and four chartered private universities. The table below provides information on the university libraries studied.

Table 6 Details of University Libraries Studied

<table>
<thead>
<tr>
<th>Parent Institution</th>
<th>Library Name</th>
<th>Location in Kenya</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic University of Eastern Africa</td>
<td>Bishop McCauley Library</td>
<td>Nairobi</td>
<td>Private</td>
</tr>
<tr>
<td>Daystar University</td>
<td>Agape Library</td>
<td>Nairobi</td>
<td>Private</td>
</tr>
<tr>
<td>Jomo Kenyatta University of Agriculture and Technology (JUAT)</td>
<td>JUAT Library</td>
<td>Central Province</td>
<td>Public</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>Moi Library</td>
<td>Nairobi</td>
<td>Public</td>
</tr>
<tr>
<td>Moi University</td>
<td>Margaret Thatcher Library (MTL)</td>
<td>Rift Valley Province</td>
<td>Public</td>
</tr>
<tr>
<td>University of Eastern Africa Baraton (UEAB)</td>
<td></td>
<td>Rift Valley</td>
<td>Private</td>
</tr>
<tr>
<td>University of Nairobi (UON)</td>
<td>Jomo Kenyatta Memorial Library (JKML)</td>
<td>Nairobi</td>
<td>Public</td>
</tr>
<tr>
<td>United States International University (USIU)</td>
<td>Lilian Beam Library</td>
<td>Nairobi</td>
<td>Private</td>
</tr>
</tbody>
</table>

All of the 60 respondents interviewed were professionals. Of these, 38 were from public university libraries and 22 were from private university libraries. The average reported professional experience in the library was 8 years. The majority of the respondents have graduate qualifications in library and information science. Below is a summary of all respondents interviewed.
Table 7 Summary of the Respondents Interviewed

<table>
<thead>
<tr>
<th>University</th>
<th>Librarian</th>
<th>Deputy Librarian</th>
<th>Systems Librarian</th>
<th>ICT Manager</th>
<th>Other Librarians</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic University of Eastern Africa</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Daystar University</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Jomo Kenyatta University of Agriculture and Technology (JKUAT)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Moi University</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>University of Eastern Africa Baraton (UEAB)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>University of Nairobi (UON)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>United States International University (USIU)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>9</strong></td>
<td><strong>7</strong></td>
<td><strong>4</strong></td>
<td><strong>32</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>
The table covers all librarians interviewed. If all the expected respondents were covered, the study would have interviewed a total of 80 librarians. In some of the libraries the small number of staff interviewed answered all the questions adequately. As a result, a total number of 60 staff were interviewed and consulted.

**Table 8: Staff details**

<table>
<thead>
<tr>
<th>University</th>
<th>Gender</th>
<th>Total No. of staff</th>
<th>Staff Changes</th>
<th>Reason for staff changes/absences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic University of Eastern Africa</td>
<td>Male</td>
<td>25</td>
<td>Yes</td>
<td>New staff employed due to expansion</td>
</tr>
<tr>
<td>Daystar University</td>
<td>Female</td>
<td>29</td>
<td>Yes</td>
<td>• New employees</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Better paying jobs</td>
</tr>
<tr>
<td>Jomo Kenyatta University of Agriculture and Technology (JKUAT)</td>
<td>Male</td>
<td>40</td>
<td>Yes</td>
<td>• Retirement</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>Male</td>
<td>134</td>
<td>Yes</td>
<td>• Retirement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Better paying jobs</td>
</tr>
<tr>
<td>Moi University</td>
<td>Male</td>
<td>260</td>
<td>Yes</td>
<td>• New employees due to expansion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Retirement</td>
</tr>
<tr>
<td>University of Eastern Africa Baraton (UEAB)</td>
<td>Female</td>
<td>7</td>
<td>Yes</td>
<td>Study leave</td>
</tr>
<tr>
<td>University of Nairobi (UON)</td>
<td>Female</td>
<td>180</td>
<td></td>
<td>• Retirement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Further studies</td>
</tr>
<tr>
<td>United States International University (USIU)</td>
<td>Female</td>
<td>23</td>
<td>Yes</td>
<td>• New employees</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Better paying jobs</td>
</tr>
</tbody>
</table>
The data in the first part of the interview schedule was only required of the University Librarians and not all the respondents. It is important to note that only two librarians gave their ages and both are over 55 years of age. The years of service given by respondents ranged from one year to 25 years. The years of service is very significant in this kind of study because it is obvious that the University Librarian with 25 years experience has more knowledge of the job than the one with one year experience. Of the University Librarians visited, there was gender balance in that four were male and four were female. What was notable in the gender field was that private universities have more female librarians than male and vice versa for public universities. The gender factor was not linked to KM but for general information on who runs academic libraries in Kenya.

In all the universities studied, there have been staff changes. In recent years, there has been an expansion of universities to all parts of the country. These expansions have affected library services in many ways. Library staff have been deployed to new stations and new staff have been employed with a few senior staff getting better paid jobs in the mushrooming university colleges and campuses. This is very significant in the study of KM because none of the universities studied has a formal system of KM in place. This means that the staff who leave go with the know-how that they have acquired over the years. Those left behind are left to start afresh and learn the organizational culture, systems and processes.
Table 9 Qualifications of Librarians Interviewed

<table>
<thead>
<tr>
<th>Library</th>
<th>PhD</th>
<th>Masters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic University of Eastern Africa</td>
<td>1 (1.6%)</td>
<td>5 (8.3%)</td>
<td>6 (10%)</td>
</tr>
<tr>
<td>Daystar University</td>
<td>0</td>
<td>6 (10%)</td>
<td>6 (10%)</td>
</tr>
<tr>
<td>Jomo Kenyatta University of Agriculture and Technology (JKUAT)</td>
<td>0</td>
<td>7 (11.6%)</td>
<td>7 (11.6%)</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>0</td>
<td>9 (15%)</td>
<td>9 (15%)</td>
</tr>
<tr>
<td>Moi University</td>
<td>1 (1.6%)</td>
<td>9 (15%)</td>
<td>10 (16.6%)</td>
</tr>
<tr>
<td>University of Eastern Africa Baraton (UEAB)</td>
<td>1 (1.6%)</td>
<td>4 (6.6%)</td>
<td>5 (8.3%)</td>
</tr>
<tr>
<td>University of Nairobi (UON)</td>
<td>0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>United States International University (USIU)</td>
<td>1 (1.6%)</td>
<td>4 (6.6%)</td>
<td>5 (8.3%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4 (6.6%)</strong></td>
<td><strong>56 (93.3%)</strong></td>
<td><strong>60 (100.0%)</strong></td>
</tr>
</tbody>
</table>

N=60

The table above shows the educational qualifications of all the respondents interviewed in all the libraries.

5.3 Human resource and organizational structure issues

In discussing management’s role in the KM program 80% of respondents agreed that top management is a major player in the success of any KM program. According to the respondents management is mandated with keeping in touch with new developments and integrating them thru’ the management board and academic board- to central
management, providing guidance in implementation, motivating staff, facilitating implementation and providing backup, empowering staff in new areas e.g. International Organization for Standardization (ISO), organizing management courses for senior staff, in-house training in new developments in ICT, policy making and initiating and encouraging the sharing of information.

When asked if staff were rotated on a regular basis, only 10% of respondents were negative saying that their staff perform specific duties and are never rotated. For those who answered to the affirmative, they were full of praise for staff rotation. They agreed that it has been very effective in their organization’s informal KM program because it improves performance, after working in all the sections, you have an all rounded librarian, it ensures that staff know what goes on in other areas in the library, and it facilitates skills development in that staff have the opportunity to learn new operations. The negative side of this is that it interferes with specialization, which may add value to performance.

5.3.1 Skills related to knowledge management

Without the necessary skills, staff cannot perform their duties effectively. Most of the respondents maintained that library staff have been trained in acquiring skills relating to knowledge management. Many universities are now trying to achieve ISO standards and implementation of ISO procedures is directly related to knowledge management. Therefore, any training provided on ISO is a step towards the achievement of knowledge management. In all the universities studied, library staff have been trained in
understanding standardized practices and procedures, IT skills, library communication and management skills, training has been done on access to e-resources for all staff to empower them so that they can in turn assist users, some staff have been trained on KOHA – an open-source Integrated Library System (ILS) in use worldwide, its development is steered by a growing community of libraries collaborating to achieve their technology goal. This library system and other open source softwares are becoming increasingly popular in library universities in Kenya. Staff are also enlightened as to how ISO will work, staff update their skills by opting for courses – diploma, degree, etc., staff are sponsored on short courses relevant to their work as a result of their own initiative. Binders have also been trained at both certificate and diploma level and some secretaries have trained in librarianship and are now library assistants. Apart from the in-house training that staff are given, 60% of libraries sponsor their staff to attend workshops, seminars, conferences etc.

In Moi University the senior professional staff are encouraged to take up KM as a study area upon registering for higher degrees and to conduct research in knowledge management. One librarian said the issue had been discussed in the library and plans are underway to organize a workshop on the topic to sensitize staff on the importance and relevance of KM in a library environment.
5.4 Adoption and use of ICTs in Knowledge Management

The data reported in this section relates to the KM process and the use of ICTs. ICTs were seen to facilitate the connection of professionals to the knowledge required to perform their roles. Access to knowledge increases their skills and knowledge by providing them with access to the organization’s resources.

All the universities have an intranet facility for staff, a Management Information System that works and many access points for electronic resources. The only university with few access points in relation to student numbers was Moi University.

One librarian noted that ICT empowers the knowledge worker by supporting communication across organizational boundaries and geographical boundaries ensuring that professionals have access to valuable organizational knowledge they may never have known existed without IT. It is IT that helps librarians to align the knowledge and experience they have against user needs. This provides high value added capabilities as library users can exploit resources all across the globe. ICT facilitates this as it connects users to the knowledge they require.

When asked to describe the ICT tools that can be used to collect, organize, access and disseminate tacit knowledge to support library staff, respondents had varied answers: through introduction of Dspace (a digital repository system) on the library/university website; documentation of processes in all sections of the library.; in-house training for librarians by librarians; use of databases containing experiences by library and
ICT provides a platform for knowledge capture or sharing which is a very crucial part of KM. Several explanations were given relating to this. Librarians interviewed feel that information can easily be documented, saved and retrieved by multiple users through the intranets thereby providing flexibility in dissemination of knowledge. There was a general view that IT provides a platform for sharing ideas/knowledge/skills/experiences – thru’ web based systems such as through electronic publishing. Librarians also concurred that a well designed and recognized system can encourage people to share their knowledge electronically.

It is notable that while the value of ICTs was accepted, there was a significant difference between those who saw technology at the centre of KM and those being cautious about its role – insisting that it retains a strictly supportive position. In the literature, KM is defined by some as a process that uses ICT to manage the collection and distribution of organizational and environmental information (Bergeron, 2003). There is a lot of justification in the desire to keep technology in a supportive rather than a leadership role. This will be difficult given the strong commercial power of the ICT sector, their traditional dominance of information management and the power of technology experts in many organizations. It will be a difficult but essential task for information professionals to contribute their skills and understanding of information and
knowledge processes and roles to enable organizations to appreciate the role that technology is able to play.

