ASSESSING KNOWLEDGE SHARING PRACTICES AND THEIR EFFECT ON TEACHING STAFF PERFORMANCE IN SELECTED PUBLIC UNIVERSITIES IN KENYA

BY

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DECLARATION

DECLARATION BY THE 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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DECLARATION BY THE SUPERVISORS:

This thesis is the candidate's work and has been prepared with our guidance and assistance; it has been submitted with our approval as official University Supervisors.

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ABSTRACT

Universities and other knowledge based organizations recognize that knowledge is an asset that can help them achieve their objectives. This can work if the knowledge is governed by proper knowledge management and sharing systems that support knowledge sharing. It is regrettable that there are no laid down processes through which relevant knowledge can be identified and shared among the teaching staff in public universities in Kenya. The aim of this study was to assess the effect of knowledge sharing on performance amongst teaching staff in selected public universities in Kenya and propose suitable strategies that can be used for enhanced performance. The objectives were to: examine kinds of knowledge communities that are available for enhancement of social capital; assess the information communication technology physical infrastructure used to enhance collaborations, linkages and partnerships; determine ways in which knowledge leakage has impacted on innovations; assess knowledge management practices used to promote learning, research and innovations; establish whether there are policy frameworks used to manage knowledge and are suitable in supporting staff performance and propose suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in Kenyan public universities. The study was informed by social exchange, adaptive structured, knowledge based theories and Nonaka and Takeuchi model of knowledge conversion. Mixed methods research, rooted in pragmatism was adopted. Systematic random sampling was used to select six universities from 23 chartered universities. The sample size was three hundred and eight (308) respondents. Data was collected through structured interviews and questionnaires and analysed using qualitative and quantitative methods. Qualitative data was compiled into themes and reported in texts and direct quotations while quantitative data was analysed using descriptive statistics aided by statistical package for social sciences (SPSS) and presented in percentages, frequencies, means, tables and graphs. There were knowledge communities, information communication technology infrastructure (60%), knowledge leakage, underdeveloped knowledge management and lack of knowledge sharing policy (2%). There was association between: knowledge communities and enhancement of social capital valued at $\chi 2(16) = 32.657$, $p=.008$; information communication technology infrastructure and collaborations, linkages and partnerships at $\chi 2(16) = 71.456$, $p=.000$; knowledge leakage and impact on innovations at ($\chi 2(6) = 21.631$, $p=.001$; best practices used in knowledge management and ability to promote learning, research and innovations at ($\chi 2(16) = 71.456$, p-value = .000 and, policies of importance in knowledge management at, ($\chi 2(1) = 5.866$ $p=.000$. The study concluded that communities of practice, information communication technology physical infrastructure, knowledge leakage, knowledge management practices and knowledge sharing policies impact on performance. It recommended that university management should create effective avenues for knowledge sharing; finance teaching staff for knowledge sharing initiatives; document policies for all the activities; the teaching staff should tap knowledge from all staff; university librarians should develop working institutional repositories and the government should allocate enough resources to the universities to support knowledge sharing activities. A knowledge sharing model was developed.

DEDICATION

To my husband Levi Mugalavai

and daughters

Lyn Kavulavu, Viona Muleke and Cynthia Chamwada

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ABBREVIATION AND ACRONYMS

AST	Adaptive Structural Theory
CARTA	Consortium for Advanced Research, Training in Africa
CoE	Community of experts
CoP	community of practice
CUE	Commission for University Education
HIV/AIDS	Human Immune-deficiency Virus/Acquired Immune Deficiency Syndrome
HR	Human Resource
ICT	Information Communication Technology
IP	Internet Protocol
IT	Information Technology
KBV	Knowledge Based View Theory of the Firm
RBV	Resource Based View
KeMU	Kenya Methodist University
KENET	Kenya Education Networks
KLISC	Kenya Library Information Service Consortium
KM	Knowledge Management
KS	Knowledge Sharing
MAREN	Malawi Academic and Research Network
NBDCK	National Book Development Council of Kenya
OCSDNet	Open and Collaborative Science in Development Networks
ODDC	Open Data for Developing Countries
SCT	Social Capital Theory

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.1 Introduction

With fast generation of information since the 1900's business organizations have been concerned with the management of overwhelming information that was created by activities of the World War II(Jun & Joo,2011). According to the authors, information science and the management of information contributed to the evolution of knowledge management. The authors further state that it was during the same period when organizations' managers came to realize that business could be successful only if the company's knowledge is harvested and retrieved for business purposes.

In the 21st Century, knowledge service came into scene and has been recognized as the practical side of knowledge management (Jun & Joo, 2011). Even though managers and other enterprise leaders seek to put knowledge management to work, they have come to understand the value of knowledge service. Indeed, information, knowledge and strategic learning managers understand that knowledge organizations undertake higher level research, contextual decision making and accelerated innovations. The new emphasis is on the role of knowledge in the operational environment which has turned out to be a different way of looking at organization's intellectual assets and its collective knowledge. As a result, knowledge development and knowledge sharing is now clearly desired in modern and well managed organizations (Dalkir, 2005; Ryan et al., 2010).

With the invention of information technology (IT), a lot of knowledge is being created in knowledge organizations. There is an assumption that all workers who are computer literate are good knowledge seekers. This is not true because good

searching has to be accompanied by information literacy where knowledge workers have the abilities to know when information is needed, locate it, evaluate it and use it effectively. Studies have shown that in organizations with knowledge workers, only ninety percent (90%) of their accessible information is only used once and workers spend a lot of time just searching for it (Noor & Salim, 2011). This is a loss to the organizations because this knowledge needs to be disseminated among the workers for maximum production.

Communities of practice and communities of experts are knowledge sharing groups that produce knowledge by interactions and create group memories. Knowledge sharing (KS) can result into strong social capital where institutions' relationships with one another and norms shape the quality of their performance. These communities provide platforms where problems can be identified and solved. They enable organizations to make informed decisions and also facilitate creation of intellectual capital (Dalkir, 2005).

A person's educational skills and background are necessary for production of an organization or profession. Tsui et al., (2006) reveal that strong personal networks and relationships influence individual and organization success. These networks eventually facilitate generation of intellectual capital, keeping members with the same professional interest together. Such commitment amongst persons of same interest, leads to coordination and cooperation, which eventually lead to innovations of shared expertise. Involvement of professionals like librarians can also use this networked knowledge to develop organizational repositories (Tsui et al., 2006; Wamitu, 2015).

Frappaolo (2006) identifies knowledge resources as books, periodicals, portals, websites, institutes of higher learning and associations. These can be summarized as

individual, organizational and technological resources. The individual factors that promote knowledge sharing are the willingness and the communication skills that are necessary for knowledge sharing. Frappaolo further found that academicians, researchers, librarians and students at universities are very positive towards sharing. Organizational resources require that universities provide appropriate infrastructure and sufficient resources that facilitate knowledge sharing. This entirely depends on the universities' integration of knowledge sharing and management into their goals and strategy (Ng'ethe, Iravo & Namusonge, 2012). Universities in Kenya provide meeting spaces and physical environment where teaching staff and other researchers meet to share ideas. Technology is viewed as playing a key role in knowledge sharing and management. The technology requires relevant IT infrastructure, (both technical infrastructure, application and information architectures) that allow the flow of information between various systems. Research shows that the usage of IT applications by knowledge owners largely affects the knowledge sharing capabilities. Again, if technology is easy to use, it can motivate the sharing of knowledge (Ng'ethe, Iravo & Namusonge, 2012).

Due to financial constraints within universities, the outsourcing of teaching expertise has become a common practice. This inadvertently leaks out information about the outsourcing organization and is happening at a time when most organizations are shifting to globalization in an attempt to appreciate knowledge economy. It therefore calls for an understanding of the nature of knowledge within a given organization and how this knowledge can boost its performance and competitiveness (Tsui et al., 2006). According to Dalkir (2005), although studies affirm that organizations reap knowledge from others through dynamic interactions, there is need for organizations

to harness knowledge capabilities of their workers so as to minimize information leakage.

Similarly, Ng'ethe, Iravo & Namusonge (2012) narrate that organizational practices can either foster or bar knowledge sharing among staff and other related organizations. This is prompted by some beliefs among organization owners that what they know should remain their property and never to be shared out. According to these authors, there are some set beliefs within organizations that draw lines to the extent to which members should interact. There are those schools of thought who believe that junior members within the same organizations should not share the same cafeteria or any social platform with their seniors. These limits are created by those who feel that what they know should not be passed over to someone else. However, this is a very old school of thinking as workers in the same organizations need to work in harmony towards achieving maximum output, which can only be possible when knowledge is shared. This school of thought is not affirmed by Chen, Chen, & Kinshuk (2009) who encourage organizations to develop cultures that motivate employees to share knowledge and ideas. This also applies to those universities that feel they are champions in given disciplines and are not willing to share.

1.2 Knowledge Sharing

With regard to knowledge sharing in universities, literature revealed that some universities have little or no idea of the value of sharing knowledge (Chen,et al., 2009; Ng'ethe , Iravo & Namusonge, 2012). Some studies acknowledge that knowledge sharing impacts on universities' performance positively (Bock & Kim, 2001; Dalkir, 2005; Ryan et al., 2010; ; Wenger, McDermott & Snyder, 2002) whereas Chen et al.(2009) found that some individuals have negative attitudes towards sharing knowledge in fear that knowledge shared might be used negatively

against the sharing organizations. In support, Ardichvili, Page and Wentling (2003) state that success of knowledge exchange depends on organizations' social and technological attributes that provide a rich environment for exchange. With regard to these studies, universities need to appreciate that the knowledge they own has solutions to the pieces of problems within their organizations. They (universities) need to embark on intensive knowledge audit that will sieve out the unwanted knowledge from their stores, while remaining with what is relevant to them (Ardichvili, Page and Wentling, 2003).

Wamitu (2015) stresses that Knowledge should be mined from all knowledge owners within their organizations for use. This requires sieving through all the available knowledge to get what is relevant and can be applied. Knowledge mining only works where there are qualified and competent knowledge workers who understand the specializations of different workers within the organizations. In the university set up, knowledge managers who are usually university librarians are tasked with the responsibility of managing knowledge and directing it to the right user. To achieve this, it requires that the librarians know what the potential users of the knowledge need, and their willingness to use the knowledge. The connecting of different knowledge to different users adds up to knowledge sharing hence developed networks that build up social capital. Although this study puts emphasis on how knowledge sharing can boost performance among teaching staff in public universities, there are other benefits that sharing knowledge amongst universities can achieve.

1.2.1 Benefits of Knowledge Sharing

As a resource, knowledge shared adds value to both sharing organizations and individuals (Dalkir, 2005). This value has been expressed as collaboration,

commitment and trust, sharing costs, bonding, improved information communication technology, enhanced output in organization and personnel development among others.

1.2.2 Collaboration

A collaborative environment enhances knowledge sharing and in the event it is not favorable then knowledge owners cannot share knowledge. Dedicated knowledge sharing events provide open sharing forum. Through collaborations not only will organizations share expertise, but they can also agree to share physical, financial, organizational and human resources. Through expertise sharing, intellectual property and innovations can be generated that can benefit individuals, collaborating groups and the organization at large. Organizational memories that contain innovations, standards, patents and reference materials can grow. Through collaborations, duplication and reinvention is highly controlled reducing invention costs (Ardichvili, Page & Wentling, 2003; Wamitu, 2015).

1.2.3 Commitment and Trust

Commitment and trust have been developed among sharing universities because they (universities) have confidence and willingness to strengthen relationships. In trust, an individual or group expects that a promise, whether verbal or written can be relied upon. For instance, the recipient of knowledge or any scholar accessing any source of knowledge must be persuaded that the source is reliable and trustworthy. As a result of trust among individuals and organizations, values like teamwork, dialog, collaboration, participation, open communication, empowerment and performance have been promoted. Emotional relief and decreased tension are experienced when problems are common because a common solution is sought (Goh & Sadhu, 2013).

1.2.4 Sharing Costs

Sharing of knowledge requires individuals to invest in time, effort and money. The magnitude of the costs determine whether individuals can share their knowledge or not. For example, during the inauguration of Legislative Summit in Mombasa, participants affirmed that shared costs provide for building relationships that improve well being of various governments as is the case for universities (NMG, 2016 May 24). To share tacit knowledge which is difficult to formalize and communicate, knowledge owners need to be identified, their contacts established and brought on face to face contacts with those who need to learn from them. This is at a cost (Goh & Sadhu. 2013).

1.2.5 Bonding

Goh and Sadhu (2013) reiterate that when knowledge is shared amongst users, bonds and connections are strengthened. At the same time, the authors further observe that solving problems amongst users helps in bringing people together and confidence building. In this regard, librarians, teaching staff and researchers need to identify knowledge resources and skills in organizations with whom they can collaborate. For example, librarians can enhance bonding using different communication channels like intranets, e-mails, library websites, mailing lists, face to face and virtual reference desks, while researchers and teaching staff can share their experiences through forums like teleconferencing, professional lecturers, external examining and other exchange programs. In this way, users get a feeling of satisfaction from sharing knowledge, much like giving charity results.

1.2.6 Improved Information Communication Technology

Most knowledge organizations strive to improve their IT infrastructure to facilitate knowledge sharing. Information communication technology provides a rich platform

where knowledge owners can document their explicit knowledge and store the documents. The documented records can be easily and rapidly downloaded (Gregson et.al, 2015). To this level, ICT plays the role of a library by publicising the new and old knowledge to let others know of the existence of the explicit knowledge. The platform goes further to disseminate the knowledge.

1.2.7 Enhanced Output

Studies show that new comers become productive faster when they are told how things are done. Research is done more speedily. Re-inventions have been reduced. This is because ICT allow for visualization of teaching. For example, courses taught at universities that are interactive can use multimedia to deliver information at any time and in any place. Also, knowledge that is captured within a given organization and stored in the repository can be extracted from the repository by knowledge seekers who apply it to solve a given problem. Although Frappaolo (2006) confines this knowledge to explicit, tacit knowledge can also be captured. Training and coaching has a positive impact on knowledge organizations. Knowledge owners through organized trainings teach inexperienced teams leading to more effective execution of tasks. Knowledge owners benefit in the sense that respect from colleagues is gained by building up professional authority in a given discipline. Individuals can be promoted boosting their status and reputation, while earning them more recognized titles (Koulikov, 2011).

1.3 Knowledge Sharing in Universities

Noor and Salim (2011) opine that tremendous growth in universities requires structures that facilitate networking and online knowledge sharing. During this economic recession where universities are supposed to be recognized as centres of

knowledge, majority of the universities have not been able to establish a network to enable them share knowledge among themselves. The authors reveal that organizations that have accessible policies that support knowledge management, appropriate ICT structures and a variety of communications channels, have been successful in sharing knowledge. According to these authors, such conditions can encourage sharing of research projects, training programs, group discussions, documenting experiences and online exchange of newsletters in order to achieve knowledge sharing. The authors further explain that such activities can transform universities individuals' knowledge into collective university knowledge, while enabling faculties to share quality resources and expertise.

Additionally, Supar (2012) and Gregson et al. (2015) reveal that there have been several efforts made by African higher learning institutions to realize knowledge sharing. Some of the initiatives made include: Cameroon Inter-University Networks that embarked on the provision of modern infrastructure to facilitate knowledge sharing among the universities; Kenya Education Networks (KENET) which was established to provide Internet Protocol (IP) network with high speed that can interconnect educational institutions in Kenya and Malawi Academic and Research Network (MAREN), which was established to provide bandwidth to major academic sites in Malawi among others. This reflects Internet Connectivity as a break or make in knowledge sharing.

1.3.1 Knowledge Sharing in Public Universities in Kenya

In Kenya public universities constitute an acceptable body of knowledge. These universities are repositories of knowledge and are expected to bring about an increased level of productivity. Supar, (2012) states that knowledge sharing (KS) leads to creation of new knowledge and acts as a catalyst for innovations and

generation of intellectual property. Supar (2012) is supported by Bailey, Cloete and Pillay (2011) who add that since repositories are stores of development to both individuals and organizations, their (repositories) establishment and maximum utilization in universities should be given priority. Although there is evidence (Supar, 2012; Bailey, Cloete & Pillay, 2011) that KS leads to individuals and organizational growth, members of these universities still hoard knowledge. There are no known knowledge communities within these universities that include communities of practice, communities of experts and well established knowledge repositories. For example Universities that run the same programmes develop their own curricula and do not share the curricula for those courses. They see themselves as individuals who do not belong to a larger university community. This eventually hampers the whole process of KS with each university viewing knowledge as a weapon to be employed for individual advantage.

In today's knowledge based economy, all successful organizations rely on knowledge. There is positive relationship between knowledge sharing and performance in organizations. Decision makers in most universities have promoted and sponsored knowledge sharing forums. This has encouraged knowledge generators and owners to have themselves the desire to participate. Incentive systems and personal expectations have been key drivers of knowledge sharing. Teaching staff have been stimulated to participate through incentives like promotion and remuneration. Knowledge gained is used to make the best informed decision (Chong, Yuen & Gan, 2014).

Organizational resources require universities to provide appropriate infrastructure and sufficient resources that facilitate knowledge sharing. This entirely depends on the organization's integration of knowledge sharing into the goals and strategy of the

organization. In an attempt to make knowledge shared, Universities in Kenya provide meeting spaces and physical environment where teaching staff and other researchers meet to share ideas. In addition, 2016 report on Usage for Kenya Library Information Service Consortium (KLISC) reveals that universities invest in knowledge sharing initiatives. For example, out of the eighty two (82) KLISC members, the top twenty two (22) users are universities. This complies with Dalkir (2005) who advocates for provision of empirical evidence that enhance knowledge sharing as individual, organizational and technological. With regard to championing, University of Nairobi library in Kenya has gained popularity in training of librarians on institutional repositories; Moi University is well recognized for her authoritativeness in Information Science; Kenyatta University for championing in education while Egerton in Agriculture. These champions need to find a platform through which their specialties can be shared. Participants in such forums can have their skills improved leading to positive impact on performance (Supar, 2012).

Dalkir, (2005) suggests that the level of ICT usage by individuals within the sharing institutions determines the amount of knowledge extracted and shared among the people who utilize and benefit from the ICT platforms. Attitude depicts the intentions of ICT use in knowledge sharing. Gregson et al. (2015) state that ICT physical infrastructure applications like knowledge repositories, expert networks in libraries and communities of practice with professional expertise enhance knowledge sharing. Information technology systems need to be compatible with the environment within the organization. Technological ignorance reduces urge for knowledge sharing. Where knowledge owners and learners are not given incentives to use the new technology they remain IT illiterate where-as those who are technology literate fear

sharing the know how lest they lose their jobs and popularity (Noor & Salim, 2011; Supar, 2012).

Librarians are fundamentally associated with organization of knowledge. They provide access to the organized knowledge. University librarians are charged with activities that support quality teaching, learning and research. These changing roles of librarians require them to continually upgrade their skills. As a result, librarians join platforms like consortia through which they share knowledge on the best practices. Their participation in conferences, trainings, workshops enable them to learn new skills. These forums include Consortium for Advanced Research, Training in Africa (CARTA), KLISC to which university libraries in Kenya have played a major role in improving the skills of librarians. This can ultimately improve lives and create human capital among librarians and other knowledge owners in the economic growth of a nation (Chen & Kinshuk, 2009).

1.3.2 Knowledge Sharing in University Libraries

Librarians have a role in supporting research, training and developing the knowledge economies in nations. These changing roles and attaining of skills and knowledge required to perform these roles is a challenge to libraries and librarians (Goh & Sadhu, 2013). Today, university librarians are required to provide leadership that dedicate more time on knowledge sharing activities like establishing alert systems that inform the members of the available resources, having appropriate ICT structures that facilitate social networks, establishing virtual reference desk and having users' mailing lists and staff databases. Such structures open up to sharing of the latest research information, participation in web-based learning, opportunities to belong to international research teams and ability to connect campuses with facilities like video

conferencing that will eventually lead to generation of new knowledge. There is no evidence of librarians building their own knowledge from the conferences they attend and applying it in their own libraries. Goh and Sadhu (2013) qualify these challenges with busy schedules for librarians, funding problem, conflict of interest with that of library and university management, lack of resource persons and lack of experience and manpower. University libraries need to go an extra mile to develop staff working under them by training them on the best practices learnt from conferences.

To counter these challenges, consortia like Consortium for Advanced Research Training in Africa (CARTA), Kenya Library Information Services Consortium (KLISC), and International Network for Availability of Scientific Publications (INASP), Kenya Information Preservation Society and National Book Development Council of Kenya (NBDCK) among others have been developed. These consortia, to which libraries are fundamentally associated with, advocate for economic growth through resource sharing. To date, other than KLISC membership creating a list serve through which libraries are informed of the latest information resources and renewal of their subscription, this study has no evidence to show any sharing of the knowledge generated from the consortium. However, the background has shown that knowledge sharing enhances performance amongst employees through employment of strategies adopted by knowledge workers. These revelations prompted the researcher to empirically investigate the effect of knowledge sharing on performance amongst teaching staff in Kenyan public universities. The results obtained through inferential analysis will be inference to all the public universities in Kenya.

1.4 Statement of the Problem

Universities, mandated to produce quality, specialized and relevant education in the country have an obligation to develop knowledge communities consisting of

communities of practice and communities of experts that can facilitate knowledge transfer within and outside the universities (Ho et. al 2012; Agarwal & Marouf, 2014; Ali, 2015; Abdela, 2016). These communities can only prosper where skills necessary to achieve a certain level of performance and capability to apply the skills are available. In Kenya, Universities have made efforts to establish official knowledge sharing fora like international conferences and university exhibitions with little emphasis on building knowledge communities that can build social capital (Mugalavai & Muleke, 2016). No research has been reported on how to develop a rich ground for dialog among teaching staff where knowledge gathered is shared amongst the teaching staff (Kagwira, 2016).

Studies acknowledge the need to have the necessary current technologies to produce the required physical results that include learning, teaching, research and innovations in universities (Enakrire & Ocholla, 2017; Hawajresh & Sharabati, 2012).Lack of current technologies lead to underdeveloped collaborations through which universities can pool together their expertise. These studies appreciate that some universities have heavily invested in a range of technologies to speedily transfer knowledge, skills and competences to develop shared visions and reduce financial constraints (Ndegwa, 2015). However, Ndegwa regrets that there has been minimal concentration on the application of these technologies leading to underperformance. Failure to produce the required physical results within universities is attributed to inability to appropriately utilize the technologies within these universities (Thiga, 2012). This means that even though universities appreciate the role of technologies in learning, teaching, research and innovations, there exists a gap of how wholly these technologies can be embraced. Thus, there are no reported studies on how universities can bridge the IT physical infrastructure and staff gap to enhance performance.

Public universities in Kenya lose a lot of their treasure they have generated over a long period through knowledge leakage without notice. It is clear that in various universities staff change or leave employment as a result of retirement of very experienced knowledgeable staff in a specialized field or resignation to change to a better employer (Ng'ethe, 2013). Apparently, Kagwira (2016) established that such knowledge is only retained in the mind of the creator. Nonetheless, this knowledge is easily leaked out when the employee exits. With regard to this there exists a gap within the Kenyan universities where dynamic knowledge that is rich for innovations is lost. There is no evidence or attempts by the public universities in Kenya on how knowledge leakage affects performance and how to curb this leakage.

Organizations that have embraced knowledge management practices have leveraged knowledge to their advantage limiting loss of skilled people and reinvention of the wheel (Kimile, 2011). While these universities have registered tangible successes in publications, much has not been achieved in the management of the knowledge they own. However, studies reveal that strategies that can be employed to manage knowledge and create a new source of competitive advantage are missing ((Anna & Puspitasari, 2013). Further, Ardichvili, Page and Wentling (2003) confirm that staff motivation activities to participate in knowledge management work are also missing. There is no recorded evidence reported on knowledge sharing practices and their achievements in public universities.