5.5 Knowledge management and library operations

Data reported in this section is concerned with general KM issues, staff perceptions of KM and KM in relation to library operations. When interviewees were asked to define KM they all provided somewhat different definitions, however, the importance of understanding one’s work was a common theme that linked their responses. It was emphasized that the capture of explicit knowledge was an effective way to avoid “reinventing the wheel” and that KM is an activity based around capturing knowledge from all value adding employees for the purpose of sharing knowledge in order to avoid duplication.”

While all interviewees discussed the sharing of knowledge, 30% emphasized the process of capturing knowledge. However, the majority placed considerable importance on the requirements of trust and effective communication in order to capture knowledge. The importance of having knowledge on all aspects surrounding the library profession as well as the institution was underscored. This means that between an individual and the institution there should be a give and take relationship otherwise, staff will not be willing to share their knowledge. So it is important to build trust by replenishing employees knowledge and by providing them with an easy to use repository for their knowledge. This means including employees in deciding what
should be done for them by asking them how they want knowledge to be shared with them and how they want knowledge to be taken from them.

5.5.1 Knowledge assets

To gauge their understanding of knowledge, librarians were asked what knowledge assets they have that complement them in their work. The responses were as follows: Library Catalogue; Library Intranet/Internet; Librarians; Specialized knowledge in particular fields; Information sources for specific information – CD-ROMs, e-databases; bibliographies, indexes; user profiles – areas of research interests; organizational profiles – knowing which library deals with what; Expertise at all levels; information stored in databases; Special collections e.g. National collections; Thesis & dissertations; Cultural artifacts, art paintings; Multimedia resources; Competencies; Unique skills; Valuable experiences; Specialist skills e.g. systems librarians skills are very specific, subject librarians etc. The answers reflected a good understanding of the subject and respondents were then required to spell out the tools that are used to manage these knowledge assets. Going by the responses given, they include:

- A collaborative environment through Library seminars and workshops.
- Electronic databases/manual systems, Library Management systems (LMS) and web based systems can be used to store searches, etc.
- The intranet is a common way of communicating
- Hot spots have become a common feature
- Standardization
- Catalogues
- Indexes and bibliographies
- Publications: staff with unique knowledge/experience record it in a ledger and this information is then stored electronically
- Meetings – Minutes are recorded and stored in a format that can easily be accessed

The responses given are an indication that in as much as the activities are not referred to as knowledge management, several libraries are actually running something very similar to KM without actually knowing it. Expertise and specialized knowledge was mentioned as a knowledge asset several times giving a clear indication that the respondents know that their experience is indeed a knowledge asset in their institutions. Experience is the reason that such knowledgeable individuals make good decisions. Experts who encounter a wide variety of situations over many years accumulate a storehouse of knowledge and, with it, the ability to reason swiftly and without a lot of conscious effort.

Respondents share their knowledge assets in a variety of ways; they exchange ideas across sections; in-house trainings are organized e.g. on the use of e-journals, on the LMS; material is posted on the intranet; when literature searches are carried out, there is documentation which is filed and can be used for future reference and some of it is done verbally on a need to know basis. The way in which this is done can vary from people facilitating workshops and sharing their knowledge to heads of sections having
consultative sessions with their staff and presenting their findings during fortnightly meetings for section heads. The concept of sharing of knowledge assets is a major concept in KM and from the above, it is obvious that libraries are a step ahead and now need to focus in the right direction to ensure that KM is made a reality.

Internalization connects the knowledge to the query. In this case, to internalize, is ‘to make a feeling, an attitude, or a belief part of the way you think and behave (Hornby, 2005). All participants stressed the importance of effective internalization for the successful transfer of information and knowledge. One in particular noted that good access to pertinent information on a timely basis is crucial to ensuring people know what they need to know and when they need to know it. It was agreed that internalization is essential to communication with the users as it acts as a carrier of product information and serves to build relationships. This is a must for competitive purposes. One librarian expanded on this relationship development role - search and retrieval tools have to be developed, allowing the user to make clear their view into the database, producing search results that are rich and relevant to user needs. Search and retrieval depends on a database that recognizes a variety of conceptually and contextually related search terms in order to provide the right information.

Agility of technology and a common business language, was recognized, as necessary for organizational databases to support effective internalization.
5.5.2 Knowledge management programs

In all the libraries under study, there is no formal KM program in place. The Baraton library was very clear that they do not have even an informal program, the remaining libraries have some semblance of KM in the form of work procedures and manuals for each section which have been used from as far back as 1980 in one library. This means that new employees and those on transfer from different sections have access to work procedures and manuals that they can use to guide them in their work. Apart from this, in-house training is conducted for all new staff in all the libraries and in seventy percent they are exposed to all sections before finally being posted to their work stations. Ninety percent mentioned that the implementation of ISO (International Organization for Standardization) standards would change the informal state of KM because it is a form of knowledge management.

The respondents that have set procedures – Kenyatta University and Jomo Kenyatta University went further to describe how the work manuals are used. They are drafted and updated by the section heads and distributed to staff either on the intranet for some libraries or as hard copies to be referred to on a daily basis. Policies which assist in maintaining standards at work include Collection Development; Technical Services; Reader Services. The operational procedure manuals in use include the following sections:
According to the respondents, the manuals assist new staff in knowing work procedures. They also promote consistency in the work flow, help in maintaining standards and in bringing together allied services such as ICT, Library, Bookshop, Archives and Open & Distance learning to share ideas, resources, skills. All respondents agreed that the use of manuals improves resource utilization and assist libraries in avoiding/reducing duplication.

For Baraton, the university as an institution has not focused on the area of KM. The Library too has not introduced a formal KM program. The library has not come up with a formal KM initiative. However performance contracting approach to management has facilitated capture of vital knowledge from employees through simple step-by-step manuals.

It is clear that libraries in Kenya still have a long way to go in adopting knowledge management. This makes true the assumption that, ‘application of KM practices in university libraries in Kenya is inadequate’. It is inadequate since all the libraries studied do not have KM programs in place. However, the reason it can be referred to as
inadequate is because some of the libraries have some semblance of KM which they practice but which they do not recognize as knowledge management.

**5.5.3 Staff Participation**

When asked how are staff involved in their informal KM programs, all respondents were in agreement that staff have a major role to play. The librarians concurred that senior staff/heads of sections come up with draft policies, in consultation with their staff. They also update work manuals, policies, procedures and work flows and all library staff have regular meetings where they are encouraged to air their ideas. Apart from being involved in revising the manuals, senior staff ensure that what is in the manuals is implemented.

It was found that day-to-day duties in the libraries are organized in different ways. One librarian said that, ‘daily management of knowledge is mostly a tacit affair whereby you do what you know and how you know it’. However staff have job descriptions detailing the range of duties to be executed.’ In this library, staff do their work with minimal interaction. In many of the reference sections of the libraries, forms are provided for maintaining statistics with details of all enquiries and answers for future reference. It was found that in as much as there is a reference file for past queries and search results, the lack of a database for storing search results, makes it tedious to retrieve past searches and learn from them. To make it worse, the enquiries are not filed in any easily retrievable format, e.g. by subject. The bottom line is that in most libraries, duties are guided by job descriptions and operational procedures by the work manuals. Job
descriptions are revised regularly depending on the changes and improvements in the section and staff who are specialized in certain disciplines are in charge of those key areas. This means that when the specialist is away, it becomes next to impossible for another person to step into their shoes. This is where KM comes into play. In such key areas, there has to be a database of facts that can be retrieved by all staff when the need arises.

5.5.4 Library operations

In knowing how libraries manage their knowledge, it was important to find out how information relating to library operations is stored. All the respondents agreed that they require information to do their work and that they store information so that their staff can have access to it in their day-to-day duties. In most cases, the University Librarian controls the library operations and gives directions on what should take place and how it takes place. Both electronic and print copies of procedures are provided in the libraries. In KU, all information relating to library operations is stored in the work manuals which are available in hard copy. USIU and CUEA use the intranet to communicate to their staff while in KU, each section stores their own records and documents. In Daystar, Collection development, technical services, reader services policies are already in place while the operational procedure manuals have just been introduced. Web based documents are becoming more common as libraries acquire Library Management Systems and organize their documents for easy access by all. The universities studied have the following library systems: UON has VUBIS, Daystar – Mandarin, KU –
KOHA, USIU – Winnebago, Moi – ABCD, Baraton – Library Solutions, JKUAT - KOHA, and CUEA - VUBIS.

Once the information has been stored, how is it retrieved when it is needed? This question drew responses that are more or less similar. They are summarized below:

- Information is retrieved through personal inquiry form one person to another and is delivered verbally.
- Information is available to heads of sections
- Respective section members have access to section manuals
- Staff from other sections have access to manuals on demand
- Information is disseminated and shared during meetings
- The document (manuals) is available for borrowing
- Videos are facilitated by a member of staff for viewing in the library only
- Systems are in place to facilitate retrieval of information both in print and in electronic format
- Staff can access the manuals electronically – on the intranet
- Minutes relating to meetings is electronically stored

Systems have been put in place to ensure that information can be retrieved by all staff.

In handling their duties, it was established that staff require information on a daily basis. This information varies and includes: Information on new processes and information to facilitate workshops and seminars and generally to carry out reference work; Technical information; Reference information; Library statistics; and Information to facilitate
management decisions. This information is retrieved through extensive research via available resources and also through other university Library websites; through use of standard tools e.g. AACR II, online sources, Library of Congress website, e-databases etc.; Continuing professional development – thru’ workshops, seminars attendance – usually fully sponsored; From consultation with colleagues; After years of experience, information is internalized; From experts and lecturers; through reports written by Heads of Department and heads of branch libraries; Academic programmes thru’ relevant committees; Systems are in place to facilitate staff to produce reports, statistics, etc.; Campus wide networks where all staff and students are encouraged to have email addresses and all communication is electronic e.g. notices of meetings, memos etc. In one library, most of the information is transmitted verbally without good documentation, the comment given was that, ‘apart from manuals and other work instructions, the rest is verbal.’

In all the libraries, but Baraton, new staff are trained by experienced librarians. The librarian here supports the mentoring process even though they do not use it to induct staff. In this library, staff are introduced briefly to all sections of the library then they are posted to their stations. The small number of staff in this library might be the reason for this practice. In all the other libraries, staff are given briefings, a mentor is selected for them, induction programs are prepared and they are given work flow manuals and files in hard copy to assist them in learning the library and how it operates. New staff are encouraged to share aspects of their new jobs with colleagues so that they can be guided. In 70% of the libraries staff are given thorough orientation in all sections before
their final posting. When there are new developments, staff are trained so that they can manage the services e.g. accessing e-resources, ISO, etc. All new librarians are deployed to work under experienced ones before they can head any unit.

5.5.5 Role of Information and Knowledge in the Library

Librarians use information in their day to day duties, and it is important to know how they view its role in their work. There was a general consensus that information which leads to knowledge is a vital tool if meaningful processes are to take place and that information is crucial to any decision making. One respondent opined that information is used for quality management. The Agape library is creating an electronic database of archival records of the university – this will capture even the earliest history of the institution – it has been given high priority showing managements’ commitment to recording and storing information. In libraries, information and knowledge have a key role to play in the organization since research, publication, provision of information to authors, readers etc is key to the role of the university.

In all the libraries visited, information is used for decision making, planning, managing, performance evaluation, and quality service provision. Information plays a central role in university libraries and facilitates key management decisions that take the organization forward. At another angle, information literacy through teaching and letting people know what is going on is important.
5.5.6 Information Relating to the Library Users

All libraries collate information relating to their users, which assists them in knowing who their users are, their needs and their areas of interest. User information includes:

- Personal details/user profiles and circulation/borrowers details which is automatically generated by the library systems
- Staff user profiles have been collected for purposes of providing SDI
- Books borrowed – statistics are kept. These are used to evaluate how the service is valued
- Data collection forms are used both in print and in electronic format
- Data is also collected verbally thru’ interviews and various management directives
- Registration information using library forms – this information is then entered into a database and is available electronically, at the touch of a button

All this information is important for the running of the libraries and can help in the improvement of services. Information that is stored manually, is not available to all the library staff while that which is stored electronically is available for selected staff.

Out of the eight libraries, Baraton and CUEA do not conduct user surveys because:

- They are not considered to be part of library processes
- Of lack of time
- Of lack of resources (both human and financial).
- Complaints are handled as they arise and they are addressed immediately
All the other libraries conduct user surveys in various ways and for many reasons. One way is through the use of a suggestion box. This is very popular because responses received can help gauge satisfaction levels. Another way is through using the library management system - users can write queries to the librarian who then handles them at the appropriate time. User satisfaction is done to find out how effective the services are and where improvements can be made – and also to increase user satisfaction. From enquiries at the information desk, staff can know what users want and how to get it. In this case, feedback is instantaneous. While user questionnaires are given to all students who come to the library, questionnaires are sent to all the academic staff. Public university libraries are now waking up to the dawn of ISO certification and ISO certification requires that user surveys are done every six months. Seventy percent of libraries have now installed a help desk to capture user feedback. User feedback is a very important aspect of KM in that the staff who handle this data are able to assist users and improve services. Such data should be documented so that any staff employed at the help desk can have access to such records.

5.6 Data, Information and Knowledge

When asked how data, information and knowledge affect an organization’s operations and performance, respondents emphasized that knowledge and information have a direct impact on organizational performance because they serve as a medium that links the organization to the client and employees to each other. Eighty percent of the interviewees qualified their answer to this question by espousing that their organization’s only asset was the intellectual talent of their professional employees. The
informal KM strategies are organized around their professional employees’ intellect and their focus is on client services and on their ability to access knowledge across the organization.

Knowledge and information improves performance in the value chain by improving core skills and as a result, employees exposed to new relevant knowledge develop their skills by augmenting their knowledge.

One view is that,

“As knowledge is so important for growth we must understand what knowledge is important for our success and what knowledge is not important for success. This requires employees to have an understanding of objectives and values so knowledge and information can be categorized in correct databases, classified appropriately and documented in context.”

The university libraries provide information to users and they know what data, information and knowledge add value to their users’ interest. This is through personal assessment after frequent contact with the users and the feedback that they obtain. During the user training sessions that are conducted in the various libraries, it is also possible to get lots of ideas and responses to the library services. Sometimes, informal responses, especially from lecturers – on the corridor, over a cup of tea, etc., are captured and made use of. These informal exchanges are the ones that are hard to capture and remain with the individual and not with the institution. There are also
formal forums like committee meetings, departmental boards, general and faculty assemblies, user surveys, stock taking, management reports, etc., that can generate the information required. These are well documented and can be referred to when the need arises.

5.7 Critical Success Factors in Application of Knowledge Management

In answer to the question of whether the KM programs have been successful, the respondents were referring to the use of work manuals and how they have been used successfully. In KU, the policies are followed and revised every two years. The use of work manuals is of specific relevance when inducting new staff.

USIU, Baraton, JKUAT and Moi University do not rotate staff because they perform specific duties and because it tends to interfere with specialization which adds value to performance. KU, Daystar, CUEA and UON rotate staff on a regular basis because:

- Staff are exposed to all the sections and can work in any of the library sections without being retrained.
- It facilitates skills development in that staff have the opportunity to learn new operations
- It is very effective in ensuring that staff know what goes on in other areas in the library
- It produces an all rounded librarian
- It improves performance
In USIU, the work instruction documents that have been produced have improved performance and ensured consistency in policy and standards as well as improved quality services.

5.8 Challenges in Adopting KM

In order to know how to assist the libraries in their KM endeavours, it was necessary to know the challenges they face. The following comments were recorded:

- We do not have a formal KM system in place.
- The framework is in place but the problem is that people don’t always remember what is in place and they have to be reminded
- It will take a while to implement KM through ISO because it is a new concept although it is being embraced, is welcome and staff are willing to participate
- Formal meetings with staff have been done to correct anomalies and change the working attitude
- Updating of the work manuals has been irregular
- There is no time or resources for education and training
- KM is still in its infancy and has not been embraced by all
- There is very little knowledge about the concept of KM among staff
- The top management do not know much about knowledge management
- We tend to hold tight on what we know – it is our only weapon to survival therefore knowledge sharing is limited
- The library has no proper tools for knowledge management
- Managing what is in one’s head is difficult and unreliable
• How to appreciate that KM is a necessity is a major challenge

The fact that little is known about KM applies in this study as in the studies carried out by Macharia (2007) and Mosoti and Masheka (2010). The challenges of incorporating KM into the organizational culture and strategy are common in both the studies as is the case in this study. The informal application of KM in this study is similar to what Macharia (2007) indicated in his study of Nairobi hospital.

When asked how these challenges can be overcome, respondents gave more or less the same response in relation to awareness. They indicated that there was need for a change in existing mentality/attitudes and for staff to accept the importance of KM. They also felt that there was a need for more exposure to information relating to KM and to set aside funds to purchase necessary equipment and materials for training staff. What is worth noting is that knowledge sharing, which is a major component of KM, has not been fully embraced by many.

All respondents said that their library needs to introduce the concept of KM and embed it into daily operations. They all agreed that librarians need to be trained on KM. They said that librarians need to be encouraged to incorporate KM practices into their daily routine, to integrate various library processes using KM and to align services to the concept. The issue of training and exposure to KM was seen to be a necessity in all the libraries studied.
The respondents agreed that policies have to be reviewed regularly to maintain standards and that libraries need to try and attain the ISO certification standards because with the ISO certification, it is a requirement that the work procedures are revised every six months.

The following steps were suggested to enhance performance:

- First there is great need to sensitize the staff on the concept
- Meetings to inform all levels of staff on new developments
- Update staff at the sectional level on what is expected
- Train staff in acquiring new skills that help them in offering better services to users
- Have policies in place to guide activities
- Motivate and reward staff who do well in knowledge management
- The library ought to put a formal initiative in place to manage knowledge
- KM should be included in the strategic plans of 2011 – 2015,
- Libraries, through the consortium, can find out what KM programs are in place in other parts of the world, how successful they are and what they can work with

In a study by Maingi (2007) on KM readiness UON was one of the institutions covered and it emerged that it was the only university that was classified as being very ready for KM. The areas of assessment included financial and non-financial indicator analysis, internal and external performance analysis, project-oriented analysis and organizational – oriented analysis. There is therefore light at the end of the tunnel and whatever it is
that UON are doing right, can be learned by the other universities so that they can also be ready for KM.

5.9 Knowledge Creation, Sharing, Preservation and Application

5.9.1 Knowledge creation

All the respondents apart from one affirmed that there are problems experienced in the creation of knowledge, sharing, preservation and application. In all the libraries studied, there was a general view that knowledge creation is not a major priority and that staff had not been given the opportunity to think outside the box, as one respondent put it. There are also problems related to IT. In one library, an example was given that when the links are down or too slow, business was affected because staff were forced to manually issue items then to enter these records into the system later – leading to a backlog. In such a case, coping with the backlog becomes difficult hence preservation of knowledge in an easily retrievable format is either delayed or never done at all. A suggestion was made that staff should be motivated to generate more knowledge.

5.9.2 Knowledge sharing

The issue of training new staff arose under knowledge sharing. The respondents were of the opinion that staff need to be taken to other libraries so that they can see and think differently on library operations. This means that the libraries being visited need to be willing to share their knowledge and skills for the exercise to be a success. However, two respondents implied that no proper orientation was carried out for new staff and no proper handing over done by some staff either when leaving employment, going on
leave or moving to other sections in the library. There needs to be a change in attitude on information sharing so that all staff understand that to improve performance and effectiveness, knowledge has to be shared all round.

5.9.2.1 Benefits of Knowledge Sharing

When asked if knowledge sharing has generated any benefits and solved a problem for library users, the answers were many with respondents sharing varied experiences. One librarian explained that the library embarked on a basic information literacy campaign, in which library users including faculty members were trained. This has changed the faculty members approach to assessing students’ term papers. Today students cite resources from the university e-Databases and not Google as had been the case before the training. This has resulted in creating a common understanding of what needs to be done and what common practices need to be acquired. According to three librarians, there is a marked improvement in performance/processes when experiences are shared and suggestions come from different quarters. One librarian gave a practical experience to highlight knowledge sharing - During the International Federation of Library Associations (IFLA) conference in Korea, the librarian learnt about Radio Frequency Identification (RFID) Technology – a security system. This system has already been installed and implemented, is being used and has been integrated with the library system, hence supporting the view of a different librarian, that, networking amongst librarians is necessary in updating oneself in new innovations and technologies available for the profession.
All the respondents agreed that knowledge sharing is important and suggested several ways in which collaboration and sharing of knowledge amongst professionals can be enhanced:

- Through regular workshops, seminars and even annual conferences.
- By creating a database of knowledge related to LIS.
- Use of a listserv e.g. on the Kenya Library Association (KLA) website to update members.
- Linking key resources to institutional websites for easy retrieval.
- Strengthening sharing within the library and information consortium.
- An interlibrary loan network that works.
- Strong library association which is all inclusive like other professional organizations in the country e.g. the Law Society of Kenya.
- Common software in university libraries for easy access to each others’ resources e.g. KOHA – Jomo Kenyatta University of Agriculture and Technology, Kenyatta University and Strathmore University.
- Introduction of web based systems.
- Through research and publishing.
- Most of the respondents felt that there should be a reliable method of appreciating sharing and that it is necessary to have a formal initiative in place to sensitize professionals to the benefits of sharing knowledge and practicing knowledge management.
Most of the library processes are knowledge based and within each library function there are elements of use and sharing knowledge resulting in creation of knowledge. From the data gathered, this leads to improved library performance because best practices are put to use and if a framework is in place, there can be continuity or standardizing of practices. Knowledge creation, use and sharing is critical for improved library performance because it is critical in skills development and general staff capacity building and also in encouraging performance thru’ improved problem solving techniques. Activities like, user surveys result in knowledge creation, this brings out new ideas which result in improvement in services, if implemented. Critical decisions can be made from new knowledge and knowledge sharing can help in giving feedback on strengths and can help in maintaining these areas of strength.

Bhirud, Rodrigues and Desai (2005) have come up with ways in which institutions can best share their knowledge to make a difference as depicted in Figure 10.