Most knowledge based organizations recognize that knowledge is an asset that should be managed the way capital assets are managed. Dewar (2011) opine that organization's knowledge needs to be governed by proper knowledge management and sharing systems that are fully embedded by the knowledge organizations. The governance involves the laying down of processes through which relevant knowledge

is identified and shared amongst the staff to help the organization achieve her intended objectives. A policy that outlines these processes is necessary. It is regrettable that although universities in Kenya acknowledge knowledge as weapon to their success, there has not been reported formal knowledge sharing policies that enforce knowledge sharing.

It is against this background that the present study sought to investigate how knowledge sharing affects performance. The study specifically emphasized on knowledge communities, technological infrastructure, knowledge management practices, leakage of knowledge, knowledge management policies and knowledge sharing strategy development in public Universities in Kenya.

1.5 Aim

The aim of this study was to assess the effect of knowledge sharing on performance amongst teaching staff in selected public universities in Kenya and propose suitable strategies that can be adopted by knowledge workers for enhanced performance.

1.6 Research Objectives

The objectives of the study were to:

1. Examine kinds of knowledge communities that are available for enhancement of social capital amongst teaching staff in selected public universities in Kenya;
2. Assess the information communication technology physical infrastructure used to enhance collaborations, linkages and partnerships amongst teaching staff in selected public universities in Kenya;
3. Determine ways in which knowledge leakage has impacted innovations amongst teaching staff in selected public universities in Kenya;

4. Assess knowledge management practices used to promote learning, research and innovations amongst teaching staff;
5. Establish whether there are sustainable policy frameworks used to manage knowledge in selected public universities libraries in Kenya for supporting staff performance;
6. Propose knowledge sharing and management strategies that are suitable in supporting staff performance public universities in Kenya.

1.7 Research Questions

1. How do knowledge communities relate to social capital amongst teaching staff in selected public universities in Kenya?
2. In what ways does information communication technology physical infrastructure influence collaboration, linkages and partnerships amongst teaching staff inpublic universities?
3. How does knowledge leakage relate to research and innovation amongst teaching staff in public universities?
4. What is the influence of knowledge management on learning, teaching, research and innovations in public universities?
5. How do knowledge sharing and knowledge management policies influence research and development amongst teaching staff in public universities?
6. How will the findings of this study influence policy makers and administrators in public universities?

1.8 Assumptions

The study was founded on the following assumptions:

1. Although universities in Kenya generate vast resources of knowledge, they lack platforms for knowledge sharing among teaching staff to enhance their performance.
2. Poorly developed information communication technology physical infrastructure for supporting collaboration, linkages and partnerships have contributed to the inadequate knowledge sharing among teaching staff in the public universities.
3. It is possible to improve knowledge sharing and enhance performance of teaching staff in public universities if knowledge sharing strategies are formulated and implemented.

1.9 Significance of the Study

It is expected that the results of the study will make a contribution towards enhanced performance among teaching staff in public universities in Kenya. It informs the teaching staff in public universities to build knowledge communities that provide a common platform for knowledge sharing. The study provides useful insights to the university management in meeting the challenges that come with underdeveloped information communication technology physical infrastructure and knowledge leakage. The study will also be useful to public university librarians and all other librarians in helping them to understand their role as knowledge managers and community of practice. Finally, the study will be useful to the ministry of education and ministry of finance in providing information that will inform budgetary allocation to enable universities to build a conducive working environment that can enhance performance.

1.10 Justification

The 21st Century economy recognizes knowledge as the primary resource for wealth generation for competitive advantage. This has stimulated the concern of both university teaching staff and universities' management on how to make maximum use of the knowledge they own. It also means that the survival of the economy depends on knowledge creation, transfer and its maximum exploitation. This involves projection of quality knowledge content that is up-to-date, uninformative and applicable to all units of the economy. It is the responsibility of the top management within these universities to initiate, sponsor and promote knowledge sharing and management activities by providing enough finances and resources. Although Knowledge remains the greatest asset owned by individuals in universities, most universities have not recognized that knowledge sharing enhances institutional performance. This study recognizes that the teaching staff in the universities that own knowledge have solutions to the many pieces of problems within their universities and the economy at large. The study therefore creates an environment where knowledge can be shared to enhance performance and growth in public universities and other knowledge organization in Kenya and anywhere else in the world.

1.11 Scope of the Study

The study on knowledge sharing practices among teaching staff in public universities in Kenya was conducted between November 2016 and February 2019 through a cross sectional survey. The study was conducted in six (6) public universities namely: Egerton; Masinde Muliro University of Science and Technology; Laikipia; Chuka; University of Kabianga and Kibabii. The audience of the study was all the university communities who consider knowledge as one of the greatest assets in their possession.

1.12 Operating Definition of Terms

Community

People function through relationships of mutual relationships that bind them together into a social entity. They interact regularly and engage in joint activities that strengthen their relationships and trust (Ardichvili, Page & Wentling, 2003).

Communities of experts:

Communities of experts are formal groups of experts from within or outside organizations who come together to enhance their capabilities. These groups are champions in their areas of specialization and their coming together provides a platform to challenge their counterparts (Wenger et al., 2002).

Communities of Practice

Described as a learning theory with a strong relationship to the social construction of knowledge (Ardichvili, Page & Wentling, 2003). The community of practice (sometimes incorrectly referred to as "communities of practices") consists of members who interact with each other for their pursuit of a common practice. It is therefore this collective social practice that links individuals together across official organizational boundaries and departments, and makes up the community. It is important to note that these are not teams. A 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 (Chen, Chen & Kinshuk, 2009).

Infrastructure

These are tools and communication channels used by organizations and individuals to allow knowledge flow from individual to another in order to solve an organizational problem (Frappaolo, 2006).

Institutional Repository

According to Choi, Lee and Yoo, (2010), an institutional repository is an archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution. It can be viewed as a "...a set of services that a university offers to members of its community for the management and dissemination of digital materials created by the institution and its community members." For a university, this includes materials such as monographs, eprints of academics.

Knowledge

Dalkir (2005) explains that knowledge is the right intelligent to the right people. It is a developmental stage and value in the cycle of data, through to information and then to knowledge. The author further illustrates that Knowledge is information that is contextual, relevant and actionable and can be classified into two: tacit and explicit knowledge. **Tacit knowledge** represents internalized knowledge that an individual may not be consciously aware of, how he or she accomplishes particular tasks and has not been documented. On the other hand, the author notes that **explicit knowledge** is recorded or documented or formal knowledge and that it entails details of processes, procedures, records of all types, manuals, databases etc accessible to all in an organization. Explicit knowledge represents knowledge that the individual holds consciously in mental focus, in a form that can easily be communicated to others.

Knowledge communities

Knowledge communities are groups of people who share common challenges, opportunities or a passion for a given topic, and who collaborate to deepen their understanding of that topic through ongoing learning and knowledge sharing. The sharing of knowledge further depends upon information seekers who are in need of a certain type of knowledge. They come together to so that they can perform certain tasks with confidence using knowledge sources that have all the required information (Dalkir, 2005).

Knowledge leakage

Knowledge leakage is the loss of knowledge intended to stay within an organization but is degraded over time. This loss may be deliberate or accidental to unauthorized personnel within or outside of an organizational boundary (Durst, Aggestam & Ferenhof, 2015).

Knowledge Management

Knowledge management (KM) is a process that helps organizations identify, select, organize, disseminate and transfer important information and expertise that are part of the organisation's memory and that typically reside within the organization in an unstructured manner. Knowledge management can therefore, be defined as the process by which an organization formally, creates, gathers, analyses, shares and applies its knowledge in terms of resources, documents, and experience and people skills. Knowledge Management is the tools and techniques for collecting, managing and disseminating knowledge within the organization (Frappaolo, 2006).

Knowledge organizations

Knowledge based institutions whose workers have the ability to generate knowledge and apply it in their business. Giluninia, Rankouh & Gildeh (2013) describe these

institutions as those that acquire, share, interpret, maintain and utilize knowledge and that their main capital is knowledge.

Knowledge Sharing

Knowledge sharing is the stage which “Tacit or explicit knowledge is communicated to other organizational participants. It is a voluntary activity of exchange of knowledge among individuals with a focus on interaction

Knowledge worker

Workers who apply their professionalism in their businesses by continually creating innovations and strategies to keep their organizations for which they work competitive. They solicit information from each other review, conduct research, are creative and innovative.

Organizational Culture

Organizational culture includes an organisation’s expectations, experiences, philosophy, as well as the values that guide member behavior, and is expressed in member self-image, inner workings, interactions with the outside world, and future expectations. These are beliefs of the owners of the firm that bind the members of the organisation together. These beliefs are expressed in the ways the organisation conducts its business, treats its employees, customers, and the wider community, the extent to which freedom is allowed in decision making, developing new ideas, and personal expression, how power and information flow through its hierarchy, and how committed employees are towards collective objectives. These beliefs are often very difficult to change. Organisational culture evolves over a period of time

Policy

A written principle that governs an individual, group or organization in the administration of its functions. It influences and determines major decisions and actions of all the activities that take place within the set boundaries.

Public Universities

A public university is a university that is publicly owned or receives significant public funds through the national government. They enjoy a higher reputation and are the most influential research institutions in a country

Social capital

Social capital is a positive product of human interaction. The positive outcome may be tangible or intangible and may include useful information, innovative ideas, and future opportunities. Choi, Lee and Yoo (2010) define social capital as the contribution to an organization's success that can be attributed to personal relationships and networks, both within the organization and outside of it. The term social capital is also sometimes used to describe the personal relationships within an organization that help build trust and respect among employees, leading to enhanced organization’s performance.

1.13 Chapter Summary

This chapter gave the underlying issues of the research on assessing knowledge sharing practices and their effect on teaching staff performance in selected public universities in Kenya. It gave the background to the study, and stated the general benefits of knowledge sharing. Specifically, the chapter gave the benefits of knowledge sharing as collaboration, commitment, trust, cost sharing, bonding, improved information communication technology and enhanced output. The chapter

gave the importance of knowledge sharing in universities and efforts made by public universities and university libraries in Kenya towards knowledge sharing. It gave the statement of the problem, research objectives, research questions and significance of the study. Based on the topic of the research, the chapter gave the study assumptions, significance of the study, justification, the scope of the study and operating definitions of terms.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature related to knowledge sharing and management in knowledge organizations and public universities, and conceptualizes the various topics under the objectives of the study. Included in this chapter are the theoretical and conceptual models adopted by the study. The reviews in this chapter mainly focus on how knowledge communities enhance social capital, how technological infrastructure boosts partnerships, collaborations and linkages, the effect of knowledge leakage on innovations, teaching, learning and research in universities, and how knowledge sharing and management practices in public universities are used to promote learning, research and innovations amongst teaching staff. Finally, the policy frameworks needed to manage knowledge in public universities in Kenya, strategies, initiatives and challenges that affect knowledge sharing have also been reviewed and discussed.

2.2 Theoretical Frameworks

Various theories that address knowledge sharing and management practices have been advanced by a number of authors. Among them are; Technology and adaptive structural theory (AST) by Giddens (1984) which provides for integrating knowledge and creating networks; Nonaka and Takeuchi model of knowledge conversion which explains the processes through which knowledge is converted while being transferred from one individual to another; Knowledge based view (KBV) theory of the firm that assumes knowledge is created through human interactions with a social agenda of guiding organizations to do what is expected of the firm (Mbhalati, 2012) and social exchange theory by George Casper Homans in 1974 commonly used to investigate

individual's behavior towards knowledge sharing (Noor & Salim 2011). These theories and model represent a holistic approach to knowledge where people, organizations and technology are put into consideration. They have been reviewed, critiqued and discussed in knowledge related issues by academics, researchers and practitioners. These theories and model have also been implemented and tested for reliability and validity. The theories put into consideration the dependent variables conceptualized in the framework (Figure 2.2) thus informed the study to adopt them. In addition to the theories and the model, a conceptual framework developed by the researcher was adopted

2.2.1 Social Exchange Theory

Noor and Salim (2011) found that social exchange theory (SET) was written by George Casper Homans in 1961, revised in 1974 and later developed into a theory by Peter Blau and Richard Emerson. The authors state that SET has its roots in economics, sociology and psychology whose decisions are based on the costs and rewards with the aim of balancing what an individual gives and takes. The theory interprets society as a series of relations between people based on rewards. Noor and Salim further found that SET assumes that individuals involved in interactions maximize their profits; satisfaction in humans comes from the others; people who have access to information have more solutions to their situations; they freely and competitively achieve their goals; individuals exchange their actions within their cultural norms and people are gauged and evaluated against their actions.

Based on the assumptions of social exchange theory in relation to the present study, the theory is applicable to independent variable; knowledge communities which advocates for both formal and informal interactions amongst individuals with a common interest within the university. University knowledge communities aim at

achieving actions stipulated by the university for competitive advantage. Universities in Kenya serve a common interest to achieve a common goal. According to SET, individuals in the universities are encouraged to have interpersonal relationships that bind both the individuals and the universities to feel good positive value that will provide solutions to their problems. In relation to the present study, the theory postulates that individuals can only share knowledge when they know how they are going to benefit from whoever they are sharing with. While individuals may gain directly from one another, the universities need to appreciate their workers by giving them monetary prizes, promoting them or just a nod to justify the assumptions of the theory that those who are willing to share expect maximum gains. These gains can be actualized through university performance outputs that include social capital (Noor & Salim, 2011).

Although Social exchange theory advocates for sharing, its acceptance may not be welcome by those who treasure their cultural beliefs that do not provide for active knowledge sharing with a view that they are already well-established institutions and do not have anything to receive from the upcoming ones. The theory favours openness which is not always best given that there are some knowledge products like patents that cannot be exposed to everyone. However, this challenge can be overcome by laws that govern knowledge and information; patenting of innovations is legally practiced in Kenya. Lastly, organizations who apply the theory in their activities are cautioned against reducing interactions to rational processes that may lead to intimacy. This can also be mitigated through strict adherence to interactions that come with competitive advantage to the organizations.

2.2.2 Adaptive Structural Theory

Adaptive structural theory (AST) was inspired by Anthony Gidden's concept of structurisation and later developed into a theory by Miscott Poole (Tzanakis, 2013). According to the author, AST was formulated as a production and reproduction of social systems whose units use rules and resources to interact. The author found that Poole called the present theory adaptive because it is believed that group members adapt rules and resources to accomplish their goals. Tzanakis explains that adaptive structural theory emphasises that when members adapt rules and resources to their work, the adaption influences outcome. The theory seeks to understand the structures provided by technology that can emerge in human action while people interact with the technologies.

The emphasis of adaptive structural theory is on the social aspect of technology. According to Desanctis, & Poole, (1994), AST is viable for study of ICT infrastructure because it influences and moderates the use of technology on group work hence improves performance. The authors state that the theory works with systems that have observable patterns of relationships and communicative interactions. They further state that such systems exist in relationships with each other under certain rules and that the structural relationships can be stable and change substantially with time. The structures determine the influence and the willful choices of the groups, evaluate given groups in organizations and propose possibilities of how members can influence what they are capable of.

Adaptive Structural Theory has been tested and used to analyse various innovations within groups and organizations and how these innovations impact on the society. Based on the current study that seeks to establish how ICT physical infrastructure can

enhance collaborations, linkages and partnerships amongst the teaching staff in public universities in Kenya, AST asserts connections between the two; infrastructure and performance in universities can adopt the theory to embrace ICT to accomplish their goals. Universities in Kenya have heavily invested in technology so as to perfect their performance. Among the expected output of universities in Kenya are innovations, research and collaborations that need to penetrate into the society guided by the structures advocated for by the theory. Such innovations eventually give Kenyan universities a platform through which they (universities) gain visibility for competitive advantage. This theory is approved of by other studies (Bosch-Sijtsema and Postma, 2004; Gregson et al., 2005) who recommend ICT use for documentation of knowledge.

2.2.3 Knowledge-Based Theory of the Firm

In a study on knowledge based view (KBV) theory of the Firm, Sveiby (2001) writes that knowledge is a significant resource within organizations which cannot be imitated. The author states that this knowledge, embedded in organizational memoirs determines the competitiveness of an organization. In KBV, the author acknowledges that this knowledge created over a long time does not depreciate but continually generates increased returns. Even though there are organizational cultural practices that may be a hindrance, Mbhalati (2012)advices organizations to invest more in the creation, transfer and transformation of knew knowledge into competitive advantage.

Knowledge based theory of the firm is an extension of Resource-Based view (RBV) which assumes that organizations that possess resources which others do not have achieve better performance. Based on RBV, KBV stresses that knowledge which resides in individuals should be amplified into organizational knowledge through interactions (Mbhalati, 2012). The author compliments this by arguing that

organizational knowledge is created through synthesizing of various views of people and building relationships. The theory states that to retain the knowledge, it needs to be transformed into services, prescribed into models, developed into theories, develop unifying language and develop academic studies that will be retained in the organization so that when a worker exits, knowledge is retained. This ensures that organizations are able to work efficiently and produce products with competitive advantage.

This is in accordance with the views of this study that knowledge shared in organizations develops competitive advantage and does not depreciate the way other economic products do but continues to generate productive returns. The view specifically underpins objective number three of this study; ways in which knowledge leakage influences performance, thus appreciates knowledge owned by people in organizations and advocates for finding ways of retaining it so that when they (workers) leave organizations, their knowledge remains glowing. Universities can apply this theory to produce innovations, generate patents, working manuals, models and theories. In the present study which looks at knowledge leakage as a drawback to competitive advantage, KBV helps in setting rules and directives where each specialized knowledge generated over a long time by workers in the university can be transformed into products that enhance performance in universities. This is supported by other studies where Bosch-Sijtsema and Postma (2004) remind organizations that because humans create knowledge on which organizations thrive, they (universities) should not treat them (humans) just like other resources but put structures in place that will retain the knowledge owned by the workers. Ndegwa (2015) further confirms the proposition of resource based theory that resources that are rare, valuable, non-imitable and non substitutable contribute to an organizations competitiveness. This

affirms that when knowledge is shared, better decisions are made leading to better performance.

2.2.4 Nonaka and Takeuchi Model of Knowledge Conversion

In Nonaka and Takeuchi model of knowledge conversion, Dalkir (2005) has modeled (figure 2.1) two types of knowledge; tacit and explicit knowledge can be converted through various ways of interaction.

Tacit knowledge	Socialization	Externalization
Explicit knowledge	Internalization	Combination

Figure 2.1: Knowledge Conversion Model

According to Dalkir (2005), Nonaka and Takeuchi model of knowledge conversion argues that knowledge can be shared through mental models, impromptu corridor meetings, coffee shops and still remain in the minds of original owners. For example, socialization refers to where knowledge is shared through informal interaction while in externalization, tacit knowledge is transformed into explicit knowledge where expert databases are organized in a way that they can be stored and accessed by like-minded experts from computerized systems. In internalization, explicit knowledge is transformed to tacit through observations, surveys, questioning then the researcher generates new knowledge from the said activities. The researcher can then customize the knowledge to solve a problem. Explicit knowledge can also be transformed into explicit knowledge when the researcher generates bibliographies, graphs and charts from the data he/she collects to solve a problem.

With regard to this study, this model advocates for the processes through which knowledge is modeled (objective 4: assess knowledge management practices used to promote learning, research and innovations) which requires knowledge to be transformed, through various processes into different formats to suit different environments and needs. The expected output of these processes and transformations lead to generation of research publications, establishment of institutional repositories and generation of new knowledge. In addition, tacit knowledge can be transformed into explicit knowledge and be repackaged to suit different needs of various users. This can also contain knowledge leakage from universities as expressed in objective 3 (determine ways in which knowledge leakage has impacted innovations amongst teaching staff in public universities)because the model provides for means of transforming tacit knowledge into recorded explicit knowledge for future reference. Scholars have however assured the knowledge owners that although this knowledge is shared out with others, there are rules that protect their knowledge and it can never be taken away from the owners (Supar, 2012).

2.3 Conceptual Framework

A conceptual framework to guide this study was developed based on the three theories and a model; social exchange theory; knowledge Based theory of the firm, adaptive structural theory and Nonaka and Takeuchi knowledge conversion model. The theories expressed the relationship of knowledge sharing and management to performance. The authors have illustrated that when knowledge is shared and managed appropriately, the output in terms of innovations, intellectual property and social capital is realized. In addition, the literature reviewed (Jeon, Kim & Koh, 2011; Gagne 2009) on knowledge sharing strategies, advocates for well laid down strategies that can facilitate knowledge sharing. This gave the basis on which the researcher

developed a framework (figure 2.2) that guided the study in the achievement of the study objectives.

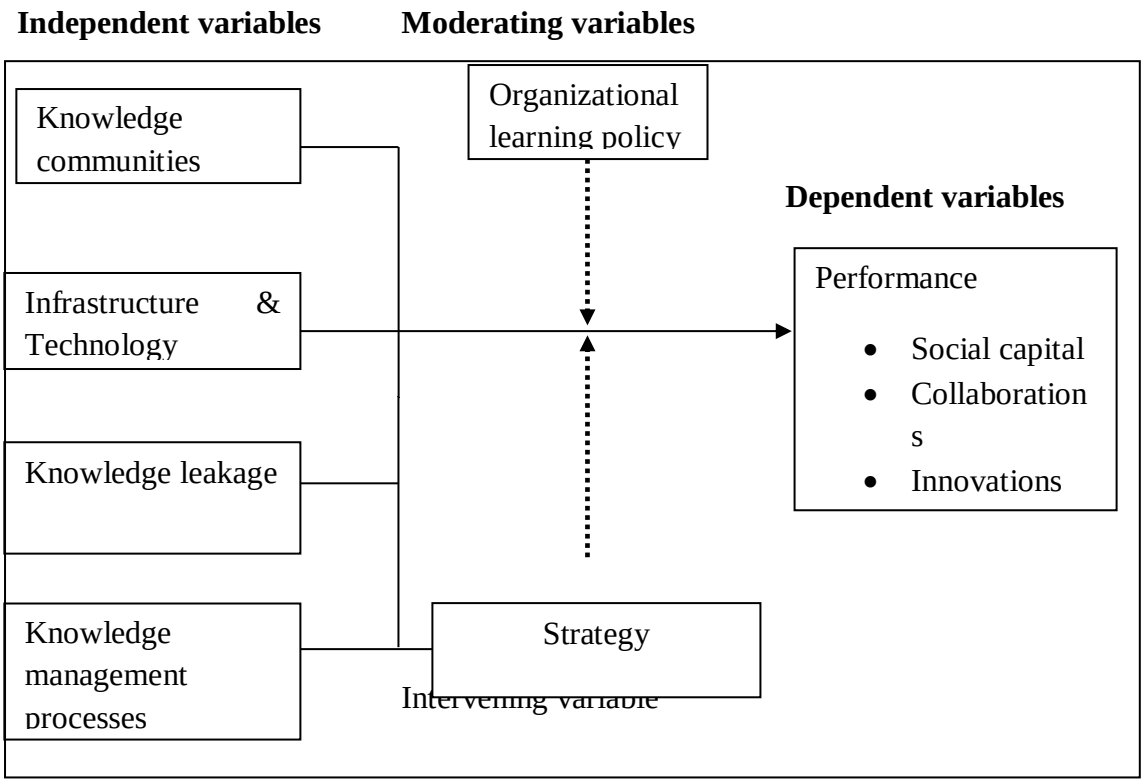

Figure 2.2: A Conceptual Framework for Knowledge Sharing

Author's impression on how the variables are interrelated

In the framework shown in figure 2.2 organizations with established knowledge communities can build strong social capital amongst the sharing organizations. Such communities can prosper when organizational policies that govern their operations have been established. A plan on how knowledge communities can enhance social capital has to be defined within the policy. Performance in university organizations is mainly measured against collaborations, linkages and partnerships. The framework postulates that information communication technology policy and knowledge sharing strategy are necessary in universities and other knowledge organizations for effective partnerships, linkages and collaborations. The strategy guides on the establishment of such working relationships provided for in the policy. The framework also postulates

that knowledge leakage and poor knowledge management deny universities dynamic knowledge that could otherwise be translated into innovations. However such a loss can be mitigated if there are guidelines and programs to be adhered to during knowledge management activities.