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**Figure 7: Knowledge sharing mechanisms, Journal of KM Practice**
Bhirud, Rodrigues and Desai (2005) suggest that institutions should try holding the following events:

- **Innovation Day** – this is an internal annual event and a platform for knowledge sharing across various divisions in the organization. The technologies that are currently in use and those that are going to be adopted in the future are displayed and demonstrated.

- **Organization’s internal conference** – the papers selected for conferences go through a review process like any academic conference. Employees’ present novel concepts, insights, and experience gained in organization in the form of technical papers. It also encourages intra-division interaction among employees. All the technical papers are disseminated through conference proceedings with other subsidiaries.

- **Storytelling** – this session gives emphasis on knowledge sharing. Both external and internal knowledge is shared in this event. The external knowledge is imported through external speaker while internal knowledge is disseminated by the employees. Interesting topics on technical and non-technical subjects are covered in storytelling.

- **Technology show** – this is a technology event. It can be used to present the future of the organization’s research and development activities. Speakers can come from the organization along as well as from other institutions.

- **Best practices are shared through a dedicated repository.** The institutional repository or an intranet should be set up to encourage
sharing of information. Employees share their achievements and experiences with best practices.

- Internal Trainers should be called in to conduct training sessions for the employees. This leads to the development of mentors, one of the objectives of which is to make fresh recruits to be project-ready with domain knowledge and process expertise relevant to their roles. One such training that all staff in an organization should have is customer care training.

5.9.3 Knowledge Preservation

In one library, knowledge is preserved but it is hard to cope with the backlog when the work has piled up due to IT related problems. Africana materials are preserved in special ways – however in most cases they need to be digitized but this has not been possible due to pressure of work. Some libraries do not have proper work manuals detailing procedures and policies and yet this is a way in which knowledge can be preserved to assist new staff know how to go about their work. In one library, it was notable that there is no weeding, disposal or collection development policy in place. 80% of respondents suggested it was necessary for staff to be trained on how to document processes, capture tacit knowledge and how to preserve it. ICT based skills, archiving skills need to be acquired or improved on if knowledge has to be preserved. It is also important for institutions to have institutional repositories of knowledge.
5.9.4 Knowledge Application

In all the libraries staff are sponsored to attend conferences, seminars and workshops. After the conferences, the staff are expected to report back and share with other staff and to apply the knowledge they have acquired to improve their services. This has not been happening the way it should and staff require more training in specialized areas in order to manage their work better. Staff also need to be trained in knowledge management, have information on KM and acquire KM skills.

5.10 Knowledge management and performance measures

KM techniques and processes were seen to develop a cultural advantage by building a sharing and learning environment based on trust. This is because the sharing and exchange of knowledge between librarians in meetings, workshops and seminars has created an innovative environment that adds value. The combining of IT, creative minds, a sharing culture and competitive pressure is a potent combination.

All interviewees reported that their organization’s informal KM initiative is aligned with the corporate strategy. One candid librarian explained, “KM is aligned with corporate strategy; however, corporate strategy cannot be fully supported by the KMICT component.” Another librarian asserted, “KM cuts across all library functions,” while one affirmed that, “KM is an enabler of corporate strategy.” The advocated strategic goal for KM was to “Retain and capture employee tacit knowledge in order to provide a better faceless service.” All respondents indicated that in drawing up work manuals their strategic goals involved one or more of the following objectives; making
information and knowledge available to employees in order to avoid duplication of services, networking employees, and/or aligning users with each other. This was clearly put by one librarian, ‘The use of work manuals supports the overall university strategic goals because this is now in line with the ISO certification and is a requirement – all departments have to document work procedures in all sections.’

When asked what steps the library can take to adopt appropriate KM practices to enhance performance, respondents were full of ideas as summarized below:

- Librarians need to acquire skills on KM
- Librarians need to be encouraged to incorporate KM practices into their daily routine.
- Policies have to be reviewed regularly to maintain standards
- Libraries need to try and attain the ISO certification standards because, with the ISO certification, it is a requirement that the work procedures are revised every six months

Respondents went further and suggested steps to adopt KM to enhance performance:

- Regular meetings need to be held to inform all levels of staff on new developments
- Staff need to be trained to acquire new skills that help them in offering better services to users
- Motivate and reward staff who do well in knowledge management
- Libraries ought to put formal KM initiatives in their new strategic plans
• Libraries can find out what KM programs are in place in other parts of the world, how successful they are and what they can work with.

The respondents declared that some of the essential requirements for a knowledge organization to perform effectively are as follows: leadership, sound management of resources, trust, integrated agile technology, entrepreneurial spirit, a sharing culture, innovative attitude, an understanding of the value of knowledge, recognition and reward, and a culture that encourages individuals to challenge taken for granted assumptions. When asked what can make KM work, respondents cited the above requirements but three librarians added five more criteria listed below:

• Having librarians who can add to the knowledge base and contribute useful knowledge on a regular basis.
• Using self organizing teams that concentrate on obtaining user requirements.
• The organizational structure must facilitate sharing.
• IT must be used to learn employee behaviour and align to this behaviour. IT must also be used to record employee activity for measurement.
• Staff should be trained continuously in developing analytical and problem solving skills.

A network structure is seen to be the most appropriate in supporting KM processes. One librarian explained that the structure has to recognize learning, knowledge and experience. All agreed that whatever structure is used it must be, one in which people talk to each other. Open communication is therefore considered as being very important.
The corporate culture most conducive to innovation and competitiveness was seen as that which allows freedom to experiment, rewards success and views failure as an opportunity to learn, is appropriate. All librarians agreed that empowerment within corporate guidelines is necessary to nurture a competitive corporate culture. One in particular commented that,

“Responsible empowerment is essential, employees must understand what knowledge and information they are responsible for and that they are responsible for providing others with knowledge and information.”

All respondents agreed that a variety of cognitive and communication styles are required in order to view issues from different perspectives.

### 5.10.1 Activity Analysis

The participating librarians acknowledged that the current practice is to conduct a knowledge audit prior to implementing a KM strategy and to periodically conduct such audits thereafter. This can be compared to the user surveys that are carried out in practically all the university libraries visited. As explained by Koupoulos and Frappaolo (2000), this auditing tool is necessary to assess several aspects of the knowledge characteristics of the organization:

- The current level of knowledge usage and communication;
- The current condition of KM;
- The identification of potential problem areas;
- The perceived value of knowledge within the organization;
- The identification of knowledge gaps;
- The profiling of employees knowledge;
- The mapping of knowledge resources available to the organization; and
- The identification of communities of practice/interest.

According to Koulopoulos and Frappaolo (2000), knowledge audits should measure the following elements:

- The role of structure;
- Technology experience, perceptions, requirements;
- The impact of culture;
- The nature of process management;
- Sources of innovation;
- Models of communication;
- Strategy; and
- Perceptions of the current KM initiative.

Each of these factors is measured separately and plotted on a chart (see Figure 8 below). Connecting the plots depicts the KM environment, revealing the areas of weakness, strengths and opportunities for knowledge management. A scale of zero to ten can be used to plot elements and management investigation into each area produces qualitative assessment of the KM environment. The knowledge audit can be used to benchmark the organization against others using KM in the same industry. It can also be used to justify a metric and method of incentivisation, (Koulopoulos and Frappaolo, 2000).
In the figure below, the organization profiled with the dotted line has little in the way of formal KM technology or practices, yet it demonstrates an ideal environment for leveraging KM practices and technologies. The organization profiled with the dark black line has KM technology and practices, yet demonstrates an organizational environment that undermines its KM efforts. Neither organization is ideal. Understanding where and how to overcome the inadequacies of each organization is the purpose of a knowledge audit.

*Figure 8 Knowledge Audit (adapted from Koulopoulos and Frappaolo 2000)*
5.10.2 Motivation

Some of the respondents stated that organizational design and incentive schemes have a role in the performance of knowledge management. However, there was no agreement on the extent of this role or method to be used for motivation. The majority of respondents do not reward staff financially. For example, one librarian stated, “The role of organizational design and the incentive scheme, is more about recognition than reward.” While another said, “Sharing and using knowledge is part of the professional job of staff and therefore no reward should be expected”. One simply said, “The management appreciates the contribution of staff by communicating to them. Generally this is a major challenge. It is the key to successful KM programs yet we do not have satisfactory methods of appreciating staff”.

None of the participating organizations has established a metric for recognizing that knowledge sharing has occurred. This can be done using an input/output cycle to measure how much knowledge an individual contributes that is subsequently used by other individuals to add value to the organization. Such a metric places a focus on the value of knowledge rather than motivating the contribution of useless information. This metric also identifies communities of interest as it identifies the way knowledge is communicated and between which individuals. Davenport (1997) report that it is relatively straightforward to measure use of knowledge. They contend that the metric for an input/output cycle can be derived from tracking database queries and inputs, while the auditing of e-mail messages between individuals can identify knowledge
sharers. Management can use this information to remove material that is not in demand and analyze why certain material is popular.

Davenport (1997) and Davenport and Marchand (2000), report that their research into knowledge markets within organizations indicates that establishing a knowledge value through empirical means is essential to motivate KM participation. This means that a method of providing incentives such as bonuses, pay raises and promotion must be instituted alongside the knowledge sharing metric. Only one organization involved with this study has reported that ‘performance evaluation is done annually and those who excel are given an increment on merit’.

Koulopoulos and Frappaolo (1999) and Davenport and Prusak (2000) report that it is important to recognize knowledge sharing in the context of communities. Their research indicates that implementing a KM incentive scheme in the context of community creates trust, challenges the individual’s belief that knowledge is power by encouraging them to share and creates benchmarks for knowledge sharing that can be emulated by other communities within the enterprise.

The relationship between KM and performance measures was well tackled and only one respondent felt that the two are not related and KM is about managing intellectual resources while performance measures are about work output of general operational activities. The remaining respondents gave positive views to the effect that, effectiveness of KM would reflect on a library’s performance. This means that if a
library has an effective KM program in place then its performance will be highly ranked. Another respondent put it differently by saying that practice of KM leads to better performance. Two respondents went further to say that when there is a performance management system in place, staff are forced to carry out their duties using their job descriptions and work plans – this means that they must meet their set targets. With KM in place, it would mean that all staff would know what to do in their various work stations and better access to what one should do leads to better performance.

The answer to the question, ‘How does the library correlate the link between KM practices and improvement in library performance?’ could not have been better put by one respondent who said that, ‘Managing knowledge facilitates sharing skills among staff and hence improves performance’. Another went on to add that, ‘Good KM practices improve library performance. It markets library services hence encourages achievement of improved library performance.’ There was a further comment that, ‘It also impacts on continuity within the organization and deals with the issue of duplicating resources’.

It was interesting to note that respondents did not all agree that, ‘Once an organization gains a knowledge based competitive edge, it is easier to maintain its lead and harder for its competitors to catch up’. Those who agreed were of the opinion that, ‘knowledge is power and power is the ability to control both people and events. Therefore, if one is in control, then one is in the lead. This being the case however, one should not be complacent. There is need for further innovation through knowledge
5.11 Summary

In as much as the libraries studied do not have formal KM programs, it was interesting to note that the librarians were of the opinion that indeed, there is a connection between KM and improved performance. It is important to note that the link between the two is so frequently taken for granted but, it might not always exist. This study is qualitative in nature and not all university libraries were studied, thereby limiting the ability to generalize findings other than in relation to existing theory. In order to understand the topic better, more research is needed into the complex relations between knowledge and value. Given the limited amount of empirical research available on the topic, there are plenty of windows for both qualitative and quantitative research.
CHAPTER SIX

SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The aim of this study was to investigate the current KM practices in university libraries in Kenya, examine their influence on library performance and come up with proposals for future improvement. The study was guided by the following objectives:

- Establish KM practices in university libraries in Kenya and identify the tools currently used in managing informal knowledge;
- Establish the extent to which KM practices have improved information service provision in university libraries in Kenya;
- Analyze the opportunities of application of KM practices;
- Establish the problems and challenges affecting university libraries in adopting KM practices;
- and Provide practical recommendations to enhance adoption and use of KM practices for knowledge sharing and dissemination among university libraries in Kenya.

This chapter will draw some conclusions which have been derived from the analysis of data collected from the subject studied and the research questions used. It begins with a summary of the findings which are provided in reference to the aim, objectives, research questions and assumptions of the study. This is followed by the writer’s opinions and thoughts on knowledge management’s role in improvement of services, followed by a discussion on the implications for IT in knowledge management. It then provides recommendations for future improvement and ends with suggestions for further research.
6.2 Summary of findings

The study set out to investigate the application of KM in university libraries in Kenya. The findings related to the objectives and the research questions are summarized below.

6.2.1 Establish KM practices and identify the tools currently used in managing informal knowledge

From the study, it was established that no library has a formal KM program. The libraries studied have informal programs in place but admittedly, none of them referred to them as KM programs. The informal package consists of work manuals, operational procedures, simple step-by-step manuals and policies that guide these procedures. It was established that these manuals are used in all sections of the library and are updated by the staff in those sections. This is a very important activity because the updates include the output of the staff involved and facilitates the capture of vital knowledge from these employees. It is clear that KM is a relatively new term and library staff have no idea about what it entails and how it can be of use in their work.

The researcher found that staff rotation is used as a means of managing know-how. Staff rotation was identified as a key player in retention of employee knowledge. The libraries that practice it do so to ensure that their services are not affected. Junior and middle level staff are rotated periodically and if done regularly and with some order, all staff can work in all sections of the library even in the absence of key staff. This ensures that work does not suffer in the absence of the post holders. Rotation of staff is a very
effective way of developing the know-how of staff in all sections of the library. It is important to note that not all categories of staff are rotated. Senior staff are specialized and are therefore retained in their positions even as other staff are rotated. In 2009, Cardiff University Library Service conducted a study involving the rotation of six library assistants. Firstly, it investigated whether job rotation improves motivation and secondly, whether there was an improvement in skills. Those involved in the rotation were interviewed before and after the rotation. They completed daily reflective logs during their rotations which were also analyzed. The findings indicate that the rotations resulted in wide-ranging positive outcomes including an increase in both motivation and technical skills. Other positive outcomes included increased confidence, a sense of being part of the whole library and in essence seeing the bigger picture. The study concluded that job rotation can be a positive and powerful tool for staff development.

It was found that mentoring is used as a means of induction for new employees and for those who are not very experienced in certain sections of the library like the technical services section. The mentoring process is very important and should be adopted by institutions. It is a way of passing on experiences to others. Tacit knowledge is what is shared when experts show the ropes to novices. It is what is passed on in the mentoring relationship.

Mentoring techniques can go a long way in ensuring that employees feel included in an organization’s corporate culture and in encouraging the formation of networks. In an experiment, Clutterbuck (2001), invited several hundred human resource professionals to describe how they learned most frequently and most intensively. The most frequent
source of learning not surprisingly was through peers at work; the most intensive was some form of mentoring. Mentoring has become a very popular method of training and knowledge transfer. By matching new/inexperienced employees with more experienced senior personnel, the intangible, tacit knowledge of the organization can be passed on effectively. It allows the newer employees to grow without learning the hard way and creates a bond between the mentor and the one being mentored. This is particularly useful for organizations with a large population of employees approaching retirement age or those with high turnover rates. Mentoring also allows the more experienced personnel to make a personal contribution to the growth of the organization.

In the past decade mentoring has evolved from an obscure process experienced by a fortunate and sometimes privileged few to a major instrument of change within organizations and society at large. It has also become one of the strongest drivers of KM contributing to the ‘soft’ interpersonal aspects that balance the aggressive dissemination of technological solutions to the capture and dissemination of knowledge (Clutterbuck, 2001). Mentoring therefore supports KM processes in an integrative manner and contributes particularly to the transfer of intuitive implicit knowledge at both practical and conceptual levels.

Apart from the work manuals, operational procedures and policies, it was also established that ICTs are used to store explicit knowledge that can be used by staff in improving their efficiencies at work. Libraries have installed and are using management information systems in their day to day work. At the touch of a button, staff are now
able to obtain information for their work. Communication has been made easier with the campus-wide networks. Use of the intranet as a communication tool within the universities is very common and staff are using this as a means to share knowledge. The use of such communication media is an effective way to avoid reinventing the wheel and duplication of effort. ICTs are an important ingredient of virtually every successful KM program. An ever wider range of highly effective solutions are coming to the market, including a new generation of artificial intelligence solutions, new flavors of document management systems and various collaborative technologies such as the Internet. Successful implementation depends, as always, on giving appropriate focus to the non-technical factors such as human factors, organizational processes and culture, the multi-disciplinary skills of hybrid teams and managers, and the already existing knowledge repository of prior learning - providing, of course, that it is well structured, accessible and gives you access to critical expertise (Skyrme, 1998).

6.2.2 Establish the extent to which KM practices have improved information service provision

In as much as the study affirmed that no formal KM programs are in place in any of the universities, it was confirmed that libraries are doing some semblance of KM in their every day work. One such practice is knowledge sharing which is practiced on a rather small scale but which has generated benefits to those who have actually used it. Knowledge sharing was established earlier on as a major ingredient of KM without which the process cannot be complete. Knowledge sharing has resulted in the creation of a common understanding of what needs to be done and what common practices need
to be acquired to improve services in many of the libraries studied. USIU acquired a library security system as a result of knowledge sharing with colleagues. This strengthens the conviction that networking amongst librarians is necessary in updating oneself about new innovations and technologies available for the profession. KU is now using KOHA as their library management system, after the success achieved by Strathmore University in maintaining the open-source software. Several other libraries are also considering other open source software and this would not have been possible were it not for knowledge sharing.

The study established that librarians have more ideas on how KM can improve information service provision than on the extent to which it has actually improved information service provision because until the time of this study, the libraries did not know that they practice KM. An effective KM strategy depends on management’s ability to develop a work environment that fosters learning, knowledge creation, knowledge sharing and the use and re-use of institutional and personal knowledge. Furthermore, management must ensure that the application of knowledge is used in the pursuit of effective results and matches with corporate goals.

The analysis performed on the primary and secondary data reveals that it is mandatory to establish a knowledge sharing culture and network structure. As knowledge is rooted in human experience and social context, managing it well means paying attention to people, culture and organizational structure, as well as ICT. Consideration of the above issues is essential for identifying, developing and supporting knowledge sharing.
personnel that are receptive to contributing, applying and replacing knowledge. This was acknowledged by the respondents in their observation that KM benefits internal communication because as employees share their skills and knowledge with one another, they simultaneously learn from each other and this in turn assists them in fulfilling the needs of their library users.

Communities of interest are largely about collaboration and this collaboration often centers on an issue in which all the members of that group have a vested interest. Communities of interest are among the most important structures of any organization where thinking matters, (Stewart, 1999). They perform two important functions: knowledge transfer and inspiring originality. Organizational learning depends on these groups as they produce a common sense of purpose and a forum for exploring ideas. Communities are usually self-organizing, democratic and responsible to themselves for the knowledge they create. People join because they have something to learn and something to contribute. The work they do improves performance and effectiveness; for example, the formation of the Kenya Library and Information Services Consortium (KLISC), has resulted in libraries having resources that they would not have had, had they gone it alone. KLISC is a consortium consisting of all libraries in tertiary institutions, research organizations, and special libraries. Its role is to:

- To develop and improve cooperation and understanding among member libraries
- To enhance the provision of learning resources and access to information
- To subscribe to electronic resources for consortium members
KLISC has grown over the years and the resources it subscribes to have also undergone a remarkable change. This is the era of electronic books and libraries now find it easier to reach a larger number through the use of e-resources. This mode of sharing has made a difference in libraries and is assisting the KM process.

### 6.2.3 Analyze the opportunities of application of KM practices in University Libraries in Kenya

The universities in this study have opportunities which they need to take up in application of knowledge management. Many universities in the country are now striving to achieve ISO certification. ISO is all about standards and procedures and their proper documentation. This is an opportunity because the whole idea of ISO and how it functions is a window of opportunity for knowledge management. With procedures in place, it is easier to share knowledge between departments.

The use of ICTs in libraries is widespread and many libraries now have automated systems. Here, the opportunity is in the sharing, application and preservation of knowledge. The availability of internet, intranets, database management systems, etc., means that information stored can be retrieved easily by all that have access to it and there is movement away from hoarding knowledge. Using ICTs, it is easy to access information, and use it for a variety of purposes. In many libraries, reference services are offered but documentation differs in the various libraries. In a case where enquiries are done using forms and then filed, it is not possible to retrieve past searches and use them for current queries. There is an opportunity for such libraries to store this
information in a database to avoid repeating a search and to make the files easy to retrieve.

All libraries in the study have knowledge assets in the form of expertise/unique skills, information sources and resources, databases on users, valuable experiences, etc. These knowledge assets can be exploited and used by university libraries to apply knowledge management. Specialist skills for example include those of systems librarians and subject librarians. Most of their knowledge is in their heads and one of the ways in which it can be captured appropriately is through mentoring. At any one time, these specialists should be involved in mentoring staff in their sections to acquire the skills and knowledge that they themselves possess. From the study, it was possible to gather that librarians have KM skills but lack some attributes which are necessary for KM to be effective. Some of these skills are:

- Flexibility
- Team skills
- Communication skills
- The ability to assess and evaluate information
- How to create, record and store information effectively
- How to train and educate library users
- User service oriented
Attributes that might be lacking include:

- Marketing capacity
- Ability to analyze the library’s role and identify areas for improvement
- The ability to move away from monotonous tasks and re-engineer them
- The capacity to manage, rather than merely endure, change
- Project management capacity

Attainment of these skills is a necessity and therefore libraries should see this as an opportunity to make full use of their staff to acquire the lacking attributes and fully integrate KM into the day-to-day activities.

The use of work manuals and operation procedure manuals is an opportunity for some libraries. This is because these libraries maintain standards and there is consistency in what is done. If the manuals are updated regularly, if they are available to staff online and if they are implemented, then services will be maintained and improved.

From this study, it is possible to deduce that the concept is new to most and little is known about it. There is therefore an opportunity to introduce the best of KM in terms of improving performance. Performance can be seen to be dependent on people and their focus, will and capability. The most favorable set of conditions for optimal performance will be when the three form a self-reinforcing system, with all elements in balance and harmony. This means that performance potential should be represented by the degree of overlap and a balance of the focus, will and capability of staff. Imbalance and lack of congruence will typically lead to misdirected and wasted efforts as well as
loss of performance. For example, organizations are known to concentrate on the skills required to carry out a particular activity without regard for employees’ understanding of what they are to do, or of their motivation to do it. This is doubly wasteful, since performance will not only be poor, but the time and resources used will also be wasted.