2.3.1 Knowledge Communities

Knowledge communities are those organizations that facilitate learning of their members who are eventually transformed into more competitive resources. Choi, Lee, & Yoo (2010) refer to them as communities that pull knowledge from a team member drawn on what one knows effectively and apply the knowledge to address a given problem. Mohamed et al., (2007), add that the team members have to interact, adapt new situations, exchange their experiences to eventually apply to their own situations. These communities can be linked to social exchange theory whose emphasis is on organizations ability to identify, create, represent and distribute knowledge that can perfect their performance. The success of these communities is vested in the members' willingness to actively participate in knowledge generation and sharing.

In addition, Jeon, Kim and Koh (2011) observe that individual resources that include willingness and communication skills also promote knowledge sharing. The authors argue that sharing of knowledge is based on personal interests and enthusiasm of academicians, researchers, librarian and students at universities whose personal attributes eventually develop organizational values and assumptions towards sharing. Basically, individual resources refer to individual traits about sharing. Gregson et al. (2015) complement the argument through their advocacy that organizations need to identify these individual resources that reside in their workers to protect and retain it

for higher production. They (workers) can be grouped into two major categories; communities of practice (CoP) and communities of experts (CoE).

Networks of training are willful gatherings of individuals held together by a good judgment of direction, who share a worry, a lot of issues, or an enthusiasm about a point and who develop their insight and skill in a specific territory of worry by interfacing on an on-going premise with a genuine need to realize what each other knows. As per King (2009), Communities of training are gatherings of people with basic premium who meet up to figure out how to improve through customary connections. Writing (Dalkir, 2005; Frost, 2014; Wenger-Trayner and Wenger-Trayner, 2015) uncovers that they have qualities to which they are related to.They have a common shared domain of interests like shared competences that distinguish them from others. This common domain does not necessarily have to be expertise. And also belonging to the same profession does not mean you belong to a community of practice. They must interact regularly and learn together as a team. They engage in their domain through joint activities, discussions, help each other and share information that enable them learn from one another. They must develop a shared practice of regular meetings with a common repertoire. They brainstorm and solve their problems together which enables them to take a common responsibility in managing the knowledge they need. They create direct links among the members through which they request for information from community members. This information eventually boosts their learning and performance. They reuse assets whereby one may have used a given data to solve a problem and the same data can be customized by the community member to solve another problem. These communities facilitate creation of intellectual capital which can either be owned by them (CoPs) or the organizations (Wamitu, 2015; Mugalavai & Muleke, 2016).

Studies show that community members coordinate through combination of forces to build up a bulky one at the same time build arguments from others. Furthermore, this study acknowledges how members look at how others have solved their problem before and ask themselves how they can apply the same tactic to their situation (Mugalavai & Muleke, 2016). The authors further explain that members grow confidence by trying it in their communities first before they can share it out. In addition, they discuss development like coming up with new systems, document projects such as the problems they undergo and benchmark with people who have same interest as theirs. Because they understand their community members, they map knowledge to those who will apply it to their need. Mapping of knowledge to the intended user is one of the processes of knowledge management that aims at ensuring that knowledge is applied appropriately. The communities also identify problems and people who can solve those problems hence mapping knowledge becomes relevant to facilitate problem solving.

According to Wenger, McDermott & Snyder. (2002), communities of experts are formal groups of experts from within or outside organizations who come together to enhance their capabilities. Wenger et al. assert that these groups are champions in their areas of specialization and their coming together provides a platform to challenge their counterparts. While Dalkir, (2005) refers to them as teams that have the ability to access valuable knowledge, disseminate it, reproduce and re-apply the knowledge throughout the organization, Giluninia, Rankouh, and Gildeh (2013) tag them with the responsibility of generating organizational memories. Communities of experts can transform knowledge into products, services like patents, innovations and document the process as intellectual property. They enable organizations to gain social capital that benefit both the organization and individuals (Wenger, et al., 2002).

2.3.2 Infrastructure and Technology

The present study refers to infrastructure as tools and communication channels that are used by organizations and individuals to allow knowledge flow from individual to another in order to solve an organizational problem. Frappaolo (2006) identifies knowledge management resources as books, periodicals, portals, websites, institutes of higher learning and associations. These can be summarized as individual, organizational and technological. This study recognizes knowledge sharing requirements as part of the infrastructure that facilitates knowledge sharing. They include virtual reference desk, fax, telephone, mailing lists, intranet, e-mail and snail mail. Literature (Paulin and Suneson, 2012; Gregson et al., 2015) reveal that there is an overload of information that needs to be transformed into knowledge. Information literacy comes in handy to facilitate access to such information. Both individual and organizational technological resources are required to facilitate the access.

Gregson et al. (2015) found that technology is viewed as playing a key role in knowledge sharing. The authors state that technology requires relevant information technology infrastructure; both technical infrastructure; application and information architectures that allow the flow of information between various systems. Further, the authors state that usage of information technology applications by knowledge owners largely affects the knowledge sharing capabilities. Again, if technology is easy to use, it can motivate the sharing of knowledge. Other studies (Choi, Lee & Yoo, 2010) reveal that information technology usage provide for uptime, backups and storage capability that allow knowledge to be accessed and applied when needed. These authors reveal that information technology influences integration of knowledge to solve complex problems and invent new innovations. For example, tacit knowledge can be captured in a more standardized format in order to be applied. Choi, Lee &

Yoo, (2010) further reveal that organizations have built repositories that promote knowledge sharing based on use of information technology. Although information technology is appreciated for fast and accommodative capabilities mentioned, organizations are pre-cautioned against the failure rates and security breaches that come with it. While the caution has been put across, information technology stands high in the knowledge sharing and management processes.

Choi, Lee & Yoo, (2010) reiterate that information communication technology provides a rich platform where knowledge owners document their explicit knowledge and store the documents. The authors note that the documented documents can be easily and rapidly downloaded. To this level, the authors applaud that information communication technology plays the role of library by publicizing the new and old knowledge while letting others know of the existence of the explicit knowledge. The platform goes further in disseminating the knowledge. For example, tacit knowledge owners can communicate their knowledge and interact with others using information communication technology platforms. Study by Ho et al., (2006) shows that tacit knowledge is retrieved, extracted and absorbed more effectively through information communication technology platforms. Contents of communications are recorded, integrated and stored in a database for future reference and reuse.

The level of information communication technology usage by individuals within the sharing institutions also determines the amount of knowledge extracted and shared among the people who utilize and benefit from the information communication technology platforms. Attitude depicts the intentions of information communication technology use in knowledge sharing. Information communication technology physical infrastructure applications like knowledge repositories, expert networks in

libraries and communities of practice with professional expertise enhance knowledge sharing. Tacit knowledge owners can communicate their knowledge and interact with others using information communication technology platforms. Information technology systems need to be compatible with the environment within the organization. Technological ignorance reduces urge for knowledge sharing. Where knowledge owners and learners are not given incentives to use the new technology they remain information technology illiterate where-as those who are technology literate fear sharing the know how lest they lose their jobs (Noor & Salim, 2011).

2.3.3 Knowledge Leakage

According to Durst, Aggestam and Ferenhof, (2015), knowledge leakage is the lose of knowledge intended to stay within an organization but is degraded over time. This lose can affect the organization either positively or negatively. For example positive lose is where knowledge spills over to other organizations through collaborations while negative leakage is when knowledgeable members leave an organization or external partners misappropriate knowledge from the organization in question or when an organization becomes redundant. To minimize knowledge leakage, Anderson, (2012) advocates for knowledge sharing through consistence skills training which also improves organizational performance. These findings are applauded by Mohamed et.al (2007) who encouraged organizations to train everyone including new hires and transferees practically while retaining both in-house knowledge and experience with realistic examples. This can be a way of maintaining skills learnt especially tacit knowledge which does not leave ones brain.

2.3.4 Knowledge Management Processes

Aming'a (2013) contends that knowledge management is identified with the idea of scholarly capital where aggregate information lives in the psyches of the association's workers, clients, and merchants. The creator contended that information the board is significant for all associations since the present leader faces the strain to settle on better and quicker choices in a domain described by extremely high rivalry and the result of those choices can have such an extensive effect on the association. Traditionally, universities were identified with knowledge gathering, organization, storage and dissemination while focusing on learning. Today, university staff and students roles have changed. They no longer live in isolation but have become part of the society through teaching and research. Studies show that universities are involved in knowledge management and sharing processes namely, creation, gathering, mining, auditing, organizing, dissemination, use and exploitation of knowledge. Maponya, (2004) and Wamitu, (2015) have summarized these processes in Table 2.1

Table 2.1: Four Process View of Knowledge Creation

Major Process	**Activities**
Gathering process view (i)	Data entry
Organizing process view (ii)	Voice input Searching for information Cataloguing Indexing Filtering Linking
Refining process view (iii)	Contextualizing Collaboration Compacting Projecting Mining
Disseminating process view (iv)	Flow sharing alert push

Source: Adopted from Wamitu (2015)

Table 2.1 explains the major activities of knowledge processes. The table shows that there is the gathering process which involves the collecting of relevant information that eventually creates the desired knowledge. Once created, the knowledge is organized and put into meaningful form which is then refined and disseminated to those who need it, whom Dalkir (2005) describes as knowledge communities.

Knowledge management has developed from pressure facing modern organizations to enable them to remain competitive in their organizational learning, teaching, research and development functions. These functions are characterized with groups of people who agree to work together to enhance their capabilities so as to achieve their organizations' set goals. Knowledge required to achieve the named functions has to undergo various stages to put it to utilization. These stages are referred to as knowledge management. Giluninia, Rankouh & Gildeh, (2013) have demonstrated the stages of knowledge management in figure 2.3.

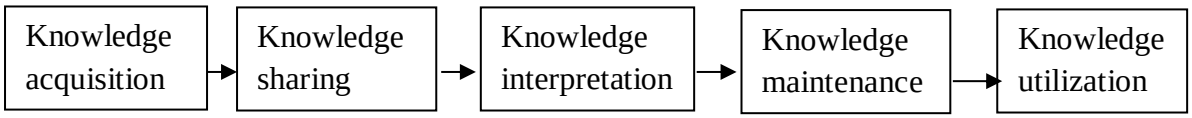

Figure 2.3: Stages of Knowledge Management
Source: Adopted from Giluninia, Ronkouh and Gildeh, (2013)

Figure 2.3 implies that before knowledge is utilized, it has to be acquired. It must be shared among the workers who will interpret it to fit in their working tasks. This knowledge will be maintained in organizational repositories in form of intellectual property and other relevant published reference materials. Eventually peer-to-peer collaborations are developed through these interactions.

Additionally, knowledge repositories have emerged as products of good knowledge management practices where storage of all relevant documents can benefit many scholars. The repositories facilitate re-use of the knowledge and collaboration (Obasola et. al, 2014). Repositories serve as a preservation tool. Knowledge preserved in institutional repositories has to be repackaged in a manner that suit formats in which various users need thus the coming together reduces the costs incurred by individuals and organizations (Frappaolo, 2006). Thiga (2012) found that knowledge stored in institutional repositories forms a very rich ground where teaching staff access knowledge for teaching, research and innovations. The author notes that repositories form knowledge heart of a university memory where scholarly papers and unique testimonies of her (university) achievements are preserved. The author explains that these are structures where research materials by members of the university are collected, preserved, monitored and accessed by academic staff.

In support, the present study argues that an established organizational repository requires that all academic staff deposit all their research outputs such as datasets, theses, lecture notes, learning objects, conference proceeding and any other valuable grey literature generated within the university to provide access to the university community members. The staff within these repositories digitizes, organizes and categorizes the knowledge for easy access. This provides a common platform where scholars within the university can contribute scholarly knowledge that promotes knowledge sharing for inter-disciplinary research. Eventually, this electronic explicit knowledge gains global visibility while allowing measurable research output by the university. Today university performance is rated against their research output that is visible and accessible via their websites. To this end, many universities in Kenya are yet to develop working institutional repositories through which the academic staff can

channel their research output. Good knowledge management practices influence the behavior and control of knowledge processes in organizations. These processes are supposed to help organizations to use what they know and help the workers to understand the value of sharing the knowledge they create (Ryan et al., 2010; Travica, 2013).

In relation to knowledge sharing, Raja and Issa (2008) state that good knowledge management shapes relationships between individuals and organizational knowledge creating an environment for social interactions. Organizations are encouraged to eliminate the old school of thinking where organizations were measured according to what they knew but empress the concept of being measured on what they do. Openness and lack of hoarding in transaction to do with information, knowledge and learning is now understood to be for the common good. According to Gregson et al. (2015), effective knowledge sharing requires a culture that is willing to offer an opportunity to evaluate the fundamental aspects in the exchange relationship.

2.3.5 Knowledge Policy

Policy is a written statement that outlines the ways in which an organization should conduct her affairs. Knowledge sharing and management policies prescribe the major functions and responsibilities together with good practices and regulations. By virtue of knowledge being a valuable asset within organizations, a knowledge sharing and management policy is formulated to reflect the good practices agreed upon by the organization that guides her in decision making. Studies show that organizations that have embedded these guidelines in their operations have competitive advantage over those that have not. Such organizations are identified with improved organizational culture for knowledge sharing, improved knowledge system, business processes and information technology solutions for knowledge capture, enrichment and retrieval.

Universities, expected to have well functioning knowledge communities that can foster partnerships for broader knowledge sharing and learning have an obligation to have these guidelines in place (Dalkir, 2005; Maponya, 2004; Gregson et al., 2015).

2.3.6 Strategies and Initiatives for Knowledge Sharing

In today's knowledge based economy, knowledge organizations have an obligation to create an environment that allows practical application that can help them solve their problems. Knowledge sharing has been identified as one of the processes that cultivate acceptable outputs. This has forced knowledge workers to propose strategies that can keep these organizations in business. Koulikov (2011) notes that generating knowledge is a costly venture and for one to willingly transfer it to another party requires incentives that can motivate the knowledge owner to share. The author explains that Knowledge organizations can create some awards for knowledge owners who transfer their knowledge to others and that money can also be directly given to individuals as a motivation factor to prompt knowledge owners to share knowledge. Gagne (2009) in "A Model of knowledge sharing motivation" has a different perception. Gagne argues that tangible rewards like money to researchers are insufficient and can be detrimental to the motivation to share knowledge. Instead the author advocates for appropriate reward systems and sharing opportunities within organizations. Additionally, Dalkir (2005) encourages legitimate peripheral participation where professionals spend time with individuals who gradually and naturally learn the process to become masters in their specific fields. A group of people who are experts in a given field may be bound together to professionally share their expertise, experiences as has been witnessed in paper publications and funded projects where professionals from different organizations have occasionally worked together (Mbhalati, 2012).

2.4 Empirical Studies

The study reviewed various empirical studies based on the study objectives as captured hereunder. These were classified as; knowledge communities amongst teaching staff, information communication technology physical infrastructure for enhancement of collaborations, linkages and partnerships amongst teaching staff, knowledge leakage impact on innovations amongst teaching staff, knowledge management best practices, policy frameworks needed to manage knowledge in public universities, and strategies for knowledge sharing that can be used to enhance performance. Finally, based on the objectives and subsequent variables of the study, it should be observed that the study has a direct relationship with the library. This is because the library is where all knowledge related matters are addressed. Therefore most of the problems of the teaching staff such as research needs, innovations generation, communities of practice, knowledge management, ICT tools, knowledge leakage and retention among others have been addressed in relation to the use of the library. Thus the study more often related the review of the study literature to the library.

2.4.1 Knowledge Communities for Enhancement of Social Capital

According to Dewar (2012), numerous empirical considers have set up that since a great part of the hierarchical information is inferred in nature the associations need to hold it and acquire its profit by the workers having it by sharing the information through the network of training (Kagwiria, 2016). With their network and intelligence, the college people and gatherings make information through information sharing. The development of networks of training empowers information to be held inside the association through sharing. Information that can be shared among learning foundations individuals incorporate accepted procedures; information found in

research articles, abstracts, and non-scholarly articles; and information on the most proficient method to deal with the college records. Importantly, information shared by network of training as by people becomes hierarchical resource. As per Kagwiria (2016), Communities of training (CoP) are willful gatherings of individuals held together by a sound judgment of direction, who share a worry, a lot of issues, or an energy about a subject and extend their insight and mastery in a specific region of worry by interfacing on an on-going premise with a genuine need to comprehend what each other knows.

The examination by Kagwiria (2016) on information move and sharing at Kenya Methodist University (KeMU) found that the practices that were researched in networks of training had both hopeful and unwanted discoveries. The cooperation of staff in different gatherings, the presentation of staff to different units and the maintenance of representatives past their retirement age were discovered to be qualities in the exchange and sharing of information at KeMU. These positive ascribes allude to networks of training, position revolution and staged retirements as information move rehearses. The capacity to empower operational information gets by through expert associations, presenting staff to testing and multi-tasks as the capacity to sustain implicit information inside experienced long serving staff is viewed as imperative for information maintenance. Networks of training share both inferred and express information by taking data and materials and refining them to a point where they can become corporate situations on subjects. Such individuals have a sound judgment of direction and normal premiums; they share business related information and encounter and take part in an aggregate cycle of learning.

The examination by Sirorei (2017) suggested that data correspondence innovation trainings be accomplished for significant information laborers in the scholarly libraries and their parent associations. The examination proposes that such trainings ought to be created to extensively remember adequate substance for the utilization of all information the executive's innovation devices in the library. Past the trainings the examination proposed thatthe library and its parent association ought to guarantee that there are input components for auditing and checking the reception of picked up information on utilization of ICT for improvement of information the executives rehearses. As per Sirorei, rewards dependent on successful and effective utilization of such advancements additionally prove to be useful.

The examinations by both Kagwiria (2016) and Sirorei (2017) have indicated the significance of the networks of training inside Kenyan colleges arrangement. In any case, it was not satisfactory from these investigations the sorts of information networks that are accessible for improvement of social capital among showing staff in colleges. Despite the fact that the examinations by Sirorei (2017) and Kagwiria (2016) were directed in Kenya, they missed the mark concerning uncovering the sorts of information networks that are important for upgrade of social capital in Kenya. This leaves a hole on the sorts of information networks that are accessible for improvement of social capital among instructing staff that can be utilized to catch resigned and more seasoned workers' information.

Wamundila and Ngulube (2011) examined the manner in which information may be held at the college of Zambia (UNZA) and affirmed that individuals from a network of training can be utilized to hold information where the network of training procedures help with catching implicit information from specialists. The examination

found that information rehearses at UNZA included networks of training. Dewar (2012) places that so as to hold information, associations depend on networks of training for the motivations behind recognizing, catching, and moving information. The contention by Dewar (2012) is that networks of training share encounters and experiences despite the fact that they are not a proper group. Networks of work on dealing with organization ventures and activities, share both implied and express information by taking data and materials and refining them to a point where they can become corporate situations on subjects. Nonetheless, Wamundila and Ngulube (2011) recognize that information can be held in an association through techniques, for example, setting up networks of training as in Zambian colleges. This information must be caught and put away in data sets, records, programming and cycles, items, and administrations.

Chigada (2014) led an investigation whose discoveries uncovered that among the techniques that defended information that were set up included networks of training. Chigada found that shielding information through cooperation and long range interpersonal communication of topic specialists and networks of training were indispensable. Different discoveries in the investigation by Omogeafe and Ohimai (2014) created the proposal that gigantic preparing of colleges' present workforce and standard gathering between college the board and assembly is likewise significant. Omogeafe and Ohimai stress that for information to be shared through networks of training, colleges ought to make vital collusion with different colleges, research organizations, and organizations so as to increase new and reasonable information. The examination by Chigada (2014) was directed among the South African banks while the extent of the investigation by Omogeafe and Ohimai (2014) was Nigerian Universities. The extent of the investigation by Chigada (2014) restricted its

appropriateness to the financial business and explicitly in South Africa. Despite the fact that the investigation by Omogeafe and Ohimai (2014) secured colleges, it just clarified the significance of CoPs in information sharing yet shied off from sorts of information networks that are accessible for upgrade of social capital among instructing staff. Critically the two examinations unequivocally uncovered the fundamental pretended by networks of training in associations. In any case, attributable to their degree, they neglected to uncover the sorts of information networks that are accessible for improvement of social capital among encouraging college staff and explicitly in Kenya.

Dewar (2012) directed an examination which uncovers that a network of training is one methodology of helping information move from the accomplished, gifted, capable or from old representatives to the more youthful workers. Along these lines, information can be held in the association when the individuals who have it withdraw. O'Dell and Hubert (2011) in their exploration discovered that networks of training can: give the way to make an interpretation of nearby skill into worldwide aggregate information; assist representatives with trading thoughts, team up, and gain from one another; rise above limits made by work process, capacities, topography, and time; empower speed and development required for commercial center authority; and incorporate into the texture of the association's center work and worth cases and effectively line up with formal administration structures. Among the excellencies for utilizing networks of training in associations and colleges include: capacity to interface experts, empowers information sharing for a huge scope and consequently empowering endurance of information inside the association and accelerating the learning for new part accordingly, networks' techniques. A related report by Wamundila and Ngulube (2011) presumes that information can be held in an

association through different methodologies that may include setting up networks of training as instruction and preparing. An investigation by Dewar (2012) set up that the accessible information maintenance methodologies, in three telecom organizations were networks of training, narrating, and mentorship and apprenticeship programs. Another examination by Dewah (2011) recognized information networks as an information maintenance system was on Southern Africa open telecom companies, which isn't identified with college condition. This makes the speculation of the examination to the school personnel in colleges troublesome. Different investigations uncovered the significance of CoPs in colleges without clarifying the sorts of information networks that are accessible for upgrade of social capital among showing staff (Wamundila and Ngulube, 2011; Dewar, 2012; Kagwiria, 2016; Sirorei, 2017).It depends on this reason the current examination tried to analyze sorts of information networks that are accessible for improvement of social capital among showing staff in Kenyan colleges.

Dewah (2011) directed an investigation which uncovered that human asset rehearses contain five fundamental builds: staffing, position structure, execution examination frameworks, prize and remuneration frameworks, and preparing advancement. Staffing alludes to the degree to which associations consider fit to guarantee coinciding of individual and authoritative qualities and objectives encourage information sharing among representatives when leading enrollment and choice systems. Occupation configuration alludes to how much representatives are relegated to places that are reliable with their aptitudes and capacities since it can impact laborers' inspiration, and chances to utilize information. Moreover, as indicated by Dewah; group based work configuration can build social connections among colleagues which are probably going to encourage information sharing conduct;

execution examination frameworks allude to the degree to which associations assess singular execution while considering information sharing capacity as one of the principle execution models; prize and remuneration frameworks allude to how much individuals who are associated with information move exercises are perceived and compensated while preparing and improvement allude to the degree to which representatives will be furnished with extraordinary open doors for self-awareness and professional success. Still in the examination by Dewah (2011), it isn't away from sorts of information networks that are accessible for improvement of social capital among training college staff which further makes more enthusiasm to lead an investigation to fill the said hole.

2.4.2 Information Communication Technology Physical Infrastructure for Enhancement of Collaborations, Linkages and Partnerships

Enakrire and Ocholla (2017) found that availability and accessibility of information communication technology infrastructural support for knowledge management among the libraries influenced a portion of the college libraries by and large. The information and aptitudes for utilizing data correspondence innovation for information the executives were to a great extent sufficient, however differed inside the libraries and curators. The difficulties cap confronted the libraries verged on deficient foundation and expert staff. The creators set up that, independent of the difficulties confronted, libraries had concocted methodologies for adapting and delivering administrations. The investigation reasoned that since data correspondence innovation had strong accounts used to help data administrations, staff and understudies' data needs were met in an assortment of courses in scholastic libraries. This investigation by (Enakrire and Ocholla) can assist with cultivating and improve the comprehension of how curators deal with the association in present-day library tasks. The investigation

prescribed that staff advancement be strengthened to empower custodians adapt to changes and new advances for current data administrations being supported and procured. The examination by Enakrire and Ocholla (2017) critically uncovered the fundamental pretended by data correspondence innovation in information the executives.

From this study, the present study was able to establish that the availability and accessibility of information communication technology infrastructure significantly supports knowledge sharing and knowledge management. However, the study did not reveal suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities. Thus, although the study by Enakrire and Ocholla (2017) showed the need for librarians to cope with changes and new technologies for modern information services being encouraged and acquired, it is not clear about the suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities.

Sirorei conducted a study in (2017) which found that information communication technology instruments were used for knowledge management at St. Paul's University library in Kenya. Sirorei revealed that assortments of information communication technology instruments were adopted at St Paul's University library. For instance, St. Paul's University library had invested heavily on information communication technology and enabled internet connectivity through fiber optic platform and used various information technology instruments that included online repositories, databases, computers, internet, federated search tools, integrated management

systems, and networks as organization's intranet and portals. The study therefore conclude that there was need to encourage and train employees on how to use information communication technology available at St. Paul's University at its academic library and implement ICT policies that can fully support knowledge management. Based on Sirorei (2017) the present study gathered that ICT training is important for effectiveness in KM.

The study by Sirorei, (2017) revealed that St. Paul's University library used emails, computers and mobile phones as ICT tools that supported real time interactions and collaborations. This study recommended to St. Paul's University library to consider expanding the use of ICT real time interaction and collaboration tools beyond what the library was currently utilizing. It was also revealed that St. Paul's University library utilised classification tools, internet and online public access catalog (OPAC) for organising knowledge in the library. Online organizing tools such as the library of Congress were used to make work easy during cataloging and classification. It also emerged that St. Paul's university library utilised KOHA database system which includes a suite of cataloguing and metadata services to classify library material while relying on the library of Congress Classification system. This database management system enabled the library's classification practice meet international standards. The library is a member of Kenya library information service consortium (KLISC), consortium for advanced research training in Africa (CARTA), Kenya library association (KLA), professional organisation groups that present it (library) with opportunities for increased and enriched collaborations. The study identified documentation, training and digital repository as the tools for transferring and retaining knowledge in the library. Based on these findings, the study recommended increased use of advanced technologies. Some of the advanced technologies that were

recommended for increased use at St. Paul's University library and its parent organization were video conferencing technologies, social media tools, wikis and D-space. The study by Sirorei (2017) provided useful leads to the suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in universities. However, the study scope was limited to St. Paul's University library. It is not clear whether the results obtained from St. Paul's University library were also applicable to public universities. This motivated the present study to establish the suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities.

The study by Kagwiria (2016) concluded that Kenya Methodist University library users are computer literate knowledge users capable of using the computer for knowledge retrieval, transfer, sharing and retention of explicit knowledge. Kagwiria further established that the respondents had frequent access to fax, internet, intranet/email, databases, skype and discussion forums. In contrast, there was little support established for the existence of intelligent search engines, fax, virtual conference rooms, telephone, groupware and wikis used technologies in retrieving, sharing and disseminating knowledge. However, with regard to ICT, Kagwiria recommended that KeMU should invest in a comprehensive infrastructure that supports knowledge management to improve bandwidth, accessibility, provide knowledge management tools, create awareness of the institutional repository and develop policies on ICT usage to manage knowledge rapidly and more efficiently so as to reap benefits. Staff training was also needed to maximize the use of knowledge and allow the depositing of items in the repository. As it were with the study by

Sirorei's (2017), Kagwiria (2016) established that information communication technology literacy is important in enhancing effectiveness of knowledge management. However, more desire was created on the suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities. Such desires were not fulfilled by Kagwiria's (2016). Suffice to say that there was inadequate information in the study by Kagwiria (2016) as regards the suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities.

Bray and Konsynki (2015) in the study of knowledge management and its impact on organizational performance emphasized on the importance of information technology knowledge diffusion in the entire organization. The study stressed that improvement on performance is obtained best when IT knowledge and skills are imparted on all employees across the board, pointed out that information technology had improved the ability to store, access, manipulate and use information in a variety of ways by providing ability to improve communication between people and encouraged collaborations. Technology can streamline work operations and improve communications between people. El Sawalhi and Matar (2015) established that information communication technology facilitates rapid collection, storage and exchange of explicit organizational knowledge, while fostering knowledge sharing and creation, by eliminating communication barriers and promoting social connection.

A related study by Berraies, Chaher and Yahia (2014) found that knowledge management is highly influenced by information communication technology

products. Degree of information technology ICT support, which is the degree to which information communication technology supports for collative work, communication, searching, accessing, simulation and prediction, and systematic storing use, determines the effectiveness of knowledge management as defined by the degree of implementation, usage and advancement of information communication technology. In general information communication technology makes knowledge accessible in the entire organizational business unit. Knowledge management supported by different information communication technology products like decision support systems, groupware, document repositories, knowledge maps, shared databases, video conferencing, electronic whiteboards, yellow pages, and discussion forums are some of the information and communication tools used to facilitate knowledge management (El Sawalhi & Matar, 2015).

Hsu (2014) conducted a study to explore the current business firms with the information technology strategy, organizational learning and organizational culture that enhance organizational performance, using knowledge management as an intermediate construct. The study by Hsu revealed that information technology is directly related to organizational performance and positively affects knowledge enabler capability. Elsewhere Agarwal and Marouf (2014) concluded that technology includes having IT-based mechanisms that link library staff and stakeholders to one another, and to public; having an institutional memory that is accessible to the library as a whole; determining whether the library fosters the development of human-centered ICT; having an environment where the technology that supports collaboration is rapidly placed in the hands of faculty and staff; and where available information systems are real time, integrated and smart. The studies by Bray and Konsynki (2015), El Sawalhi and Matar (2015, Hsu (2014), and Agarwal and Marouf

(2014) revealed that information communication technology is an important tool for enhancing effectiveness of knowledge management. These studies were crucial in indicating that information communication technology fosters knowledge sharing and creation as it also eliminates communication barriers and promotes social connection. These occasions ensure effectiveness of knowledge management since it supports collative work, communication, searching, accessing, simulation and prediction, and systematic storage and use. These studies were therefore useful in explaining the importance of information communication technology in knowledge management environment.

The results in the study by Mbuvi (2014) revealed that information communication technology had a positive impact on organizational performance as knowledge enabler capability while the study by Hawjreh and Sharabati (2012) revealed a positive significant relationship between information communication technology and knowledge management practices among Jordanian industrial companies. Information communication technology and knowledge management practices are important source of organizations' wealth and therefore it should be taken into serious consideration when formulating the company's strategy. The results in the study by Hawjreh and Sharabati (2012) indicated that technical capabilities affect the knowledge management practices more than technology type. According to the study by Hawjreh and Sharabati, the Jordanian industrial companies are concerned about ability to acquire an infrastructure which supports technical capabilities more than the technology type. Emadzade, Mashayekhi and Abdar, (2012) study acknowledge that there is an indirect effect of ICT and knowledge transformation on the organizational performance.

The studies by Hsu (2014), Mbuvi (2014), Hawjreh & Sharabati (2012), and Emadzade, Mashayekhi & Abda, (2012) reveal relationship between information communication technology and knowledge transformation, where ICT appears as knowledge enabler. Through knowledge enabling ICT is shown to enhance organizational performance. With all these good tidings about information communication technology, the authors leave the present study hanging due to the lack of revealing the suitable information communication technology physical infrastructure that is used to enhance collaborations, linkages and partnerships amongst the knowledge users. More precisely, these studies fall short of exposing the suitable ICT physical infrastructure for enhanced collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya. The present study therefore filled the knowledge gap by determining suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya.

2.4.3 Knowledge Leakage Impact on Innovations

The study by Edoun (2016) concluded that lack of effective management policies in public sector economies in many African countries had led many young graduates and professionals to seek greener pastures in Europe, the USA and Asia, causing a brain drain that has negatively impacted into the future of Africa as all qualified cadres are leaving the continent. There is therefore the need for African governments through the African Union to craft a well-designed and continental KM strategy that shall assist Africa in achieving its 2063 vision. The study by Edoun (2016) recommended that knowledge management should be a key component for socio-economic development in Africa where for KM to become more effective, it should be introduced at all levels

of governments and the African governments should develop the expertise readily available to ignite socio-economic development. The devastating impact of knowledge leakage was exposed in the study by Edoun (2016). This study explored the continent touching both developed and developing economies and assessing the impact of knowledge leakage. Although the study was clear that knowledge leakage impact negatively on economy, it did not show whether knowledge leakage has impacted on innovations. Specifically, the study leaves much to be desired as relates to ways in which knowledge leakage has impacted on innovations amongst teaching staff in public universities in Kenya.

The study by Kagwiria (2016) established that KeMU had programmes put in place to effectively utilise retirees although the institution was regenerating the lost knowledge through documentation of the operations of the library. The findings of the study showed KeMU was not fully regenerating the lost knowledge, which indicate that regenerating lost knowledge as a knowledge recovery initiative was lacking. The study by Kagwiria (2016) concluded that the university utilized succession planning and job rotation as a human resource process and practice in order to retain the organizational knowledge and that KeMU was not utilizing Personal Assistants (PAs) to retain knowledge. According to the study, the kind of rewards that took place at KeMU was recognition, letter of appreciation, promotion and salary increment, which helped in retaining employees especially those, deemed to be knowledgeable in certain fields. The findings showed that this can contribute to generalize knowledge advancement. Meanwhile, incentives attached to good performance and their effort to progress can promote specialist knowledge development.

Kagwiria (2016) recommends that KeMU should work out a knowledge retention policy on how to implement the best knowledge retention practices. The study also recommends that KeMU should work out a knowledge retention policy on how to implement mentoring programmes, coaching, succession planning, apprenticeship, encouraging communities of practice, utilising retirees and subject matter experts, recording experts knowledge and keeping the lessons-learned archives as strategies for capturing and retaining critical personalised/tacit institutional knowledge. The experienced and subject matter experts should be identified so as to assist junior employees in knowledge acquisition and skills equipping that should be retained in institutions of higher learning. This study by Kagwiria seemed to solve the problem identified in the study by Edoun (2016) but this time concentrating on academic circles. It focuses on addressing the knowledge leakage by capturing and retaining critical personalized tacit institutional knowledge (knowledge useful for innovations). But before reaching this point, the study failed to reveal the impact of knowledge leakage on innovations amongst teaching staff in these universities.

In the study by Ng'ethe, Iravo and Namusonge (2012), it was observed that most of the studies conducted on staff retention were from other countries and in addition were based on business oriented environments, and the few studies conducted in higher education in Africa are addressing the issue of brain drain. Most of these studies on academic staff retention are cross sectional studies of various countries and only one by Tettey (2009) incorporated one Kenyan public university. It is also noted that other than going to other countries for employment there is also local competition of employees from other public universities, private universities and the corporate sector. It is evident that the problem of academic staff retention in Kenyan public universities is a pertinent issue and is expected to be worse in future. According to the

study by Ng'ethe, (2013), universities hold the key to the realisation of Vision 2030 by providing the manpower with the requisite skills and Knowledge. These institutions can only achieve this noble goal if they themselves have adequate capacity in terms of human and other resources.

The study by Hammad (2015) found that Islamic University of Gaza (IUG) identifies the type of knowledge to be retained, stored it in an appropriate manner; however, departure of experts did not constitute any risk to the university's performance. According to the study, University of Gaza works constantly to create new knowledge, determine the type of knowledge needed to accomplish tasks, identify staff experiences and skills that should be retained, and sponsor the rights of innovation and excellence to their employees. The study demonstrated a high level of knowledge retention at University of Gaza. The results of the study findings confirm the organizational and behavioral factors level of presence. The study concluded that University of Gaza observes the organizational and behavioral factors towards knowledge retention, which in turn enabled this academic institution to be considered a knowledge retention organization. From the conclusion, the study recommends that University of Gaza should encourage knowledge retention as sector that requires continuous observation, measurement and improvement, increase awareness to knowledge retention between IUG employees, and examine each factor influence on knowledge retention in an elaborated manner.

Aming'a' s (2015) study established training, brainstorming, recruitment, mentoring, and notices as the most important knowledge capture and acquisition mechanisms at Kisii University. The level of adoption of the knowledge capture and acquisition mechanisms at the University was low; therefore, the university needs to improve its

capacity to capture and acquire relevant functional knowledge to enhance organizational memory and thus improve organizational performance. With a view to combat the established challenges in knowledge capture and acquisition, Kisii University, and in extension other higher education institutions, should adopt the following knowledge capture and acquisition mechanisms to enhance its organizational memory: subject matter experts, after action reviews, and expert systems. These mechanisms together with the mechanisms already at the university will advance and encourage an adequate operational knowledge base and hopefully improve organizational performance.

The results from the study by Olaimat (2015) showed that specific human resource management (HRM) practices were significantly associated with different knowledge management dimensions. Performance appraisal had a positive influence on technical knowledge management, while staffing, performance appraisal, and job security were positively associated with cultural knowledge management. Staffing, training and development, and employee participation and involvement were found to enhance human knowledge management. In addition, different dimensions of knowledge management were found to mediate between different types of HRM practices and organizational performance. Technical knowledge management mediated the relationship between staffing, and training and development and organizational performance, while cultural knowledge management mediated the relationship between staffing and job security, and organizational performance. On the other hand, human knowledge management mediated the relationship between staffing, training and development, and job security, and organizational performance. Finally, competitive strategies interacted with human knowledge management in predicting organizational performance.

Kinyili (2015) found that there were weak but statistically significant positive relationships between remuneration practices, career advancement practices, work environment management practices and work-life balance practices and retention. Due to the poor remuneration, career advancement, work environment and work-life balance practices, the employees' level of commitment was low. However their intent to leave was also low because finding alternative jobs was difficult among other reasons. Other practices such as leadership, employee involvement, and performance management were also said to influence. Based on these findings, it was recommended that Machakos county government should look into the aspects of remuneration, career advancement, work environment and working life balance practices and put in place mechanisms that would address these practices and thus minimize their negative effects on staff satisfaction and commitment hence retention in the health care institutions in the county.

Ng'ethe (2013) conducted a study which revealed that leadership style negatively influenced academic staff retention. This study therefore brought to the fore, the role of leadership and their leadership style in academic staff retention. The findings also indicated that promotion influenced academic staff retention. The findings also indicated that in the presence of leadership style, promotion, remuneration and training did not influence academic staff retention. The study established that majority of those who left for studies abroad especially to the United States of America did not return. The findings showed that personal characteristics such as age and education level did not have a moderating effect on the relationship between the independent variables and the dependent variable. The study however established that on average the academic staff possessed PhD degree unlike previously where empirical findings had indicated that there was a paucity of PhD degrees in public universities in Kenya.

The study recommended that leadership style and promotion practices be enhanced to decrease intention to leave and thus enhance academic staff retention in these institutions. The study also recommended that the unfavorable aspects raised regarding remuneration and training be addressed in order to make these institutions competitive. Additionally, the study suggested that public universities embrace current trends in employee retention such as employer branding in order to retain the core employees- the academic staff. Most of the empirical studies reviewed such as by; Aming'a (2015), Hammad (2015), Kinyili (2015), Olaimat (2015) and Ng'ethe (2013) importantly emphasized on mechanism for addressing knowledge leakage but shift their focus from the impact of knowledge leakage on innovations. It is based on finding that the present study determined the ways in which knowledge leakage has impacted on innovations amongst teaching staff in public universities in Kenya.

2.4.4 Knowledge Management Best Practices

Shu-Hung Hsu (2014) carried out research with the title "effects of organization culture, organizational learning and IT procedure on information the executives and execution". This examination uncovers that IT is straightforwardly identified with authoritative execution and emphatically influences as information empowering agent capacity. Studies show that the worldwide economy of the cutting edge world, likewise called the New Economy, is portrayed by globalization, developing client requests, more prominent rivalry and nonstop advances in innovation. This e-business condition expects associations to reexamine the way(s) in which they work and work with an understanding that information has gotten one of the most significant resources that can empower associations to be among the top players. Information in associations can be unequivocal and recorded, or can be inferred and in individuals minds. Before, associations (additionally scholastic libraries) were acceptable at

making, scattering, sorting out, recording and recovering unequivocal information (likewise called data). It is the unsaid information (mastery, expertise, abilities, and so on.) of their staff and customers, nonetheless that gives them the edge over their rivals. Some implied information can be recorded (made express), yet a major some portion of it can never be recorded, archived or caught.

Information the board ought to be a key part for financial advancement in Africa. African governments ought to arrange more powerful fora where government authorities can share information and great practices. Through Knowledge the executives, governments ought to have a typical situation on the most proficient method to control unlawful budgetary streams and how to stem informalities by making an interpretation of casual areas to completely fledge organizations with the goal that African governments widen their duty base therefore for homegrown assets preparation for Africa's change. Companion learning for good practices is thusly significant for this. Preparing ought to likewise be given to burden official and nearby experts for a more powerful asset preparation. For KM to turn out to be more compelling, it ought to be presented at all degrees of governments. The selection of monetary decentralization is in this way basic as a methodology and strategy to drive all improvement activities. Neighborhood governments that are actualizing operators are entrusted to drive decentralization measure at nearby levels by utilizing the skill promptly accessible to them to light financial turn of events.

According to Elica and Hosseini (2015) dynamic knowledge repository within an organization where all the employees participate actively, contribute and locate wide range of information about organization’s best practices is required. In support, the present study argues that an established organizational repository requires all

academic staff to deposit all their research outputs such as datasets, theses, lecture notes, learning objects, conference proceeding and any other valuable grey literature generated within the university to provide access to the university community members. The staff within these repositories digitizes, organizes and categorizes the knowledge for easy access. This provides a common platform where scholars within the university can contribute scholarly knowledge that promotes knowledge sharing for inter-disciplinary research. Eventually, this electronic explicit knowledge gains global visibility while allowing measurable research output by the university.

As Kagwiria's (2016) study concludes that sharing and KM practices have both optimistic and undesirable findings, the study by Emadzade, Mashayekhi & Abdar, (2012) indicates that KM practices can be made possible through the process of combining, filtering, and integrating, merging, coordinating, distributing, and reconstructing knowledge. The study by Al-Hayaly and Alnajjar (2016) concludes that knowledge management contributes to increased innovation and creation initiatives by the teaching staff members in the universities. The results of the study by Abdela (2016) show that elements of knowledge enabler capability and knowledge process capability have positive impact on knowledge management capability. In this study, knowledge process capability strongly related to knowledge management practices than knowledge enabler capability. Knowledge application strongly influences knowledge process capability when compared to the four observable construct. The studies by Emadzade, Mashayekhi & Abdar, (2012), Al-Hayaly and Alnajjar (2016), and Abdela (2016) are great proponents of best knowledge management practices as the study by Kagwiria (2016) propagates knowledge sharing thus providing evidence that knowledge management best practices as knowledge process capability enablers. Despite their contributions to present study in proving

that knowledge management best practices positively impact on knowledge management capability, they do not provide sufficient evidence on these factors as promoting learning, research and innovations.

In the interim the examination by Gaveli (2016) reasons that information the board in libraries ought to be centered around viable innovative work of sharing of information between library staff, preparing of the library staff, accelerating express handling of the verifiable information and acknowledging of its sharing. Information in scholastic libraries can be obtained through building up information connects or coordinating with different libraries and different establishments of numerous types. Information procurement can likewise be increased through going to preparing programs, gatherings, classes and workshops, purchasing information items or assets as manuals, plans, reports and exploration reports. Despite the fact that Gaveli (2016) study shows the significance of sharing of information between library staff, there is no proof of the equivalent being valuable in advancing learning, exploration and developments.

Fari and Ocholla (2015) led an investigation in Nigerian which uncovered huge difficulties to data and information partaking in their colleges, for example, an absence of power; lacking print and electronic data assets; helpless exploration the board and backing; helpless gathering, course and workshop participation and correspondence; and helpless perspectives towards sharing among the scholastics. In Kenya, Ndegwa (2015) built up that information sharing had a positive and measurably huge impact on hierarchical execution. In light of this finding, the investigation presumes that information is a significant asset pack and sharing it adds to accomplishment of improved authoritative execution. This attests when information is shared, better choices are made prompting better execution. As indicated by the

examination by Elica and Hosseini (2015), there is requirement for dynamic information archive inside the organization's condition where all the representatives could take an interest effectively, contribute and find wide scope of data about organization's accepted procedures and that information the board gives communitarian instruments. As per the examination, KM worked with the insurance agency's group to make rich metadata sets which oversaw, execute and incorporate the benefit with the business cycle. These rich metadata upgraded the substance's setting transforming it into savvy content which thus naturally starts the correct work processes and errands. The investigation by Elica and Hosseini, (2015) saw that KM; increment in worker profitability; improved group coordinated effort, representative connectedness and inspiration, encouraged cross-learning openings among numerous groups prompting new information creation; forestalled loss of hierarchical information when individuals leave and supported exchange of information; and started a domain of straightforwardness and data sharing prompting catch of 'implied information. The examinations by Ndegwa (2015) and Elica and Hosseini, (2015) indicated the significance of information partaking in profitability and better execution however neglect to characteristic learning, exploration and advancements similar to a result of information sharing. Hence, the investigations need proof of best practices for information the board in state funded colleges as being utilized to advance learning, examination and developments among instructing staff.

Ali (2015) carried out research in Somalia which found that knowledge management best practice include; knowledge creation, knowledge sharing, knowledge utilization, knowledge storing from knowledge management process and organizational culture and information technology. The finding of this research shows that organizational culture and the knowledge management process positively impact on the performance

of telecommunication companies in Somalia specifically in Mogadishu. The local study by Karani (2015), in Kenya, concluded that knowledge management practices in general influences organization performance in various ways including, knowledgeable employees, better decision making in the organization, improved service offering to clients, reduced operational costs and improved organizational competitiveness. According to the study by Karani (2015), other knowledge process capability for knowledge creations mainly influence organizational performance. The finding in the studies by Ndegwa (2015) and Elica and Hosseini, (2015) was replicated in the studies by Ali (2015) and Karani (2015). Meanwhile the study by Karani (2015) and that by Fari and Ocholla (2015) consider these as knowledge process capabilities.

Omogeafe and Ohimai (2014) carried out a study on Nigerian universities to assess the relationship between knowledge management practices and effectiveness on performance. The study found that the variation in implementation of knowledge practice leads to variation to organizational performance. Based on the result the researcher concluded that knowledge management significantly influences organizational performance of, innovation, growth and competitive advantage. Moreover the study suggests both government and private organization should consider and emphasis on KM for their competitive advantage and organizational performance. The study by Omogeafe and Ohimai (2014) specifically addresses the importance of knowledge management practices in universities by showing that this enhances performance. However, the scope of the study was in Nigerian universities making it difficult to generalize its findings in Kenya.