In many of the libraries, it is common to find that only two elements overlap. For example, it is not unusual to find that employees have a relatively clear understanding of the problems, they are charged to action and have a strong focus, they have adequate interpersonal skills and resources to carry out tasks, but they lack the belief in the method or incentive to follow the method through, i.e., low will. This is an opportunity for the libraries to ensure that remedial activities are initiated so that KM is used to improve information service provision.

In knowledge management, it is important to pay attention to the entire staff and work environment, including leadership, core values, skills, competencies, structures and rewards. The result: helping people to perform the right processes more efficiently and effectively, supported and sustained by the right organizational structures, leadership and enablement. When elements are considered in an integrated way, ICT capabilities can be realized. Libraries have the opportunity to manage knowledge in the right way.

6.2.4 Establish the problems and challenges affecting university libraries in adopting KM practices

The libraries in this study face various challenges in adopting KM practices, the major one being little knowledge about the concept right from top management to those who
should implement it. This makes true the assumption that lack of appropriate information on adoption of KM practices hinders university libraries in Kenya in providing effective information services. It also follows that university librarians in Kenya lack awareness of the potential of KM in improving their overall performance. If KM is to be successful, it has to be embraced right from the top. This requires that libraries form a group of people (Community of interest) with the necessary skills and knowledge, interested in taking the agenda of KM forward and presenting this agenda to top management for approval and support.

The support of communities of interest is a KM challenge. Too much interference by management will suppress a group’s collaborative effort, especially if management is expecting short-term returns. Communities of interest require nurturing as opposed to managing. Management needs to recognize the library’s importance and support their endeavours by allocating resources to them. This can be as simple as providing a meeting room, or as grand as engaging an outside expert to speak to a group. Institutions have been known to provide professionals with a room and refreshments where they can meet.

Nurturing the development of communities of interest requires management to promote an awareness of knowledge responsibility. This means that all workers must be informed of the benefits of knowledge sharing. They have to understand that knowledge is no longer a long-term source of power. Management must advance a culture that understands that sharing knowledge is power as transferring knowledge
creates new knowledge and enhances or replaces old knowledge. Professional employees have to be able to identify and exploit opportunities for knowledge transfer. Once again, trust is the key. Knowledge responsibility has to be based on reciprocity that is based on trust. Reciprocity based on trust is a matter of demonstrating the benefits of a one to many relationship. This means that employees need to understand that they are one of many in a community, and that you contribute once, but gain from the contributions of all the other members of the group.

In the library, knowledge responsibility based on trustful reciprocity depends on librarians asking several questions:

- What knowledge do I need to perform my tasks?
- In what form do I need the knowledge?
- When do I need the knowledge?
- Who depends on me for knowledge?
- Who do I depend on for knowledge?

Answering these questions and acting on the answers is necessary to create trust that encourages knowledge sharing. Furthermore, management must communicate that its knowledge responsibilities include nurturing and controlling the collective knowledge base for the benefit of the institution. For example, providing time for learning and reflection during and after projects demonstrates management’s interest in nurturing knowledge.
While communities of interest are important sources of creative power and focusing members on corporate goals is essential to ensure appropriate application of knowledge, developing innovative efforts is critical for creating an efficient institution. As mentioned in the literature review, the truly distinctive aspect of KM is the creation of innovative knowledge and applying it to improve services. Although knowledge creation can be accomplished using techniques such as the “Spiral of Knowledge”, “Creative Abrasion”, “Double Loop Learning” or the “Learning History”, Davenport and Prusak (2000) explain that in general, the creation of innovative knowledge has been the least systematic of KM activities.

The writer surmises that for most professionals any situation perceived to control their creative efforts is not welcomed as it is viewed as a questioning of their professional esteem. Furthermore, professionals have been trained to operate in a paradigm that is unique to their profession. Their professional ego can cause them to de-value other professions’ cognitive and communication styles. Because of these cultural and professional traits, managers often tend to surround themselves with professionals who share their views, notions and communication styles. This means that innovative efforts become nothing more than exercises in compromise while the conflict that should take place constructively among ideas often ends up becoming a process of screening and selecting between similar ideas. True creative innovation, which takes place when different ideas, perceptions and cognitive styles collide, is rarely achieved. Subsequently, difficult KM procedures for creating knowledge are rejected by most managers, as they require a paradigm shift and a concerted effort at managing the
complex creative process. Institutions that foster successful innovation figure out how to get different approaches to grate against one another in a productive creative process.

Institutions that manage knowledge innovation also include the client in the creative process, as their perceptions must be included in the solution to generate creativity. In this case, inclusion of library users in the creative process develops a strong knowledge of their views, likes and dislikes. Such knowledge is key to effective customer care. In order to do this successfully, ground rules must be established to discipline the creative process, emphasizing that people must respect the thinking styles of others. There must be some shared knowledge and trust before productive collaboration can take place. This institutional common knowledge can only exist if knowledge is redundant. Knowledge redundancy is a necessary condition to develop the trust required for knowledge creation. To create knowledge redundancy, management must make structural knowledge accessible across the institution and support communities of interest where tacit knowledge redundancy occurs. Redundancy of knowledge in the institution serves as a territory that diverse knowledge workers must inhabit before they can collectively innovate for their users/clients. However, redundancy will still be difficult to achieve because knowledge sharing has not been embraced fully. As shown by the response, ‘We tend to hold tight to what we know – it is our only weapon to survival therefore knowledge sharing is limited’.
Without nurturing and disciplining the creative process it will be difficult to change institutions and their members. Institutions that rely on a black box effort to generate innovation run the risk of being lulled by past successes. Management complacency can result and institutions can fail to see changes in their environment or acknowledge that change can affect them. Institutions that fail to proactively nurture their professional’s creative efforts are not using knowledge management’s knowledge creation potential. The challenge in many of the libraries is that there is neither time nor resources for educating and training of staff in KM practices. Another challenge is staff attitude towards change and how they can appreciate that KM is a necessity if they are to improve their performance.

6.2.5 Suggest a model to enhance the adoption and application of KM for knowledge sharing and dissemination among university libraries in Kenya

From the available literature and data collected from the study, KM is still a new concept and many institutions are yet to understand how to make the most of it. As a relatively new concept there are several theories and models that have been proposed as guides to those interested in embracing the concept. However, it is not possible to use a model that has been developed for others since each organization or industry has its own unique needs. It is important to assess one’s situation before coming up with an appropriate model.
The respondents in the study all agreed that KM is critical—but few know precisely what to do about it. There are numerous examples of knowledge-management programs intended to improve innovation, responsiveness and adaptability that fall short of expectations. Much of the problem with KM today lies in the way the subject has been approached by vendors and the press. Often, it is portrayed very simply as if one solution can work for all organizations. Most of these approaches have little relevance for real life situations.

KM is complex and multifaceted; it encompasses everything the organization does to make knowledge available to all its employees and stakeholders, such as embedding key information in systems and processes, applying incentives to motivate employees, building partnerships and adding value to new knowledge. Effective KM requires a combination of many organizational elements—technology, human resource practices, organizational structure and culture—in order to ensure that the right knowledge is brought to bear at the right time.

With the belief that ICTs are the mainstay of knowledge management, many organizations have implemented sophisticated intranets, common repositories and other systems, largely ignoring the complex cultural issues that influence the way people behave around knowledge. Many of these organizations have seen little improvement in their ability to manage knowledge and too often, institutions have implemented state-of-the-art technology and then discover that culture and behavior are slow to change.
To help librarians, the writer has developed a model that associates specific knowledge-management strategies with specific challenges that university libraries in Kenya face.

6.3 Conclusions

The research has established that no formal KM practices exist in university libraries in Kenya today. This is common with many university libraries in the developing world. KM is not regarded as an important activity in the overall everyday functions of the library and therefore it has not been given prominence. KM practices have been seen to result in the provision of effective services. The basic reason for managing knowledge is to make university libraries act more intelligently in the way they perform their duties and their internal operations. This purpose is sometimes not recognized or expressed clearly. Instead, libraries may focus on behavioural factors that are indications of underlying knowledge. What needs to be done is to promote intelligent acting behavior by individuals through delegation of authority, management and work practices, effective organizational structures and work cultures. Libraries should copy this because intelligent acting behavior is largely a result of the individual’s knowledge and the external and personal permissions to use it and the incentives provided. Such changes result in dependable and rapid delivery of services, improved quality and conformance to customer specifications, continuous improvement, flexibility, effective internal operations, among others. Together these results serve the goal to improve the library’s performance of viability, relationship with the users, employees and society as a whole.

A number of conclusions can be drawn from this research:
• The level of interest suggests that KM needs to be taken seriously as a professional issue for information professionals and for the fields of librarianship and information science. KM is perceived to enhance the role of the information professional. However, the confusion, variations and concerns expressed indicate that KM is still a difficult area requiring a lot of development.

• KM is practiced very informally in the university libraries through the use of work manuals, operation procedures and staff rotation. The use of standardized practices and procedures was highlighted as a way of making it possible for professionals to take over tasks without leaving a gap when the office holder leaves the institution. It is interesting to note that the libraries run something very similar to KM without knowing it. The work manuals assist new employees in knowing work procedures, promote consistency in the work flow and help in maintaining standards.

• Knowledge sharing is regarded as an integral part of KM. Without sharing, it is not possible to effectively practice KM. In the study, respondents indicated that most people like to cling onto what they know. Knowledge sharing that links core capabilities is impossible without trust and trust begins with a common language. Research shows time and time again that a shared language is essential for productive knowledge transfer (Davenport and Prusak, 2000).

• It is clear that for KM there has to be a common vision and goal. The study showed that routine duties take precedence and most times employees do not stop to think whether their goals are being achieved. This implies that KM enabled institutions require objectives that translate into actions or outcomes so
that employees from different sections can focus on a co-operative effort. A common vision establishes a universal reason for team members to co-operate, share and create a purpose for effective application of knowledge.

- There is no doubt that ICT is a key enabler of KM and this was clearly seen in the responses towards use of ICTs in all the libraries. ICTs are used as a means of communication, for storing data and also for sharing information. Intranet facilities are available in all the libraries for access to institutional information. The libraries also run Management Information Systems and provide many access points for access to electronic resources.

- In the study, it was ascertained that all libraries are aware of their knowledge assets and the most emphasized asset was in the specialized skills of the staff which can be referred to as intellectual capital. The present value of intellectual capital’s future potential is a prerequisite for the formation of effective investment risk management. The study showed that library staff share their knowledge assets through the exchange of ideas across sections, through in-house training and on the intranet.

- Libraries were found to run their day-to-day operations in a variety of ways. Operations range from individualized work schedules with minimal interaction between staff to sharing of duties across sections. In the reference section, it was found that the lack of a database for storing search results is a major hinderance in retrieval of past searches and learning from them.