The results from the study by Ahmed, Fiaz and Shoaib (2015) showed that knowledge management activities or processes i.e. knowledge acquisition, knowledge conversion, knowledge application and knowledge protection results in provision of quality services to customers, high customer satisfaction, efficiency in resource utilization, more profits and overall improved organizational performance. Thus the study concluded that the application of knowledge management activities or processes for better organizational performance. The findings in the study by Ahmed, Fiaz and Shoaib, (2015) confirmed the findings in the study by Ali (2015)

Omogeafe and Ohimai (2014)conducted a study which found that knowledge management practices led to differences in performance. The study found that variations in knowledge management practices led to differences in organizational performance; Knowledge management (KM) was statistically positively related with overall performance, innovation, growth and competitive advantage. According to the study, knowledge management practices was significantly related to innovation,, competitive advantage and growth in university. This means that by fostering knowledge management programmes in these universities, performance will be significantly improved. The study concludes that knowledge management influences organizational performance of innovation, growth and competitive advantage. Therefore in order to innovate, grow and be competitive, Nigerian universities must as a matter of necessity be able to identify the knowledge management practices to assist the universities authorities, government and captains of industry and other change agents in designing, initiating, and implementing changes that foster successful knowledge management programmes. In this new era of knowledge economy, universities must understand knowledge management processes and systems and ensure they are in place. The universities should continuously upgrade

their knowledge management infrastructure for continuous growth and competitiveness.

Chigada's study (2014) concludes that KM practices in the banking situation are actions aimed at improving the internal flow and use of information and knowledge, and the banks can be a major participant in these activities. These KM practices include the creation of best practices, databases, regular training and development programmes, encouragement and promotion of employee interaction within departments and between individual staff and departments. According to the study, KM practices need not be based on the preconception that an organisation can mandate people to share their knowledge. It is likely that individuals would be willing to share their knowledge because they want to, not because they have been told or coerced to do so. The study found that there were no stipulated practices at both banks for knowledge acquisition, creation, sharing or retention. The study established that knowledge at selected banks was not properly managed to facilitate the implementation of competitive KM practices for surviving in a knowledge-driven environment. Being a dynamic competitive and information-intensive industry, bankers should possess skills that include the identification of knowledge needs, distinguish knowledge management from information management which can facilitate a broader and more inclusive KM initiative. This could result in the development of a KM framework for sharing institutional practices that include all employees as important component of a KM strategy. The study by Chigada (2014) recommends that in using the knowledge management practices, the banks should employ; various methods to acquire, create, share and retain organisational knowledge. The study established that the investigated selected banks' databases and

procedure manuals were the most common methods of retaining organisational knowledge.

Agarwal and Marouf (2014) listed the basic areas that must be in place for effective knowledge management as; people, culture, processes and technology. They list these in the context of colleges and universities as a whole, but these would be equally applicable to knowledge retention and transfer in academic libraries. These are the library capability or readiness for knowledge retention and transfer. Ohiorenoya and Eboreime (2014) in their study found that sharing knowledge through Communities of Practice (CoPs), identifying and using best practices as knowledge harvesting should be encouraged. Anna and Puspitasari (2013) in their study conclude that knowledge sharing has not been formally adopted by many libraries in Surabaya as only some libraries that have been implemented. But in the process of implementation of knowledge sharing, libraries in Surabaya are still not maximized, it is visible from the strategy that only focuses on the implementation of knowledge sharing (face to face meeting) or just to share the results of the seminar/training without considering knowledge sharing as a complex process for knowledge creation.

The study by Wijetung (2012) found that KM initiatives are not well developed within the universities and recommends for raising general awareness of KM and value of knowledge of all staff through seminars, developing confidence and competences of managerial staff in KM. sharing through seminars / workshops, documenting good practices and follow-ups and offering advanced training programmes in knowledge Management to executive staff. The study concludes that KM can make a significant contribution to the effective and efficient functioning of the library as many researchers have proved its contribution in increased productivity.

The study by Okonedo and Popoola (2012) found that; the self-concept of librarians in public universities in the South-West, Nigeria is very high. Librarians in public universities in the South-West Nigeria share their knowledge, the extent of knowledge utilization by librarians as revealed by the study is great, and the level of research publication of librarians in the last four years is moderately high with articles in learned journals occupying the fore front. There is a significant joint effect of self-concept, knowledge sharing and knowledge utilization of librarians in public universities in South-West, Nigeria. There is a relative contribution of both self-concept and knowledge utilization on research productivity, but it was revealed by this study that there was no relative contribution of knowledge sharing on research productivity. Okonedo and Popoola (2012) study concluded that librarians who possess high self-concept and who properly make use of knowledge gained through knowledge sharing will have high research productivity. The study concludes that librarians occupy a central position in the university system, and they are regarded as academics. In order to justify this status accorded them, they need to publish in order not to perish in the academic blue seas. As a result the research productivity of librarians is very important. The inference that can be drawn from the outcome of this study is that self-concept, knowledge sharing and knowledge utilization variables play important role in the enhancement of research productivity of librarians in public universities. There is no doubt that librarians who possess high self-concept and who properly make use of knowledge gained through knowledge sharing will have high research productivity.

It was recommended that internal seminar and workshops should be organized every quarter of the year where it will be made compulsory for each librarian to present a quality paper. This will encourage knowledge sharing and will increase librarians'

zeal to utilize knowledge and also have more research publications. The library management; try as much as possible to encourage sharing and discourage hoarding of knowledge, by motivating them, giving the incentives that will encourage them to share their knowledge; and also solicit for fund from their parent body to sponsor librarians to conferences, workshops and seminars. The library management should give self-concept training to the librarians there in public universities so as to improve their research productivity. The library management should see that frequent internal seminar and workshops are organized, where it will be made compulsory for each librarian to present a quality paper every quarter of the year. This will increase their zeal to utilize knowledge and also have more research publications.

Mavodza and Ngulube (2011) study established that selected banks had archival systems (libraries and records) where organisational explicit knowledge was kept. During document review, the researcher was taken and shown around and observed the repositories of selected banks, which, in the researchers view, contained incomplete records and made it impossible to decipher the types of knowledge present or how KM was viewed. The study recommends that management at the selected banks should properly manage knowledge through the adoption of the organisational knowledge conversion theory. Another recommendation is that it is important for selected banks to include knowledge management practices as they are made up of organisational learning, human capital, systems and technology, as culture and strategy.

The study by Munir and Rohindi (2012) concludes that knowledge management works to develop the university performance and links it directly to the society, knowing the need of the marketplace, setting the relevant curricula and the effective

teaching methods that serve the society, especially through the internet webs that facilitate knowledge sharing with the society, and the rapid communication with it. Meanwhile Mavodza and Ngulube (2011) study established that selected banks had archival systems (libraries and records) where organisational explicit knowledge was kept. Munir and Rohindi (2012) conclude that knowledge management contributes to enhance the psychological empowerment of the teaching staff members in the universities.

Although numerous empirical studies have linked the best practices for knowledge sharing to the management in public universities, they have not provided sufficient evidence of best practices for knowledge management in universities that can be used to promote learning, research and innovations amongst teaching staff. In fact from the studies review under the heading knowledge sharing and management best practices, there is no evidence of best practices for knowledge management in Kenyan public universities that can be used to promote learning, research and innovations amongst teaching staff. The present study filled this gap.

2.4.5 Policy Frameworks Needed to Manage Knowledge

According to Sirorei (2017) studyon St. Paul's University Library, it emerged that all the knowledge management processes were utilised albeit to varied degrees. The author noted gaps in various knowledge management processes and the use of ICT in knowledge sharing. The study recommended that St. Paul's University library should fully incorporate all the knowledge management processes and ensure appropriate policies are put in place to support knowledge management leading to increased effectiveness and efficiency in the library. According to Sirorei, there was lack of policy that can encourage knowledge retention. To achieve good knowledge

management standards, the study recommended that the library should ensure that appropriate policies that effectively support knowledge management have been put in place. This requires an audit of policies required for ensuring a thriving knowledge management environment and then develop any lacking policies to enhance existing policies that do not effectively support knowledge management. Incentives come in handy for adoption and conformance of knowledge sharing support policies in academic libraries. However Sirorei's addresses to a variety of diverse issues did not reveal existing and suitable policy frameworks needed to manage knowledge in public universities in Kenya.

Knowledge is increasingly recognized as an organization's strategic asset (Chigada, 2014). As a resource, knowledge is used to improve an organization's efficiency and effectiveness, to create innovative solutions and to enhance decision making capabilities. Importantly, it is a mandate to employees to make extensive use of best knowledge management tools available. Contrary, the study reveals that, if employees feel use of knowledge management tools is not part of their jobs and of themselves, the knowledge management effort cannot yield any desired results. According to Chigada (2014), current means and processes employed to acquire, create, share and retain knowledge indicated the absence of policy guiding access and contribution to institutional knowledge. The absence of policy implies that employees could have sometimes not been aware of what information and knowledge available to help them effectively fulfill their job requirements, and, even when they had valuable knowledge, they lacked guidance on how to preserve it effectively. Policies aimed at creating an inventory of organisational intellectual assets can be part of best practices in knowledge organisations. The author concludes that development ofknowledge management policies in banks is recognised and regarded as a strategic organisational

asset. Lack of knowledge management policies may compromise the ability of the selected banks to make timely, informed decisions that take place in a dynamic competitive environment.

The study by Chigada (2014) recommended that due to lack of knowledge retention policy for the management of organisational memory, top leadership should: see knowledge as a strategic asset and provide incentives and support for knowledge management processes; the organization should focus on the development and exploitation of its knowledge assets; tools and processes for managing knowledge should be clearly defined; knowledge creation, sharing and use should be a natural and recognized part of the organization's processes, not separate from normal work processes; groups within the organization cooperate instead of compete with each other; knowledge should be made accessible to everyone who can contribute to its use; rewards and performance evaluations should specifically recognize contributions to, and use of, the organization's knowledge; knowledge management policies should be written or documented for future references; and management at selected banks should put in place policies relating to the extension of retirement age, leveraging on retirees and succession planning. Although Chigada (2014) study identified various policies for knowledge management, the applicability of its findings was limited to the banking industry. Thus, there is no evidence of existing and suitable policy frameworks needed to manage knowledge in public universities in Kenya.

Munir and Rohindi (2012) in their study developed a preliminary model for knowledge management system in university greatly contribute to improving the university performance because it will achieve the development of integrated system on the internet web usable by all beneficiaries; help the user to reach the needed

knowledge; help the university to preserve all of its documents; speed of response to any case, situation or decision, support the researchers; facilitate the process to reach the required knowledge, lead to the improvement of research quality; up-date and develop learning management system through the link to the world web and achieve communication with the similar specialties. The model developed by Munir and Rohindi (2012) was derived from university's performance and specifically at Indonesia University. The terrain at Indonesia University is very different from the Kenyan universities. Again the study was conducted in a single university. To allay any fears of the findings being difficulty to apply in other universities, the present study examined existing and suitable policy frameworks needed to manage knowledge in public universities in Kenya.

2.4.6 Strategies for Knowledge Sharing and Knowledge Management that can be used to Enhance Performance

According to Agarwal and Islam (2015) strategies for the retention and transfer of both explicit knowledge (through documentation, digital repositories, etc.) and tacit knowledge (through training and other means) are important. Sirorei (2017) found that while there was a knowledge repository at St. Paul's University library, consequently utilisation of the organisation's institutional repository was low. The study therefore recommended that for St. Paul's University library knowledge repositories to fully benefit its institution, the parent institutions should carry out regular publicity campaign programs targeting all its existing and potential stakeholders. Such campaigns should carry messages of knowledge repository existence, who can utilise such a repository, how to utilise it (repository), when to utilise it and the benefits of utilizing such a repository. To further enhance on publicity campaigns effectiveness and subsequent utilisation, Sirorei recommended

introduction of incentives for outstanding utilisation of the academic library repository. Sirorei's (2017) study features prominently in the present study owing to its ability to address diverse knowledge management factors. Although, it recommends for a suitable strategy for St. Paul's University, it falls short of proposing suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in Kenyan public universities.

Agarwal and Islam (2015) study affirms that the strategies for the retention and transfer of knowledge are important. The study proposed a framework which is empirically supported. The spiral in the framework maps to the cycle that knowledge moves through within a library. The study also showed that the strategies used by most libraries were not part of a formal knowledge management program, or that retention or transfer was done poorly in some libraries. For knowledge retention and transfer to be truly successful, it needs to be part of a formal knowledge management program and done on an ongoing, organic basis for all current employees, and not just in the last few days or weeks before a particular employee leaves. This is an important area of exploration, especially in the field of information science. Findings from the study should be transferrable to other libraries. As far as the library profession is concerned, the research can assist in the formulation of more established policies in knowledge retention and transfer, where more systematic knowledge management programs can be carried out in the library. Library practitioners can see important retention and transfer strategies found by other librarians, and adopt some of the practices in their own libraries. The framework can help librarians evaluate the studies they employ critically, and see which of the strategies can help in transfer of tacit versus explicit knowledge, or impact a particular phase of the knowledge management cycle.

The results in the local study by Kombo, Kobonyo and Ogutu (2015) indicate that knowledge strategy has a positive and significant effect on innovation activities of the firms. The results reveal that knowledge strategy has a positive and significant effect on organizational innovation. Further, regarding the relative influence of the dimensions of knowledge strategy on organizational innovation, regression results indicate that knowledge exploration has greater effect on organizational innovation than knowledge exploitation. The findings of this study imply that knowledge strategy (knowledge exploration and exploitation) is essential for higher innovation performance. Hence, to enhance organizational innovation and competitive advantage, organizations need to focus their resources on knowledge exploration and exploitation. It is concluded that higher levels of knowledge strategy result in higher organizational innovation; there is a relationship between knowledge strategy and organizational innovation; knowledge strategy has a positive and significant effect on organizational performance; and higher levels of knowledge strategy results in higher innovative performance in products and processes. This study made a contribution in understanding the effect of knowledge strategy on organizational innovation in a developing country context. However, the study has some limitations. This study adopted a cross-sectional survey. Such studies have limitations on providing explanations on the linkage between variables.

The findings in the study by Chigada (2014) revealed that there were weak strategies to capture tacit (personalized) knowledge in the selected banks investigated. However, explicit (codified) knowledge is captured in the organisational computers, servers, documents, records, archives, audio and video tapes. Nevertheless, efforts made to acquire, create, share, capture and retain knowledge in these banks were consistent with strategies suggested in the available published literature. The study found out

that the strategies to safeguard knowledge that were in place included communities of practice (CoPs), mentoring and apprenticeship, subject matter experts, leveraging retirees and story-telling. Safeguarding knowledge through collaboration and social networking of subject matter experts and CoPs were vital in the selected banks. Story-telling was not yet adopted as an important strategy of sharing knowledge in selected banks yet it was found to be an effective way of transferring personalised knowledge to fellow employees. It was also established that there were no rewards/incentive policies to stimulate knowledge creation or sharing as pointed out by the survey responses and interviews. Having acknowledged the importance of knowledge, the selected banks continued to lose knowledge through various ways of attrition. The findings revealed that the selected banks had put in place strategies to harness expert knowledge leaving the banks. The users of the selected banks got relevant knowledge and information, while employees and managers learnt and participated in inputting and organizing information and knowledge, enabling continuous knowledge creation and innovation.

Kimile (2011) conducted a study that investigated knowledge management practices at Moi University, Kenya. According to Kimile it was established that Moi University lacks integrated knowledge management strategies that enable a knowledge sharing culture, and that the technology available did not adequately address knowledge management. There was also lack of institutional repository and the existing organisational culture did not encourage knowledge sharing. Kimile (2011) recommended that Moi University should develop an Institutional Repository, provide knowledge management technology and tools, formulate a knowledge management strategy and address the barriers that impended knowledge management. Kimile (2011) also recommended further research on the adaption and utilisation of

communities of practice as a tool for knowledge sharing. This study generally focused on knowledge sharing.

All the empirical studies reviewed under the strategies for knowledge sharing and management that can be used to enhance performance have proposed strategies suitable in their specific geographical locations, for instance the study by Kimile (2011) proposed knowledge management strategies for Moi University Kenya, Chigada (2014) recommended a strategy for south African banks, Kombo, Kobonyo and Ogutu, (2015) recommended a knowledge strategy for Kenyan manufacturing firms, and Agarwal and Islam (2015) proposed framework that can help librarians. The studies reviewed lack sufficient evidence on suitable knowledge management strategies that can be used to enhance performance of knowledge workers in Kenyan public universities. In an effort to fill this gap the present study proposed suitable knowledge management strategies that can be used to enhance performance of knowledge workers in Kenyan public universities.

2.4.7 Chapter Summary

The literature reviewed on knowledge sharing among teaching staff in public universities was intended to understand and describe the practices of knowledge sharing in knowledge organizations. This was in relation to the hidden issues in literature that can explain these practices and their impact on performance. The literature specifically sought to understand the capabilities and processes that enable knowledge sharing, sharing groups and the platforms that facilitate the sharing. The literature confirmed that knowledge sharing enhances performance in organizations through both intellectual and social capital. The review also confirmed that

knowledge sharing is a key asset to universities which are charged with creation and generation of new knowledge.

Specifically, the review revealed that there were some kinds of knowledge communities that enhanced performance but failed to reveal the kinds of knowledge communities they were. The review acknowledged the presence of ICT in knowledge sharing but fell short of exposing suitable ICT physical infrastructure for enhanced collaborations, linkages and partnerships. Although the review addressed the retention of personalized institutional knowledge, it did not reveal the impact of knowledge leakage on innovations. The review further revealed that libraries acquired knowledge that can contribute to enhanced performance but failed to attribute learning, research and innovations as a product of knowledge sharing. Evidence of best practices for knowledge sharing in public universities in Kenya was missing. The review failed to reveal existing and suitable policies that managed knowledge in public universities in Kenya. Lastly, the review lacked sufficient evidence on suitable knowledge sharing strategies used to enhance performance in public universities in Kenya. These stated knowledge gaps constituted the research gaps that this study attempted to address.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter discusses the research methodology employed in the study. It gives a systematic framework to describe, understand, explain and predict the research phenomena. The chapter is organized around the following themes: research approach, research design, mixed methods approach, justification for use of mixed methods, philosophical assumptions of mixed methods, study population, sampling technique and sample size, research instruments, validity and reliability, data collection procedure; data processing and analysis, assumptions and limitations and ethical considerations.

3.2 The Research Approach

Creswell (2014) observes that there are three approaches to research namely qualitative, quantitative and mixed methods. The author states that selection of either of the approaches is informed by a paradigm. Other studies explain that paradigms are patterns of beliefs and practices that regulate inquiry within a discipline (Weaver & Oslon, 2006; Taylor, Kermode & Roberts, 2007). The authors state that paradigms provide lenses, frames and processes through which success of inquiry is accomplished. These studies reveal that research has its foundation in philosophical views and theoretical approaches based on quantitative and qualitative paradigms. Research philosophies show the assumptions the researcher has about a given phenomenon and how to carry out the study. This follows that the research philosophy one selects reflects the worldview that will shape the decisions the researcher makes in his/her research process. These philosophical assumptions are derived from a

paradigm that guides the design of the study. These assumptions are ontological, epistemological, axiological and methodological.

Ontological assumption accepts what is taken to be real without proving while epistemological assumption takes what has been learnt from ontology that is meaningful to be knowledge and axiological assumption assumes that the knowledge learnt is worth. Methodological looks at the processes and the procedures the researcher uses that are acceptable within a given paradigm. With regard to the assumptions, the present study argues that collecting diverse data provides a more complete understanding of a research.

3.3 Research Design

Research design is the plan or proposal to conduct the research (Weaver & Olson 2006). The author adds that it is a framework of methods and techniques used by a researcher to logically combine research components so as to solve a research problem. In addition, Kombo and Tromp (2006) state that research design shows the flow of data collection and analysis with an aim of relating the relevance with the research purpose. Further, Mathooko, J. M., Mathooko F.M, & Mathooko P.M. (2011) state:

> …research design stands for advanced planning of the methods to be adopted for collecting the relevant data and techniques to be used in their analysis keeping in view the objectives of the research and the availability of time and money.

Study by Creswell, (2014) categorises research into three, qualitative, quantitative and mixed methods approaches. Each approach is informed by its philosophical paradigms. This research was conducted within mixed methods paradigms. Within these paradigms, there are directions such as case studies, surveys, ethnography,

multiple surveys and many others. Most information science studies rely on survey and case studies. In view of the descriptive and explorative nature of this study, the researcher utilized survey orientation. Survey was suitable because it provides for both mixed methods descriptions of trends, attitudes and opinions of the population (Creswell, 2003).Survey allows for measurement of variables and assessment of statistical relationships between variables.

This study on assessing knowledge sharing practices and their effect on teaching staff performance in selected public universities in Kenya utilized descriptive statistics and inferential statistics to establish the relationships between variables (Figure 2.2). Descriptive and inferential statistics are characterised with survey design research. Quantitative and qualitative data was collected from a representative sample of university teaching staff to assess the relationships. Quantitative data was collected from university teaching staff, academic heads of departments and academic deans.With regard to qualitative data, university librarians were interviewed to gain in-depth understanding of the effect of communities of practice and knowledge management practices on performance among teaching staff in public universities. This method of data collection is also suitable to survey research designs.

The researcher used the methods and theories of social sciences to demonstrate the relationships between knowledge sharing practices and performance among the teaching staff in public universities**.** Social exchange theory was used to reflect how formal and informal interactions boost knowledge sharing while adaptive structural theory emphasises on investing in suitable information communication technology physical infrastructure to facilitate knowledge sharing. Knowledge based theory of the firm advocates for building up the knowledge that resides in individual through

sharing. Nonaka and Takuechi model of the firm draws the processes through which knowledge is modelled to suit varied needs.Based on the paradigms that guide the design of a study, the present study utilized mixed methods approach that used surveys to establish the relationships between the variables (Figure 2.2) and interviews for librarians to determine the effect of communities of practice and knowledge management practices on performance among teaching staff in public universities.

3.3.1 Mixed Methods Approach

Creswell and Clark (2011) opine that mixed methods approach employs both quantitative and qualitative research to satisfy real life contextual understanding, multi-level perspectives and cultural influences. The authors state that philosophical assumptions of mixed methods are that it uses dialectal stance to bridge positivist and interpretivist worldviews. The authors further state that mixed methods approach assumes that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone. These authors narrate that researchers who hold specific philosophical positions find mixed methods to be challenging because of their specific beliefs. They (authors) complement mixed methods because it presents the opportunity to transform the tension into new knowledge through dialectal discovery. The approach values both objective and subjective knowledge. Terrell (2012) adds that investigators who employ mixed methods gather evidence based on question and theoretical orientation and it is more than just collecting quantitative and qualitative data. Terrell affirms that it involves combination of qualitative and quantitative data and combination of the strengths of each to answer research questions

A positivist approach draws attention to an epistemological position that "advocates the application of the methods of the natural sciences to the study of social reality and beyond. Ontologically, positivism reflects an ontological position of objectivism, which considers the social phenomena as an external reality that is independent and observable (Saunders, Lewis & Thornhill, 2014). In positivism, the researcher is seen to play the role of objective analyst, taking a detached manner to collect and interpret the data. That is to say, all factual knowledge is based on positive information gained from observable experiences, and only analytic statements are allowed to be known through reason alone. Positivist-guided research seeks empirical regularities, which are correlations between variables. This allows laws to be defined and predictions made, and seek measurement and analysis that are easily replicable by other users, including researchers. Positivism is, therefore, based on quantitative research, which uses numbers and statistical methods. Thus, quantitative data is usually collected and analysed, based on objective and scientific methods. The study on aassessing knowledge sharing practices and their effect on teaching staff performance in selected public universities in Kenya sought to establish possible relationships among these variables. Further, positivist-oriented research attempts to be highly objective by advocating for the method of natural sciences, neutrality, measurement and validity of results; maintaining independent position; seeking real facts of social phenomena that are objective, neutral and predictable, with little regard for the subjectivity of individuals; and only phenomena, which are observable and hence measurable, can be regarded as knowledge (Saunders et al., 2014). Positivist-oriented research allows the researchers to move from the known to the unknown, through reduction and deterministic measures. As such the researcher proceeds to collect data, analyze it, and make conclusions regarding the nature and strength of the relationship among

variables of study. The design of this study assumed the empirical approach. This allowed the present study to use such a scientific process through establishing theoretical underpinnings; deducing the objectives and research questions; collecting data to answer the research questions, and subsequently confirming in whole or part, or refuting existing theories. Also, the study verified the propositions through empirical tests by operationalising variables in the conceptual framework, to allow for measurement and enough sample selection for purposes of generalizing the findings within the Kenyan public universities. The positivist approach effectively rendered itself beneficial to this study.

An interpretivist approach provides a different epistemological position by emphasising that the "human sciences are fundamentally different in nature and purpose from the natural sciences" (Schwandt, 2003). Interpretivism mainly holds an ontological position of constructivism, concerning the social phenomenon or 'facts' as a product of human interaction. It suggests that in order to understand the reality of the social world, it is important to understand individuals' perceptions of the world and gather the meanings that constitute their actions. An interpretivist approach is concerned less with numbers but more with words, observations and meanings (Cresswell, 2013). With this stance, qualitative data which show the reasoning and feeling of people are more important for understanding the situation in social sciences. Accordingly, a more subjective interpretation would be involved in data analysis, aiming to provide explanations and arguments in terms of depth, nuance, complexity and roundedness of data.

Interpretivist approach is typically inductive, using open-ended questions, and both are drawn from phenomenology, hermeneutics and symbolic interactionism

(Creswell, 2013). Qualitative approach shares its philosophical foundation with the interpretive paradigm (Cole, 2006).The author explains that interpretive paradigm provides an opportunity for the voices, concerns and practices of the respondents to be heard and recognised. Interpretive paradigm takes the assumption that access to reality, given or socially constructed, is only through social constructions such as language, consciousness and shared meanings. Cole (2006) continues to assert that qualitative researchers are more interested in uncovering knowledge about people's feelings and thought under the circumstances in which they find themselves rather than making judgments on validity of their thoughts and feelings. The present study partially provided an opportunity for the respondents' opinions to be aired in the research, hence the need for interpretive paradigm.The ontological position in this research is almost objectivism, considering there is a reality existing externally which could be observable. Therefore, the data collection and data analysis was conducted in a detached and objective manner as much as possible.. Based on these assumptions, the present study utilized mixed methods approach to maximize the strengths and minimize the weaknesses of both positivists and interpretivism approaches.

According to Crewell (2014) mixed methods research design is classified into four types namely triangulation, explanatory, exploratory and embedded designs. In triangulation design, the author states that qualitative and quantitative data are collected and analysed separately. The results are merged to compare the interrelation and validation. During interpretation, equal treatment is given to both types of data. In explanatory design, the author explains that quantitative data is collected, analysed and the results provoke collection of qualitative data whose results are then used to explain the quantitative results in the first phase. In exploratory design, Creswell states that qualitative data is collected and analysed. An instrument or theory is

developed based on the results obtained from the qualitative data. The instrument is then used to collect quantitative data and analysed. Interpretation is done based on qualitative while quantitative results are used for generalization.

In embedded design, both qualitative and quantitative data are collected and analysed concurrently. In perspective this design qualitative data enhance quantitative results. Creswell and Clark (2014) state that during interpretation, emphasis is on qualitative. Based on the nature of the present study, embedded design was adopted. The study collected both quantitative and qualitative data and analysed them concurrently. The findings were generalized with emphasis on quantitative results.

Although the researcher was not ignorant that the different types of data in the embedded design that needed to be transformed for intergration and the inequality between the two methods the current study adopted the design. The advantages of the design outweighed the disadvantages. This design allowed simultaneous perspectives from both qualitative and quantitative responses while providing for shorter data collection period. It gave in-depth perspective of the study topic while offsetting weaknesses inherent to the predominant method quantitative. It also provided the study with the advantages of both qualitative and quantitative data. The current study found the embedded design to be suitable thus adopted it.

3.3.2 Justification for Use of Mixed Methods

Mixed methods was utilized because quantitative approach or qualitative approach by itself was found inadequate to develop multiple perspectives and complete understanding about the effect of knowledge sharing on performance amongst teaching staff in public universities in Kenya. This was because the teaching staff who included academic deans, heads of departments, lecturers and librarians work at

different levels. The researcher wanted views from the different perspectives and to have one database built on the other. Data was integrated during the interpretation and the analysis. The use of mixed methods was informed by the conceptual framework (Figure 2.2) that intends to assist the universities to bring about change in knowledge sharing. Again the application of mixed methods is far ranging in library and information science among other disciplines.

Creswell (2014) explains that postpositivists assume that outcomes are influenced by some forces. They (positivists) seek to identify the force behind the outcomes. To achieve this they develop an idea, reduce the idea into variables and further break it into research questions and hypotheses which positivists use research methods to either reject or accept. The present study looked at the effect of independent variables on dependent variables. This study which sought to assess the influence of knowledge sharing on performance amongst teaching staff in selected public universities developed a conceptual framework which showed that there was a relationship between dependent variables and independent variables. Creswell (2014) states that it is through positivism paradigm that such an inquiry can be achieved using scientifically tested research methods to reject the hypotheses or accept them.

In addition, Cole (2006) points out that, positivism paradigm grounded on rigid rules of logic and measurement, truth, absolute principles and prediction insists that there is one objective reality. Accordingly, the positivist paradigm pronounces that a valid research is demonstrated only by the degree of proof that is corresponded to the phenomena that study results stand for (Weaver & Olson, 2006). Positivism studies are premised on the existence of prior fixed relationships within phenomena which are typically investigated with structured instrumentation. The reality in the present study

is that knowledge sharing influence the performance amongst teaching staff of public universities in Kenya, which subjects the study to adopt positivist paradigm. Further, the present study used a structured instrument (with close ended questions) justifying the utilisation of positivism paradigm. Studies favouring positivist approach align with the assumption that there is an objective reality that can be methodically modelled, quantified and statistically measured and tested.

In terms of epistemology of how to understand the reality, the researcher may stand between the two extremes of positivism and interpretivism. On one hand, the researcher shares the viewpoint of positivism that the social science may apply the scientific and objective approaches to collect and explain the data. On the other hand, however, several researchers argue that the distinctions between the positivist and interpretivist approaches might be overstated (Creswell, 2003). For instance, positivism emphasises the importance of the objective and detached manner taken by the researcher, the manner of detachment is argued since the interpretation of observations is still drawn from the researcher's bias and hypotheses. In this regard, the researcher shares the view that both the positivist and interpretivist approach provide value in understanding the phenomenon and portraying the reality. Thus, a qualitative research method that lays an emphasis on collecting in-depth data was used as a supplement to facilitate the quantitative research method

The present study has elements that are directly linked to interpretivism paradigm. The study focused on a specific environment, public universities and relied on the views of university librarians on knowledge management practices. According to Creswell, (2014) interpretivists visit participants in person to collect data which they generate meaning from. Creswell further explain the use of open ended questions to

incorporate the views of the respondents. The paradigm finally leads to generation of theories or patterns that make meaning. Based on the background of University librarians, the researcher used open ended questions to collect their views on knowledge sharing and knowledge management amongst teaching staff on performance in selected public universities in Kenya. Interpretation of the data was based on the researcher's experiences.

The ontological assumption of the present study was that there was a reality that was apprehended and the study determined the way things are and discovered the cause effect relations behind social reality. That is at the least, the study found meaningful indicators of what was actually happening as relates to knowledge sharing and its effects on performance amongst teaching staff in public universities in Kenya using the proposed strategies that might be adopted by knowledge workers for enhanced performance. According to the present study, reality was external to the researcher and represented by respondents, respondents had meaning independently of any consciousness of them, and reality was captured by researcher's senses and prediction.

Epistemological assumption was that the researcher and the object of investigation were independent from each other and the object was researched without being influenced by the researcher. Any possible researcher influence was anticipated, detected, and controlled or accounted for. That is the researcher had no influence on the teaching staff in the selected public universities in Kenya who participated in the study. The study assumed that the methodology of the natural sciences should be employed to study social reality; truth was attained because knowledge rests on a set of firm, unquestionable, indisputable truths from which researcher's beliefs may be

deduced. This is based on the assumption that knowledge is generated deductively from a theory or hypothesis and that knowledge is objective.

The basic assumption of Epistemology is that the goal of science is to develop the most objective methods possible to get the closest approximation of reality. Researchers who work from this perspective explain in quantitative terms how variables interact, shape events, and cause outcomes. They often develop and test these explanations in experimental studies. Multivariate analysis and techniques for statistical prediction are among the classic contributions of this type of research. This framework maintains that reliable knowledge is based on direct observation or manipulation of natural phenomena through empirical means (Neuman, 2003).

Based on these assumptions discussed, the present study employed a mixed methods approach, both qualitative and quantitative approaches to assess the effect of knowledge sharing on performance amongst teaching staff in selected public universities in Kenya. The present study provides inferences that provided opportunities for presenting a better diversity of divergent views. Having employed both quantitative and qualitative approaches, the present study has attempted to maximize the strengths and minimized the limitations of a single approach method.

3.3.3 Philosophical Assumptions of Mixed Methods

There are assumptions that underpin the mixed methods research approach. The assumptions distinguish mixed methods from other approaches but are not exclusive though overlap to some extent. The core assumption uses dialectal stance to bridge the positivist and interpretivist worldwide views. That the combination of quantitative and qualitative approach provides a more complete understanding of a research problem than either approach alone (Creswell, 2009).

Mixed methods is not fixed to one system of philosophy and reality. Inquirers draw liberally from quantitative and qualitative assumptions when they engage in research (Creswell, 2014). The author adds that Individual researchers have freedom of choice of methods, techniques and procedures of research that best meet their needs and purposes.

Pragmatists do not seek the world as absolute unity. Mixed methods researchers look to many approaches for collecting and analyzing data rather that subscribing to only one way; qualitative or quantitative. According to pragmatists, truth is what works at the time. It is not based on duality between reality independent of the mind or within the mind. Mixed methods research investigators use both quantitative and qualitative because they work to provide the best understanding of the research problem(Creswell, 2014).

Pragmatist researchers look to the *what* and *how* to research based on intended consequences as to where they want to go with the research. They need to establish the purpose for their mixing, a rationale for the reason why quantitative and qualitative data need to be mixed. They agree that research always occurs in social, historical, political and other contexts thus mixed methods studies may include postmodern turn; a theoretical lens that is reflective of social justice and political aims (Creswell, 2014).

Pragmatists believe in an external work dependent of the mind as that lodged in the mind. They believe that people should stop asking about the reality and the laws of nature. They simply want to change the subject. Thus, for the mixed methods researchers, pragmatism opens the door to multiple methods, different worldviews

and different assumptions as different forms of data collection and analysis (Creswell, 2014).

3.4 Study Population

Kombo and Tromp (2006) define a population as "a group of individuals, objects or items from which samples are taken for measurement. The authors state that population is a complete set of individuals, cases or objects with some common observable characteristics. Based on these definitions, the study population consisted of twenty three (23) chartered public universities in Kenya whose common operations are knowledge creation, dissemination and access center. The success or failure of universities in executing their key functions in academics and research depends on the available knowledge acquired through partnering with knowledge owners. The researcher therefore felt that although there are other training institutions in Kenya, public universities would provide a rich population for the study. The study was carried out in public universities in Kenya.

Public universities were selected because they attract funding from the taxpayer and are the highest producers of knowledge that is generated in Kenya. Specifically, the study systematically sampled six public universities namely Chuka, Egerton, Masinde Muliro University of Science and Technology, Laikipia, University of Kabianga and Kibabii from 23 chartered universities. Systematic sampling involved a random sampling where the researcher chose every fourth university from a list of Kenya Public universities (http://www.advance-africa.com/Universities-in-Kenya.html). This sampling technique was adopted because it is bias free (Kothari & Garg, 2014). The unit of analysis was the teaching staff of these universities. The universities had a population of 1852 teaching staff, making the target population to be 1852.

3.5 Sampling Technique and Sample Size

Creswell (2013) defines a sample as the accessible population of the study population. Other studies describe a sample by giving its qualities; should be diverse to allow for higher generalization of the research findings to the whole study population; should be representative to fulfill the questions the research is addressing; should be accessible and knowledgeable of the problem being investigated (Kombo & Tromp, 2006; Kothari & Garg, 2014). The study sampled a subset of the study population whom it was believed was a representation of the study population. This was achieved through approved sampling techniques that were applied by the researcher.

3.5.1 Sampling Technique

The study determined its sample size using the Saunders et al. (2012) formula which generates the table 3.1 for obtaining the sample size. The sample size was determined from the target population of 1852.

Table 3.1: Sample Size Determination Table

Population	**Margin of Error**			
	5%	**3%**	**2%**	**1%**
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1,000	278	516	706	906
2,000	322	696	1,091	1,655
5,000	357	879	1,622	3,288
10,000	370	964	1,936	4,899
100,000	383	1,056	2,345	8,762
1,000,000	384	1,066	2,395	9,513
10,000,000	384	1,067	2,400	9,595

Source: Saunders, Lewis & Thornhill (2012)

3.5.2 Sample Size

The study further used disproportionate stratified sampling to establish the sample size for each category: namely university librarians, academic deans, academic heads of departments and teaching staff. By using disproportionate stratified sampling technique, the study was able to determine the number of respondents to be obtained from eachcategory (stratum). This was achieved by selecting a sample and using different fractions for each status: 1/10 for teaching staff and 1 for librarians, academic heads of departments and academic deans (Kothari & Garg, 2014). This was used to avoid overrepresentation and allow for separate analysis for each stratum. The distribution of the sample size is captured in Table 3.2.

Table 3.2: Summary of Sample Size

Respondents	MMUST	Laikipia	Chuka	Egerton	UoK	Kibabii	Sample Size
University librarians	1	1	1	1	1	1	6
Academic Deans	9	4	4	9	7	5	38
Academic Heads of Departments	15	11	9	32	16	26	109
Teaching staff	35	15	18	51	21	15	155
Total Number of Respondents	60	31	32	93	45	47	308

Then simple random technique was then used to select the respondents for teaching staff category (stratum) while librarians', academic heads of departments and academic deans' strata sampled all cases.

3.6. Research Instruments

There are several methods that this study adopted to collect data namely: interview, questionnaires and document analysis. Selection of these tools was guided by the nature of data to be collected and the objectives of the study. The researcher was mainly concerned with views, attitudes, feelings, experiences and opinions of participants on knowledge sharing and management in public universities in Kenya. The researcher adopted interview method to collect data from the university librarians. Researcher prepared face-to-face semi-structured interview schedule that collected in-depth data on knowledge processes in public universities. University libraries are directly charged with the responsibility of ensuring information literacy is provided to the university communities thus it is expected they have information on the effect of information literacy on knowledge sharing and management. The librarians were also expected to provide information on communities of practice and their impact on social capital. In university libraries, not all the information service providers are professionals but serve users of high caliber. It is expected that librarians are well positioned to provide information on these knowledge sharing communities who necessarily do not have to be experts within their fields of practice. The interview for university librarians gave respondents freedom to respond to the questions in their own words (Kothari & Garg, 2014) while allowing the interviewer freedom to ask further clarification in case of need thus providing more and in depth information. These authors recommend face-to-face interviews because the interviews may secure spontaneous reactions from the participant enriching the validity of the

data. Generally, semi structured interview schedules enabled the researcher balance the quantity and quality of data while providing more information that the researcher would have omitted in the instrument. This balance of quality and quantity of information gave a fuller explanatory of the phenomenon under study.

Data from academic deans, academic heads of departments and lecturers was collected through closed ended questionnaires. Besides teaching, academic deans and heads of academic departments are charged with other university administrative duties. Closed ended questionnaires were to provide alternative answers to choose from while saving on time spent to respond to questions. In addition, research reveals that it is easier to analyze data collected through closed ended questions since they are in an immediate usable form (Creswell, 2014; Kothari & Garg, 2014). The closed ended questionnaires collected information on communities of experts, collaborations, knowledge repositories, linkages and partnerships. Academic deans, heads of academic departments and lecturers at the university level are expected to create linkages, collaborations and partnerships with industry and their counterparts from within the country and outside the nation. Communities of experts are expected to be created by academic experts. It is expected that academic deans, heads of departments and lecturers are well positioned to provide information on these variables as conceptualized in the study.

3.7 Validity and Reliability of the Instruments

Before data was collected, the study first conducted a pilot test on the research tools to test for its effectiveness. The study chose 30 respondents (10% of the sample population) who were given one week to respond (Creswell, 2014). These respondents were not allowed to participate in the main study. The pilot testing was to identify any weaknesses and allow for respective improvements to be made. The

study tested these instruments to ensure reliability and validity of the research tools. Further, it was to ensure that the items in the questionnaire were clearly stated to give the same meaning to all respondents and also provide an idea to the researcher how long it would take to complete the questionnaire. Such tests helped identify possible problems, clarity on the instruments and appropriateness of the language during the main study (Kvale, 2007).

3.7.1 Validity

Validity indicates how a study regulates and crosschecks its data to ensure that an instrument measures what it is supposed to measure. According to Creswell, (2003), validity in mixed methods looks into sample selection, sample size, follow up on contradictory results, bias in data collection, inadequate procedures or conflicting research questions. Validity of instrument which is the accuracy and meaningfulness of inferences was measured using content validity test. The study used content validity to measures the degree to which data collected using a particular instrument represents a specific domain of indicators or content of particular concept. The assessment of content validity of a measure was carried out by two professional experts. This study assessed the content validity by using experts from information sciences and a research consultant from the teaching staff. While the information science expert determined whether the sets of items accurately measured knowledge sharing, the research consultant assessed the tools to establish what concept the instrument was trying to measure.

3.7.2 Reliability

According to Creswell and Clark (2011), measurement of instrument reliability provides consistent results. In support, (Golafshani, 2003) observes that reliability is

the consistency of scores over time, degree to which measures are free from error and in effect yield consistent results. According to Golafshani, the commonly used method of assessing internal consistency reliability estimates is the coefficient alpha. Cronbach alpha is the reliability coefficient that measures inter-item reliability or the degree of internal consistency between variables measuring one construct. The data was tested for reliability to establish issues such as data sources, methods of collection, time of collection, presence of any biasness and the level of accuracy (Kvale, 2007). The tested reliability established the extent to which results were consistent over time. The study applied the internal consistency test, using Cronbach alpha to test for reliability test, where scores obtained from one item was correlated with scores obtained from other items in the tool to obtain a coefficient of correlation, r (known as Cronbach alpha, α). The coefficient (Cronbach alpha,α) varies from an absolute value of 0 to 1 and a value of 0.7 or less generally indicates low internal consistency reliability (Nunnaly, 1978). In the social sciences, acceptable reliability estimates of Cronbach alpha (α)is of 0.70 or greater than 0.70 (Kothari, 2010). That is Cronbach alpha value $\geq$ 0.7indicates higher consistency for a given scale, which was accepted. However, when the $\alpha < 0.7$, the study was reviewed by editing and removal of the inconsistent items.

3.8 Data Collection Procedure

The researcher sought a permit for data collection from the National Commission for Science Technology and Innovations (NACOSTI) which granted authorization to collect data in the six public universities spread over six counties. For administration of questionnaires, the researcher engaged six research assistants competitively recruited after recommendation by the residential lecturers from the participating universities. The research assistants were briefed on how to administer questionnaires

to the respondents and agreed on the period on which the filled in questionnaires were to be returned and handed over to the researcher for processing. The researcher arranged for an interview with the university librarians and administered the interview.

3.9 Data Processing and Analysis

The study adopted data collection instruments for both qualitative and quantitative methods and the researcher analyzed the data using both qualitative and quantitative methods. The responses were transcribed by the researcher to read through and removed the unwanted data. The researcher compiled the data into themes developed from research questions using manually assigned codes as computer SPSS, a computer software for editing texts. SPSS specifically tested knowledge communities, collaborations, knowledge repositories, linkages and partnerships amongst the teaching staff. The researcher interpreted the meaning of the themes against her experiences comparing with the information got from the literature reviewed, theories and research paradigm adopted. The researcher made sense from what was uncovered from the interview and reported them in texts, direct quotations and tables. Descriptive and inferential statistics were used for data analysis with statistical computations that included percentages, frequencies and means and presented in tables and graphs.

Thereafter inferential testing was done to test dependence of the performance of teaching staff in Kenyan public universities on knowledge communities, information communication technology infrastructure, knowledge leakage, knowledge management, policies in place using chi-square test at 95% confidence level (5% significance level). Specifically, using chi-square at probability value (p-value) of 0.05, the study tested the dependence of; enhancement of social capital amongst

teaching staff in Kenyan public universities on knowledge communities; enhanced collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya on information communication technology infrastructure; innovations amongst teaching staff in Kenyan public universities on knowledge leakage; promotion of learning, research and innovations amongst teaching staff in Kenyan public universities on knowledge management; and management of knowledge in public universities in Kenya and on policies in place. The study therefore established the relationship between the independent variables and the dependent variable using associations.

3.10 Assumptions and Limitations

Based on the importance of the study to the target population, it was assumed that the data collection instruments used yielded reliable responses from the participants. The study assumed that respondents who were well positioned to understand the questions provided honest responses. The study adopted descriptive research which heavily relied on use of small samples that produce qualitative data from university librarians, predominantly words while quantitative data was collected from teaching staff. Although the researcher gathered rich data from which ideas were based, the interpretation of the same data may not have been the same by another researcher reducing its reliability. Qualitative data collected was value-laden in terms of interviewer's interpretation while the model used to analyse the quantitative data determined the correlation but not causation

3.11 Ethical Considerations

The major ethical problem in this study was privacy and confidentiality of the respondents. First, the researcher sought a permit to carry out the research from National Council for Science, Technology and Innovations (NACOSTI). To obtain a

valid sample entailed gaining access to specific personalized information which in itself is an infringement on the privacy and confidentiality of respondents. The respondents ignored items that they did not wish to respond to. The researcher maintained intellectual honesty by presenting data and findings without distortions and ensured that the respondents were not lured through any kind of handouts. The researcher also obtained informed consent of the respondents to participate in the study. Research findings would not be concealed but rather disseminated after completion of the course

3.12 Chapter Summary

This chapter looked at mixed methods research approach and justified why the approach was adopted by the study. The study population was public universities in Kenya. The study applied Saunders, Lewis and Thornhill formular to arrive at a sample size of 316 participants, consisting of teaching staff, academic heads of departments, academic deans and university librarians. The data collection instruments were interviews and questionnaires. While the questionnaires were used to collect data from teaching staff, academic heads of departments and academic deans, interviews were used to collect data from the university librarians. Validity of the data collection instrument was tested using content validity test whereas reliability was tested using cronbach alpha. Data was coded into themes. Statistical packages for social sciences (SPSS) was used to analyse data and presented in texts, tables and graphs. Chi square test was adopted to test the dependence of expected outputs on independent variables to establish associations of social capital with knowledge communities; collaborations, linkages and partnerships with information communication technology physical infrastructure; innovations with knowledge leakage; learning, research and innovations with knowledge management practices and knowledge management with policies.