- It was found that for these respondents, KM appears to challenge many of them to think more broadly, contextually and strategically, in terms that are more
likely to advance their roles in their institutions. It seems then that KM is providing librarians/information professionals an opportunity to rejuvenate their profession, but that may have a long way to go before they engage effectively with the full scope of KM concepts. Many of the librarians interviewed were interested in the potential of KM raising the status of the profession within their organization. However, this approach presents a dilemma. Raising status has within it a potential conflict with their organization and its culture which currently holds them in low esteem. However, success in KM requires collaborative efforts with all these elements. Therefore, if professional status becomes the primary objective, there is a risk in placing information professionals at odds with other players and undermining the basis of their KM programs. Alternatively, if contribution to organizational effectiveness is the objective, it is easier to work together. This, however, requires understanding and the confidence that recognition will come once the KM initiative is a success. Professional standing also relates to the way that librarians can project their understanding and skills within their organizations. With the low understanding and skills reported here, librarians have a major task in raising the understanding of the topic within their organizations. There is a need to go beyond seeking support from senior management for KM programs, to enabling management to incorporate concepts of knowledge more effectively into their whole management process. There are benefits in developing a better understanding of the role of knowledge and the supporting information in that it
will highlight the central role of information professionals within the organization of knowledge, information and the supporting professionals.

These findings may have both theoretical and practical implications. On the theoretical level, the findings emphasize the importance of individual differences in the process of changes and assimilations of new concepts such as KM in the organization, which may lead to further research in this field. On the practical level, Librarians may look for these traits when selecting new workers. They may understand that the organization might benefit from hiring people with positive attitudes toward KM and collaboration, as those workers may collaborate and share information while instructing students or conducting researches, thus improving the services the library offers to its patrons. Furthermore, if Librarians identify workers who are inclined to have negative attitudes toward KM and collaboration, they can offer training programs to help them to overcome their inclination. Library directors can also propose rewards to encourage workers to share knowledge and collaborate. Library and Information Studies programmes should also include courses on KM in the curriculum, highlighting the significance of this issue to the library.

6.4 Recommendations

6.4.1 Recommendations for Action by Policy/Decision Makers

a) KM should ideally be embedded in institutional programs and should be part of a campus-wide initiative and not only that of the library. It should therefore be championed by management before it can trickle down to departments and to
individuals. The initial activity for management would be KM policy development & embedding of KM principles in strategic plans followed by:

- Establishment of KM organizational/Governance structures
- Coordination and harmonization of KM efforts across institutional lines
- Developing a KM architecture and establishing core KM principles
- Carrying out of a knowledge audit to establish knowledge gaps in the institution

Program support activities would include promoting KM within the institution, fostering essential partnerships within and outside the institution, and developing KM policies for the institution. Specific examples of activities include:

- Awareness raising activities around KM tools
- Workshops on KM

Executive briefings for all staff about KM efforts and how important they are for the institution

b) Knowledge cartography is essential for an effective KM culture as it creates an access guide to cross-functional sources of knowledge and reveals knowledge gaps in work processes. Cartography is a knowledge audit activity and initial efforts should focus on defined work procedures and process. The essential traits of a good knowledge map are clarity of purpose, accuracy, availability and ease of use, (Davenport and Prusak, 2000). The following is an example of a procedure for a library’s knowledge cartography.
• Develop a structure of knowledge types and levels, e.g. reference services, acquisitions and Selective Dissemination of Information (SDI);
• Define the knowledge required for a particular job;
• Rate the performance of individual employee’s in particular jobs by knowledge competency;
• Publish the knowledge competencies in an on-line system; and
• Link the knowledge model to training programs.

Since the success of KM depends so heavily on culture, as indicated by the research and literature, the benefits of knowledge cartography should not be underestimated as it promotes knowledge accessibility and the cultural “…idea that corporate knowledge belongs to the corporation as a whole, not to a particular group or individual,” (Davenport and Prusak, 2000).

c) Organizations that are serious about KM need to design a structure that will connect people at all levels. This essentially falls in the hands of the university management. The fundamental principal of organizational design that Nonaka and Takeuchi (1995) have identified from their study of Japanese firms is redundancy. Redundancy refers to the conscious overlapping of institutional information, activities and managerial responsibilities. This type of redundancy is not wasteful as it helps create a common language, spreads new knowledge, stimulates sharing, builds trust and encourages frequent dialogue, (Nonaka and Takeuchi, 1995). Redundancy is necessary to develop and support the all-important official or unofficial structures called communities of interest.
There are several approaches management can deploy to develop organizational knowledge redundancy:

- Build communities of interest;
- Rotate employees in all sections in the various departments - remove firewalls and any other walls that restrict access to structural information;
- Develop knowledge responsibility among employees - nurture a desire to learn and share knowledge;
- Ad hoc organization of professionals around users issues;
- Develop mentorship programs - employ a symmetrical effort so that the mentor and the one being mentored learn from each other;
- Employ people who are natural networkers across all sections - they serve as human intermediaries that databases cannot replace;
- Seminars and workshops - face-to-face experiences are still the most effective way to share tacit knowledge.

These are just a few methods that can help build redundancy. Achieving results requires deploying them in multiple combinations and in an imaginative manner. Whatever organizational structure is implemented to support strategy it must be one that allows people to connect with each other and empowers them to self-organize around knowledge required to solve client issues.
6.4.2 Recommendations for Action by Librarians

a) In the researcher’s opinion, questions to be asked when considering how knowledge can support the library strategy are:

- How does knowledge affect our services delivery?
- What knowledge do we require to achieve our objectives?
- What are our critical work processes?
- What knowledge drives our work processes?
- Where in the library does knowledge translate to action that begets value?
- Where do knowledge gaps exist in our value chain?

These are just a few questions that can be answered through a knowledge audit. The knowledge audit should be carried out by the university librarians in their capacity as the top managers in the library. The knowledge audit is essential for any KM initiative and should be conducted during the start of the initiative because it is important when assessing the institutions resources, competencies and expectations. The sorts of questions raised from the strategic analysis and the knowledge audit, are central to deciding the library future and putting knowledge and KM in the context of corporate strategy. The knowledge audit identifies business processes that are particularly knowledge intensive, determines where the critical knowledge links between core competencies exist in the value chain and what basic activities are knowledge demanding. Understanding these knowledge links is important for creating competitive advantage as this determines what knowledge is required to execute the library strategy successfully.
Putting knowledge in the context of strategy is necessary for establishing goals and performance expectations as it defines how knowledge will drive the services offered by the library.

b) In knowledge management, the role of the leader in the library is to establish strategy, a vision and goals that a diverse group of professionals can focus their collective effort on. The leader in this case could be a knowledge manager or a librarian in charge of KM activities. The leader must grasp the value of the institution’s knowledge base and then focus this knowledge base on corporate goals and objectives. The shift from being the source of knowledge to the nurturer of knowledge lies at the heart of knowledge leadership. Knowledge nurturing requires institutional trust. Such trust is dependent on a collective sense of community; consequently, management must identify, facilitate and support cross-functional communities of interest to effect trust that is everywhere in all sections of the institution. The leader must pay attention to dynamic knowledge environments and educate professionals on the power of knowledge sharing. Nurturing knowledge requires coaching rather than executive direction and librarians have to ask the right questions regarding knowledge application rather than provide answers. Leaders have to stimulate the knowledge process by removing barriers to sharing knowledge and networking. They also have to implement an incentive scheme that encourages KM participation and assigns value to knowledge. Leaders must also ensure resources are available so professionals can self-organize around issues relating to their users.
c) There are many frictions in an organization’s culture that can get in the way of KM success. The following are a few challenges and some suggestions on how to overcome them:

- Lack of incentives - establish a KM method of providing incentives
- Lack of trust - build relationships and trust through face to face to meetings and establish a common language.
- Lack of time and meeting places - establish times and places for knowledge sharing and learning.
- Lack of employee awareness of their knowledge responsibility - educate employees on their knowledge responsibilities and connect these responsibilities to performance appraisals.
- Lack of knowledge absorption capacity in recipients - educate employees for flexibility, provide time for learning, hire people with a positive attitude toward learning, encourage questioning of the status quo.

d) There are many other cultural frictions that a proper knowledge audit can reveal and require leaders to apply their knowledge in imaginative ways to find solutions to overcome them. For example, in many of the libraries studied staff are rotated in various sections of the various libraries. This is the most common approach to creating a knowledge sharing culture with appropriate knowledge redundancy. Another method to promote a knowledge sharing culture is to make work processes cross-functional as professionals become interested in transferring knowledge when teams are composed of people from different functional areas such as circulation and acquisitions.
Instituting cross-functional processes and rotation means that performance needs to be measured and rewarded differently, preferably in the context of knowledge communities and work processes, since most managers are judged by how well they optimize functional performance and receive few incentives to operate cross-functionally. Creating a knowledge sharing culture does not happen by mandating it or implementing groupware. Changing knowledge behaviour and culture should begin with top management as it communicates a message of seriousness to the whole organization regarding knowledge management. Furthermore, because KM has to be nurtured by top management, changing their attitude towards knowledge processes is critical for convincing others to buy into the program. Finally, by converting top management to a positive knowledge attitude, the organization inherits a cadre of KM change agents.

e) Librarians should identify knowledge trustees who should be assigned the responsibility for updating explicit knowledge domain content that relates to their particular expertise. They should also be responsible for identifying standard definitions for knowledge that falls within the domain of their expertise. Explicit knowledge should be differentiated based on its potential application value and categorized according to the client’s view and perceptions.

Content should be portable across the library and institutional databases. This is necessary in order to integrate work processes and connect individuals to information and each other. If content is not portable, redundancy of knowledge across the value
chain will not be possible. This will result in fragmented knowledge with local
duplication of knowledge application.

Tacit knowledge should be profiled and mapped for easy access from a central point
that contains the knowledge owners contact particulars. A complete mapping effort and
a continuous updating of the knowledge map is essential to maintain an effective
knowledge navigation tool and each employee should be responsible for maintaining
their own knowledge profile on the knowledge map. Content should be in the context
of work strategy as perceived by the user view and it should add value to the
professional’s work processes.

6.4.3 Proposed model

This study resulted in a KM model based on the literature review that was carried out.
The framework addresses the lack of alignment of KM with the overall organizational
culture in the light of the results of the study. The cultural aspects of the organisation
are acknowledged and the framework recommends that the KM practices of the
organisation must be compatible with its culture. The proposed model addresses the
issues raised during the study – issues that impact on KM practices and that can affect
implementation of KM. It prescribes to both prescriptive and descriptive characteristics
because the descriptive frameworks attempt to characterize the nature of KM
phenomena, whereas prescriptive frameworks prescribe methodologies to follow in
conducting knowledge management (Holsapple and Joshi, 1999).
The proposed KM model is based on the premise that the focus should be placed on the way knowledge is used to build the critical capabilities a library needs in order to succeed—on the core processes and activities that enable it to influence library performance.

The proposed model begins by assessing and categorizing the way work is done in the core process. This model is composed of two main dimensions: the infrastructure that is required for KM and the processes that make KM possible. Each of these dimensions is in turn explained by various sub-dimensions. The model suggests these factors have direct and indirect effects on the performance of KM practices and are also likely to determine to a great extent the success or failure of KM applications. It is important to note that all these dimensions and their sub-dimensions are all interrelated so it is not easy to see the effects of each on library performance as independent from each other.