CHAPTER FOUR

DATA PRESENTATION ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the data plus interpretation and analysis of the findings from the data collected from the research study under the following themes: information technology; knowledge leakage; knowledge management; knowledge communities; strategy and policy. This is drawn from the hitherto stated objectives of examining kinds of knowledge communities that are available for enhancement of social capital amongst teaching staff in public universities in Kenya; assessing the information communication technology physical infrastructure used to enhance collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya; determining ways in which knowledge leakage has impacted innovations amongst teaching staff in public universities in Kenya; assessing knowledge management practices used to promote learning, research and innovations amongst teaching staff; examining existing and suitable policy frameworks that are used to manage knowledge in public universities in Kenya and; proposing suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in Kenyan public universities. The results were presented in tables and graphical figures. Mixed methods analysis and inferential statistics were used for data analysis.

4.2 Response Rate

The study administered questionnaires to all the academic deans, academic heads of departments and teaching staff using the drop and pick method and gave them two weeks to fill and surrender the questionnaire. The researcher made follow up visits and later collected the filled questionnaires. Almost all the respondents submitted

answered questionnaires which were filled according to their opinions. However, a few who did not submit their questionnaires as shown in table 4.1 was of no consequence since the response rate was still high enough.

Table 4.1: Response rate in Frequencies and Percentages

Category	Sample size	Response	Response Rate
Academic Deans	38	38	100.00
Academic Heads of Departments	109	109	100.00
Teaching staff	163	155	95.09
Total	**316**	**308**	**97.47**

Source: Research data (2017)

4.3 Demographic Data

The study first sought to obtain from respondents their background information (demographic information) based on; period worked in the positions they were in, highest academic qualification, age bracket, and length of time worked in the university. The data informs the decision makers while making future plans. The data collected was analysed and the results obtained from analysis captured in this section.

The results obtained on respondents' gender were captured in figure 4.1

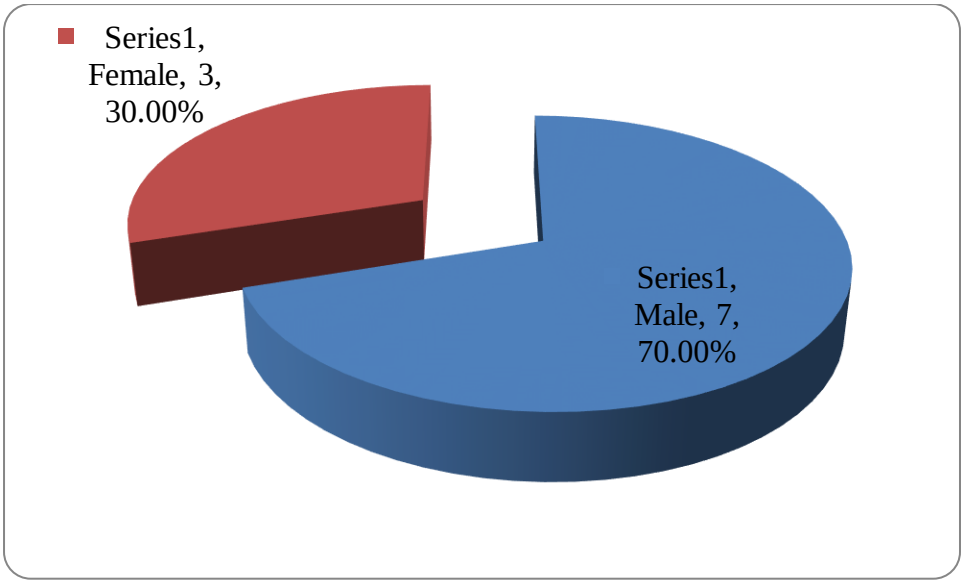

Figure 4.1: Gender of the Respondents

Source: Research data (2017)

The results in figure 4.1 show that 93(30%) of the total number of respondents were female while 215(70%) were male, a pattern exhibited across all the 6 universities surveyed. It was observed that male teaching staff exceeded two thirds of the total number of respondents as the females were less than a third of the total number of respondents, creating gender imbalance against 2/3rd gender rule enshrined in the constitution of Kenya 2010. This is a clear indication that university knowledge industry is dominated by men. Since it is premised on educational levels, it is an indication that more men, than women currently in Kenya seek higher education. It is possible to conclude that there is no gender diversity in the Kenyan university knowledge industry.

4.3.1. Levels of Education of the Surveyed Population

The study requested the respondents to indicate their highest academic qualification which was either of; Doctorate (PhD), masters degree, undergraduate degree (Bachelors), diploma, or certificate. The results obtained from the analysis were captured in table 4.2

Table 4.2: Frequencies and Percentages of the Highest Academic Qualification of University Teaching Staff in Kenya

Staff category		**Highest level of education**			Total
		Bachelors	Masters	PhD	
Librarians	No.	2	3	1	6
	%	33.33	50.00	16.67	
Teaching Staff	No.	15	109	31	155
	%	9.68	70.32	20.00	
Deans of Schools	No.	0	12	28	38
	%	0.00	30.00	70.00	
Heads of Departments	No.	0	48	61	109
	%	0.00	44.04	55.96	
Total		17	171	120	308

Source: Research data (2017)

The study findings showed that majority of the librarians 3(50.00%) had masters degree, and only 2(33.33%) had bachelors degree while 1(16.67%) had doctorate degree (PhD). This is a clear indication that librarians have a reason or the motivation to seek higher education. On the side of the teaching staff, a majority of 109(70.32%) of them indicated that they had masters degrees, as 15(9.68%) indicated that they had

undergraduate degrees and 31(20.00%) were PhD holders. All the teaching staff members, who had showed that they possessed bachelor's degrees, indicated that they had enrolled for masters' programmes as a condition by their respective schools/faculties. They were serving either in the positions of graduate assistants or part-time lecturers. A number of the teaching staff showed that they were pursuing PhD programmes.

While 48(44.04%) Heads of departments indicated that they possessed masters degrees, 61(55.96%) showed that they possessed PhDs and none had undergraduate degrees as their highest academic qualification. This shows that many universities are raising the knowledge bar in giving promotions to head various departments. In a population with majority masters degrees holders though, it is expected that experience comes out in play when considering those to promote to head various departments. That arguably validates the 44% masters holders heading departments in the surveyed universities. The level of education is critical in assessing aspects of knowledge management, knowledge leakage, information sharing, and the knowledge communities.

4.3.2. Age Bracket and Years of Experience of Respondents

The age bracket has a pointer on a number of issues like, an institution's preparedness for staff retirement, and generational reliance, all which factors have an overall effect on the productivity of the organization. On the other hand, an employee's years of experience influences the adeptness he or she employs at work, and to some extent his/her response to change. In the present study, on knowledge sharing and performance amongst teaching staff in selected public universities in Kenya, recognizing that the teaching and knowledge fraternity is the institution's social

capital base comes paramount. It is, therefore, imperative that demographics on the fraternity's age brackets and experience be carried out. The respondents were further requested to indicate their age brackets. The age bracket, specified by the study, to choose from were; less that 25 years, 26 to35 years, 36 to 45 years, 46 to 55 years and above 56 years. The results on analysis by age according to the position held was captured in table 4.3

Table 4.3: Frequency and Percentage of Teaching Staff in Age Brackets according to their Positions in Kenyan Universities

Age Bracket	Librarians	Teaching Staff	Deans of Schools	Heads of Departments	Overall
< 25 years	0	16	0	0	16
% in Group	0	10.32	0	0	5.19
26 -35 years	0	31	0	0	31
% in Group	0	20	0	0	10.06
36 - 45 years	2	31	19	44	96
% in Group	33.33	20	50	40.37	31.17
46 - 55 years	4	62	19	54	139
% in Group	66.67	40	50	49.54	45.13
> 55 years	0	15	0	11	26
% in Group	0	9.68	0	10.09	8.44
Total	6	155	38	109	308

Source: Research data (2017)

From Table 4.3, it is only amongst the teaching staff that there were respondents aged below 25 years, totaling 16(10.32%) of the total teaching staff population surveyed (155). There was no respondent aged below 25 years amongst the heads of department as the deans or even the librarians. The age is the average age of most first degree graduates in Kenya, of whom some –like those in the academia, have already enrolled for Masters Degree programmes. The majority of those surveyed aged below 25 years were serving as Graduate assistants and part-time lecturers.

The results show that 2(3.33%) out of the 6 librarians surveyed (following the adoption of purposive sampling in this study) were aged 36 - 45 years while 4(66.67%) of them were aged 46-55 years. Of the remaining aged 26-35 years, none of them was a head of department or a dean. Meaning, they were all from the teaching staff, numbering 31(20%) out of 155 of the teaching staff surveyed. Of the heads of departments and school deans, 19(40%) and 44(50%), respectively were aged between 36 and 45 years. On the other hand, 4(67%) librarians, 54(49.6%) heads of departments, 19(50%) academic deans and 62(40%) teaching staff members were aged 46-55 years. On the other hand, 11(10.09%) heads of department and 15(9.68%) members of the teaching staff were aged above 56 years. The overall analysis by age bracket is captured in table 4.4.

Table 4.4: Frequency and Percentage of Teaching Staff in Different Age Brackets in Kenyan Universities

Age Bracket	Frequency	Percent
less than 25 years	16	5.19
26 to35 years	31	10.07
36 to 45 years	96	31.17
46 to 55 years	139	45.13
above 55 years	26	8.4
Total	308	100

Source: Research data (2017)

Overall, as shown in table 4.4, those aged less than 25 years were the least 16(5.19%) followed those above 56 years at 26(8.4%). The highest population of workers 139(45.13%) was in the age bracket of 46-55 years. This implies that 46-55 year age bracket was the modal age of the respondents.

The respondents provided information of the period worked in the present positions and results of analysis captured in table 4.5. They were requested to choose the period for the categories.

Table 4.5: Percentages of Period of Experience of University Academic Staff in Kenya

Staff category	Period of experience (years)			
	1 -5	6 - 10	11 -1 5	>15
Librarians	83.33	16.67	0.00	0.00
Teaching Staff	54.84	45.16	0.00	0.00
Deans of Schools	0.00	47.00	53.00	0.00
Heads of Departments	90.83	9.17	0.00	0.00
Overall	73.70	26.29	0.00	0.00

Source: Research data (2017)

From Table 4.5, it is clear that the modal number of years of experience across the surveyed population is 1-5 years. In numbers this represents 227(73.70%) out of 308 of the total population surveyed. Breaking down, the population with 6-10years of experience numbered 81(26.29%) of 308) and comprised of 70(45.16%) of 155 teaching staff members and 1 (16.67%) of 6(0.32%) of 308 librarians. This means no dean had less than 5 years' experience, pointing to the modal period tied to academic deanship in the university setting. Given that the librarians had between 1-5 years' experience, it shows that they do not stay at their work stations longer.

All academic deans had years of experience in brackets 6-10 years and beyond. Comparing their years of experience to their ages, with 19(50%) of them aged 46-55 years, and 19(50%) of them aged 36-45 years, with none aged over 56 years, shows that rise to management levels credits some consistency in career development. This is especially true if one thinks of a dean say 36 years of age with 6-10 years' experience. It puts his maximum youngest age at which he started working at 26 years. In any management, the policy drafters are as important as the policies drafted (Frost, 2014). In this study, there are elements on policy, procedures, and performance, and the people driving this are obviously defined by their level of understanding of the entire system, basically function of their experience, exposure and education. The quality of this can determine much as this report unveils the findings.

In analyzing knowledge management best practices, issues of how universities do promotions, quality of staff, and entire management systems, starts with basics like years of experience, age, and even gender. This is because these universities play within certain policy frameworks. For instance, the question of getting quality staff in

knowledge management versus sustaining the one third ($1/3^{rd}$) gender policy in government employment borders on whether quality can be tempered with in an investigating bid to obey the same. Yet it is known that quality standards should come first. The question of the age of respondents help bring out the truth especially about the institutions' preparedness for retirement of the ageing staff, and generally about human resource planning in knowledge management to cater for enhanced productivity. The demographics also have laid ground for further results on information sharing across the various divides of the knowledge communities.

4.4 Data Analysis

Quantitative data was analysed using descriptive statistics to describe the study variables, which helped to establish the effects of the independent on the dependent variable while qualitative data was coded according to the theme they addressed and results presented in descriptive narrative. The results obtained were analysed based on the study objectives**.**

4.4.1 Knowledge Communities among Heads of Departments

The first objective was to examine kinds of knowledge communities that are available for enhancement of social capital amongst teaching staff in Chuka, MasindeMuliro University of Science and Technology, Laikipia, University of Kabianga and Kibabii universities in Kenya. The study analyzed data from both the HoDs and librarians and the results captured in this section.

Despite the immense relevance of formation of knowledge communities, there is a compelling need to find out their existence, challenges, and impact on the public universities in Kenya. The questionnaires given to the heads of departments brought the themes of communities of experts and knowledge management. Equally, heads of

departments are tasked with managing activities at departmental levels under their respective deans. Since they work firsthand with their colleagues who are purely teaching, they are the best links to bring out any issues that pertain knowledge management as a whole, as communities of experts.

The state of knowledge communities amongst teaching staff is shown in table 4.6

Table 4.6: State of Knowledge Communities among Heads of Departments in Frequencies and Percentages

Statement	Strongly Agree	agree	Neutral	Disagree	Strongly Disagree	Total
Communities of experts represent an area of common interest for a number of university teaching staff	87	0	10	12	0	109
Percent	79.82%	0.00%	9.17%	11.01%	0.00%	100.00 %
Currently communities of experts have been recognized in their respective universities	0	22	87		0	109
Percent	0.00%	20.18 %	79.82 %	0.00%	0.00%	100.00 %
confirmed that communities of experts exist in their universities	0	21	44	44	0	109
Percent	0.00%	19.27 %	40.37 %	40.37%	0.00%	100.00 %
Communities of experts help them build relationships and network with their peers within their universities and other universities		78	20	11	0	109
Percent	0.00%	71.56	18.35	10.09%	0.00%	100.00

		%	%			%
CoEs had benefited them in their daily works	0	21	55	33	0	109
Percent	0.00%	19.27 %	50.46 %	30.28%	0.00%	100.00 %
Communities are driven by the willingness of their members to participate in CoEs activities	0	33	21	55	0	109
Percent	0.00%	30.28 %	19.27 %	50.46%	0.00%	100.00 %
Members are willing to act	0	55	21	33	0	109
Percent	0.00%	50.46 %	19.27 %	30.28%	0.00%	100.00 %
CoEs motivated them to share their work-related knowledge	0	33	44	32	0	109
Percent	0.00%	30.28 %	40.37 %	29.36%	0.00%	100.00 %
CoEs helped in capture and storage of tacit and explicit knowledge for easy access and application by others	0	43	55	11	0	109
Percent	0.00%	39.45 %	50.46 %	10.09%	0.00%	100.00 %
CoEs have the ability to strengthen collaborations across departments, offices, and units within the university	0	33	55	21	0	109
Percent	0.00%	30.28 %	50.46 %	19.27%	0.00%	100.00 %

Source: Research data (2017)

On representation of common interest, table4.6 shows that 87(80%) of the representative population (109) heads of departments) either agreed or strongly agreed that communities of experts represent an area of common interest for a number of university teaching staff. Only 22(20%) remained neutral and none either disagreed or strongly disagreed. However, on whether currently communities of experts have been recognized in their respective universities, interestingly, also about 87(80%) of the respondents either disagreed, or remained neutral, with only about 22(20%) agreeing and none either strongly disagreed or strongly agreed. Meaning 44(40%) confirmed that communities of experts do not exist in their universities, and 44(40%) were not certain whether they do exist or not. Only 22(20%) were sure of such existence. Mark that this is against an 87(80%) approval that the CoEs are an area of common interest. This simply tells that, despite it being an area of common interest, universities are yet to take a lead in defining and publicizing this importance that could be significant in their knowledge business.

A whopping 98(90%) either agreed or remained neutral when asked if their communities of experts (where they actually belong), helped them build relationships and network with their peers within their universities and other universities. Merely 11(10%) denied on whether the CoEs had benefited them in their daily works, 33(30%) agreed while 55(50%) remained neutral. Both denial and acceptance on benefits prove that in fact a bigger percentage of the population surveyed was aware and took part in the CoEs, irrespective of their locations. The neutrality can go either way. It can mean existence of teaching staff that were very enthusiastic about the CoEs but have not yet realized their expectations in them. It may also represent those who still need more guidance to actualize the whole idea. Either way, there is an opportunity for the public universities to act.

With 55(50%) agreeing to the question that their communities are driven by the willingness of their members to participate in CoEs activities, 22(20%) being neutral and 33(30%) disagreeing, it only points on where to blame in case members have not realized full benefits. Here the figures reversed. Members' willingness to act rose to 55(50%), 20 points more than those who accepted they benefitted. The figures on those who were neutral dropped to 22(20%) while those who benefit stood at 55(50%).

On motivation, 33(30%) of the respondents agreed that their respective CoEs motivated them to share their work-related knowledge. On the other hand, 44(40%) remained neutral while 33(30%) denied. Again, the question of motivation needs to put into consideration. While 44(40%) of the respondents agreed to the fact that CoEs have helped in the capture and storage of tacit and explicit knowledge so that it can be easily accessed and applied by others, 55(50%) remained neutral and 11(10%) denied. Neutrality means expressing of doubts, dissatisfaction with the stated position. It may take a correction on the question for a neutral respondent to affirm, or confidently deny. Questioning if at all knowledge has been captured, stored and is easily accessed by others is questioning the whole position of knowledge management practices. Yet, with 44(40%) agreement that CoEs contribute to this process, it simply means that if CoEs are efficiently run then they can lead to such: efficiently capturing and storing tacit and explicit knowledge so it can be easily accessed and applied by others.

On the ability of CoEs to strengthen collaborations across departments, offices, and units within the university, 55(50%) of the respondents affirmed, 33(30%) remained neutral and 22(20%) denied. This still shows an opportunity in strengthening CoEs locally. A smooth 44(40%) of the respondents affirm that CoEs can strengthen

research across departments other than just collaboration. It brings out another positive aspect of it: multidisciplinary research. A university that can get an avenue to reinforce multidisciplinary research will have got a gem in the knowledge economy. Yet CoEs present such an opportunity as these respondents approve.

Despite much interest in CoEs, respondents pointed out some of the items that may limit their participation. Table 4.7 shows relative strengths of the factors limiting respondents' participation in their CoEs.

Table 4.7: Frequencies and Percentages of Factors Limiting Participation in Communities of Experts Activities

Factors	Frequency	Percent
lack of awareness	29	26.67
Lack of management support	25	23.33
Lack of incentives	7	6.67
Communication barriers	11	10.00
Time	22	20.00
Exclusive Groups	15	13.33
Total	109	100.00

Source: Research data (2017)

The rating was done by the relative voting each factor received by the respondents. Out of 109, the factor: lack of awareness led with 29(26.67%), coming out the strongest factor limiting members' participation; followed by lack of management support at 25(23.33%); then time at 22(20.00%); then communication barriers at 11(10%); and lack of incentives polled last at 7(6.67%).

When asked what would strongly motivate them to participate in CoEs, 83(85%) of the respondents mentioned ‘career development’ and ‘learning & development’. In second place was ‘meeting work goals’, to which 55(50%) of the respondents agreed to it. The third position motivators were, ‘solutions to work challenges’ and ‘staying current in sector or theme’, both to which the respondents voted up to 44(40%). ‘Support for daily activities’ was voted for by 33(30%) respondents to push it a distant forth as a motivating factor for them to join CoEs. Last on the list of preference was ‘expanding personal network’ which received 11(10%) support as a motivating factor. However, the above was factored with 5(5%) of respondents failing to state any motivating factor.

Giving opinion on what needs to be done to attract new members to communities of experts, majority 76(70%) of the respondents settled on creating awareness about their existence. If juxtaposed to table 4.5, where ‘exclusive groups’ was ranked as a factor limiting participation in CoEs, it means that there should be some deliberate effort put in to make the knowledge communities aware of CoEs. Other responses included organizing meeting forums, and running the existing ones transparently. The respondents suggested the roles they wished their respective universities played in strengthening their CoEs. They vouched for facilitation of their seminars and conferences; allowing time for member participation; streamlining local CoE activities to allow for inter-departmental, inter-school, participation up to and including related multidisciplinary research; recognizing and rewarding output from within the CoEs ranks; holding joint activities to ensure bonding of members; offering research grants to members; and providing adequate infrastructure for meetings, publicity and communication relating to the CoEs. The suggestions could be the

missing links that need be put in place to ensure established CoEs in Kenya's public universities.

Despite the importance of the CoEs collaborating, 55(50%) of the respondents said they did not know if there were existing any form of collaboration between their own universities and other CoEs globally. The idea of regional knowledge hubs is not far. Yet only 11(10%) of the respondents affirmed that their CoEs were integrated into regional knowledge hubs. On the other hand, 22(20%) of the respondents held the position that there was occasional communication between their CoEs and others.

While expecting from the team is appealing, individual participation, that which one is able to give to the pool matters. It is the sum total of individual participation that gives CoEs synergy to become the powerful knowledge hubs that they ought to be. Forty percent of those polled played primary as participants in activities and events organized by CoEs. Thirty percent admitted they work on their research alone while another 33(30%) denied being able to fit in their local university CoEs. The latter can be a confession prompted by existing conditions, mostly, from this survey, which put more emphasis on the significance of the CoE concept of knowledge generation and sharing. It is possible that the attitude of those who denied fitting in their local CoEs changes positively if there can be some effort in improving the approach to the concept actualization.

On involvement of CoEs, 65(60%) of the respondents denied having been ever involved in their local CoE activities. Thirty percent 33(30%) had 2-5 years experience of involvement and 3(10%) had 5-10 years of involvement. Those involved recorded they meet yearly and monthly on special cases. In a free participation, 55(50%) were non-committal on whether CoEs helped their respective

universities to capture and store tacit and explicit knowledge for future access. 33(30%) agreed, and 22(20%) disagreed. Similar results exhibited when they were asked if CoEs helped their universities build knowledge sharing and learning into work life. Only 33(30%) agreed that CoEs had strengthened collaboration in their local offices, departments, and units. Similar result showed when they asked if CoEs helped their universities become more adept at strategy development. Such showing is consistent with the positions the universities seem to have taken towards their local CoEs. With little input from the universities' management, the output from the teaching staff cannot be much. These are the same respondents who polled-separately-indicating, for instance, that CoEs have the capacity to strengthen collaboration across the departments and beyond.

A massive, 87(80%) of the respondents affirmed that CoEs have the capacity to identify, create, store, and use knowledge. Ninety percent agreed that CoEs can enable accelerated learning and research. Seventy percent believe that CoEs are the right platforms to connect research to action. While, 65(60%) hold that CoEs can enable organizational competence, reduce duplication and prevent reinvention of the wheel and enable professional development. Fifty percent have the view that CoEs can showcase good practices and 44(40%) hold that CoEs can permit faster problem solving response and better response times. Lastly, 33(30%) believe that CoEs can reduce the learning curve for new employees.

4.4.2 Knowledge Communities among Librarians

The librarians, just like the other categories of respondents, were purposively sampled to bring out the theme of communities of practice. As a community of practice target, librarians were relevantly selected because, quite often, they work in self organized

teams within their department. Very relevant to this survey, they are charged as custodians of knowledge. However, through this survey, much more about them came out as they gave responses to the questions which were designed to bring out the specified theme.

When asked to state their roles, the librarian stated:

> *"involved in all library services: circulation, referencing, cataloguing and classification of information material, we start with identifying information needs for our present and potential users. We have gone beyond being custodians of information".*

In other words, they were involved in dissemination and management of information resources. This description was consistently held amongst the six of them, depicting a people who had mastered what they do. Some knowledge management activities like interpretation, maintenance and utilization were conspicuously missing amongst the roles of university librarians. While stating their importance to university, one said:

> *"We ensure that information is circulated and enabling students and staff have a conducive and enabling education and research"***.**

That means they are key players in the knowledge management processes. While it is the desire of many researchers and others in the industry to easily access the information they need within the library, they may lack the necessary skills to make such available. The librarians clearly understand this key role and that is why they further stated that their duty is unique because by employing their skills in organizing knowledge, they make it easier to access and save users time. When asked who can serve in their position as a replacement, the university librarians mentioned any person trained in information science, librarians and knowledge managers. However, some observed that certain functions are only performed by senior librarians from the level of Assistant Librarians. This means there is a proficiency level of practice

needed to effect the specified tasks. If shared with the potential replacement, then they can be in a position to do.