The first step is acquiring knowledge from day-to-day experiences, external sources of information, know-how, databases, etc. This step covers all the activities performed both at individual and group level to collect and exploit knowledge. The next step is to codify the information using common formats. Explicit knowledge and tacit knowledge need to be handled differently. Tacit knowledge might be difficult to codify and can be captured in the form of reports, success stories or by creating ‘yellow pages’ within the institution for indicating who knows what. After codification, the knowledge needs to be stored in an easily retrievable format like databases, manuals, archives or in people’s
heads. This knowledge can then be retrieved by users on the basis of their needs. For the knowledge to be of any value, it needs to be accessible and useful inside the libraries. Then next step is knowledge transfer, distribution and presentation. Knowledge is more valuable if it is shared. Knowledge distribution means making it accessible to whoever can use it. The final step is knowledge application, the success of which will depend on the quality of knowledge and the satisfaction of the users with either the knowledge they have gained or with the exceptional service received as a result of using quality knowledge. It is easy to note that flexibility is another characteristic of a KM system because all the factors affect one another and any negative effects by one factor can be made positive with a few changes in how that process or infrastructure operates. The model suggested is shown in Figure 9 below.
Figure 9: Proposed Model for use in University Libraries in Kenya

- Knowledge Acquisition
- Knowledge codification & central repository storage
- Knowledge retrieval and accessibility
- Knowledge transfer, distribution & presentation
- Knowledge Application and Reuse
- Knowledge management team
- ICT Components
- Organizational Culture
- Senior Management Support
- Collective knowledge sharing & innovation
- KM policy

KM Processes

KM Performance

- Improved service provision
- User satisfaction
- Increased use of services
- Motivated staff better services
- Increased sharing of knowledge
- Quality of knowledge
- Creation of New knowledge

KM Infrastructure
6.4.4 Recommendations for further research

When considering the results and limitations of this study, the following issues can be suggested as future research directions. As KM implementations become mature over time, future research is called for to validate the link between KM performance and the overall performance of university libraries. It is clear that there will be many uncertainties in the way that KM develops and in the way that information professionals take it on.

There is scope for investigating:

1. The role of emerging technologies in the implementation of KM in university libraries
2. Successful KM programs and how they have impacted on university libraries
3. The impact of knowledge sharing in higher education institutions
4. Strategies used by university libraries in Kenya in capturing and transferring knowledge and critical expertise of leaving employees

Apart from this, future research on how KM influences performance in university libraries is required to either refute or confirm the findings in this study. Furthermore, the data in this report was collected and analyzed with limited resources; consequently, there exists a possibility that extraneous variables may have an influence on performance.
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APPENDICES

APPENDIX A: INTRODUCTORY LETTER TO RESPONDENTS

Dear Respondent

I am a DPhil student at Moi University School of Information Sciences. I am currently doing research on the application of KM practices in university libraries in Kenya.

The purpose of this study is to provide information on how information professionals currently use and view KM to improve their work performance. I have selected your institution as one of those that are moving with current developments and you as a member of the library with in-depth knowledge on how your staff, carry out their every day duties.

Your input to this study is therefore crucial in obtaining credible information and providing the profession with a deeper understanding of KM and how it affects the library work environment.

The outcome of the research will provide an insight into some of the problems and challenges facing KM practices and offer suggestions on any remedial measures that need to be taken to improve work performance using knowledge management.

I would like to assure you that any information that you provide will be treated with utmost confidentiality and will be used only for this research.

S. M. A. Ogola  
PhD Researcher
APPENDIX B: APPLICATION OF KM PRACTICES IN UNIVERSITY LIBRARIES IN KENYA

Interview Schedule

SECTION A: BASIC INFORMATION

I. Position:
II. Section:
III. Years of service in the position:
IV. Age:
V. Highest academic level achieved:
VI. Nationality:
VII. Gender:

SECTION B: GENERAL INFORMATION ABOUT YOUR INSTITUTION

I. University:
II. Number of employees in the library:
III. Have there been any changes in the staff numbers in your library/section in the last two years? YES/NO. Please explain your answer.

____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________

IV. What are the reasons for the staff changes?

____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________

SECTION C: GENERAL KM ISSUES

1. a) Do you have a KM program in place?
   b) If YES
      i) What are the objectives of the program?

____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
ii) How are staff involved in the program?
_____________________________________________________________
_____________________________________________________________
_____________________________________________________________

  c) If NO, please explain why not?
_____________________________________________________________
_____________________________________________________________
_____________________________________________________________
_____________________________________________________________
_____________________________________________________________

2. How is knowledge managed in day-to-day duties in the library/section?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

SECTION D: KM AND LIBRARY OPERATIONS

3. Do knowledge assets exist in university libraries? YES/NO
   a) If YES, name the assets
    ___________________________________________________________________
    ___________________________________________________________________
    ___________________________________________________________________
    ___________________________________________________________________
    ___________________________________________________________________

   b) What tools are used to manage these knowledge assets?
    ___________________________________________________________________
    ___________________________________________________________________
    ___________________________________________________________________
    ___________________________________________________________________

   c) Do staff share their knowledge assets? YES/NO
      Please explain your answer
    ___________________________________________________________________
4. a) How is information relating to library operations stored?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

b) How is this information retrieved when it is needed?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

5. a) Do you require information to assist you do your work? YES/NO
b) If YES, what information and how do you obtain it?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

  c) If NO, why not?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

6. What role does information and knowledge have in your organization?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

7. Do you collect and store information relating to the library users?
   b) If YES, how do you collect the information?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
c) If NO, why not?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

7. Does your KM program support the overall university strategic goals? YES/NO Please explain your answer
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

9. Would you say your KM program has been successful? YES/NO Please explain your answer
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

10. Do you have problems/challenges in adopting KM practices? YES/NO
a) How, if any, can these problems be overcome?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

b) Library take to adopt appropriate KM practices to enhance performance?
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
11. How does your library/section determine what data, information and knowledge adds value to your user’s interests?

___________________________________________________________________
___________________________________________________________________

12. Has knowledge sharing generated any benefits and solved a problem for library users? YES/NO Please narrate your experience.

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

SECTION E: HUMAN RESOURCE AND ORGANIZATIONAL STRUCTURE ISSUES

13. What is management’s role in the KM program?

___________________________________________________________________
___________________________________________________________________

14. Does management reward employees for sharing and using knowledge? YES/NO Please explain your answer

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

15. Are staff rotated on a regular basis? YES/NO If YES, how effective is it in your organization’s KM program?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
16. Has the library trained staff in acquiring skills relating to knowledge management? YES/NO
   a) If YES, which skills?
      ________________________________________________________________
      ________________________________________________________________
      ________________________________________________________________
   b) If NO, are there any plans for such training?
      ________________________________________________________________
      ________________________________________________________________
      ________________________________________________________________

SECTION F: CREATIVITY, INNOVATION AND CULTURE

17. How is knowledge creation, use and sharing critical for improved library performance?
    ________________________________________________________________
    ________________________________________________________________
    ________________________________________________________________

18. Does your organization use a systematic procedure to convert knowledge in people’s heads to knowledge that can be easily accessed by others? YES/NO
   a) If so, describe the procedures used.
      ________________________________________________________________
      ________________________________________________________________
      ________________________________________________________________
   b) What are the benefits of the procedure?
      ________________________________________________________________
      ________________________________________________________________
      ________________________________________________________________
   c) What are the limitations of the procedure?
      ________________________________________________________________
      ________________________________________________________________
      ________________________________________________________________
19. How can collaboration and sharing of knowledge amongst professionals be enhanced?

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________


SECTION G: INFORMATION & COMMUNICATION TECHNOLOGY (ICT)

20. Is the university networked? If YES, describe the ICT tools that can be used to collect, organize, access and disseminate tacit knowledge to support library staff.

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

If NO, why?

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

21. Does information technology provide a platform for knowledge capture or sharing?

YES/NO

Please explain your answer

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

SECTION H: MEASUREMENT OF KM EFFECTIVENESS

For the purpose of this study effectiveness (value added analysis) is defined as: “a measure of the level of value which can be created from a given level of resources” (Johnson and Scholes 1999).
22. Does the library have problems relating to knowledge creation, sharing, preservation or application? YES/NO

a) If YES, is there any knowledge the library needs to have to improve the situation or to solve the problem?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

b) If NO, explain your answer

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

23. What is the relationship between the KM program and performance measures?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

24. Do you have a system used to train new librarians using experienced librarians as instructors? YES/NO
a) If YES, describe the system.

___________________________________________________________________

b) If NO, explain your answer.

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

SECTION I: CUSTOMER CARE

25. Does your library measure users/readers satisfaction? YES/NO
a) If YES, how and why is it done?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
b) If NO, why is it not done?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

26. How does the library correlate the link between KM practices and improvement in library performance?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

27. Do you agree or disagree with the following statement:
   Once an organization gains a knowledge based competitive edge, it is easier to maintain its lead and harder for its competitors to catch up.  AGREE/DISAGREE
Please give reasons.

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Thank You very much for your time and co-operation!
APPENDIX C: OBSERVATION CHECKLIST

The researcher will observe the following:

1. Types of information resources in the library:
   - Layout of the library
   - Books
   - Reference materials
   - E-resources
   - Periodicals

2. Infrastructure
   - Availability of computers/work stations
   - Frequency of usage
   - Accessibility

3. Information systems in place
   - Management Information System
   - Intranet
   - Extranet
   - Library system
   - Internet
   - Email
   - Expert systems

4. Organizational structure and culture

5. Inter-personal relations and interactions

6. Layout and accessibility of the library

KM Materials

Availability of work manuals [Available Not Available]
Collection development policy [Available Not Available]

Any other unstated observation
APPENDIX D: RESEARCH AUTHORIZATION

MINISTRY OF HIGHER EDUCATION SCIENCE & TECHNOLOGY

Telegrams: "SCIENCE TEC", Nairobi
Telephone: 02-313581
E-Mail:pc@scienceandtechnology.go.ke

When Replying please quote
Ref. MOHEST 13/001/38C 235/2

19th May 2008

Sylvia Adhiambo Ogola
Moi University
P.O. Box 3900
ELDORET

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on,
"Knowledge Management Practices in University Libraries in Kenya"

I am pleased to inform you that you have been authorized to carry out
research in All Public and Private Universities Libraries for a duration of
seven months ending 31st December 2008.

You are advised to report to the Vice Chancellors Public and Private
Universities before embarking on your research project.

On completion of your research, you are expected to submit two copies of
your research report to this office.

M. O. ONDEKI
FOR: PERMANENT SECRETARY

Copy to:
Vice Chancellors
Public Universities
Private Universities
APPENDIX E: RESEARCH PERMIT

This is to certify that:

Prof./Dr./Mr./Mrs./Miss SYLVIA ADHIAMBO OGOLA

of (Address) MOI UNIVERSITY

P.O. BOX 3900 ELDORET

has been permitted to conduct research in UNIVERSITY LIBRARIES

University, Location,

NAIROBI AND ELDORET District,

NAIROBI AND UASIN GISHU Province,

KNOWLEDGE MANAGEMENT PRACTICES IN UNIVERSITY LIBRARIES IN KENYA

31ST DECEMBER, 2008

for a period ending

Research Permit No. MOHEST 13/001/38C 235
Date of issue 19.5.2008
Fee received SHS.1000

M.O. KONDIEK
Permanent Secretary
Ministry of Science and Technology