When the librarians have a problem, they revealed, they consult the relevant personnel, or if need be, refer it to a committee, the latter which comprises of section heads and professional librarians. In case the problem is handling a situation of trial and then failure occurs, they hinted that they usually consult the one who is adept on it amongst them, by visiting him for a discussion or communicating via email or both, depending on the circumstance. Problem solving within a community of practice has to be made easy, reliable, and fast. For a case of a library as the work place, the systems have to be made efficient to allow for faster access to knowledge. In a typical survey on the other categories of respondents, one typical question was how fast it takes to access information in a kept document within their respective establishments. The modal answer remained, a week or more. This was chosen while offered options like ‘few minutes’, ‘few hours’ and ‘few days’. It simply means the library needs an internal mechanism like library management systems to resolving challenges for this benefit to be passed to users.

When the librarian respondents were asked what they do when no experienced person exists within their ranks, they responded that they may need to consult someone else in another university by writing and email or telephoning him/her or both. While this is ideal, how fast it is effected has a bearing on the overall efficiency amongst the practice community members.

One respondent noted that:

> *"an informed worker comes in handy and can share what he or she knows with fellow workers and can be of significance in preservation of knowledge for future use. This strengthens the position of knowledge sharing amongst members of a community of practice".*

When asked what to change about their workmates, the librarian respondent mentioned the following:

i. *Teaching them to seek clarification on what they do not comprehend work-wise;*
ii. *advocating for continuous short course training and workshops; and*
iii. *encouraging free communication within the knowledge community;*

All the above stated can add hue to their immediate community of practice and any other.

Responding to a question on their expectation from their immediate supervisor, 4(67%) of the respondents mentioned 'assistance' and 2(33%) put it in another way, "suggestion of an alternative way out". Both responses point to all the respondents seeking or expecting help from their immediate supervisors. And this is in line with good practice. While in practical cases, there may be some where the supervisors can be hostile to their subjects. In such a case, the subjects may expect a reprimand for 'failure to know' in case they sought assistance. This discourages the spirit of harmonious working and it works against good practices in a community of practice.

A massive 4(67%) of the librarian respondents affirmed they have personal heroes/heroines in their lives. A third denied. The aspect of heroes has to do with personal inspiration for success even in ones career or any given aspect. While it may be directly in ones own area of practice, sometimes looking unto a hero for inspiration is purely looking unto the very spirit that inspires triumph over failure other than the very area of triumph of that hero or heroine. On whether the respondents get assistance from colleagues to achieve their goals, they mentioned cooperation, team

work and knowledge sharing and picking of delegated tasks in their respective areas of practice. They also mentioned spending time with their colleagues during free time to discuss professional and national emerging issues such as social and economic; and discussing other current affairs, ideas and solutions. Such harmonious working and sharing time together, helping each other are all aspects of best practice. It is a way of easily merging formality and informality in tasks and information sharing. In fact the respondents added that they indeed share knowledge during such informal forums.

While answering a question on 'other discussant other than work-mates', the respondents talked of library and information science students and colleagues from other institutions. The issues they discuss can be concerning their work, or any other depending on the issue at hand and the nature of the discussion. According to this analysis, it is a good approach and one way to merge informality and formality when it comes to sharing of knowledge in a community of practice. Other than such informal meetings, the librarians hinted that they also meet during welfare group meetings and meetings with section heads.

Some of the community ongoing engagements include writing of papers, meetings to resolve career related issues, and sharing other forms of knowledge other than profession related. Their respective universities offer training opportunity to the community members, and incorporate them onto certain functional committees and events organizing. Most of the knowledge shared within the community include: emails, social media updates, verbal; newsletters, fliers, mass media, journals, conference papers, and workshop write ups. Beyond the community they share journals and attend exhibitions. The mentioned activities develop good relationships among the staff.

In a dynamic community, there is bound to emerge new roles or leadership opportunities. A third of the respondents denied this but two thirds were in agreement. When asked they answered that it is through much strengths with responsibility and ones level of inspiration and willingness to bring change to otherwise retrogressive practice. Such is the answer that bears the spirit of change. They quipped that such leadership in a community can be cultivated through practice, peer to peer mentorship, looking up to role models, and engaging change agents.

On technical issues affecting their operations, one stated:

> "*WIFI, internet connections and inadequate knowledge on communication gadgets are scarce. Also while venues and time can be created for certain professional meetings there are still no financial incentives commitment by the university"*

On the frequency of the Vice Chancellor (VC) gathering with staff to communicate his/her experience with outside world, the answers came as 'once per year luncheons' and 'freshers' inauguration. 'Fresher' is a street term used in universities to refer to first time students coming to join for higher education, still fresh from high school. It is during their orientation and in annual luncheons that the respondents claim that the VC meets with staff to communicate his/her experience with outside world. Otherwise he does so through memos and notices, or through verbal communication, according to them. The meetings are organized by the university management and respective committees depending on the function.

4.5 Information Communication Technology Physical Infrastructure for Enhancing Collaborations and Linkages

The second objective was to establish suitable information communication technology physical infrastructure that can be used to enhance collaborations, linkages and

partnerships amongst teaching staff in public universities in Kenya. The data for assessing the information communication technology infrastructure was collected from members of the Teaching Staff. The analysis of the results are captured in this section

The questionnaires given to members of the teaching staff brought out for investigation the themes of ICT, knowledge leakage and knowledge management. The teaching staff, compared with the academic deans and academic heads of departments, is at the bottom of the pyramid and so face day to day challenges that affect the mentioned themes. A survey across them (teaching staff) in the various universities should bring out this. Nevertheless, in the ideal Kenyan context, it is rare to find purely academic deans or academic heads of departments who do not at all teach. It is, therefore, being organized to earmark the unique categories against the specified themes, without cognizing the fact that interloping of functions exists. It is worth noting that the thematic areas on knowledge leakage and knowledge management are cross-cutting issues, surveyed under the deans and the heads of departments respectively. That should make for an interesting comparison that should bring out any similarities or variations that there may be.

The theme on information communication and technology as surveyed amongst the members of the teaching staff looked into levels of institutional communication infrastructure and facilities, levels of research programmes incorporation, and commitment of universities to support research .when asked about whether their facilities for teaching, learning and research were sufficient, 47(30%) of the respondents denied, 93(60%) said ‘Yes’ to library, laboratory and equipment, while only 16(10%) said ‘yes’ to all facilities including departmental plants, and

institutional repositories. The capacity to use these resources to enhance knowledge creation also lies in both the capacity of the individual members of staff to conduct credible research as availability of funding.

While investigating individual capacity of the teaching staff members to conduct credible research, this survey established that 78(50%) affirmed, 31(20%) remained neutral and 47(30%) denied. This is coincidentally the same response received when the heads of department were asked the same question under the thematic concern on knowledge management. On research funding, 62(40%) of the respondents said they funded themselves, 31(20%) were funded by the government, none was funded by their universities, and 47(30%) had not been funded at all. Additionally, only 16(10%) hinted having received funding through a competitive research grant. This reveals a number of issues. One, the level of research fund support –hence the activity itself-is still low. Two, there are weak links between the academic/research institutions and the universities. Also, the members of staff either hardly participate in competitive research grants processes or they have not reached levels of 'research competence' as approved by the fund givers.

4.6 Impact of Knowledge Leakage on Innovations amongst Teaching Staff

The third objective was to determine the ways in which knowledge leakage has impacted on innovations amongst teaching staff in public universities in Kenya. The study collected data from both the academic deans and members of teaching staff.

4.6.1 Knowledge Leakage across the Academic Deans

The sub-hypothesis here is that deans are positioned in middle management levels and can understand aspects of knowledge leakage and policy as pertains to knowledge sharing and knowledge management. It is premised on this that the research was

prompted to survey across the 6 universities, what the actual status is as pertains knowledge leakage through such means. The study sought to obtain the respondents' perception of the effect of a staff member switching positions within the same university or moving to other institutions on the deprivation of valuable operational knowledge and the results of analysis captured in figure 4.2.

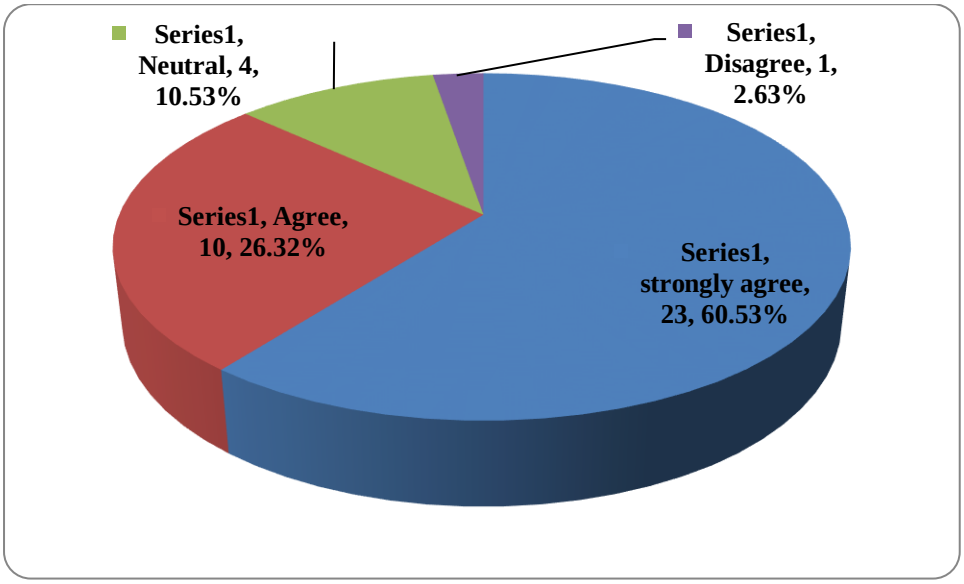

Figure 4.2: Knowledge Leakage Perception by Departing Staff Member

Source: Research Data (2017)

When asked whether leaving members of staff from their school to another school or from one department to another (within their various schools) or from their very university to another university, deprived them of valuable operational knowledge, 23(60.53 %) of all the deans strongly agreed to it as 10(26.32 %) agreed, 4(10.53%) indicated they were neutral, and the remaining 1(2.63%) disagreed to the assertion.

The study established that majority of the respondents strongly agree that departure of staff members deprived the university valuable operational knowledge. Thus, departure of a member of staff from current engagement to a different engagement,

either within the same university or outside the university deprived the university valuable operational knowledge. Such crucial operational knowledge can be leaked when members of staff retire, take a transfer to other institutions, decide to resign, are dismissed or even die.

The study further sought information on the causes of members switching positions within the university or moving to other institutions, which led to deprivation of valuable operational knowledge within the 6 universities. The results are shown in figure 4.3.

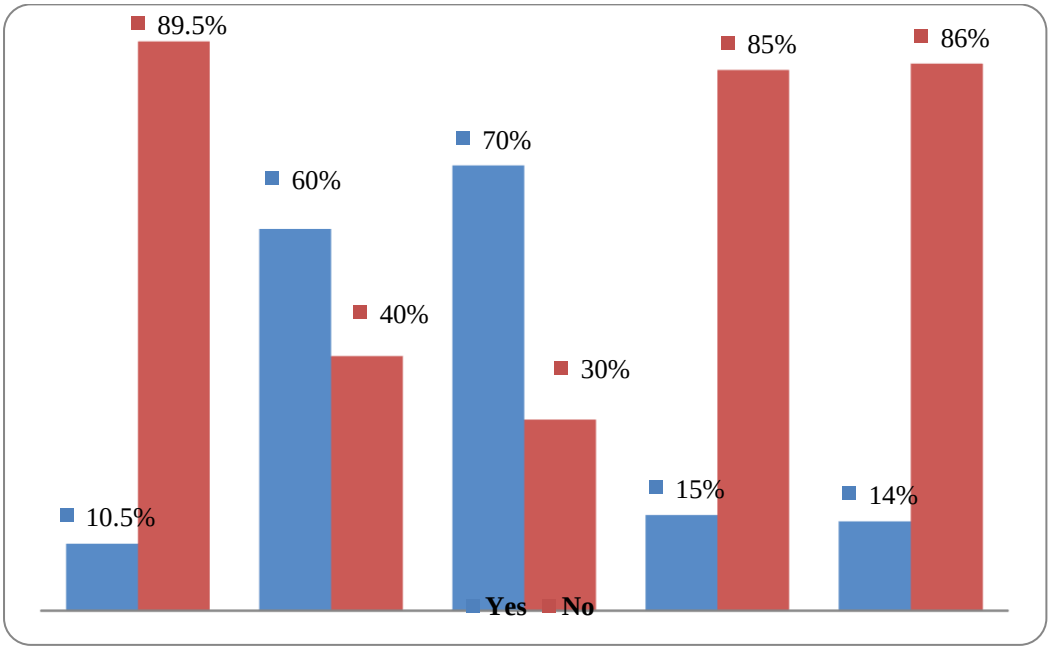

Figure 4.3: Challenges Leading to Knowledge Leakage via Staff Members

Source: Research Data (2017)

From figure 4.3, 109(70.00%) of the respondents indicated that resignation was a cause of sudden departure of lecturers leading to knowledge leakage as 46(30.00%) indicated that it was not. As 93(60%) indicated that transfer was a cause of sudden

departure of lecturers leading to knowledge leakage, 62(40.00%) showed that it was not. However, 139(89.50%) indicated that retirement was not a cause of 133(86.00%) of sudden departure of lecturers leading to knowledge leakage. As 133(86.00%) showed that death was not a cause of sudden departure of lecturers leading to knowledge leakage, 132(85.00%) also showed that dismissal was not. According to these results, resignation was the most highly ranked cause of departure followed by transfer. The others; retirement, death and dismissal were not found cause of sudden departure of lecturers leading to knowledge leakage.

The above means that generally lecturers in Kenyan Public universities have issues with existing administrations and are more likely to take a transfer to another work station-which still can be a component of resignation, than they are likely to work until retirement. Death is a natural phenomenon and unless there are epidemic cases, it is naturally expected that it occurs late in ones life. With a modal age bracket of 46-55 years amongst teaching staff in universities in Kenya, it is not much likely that death becomes a prevailing challenge amongst those leading to knowledge leakage. In most work stations, cases of dismissal border on disciplinary issues between the dismissed and the organization. Others factors leading to disharmony can set up conditions leading to dismissal.

The teaching staff respondents further gave more insight on the effect of teaching staff departure on the institution's work activities. Incomplete work leading to heavy workload amongst the remaining labor pool was the response that dominated, with at least 124(80%) of the respondents indicating so. This was especially so amongst respondents who supported the view that transfer and resignation are challenges in knowledge leakage. Others quipped that the challenge also lead to loss in certain

specialized expertise within the teaching, administrative and research ranks of the universities. The fact that some attempts to replace the departed members of staff can lead to bringing in incompetent replacements, exacerbates the case. In some cases, victims of unfair dismissal can go to court and divulge much outside the university. In the event that they win the case, the university loses in many fronts other than the immediate legal front. If it can involve other members of staff, then much work is lost because much time is spent.

Such potential challenges as mentioned above better be mitigated proactively, actively and reactively. As expected, proactive measures taken by the university can come in handy. However, 124(80%) of the respondents did not clearly state what measures their constituent departments or schools or university as a whole were taking to mitigate such expected setbacks. About 31(20%) hinted on the following:

(i) retirement and succession planning to take care of what may arise upon retirement of a dependable member of teaching staff;

(ii) Conducting exit interviews for members of teaching staff leaving to be able to loop the necessary mitigation for those still serving and if possible, try to do it for those who are leaving to see if an immediate reversal is feasible. This can help reduce cases of resignation and the number seeking transfer to other universities.

(iii) Conduct prior counseling sessions, issue warnings prior to dismissal in order to give affected teaching staff an opportunity to rectify;

(iv) In the event they do not rectify as stated in (iii) above, conduct exit interviews for them to understand the reason for dismissal. Such will instill confidence in

the remaining teaching staff because it will portray the institution's administration professional, supportive, and concerns about the success.

(v) In case of death, support the family that has lost and seek replacement (of the teaching staff)

None of the teaching staff mentioned about elaborate staffing plans based on sustainable staff: student ratios and where the schools or faculties are constantly seeking to uphold and sustain such standards. This would ensure continuity and assure the efficiency of knowledge delivery, especially if the replacements are equal to the tasks. However, ensuring proper staffing alone does not guarantee a university of the replacement of the very knowledge asset, a departing teaching staff deprives it (university) upon exit. This prompted the research design to consider the question on assessing what the universities have put in place to ensure that they retain such knowledge.

On mechanisms put in place to retain a departing member of staff's knowledge, 132(85 %) of the respondents from amongst the representative population failed to impress. Only 23(15 %) mentioned that they are:

i. encouraging documentation of knowledge and skills;

ii. arranging forums for more experienced teaching staff sharing experiences with other staff;

iii. supporting continuous training in relevant skills especially through conferences;

iv. Facilitating and organizing open lectures presided over by experienced teaching staff from various schools or faculties and

v. Establishing elaborate information storage and retrieval mechanisms;

On critical knowledge to be tapped from departing lecturers, those who contributed enlisted research skills, course content development, lecture preparation, teaching skills, exam setting, and marking skills as crucial. They also felt it imperative for those skills to be immediately passed on any new incoming teaching staff to ensure continuity. On the recommended mechanism of tapping the knowledge, those who respondent suggested that documentation of processes, lecture notes, laboratory procedures (for science based courses), information sharing forums (between experienced members and less experienced ones), be put in place. None mentioned creation of opportunities to showcase and promote innovations in various capacities.

Innovation is at the core of knowledge dynamism and creation. Most bright people find expression in bringing about new ideas and approaches to problem solving. The most important side of our higher education should be providing a platform for knowledge generation and dissemination that would lead to solving real time challenges the society goes through. However, when asked about innovations, only 33(21.5%) of the respondents agreed that they had had innovations in their respective careers. None strongly agreed, and 31(20%) was neutral. Shockingly 47(30%) strongly disagreed and a staggering 44(28.5%) opted not to respond to it.

4.6.2 Knowledge Leakage Comparison between Academic Deans and Teaching Staff

The table below (4.8) illustrates cross-cutting comparison between the teaching staff members and the deans.

Table 4.8: Percentage of Deans and Teaching Staff Response Comparison on Whether a Leaving Member of Staff Deprived Organization of Valuable Operational Knowledge

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Deans	60.50	26.30	10.50	2.60	0.00
Teaching Staff	70	10	15	5	0

Source: Research Data (2017)

From the above table, the total percentage of the deans agreeing (i.e agreeing and strongly agreeing) is 33(86.8%) of the population surveyed while that of the teaching staff sums up to 124(80%) of the surveyed population. In both cases, it shows that the majority are in agreement that members of staff who leave research organizations are likely to deprive the organization valuable information if the organization exists under similar circumstances as those surveyed. A comparison between those disagreeing and those remaining neutral does not give much difference. This is evidence that the two categories operate under similar circumstances, carry out related teaching jobs, with the uniqueness that the deans are in middle management positions.

The above is also evidence that knowledge leakage is a potential risk under certain operational conditions which need further investigation. Such crucial operational knowledge can be leaked when members of staff retire, take a transfer to other institutions, decide to resign, are dismissed or even die. It is premised on this that the research was prompted to survey across the 6 institutions, what the actual status is as pertains knowledge leakage through such means. Table 4.9 summarizes the overall results from the teaching staff members –who represented the population on knowledge leakage:

Table 4.9: Status of Challenges Leading to Knowledge Leakage through Teaching Staff Members in Percentage

Challenges	Yes	No
Retirement	20.00	80.00
Transfer	60.00	40.00
Resignation	70.30	29.70
Dismissal	20.00	80.00
Death	20.00	80.00

Source: Research Data (2017)

From the table 4.9, resignation –rated at 109(70.3%) by the surveyed population, is the leading cause of sudden departure of teaching staff leading to knowledge leakage. Transfer closely ranks at 93(60%). Retirement and death rank lowest at 31(20%) each. The above means that generally teaching staff at universities in Kenya have issues with existing administrations and are more likely to resign to another work station than they are likely to work until retirement. Death is a natural phenomenon and unless there are epidemic cases, it is naturally expected that it occurs late in ones life. With a modal age bracket of 46-55 years amongst lecturers in Kenya, it is not much likely that it becomes a prevailing challenge amongst those leading to knowledge leakage. In most work stations, cases of dismissal border on disciplinary issues between the dismissed and the organization. Others factors leading to disharmony can set up conditions leading to dismissal. Since it is a process that must have created disharmony, it scores low at 31(20%) as a cause for exit of staff.

However, 93(60%) of the teaching staff respondents did not clearly state what measures their constituent departments or schools or university as a whole were taking to mitigate such expected setbacks. A modest 62(40%) hinted on the following:

(i) General: recruitment and training;

(ii) HR planning; and appointing part-time teaching staff;

The above list compliments the points already raised by the deans on the same issue. Just like the deans, none of the members mentioned about elaborate staffing plans based on sustainable staff: student ratios and where the schools are constantly seeking to uphold and sustain such standards. This would ensure continuity and assure the efficiency of knowledge delivery, especially if the replacements are equal to the tasks. However, ensuring proper staffing alone does not guarantee an institution of the replacement of the very knowledge asset, a departing member of staff deprives an institution upon exit. This prompted the research design to consider the question on assessing what institutions have put in place to ensure that they retain such knowledge.

On mechanisms put in place to retain a departing member of staff's knowledge respondents suggested the following:

(i) mentoring other staff to be able to handle work;

(ii) keeping records of all the CATs, notes, exam results, and published papers;

The two points, again compliment what the deans had already proposed.

On critical knowledge to be tapped from departing lecturers, those who contributed enlisted preparation of e-learning material and exam setting; course outline**,** content organization and delivery. These, except preparation of e-material had already been mentioned from the deans' survey. The members of the teaching staff surveyed also suggested that new members of staff be inducted on course on preparation and class control; teaching techniques; how to handle students; and modern diagnostic

techniques for lecturers in environmental studies. On the recommended mechanism of tapping the knowledge, those who responded suggested that field experience knowledge be documented at every stage. Just like the deans, no teaching staff member surveyed mentioned creation of opportunities to showcase and promote innovations in various capacities as a way of tapping and retaining knowledge from more experienced scholars and researchers, yet innovation is at the core of knowledge dynamism and creation. Most brilliant scholars find expression in bringing about new ideas and approaches to problem solving. The most important side of our universities should be providing a platform for knowledge sharing and management that would lead to solving real time challenges the society goes through. However, when asked about innovations, only 16(10%) of the respondents agreed that they had had innovations in their respective careers. 16(10%) strongly agreed, and 10 % remained neutral. 31(20%) disagreed, and another 21(20%) strongly disagreed while 47(30%) opted not to respond to it.

4.7 Knowledge Management for Promoting Learning, Research and Innovations

The study assessed objective four; establish best practices for knowledge sharing and management in public universities that can be used to promote learning, research and innovations amongst teaching staff where data was collected from both Heads of Departments and members of teaching staff.

4.7.1 Knowledge Management among Heads of Departments

The survey on knowledge management looked into the universities capacity to store and avail knowledge memoirs, the respondents' personal involvement in knowledge management and the respondents' self-paced delivery. When asked if the university's knowledge memoirs are available and accessible at the repository, 44(40%) of the

respondents either agreed or strongly agreed. From the results, 44(40%) of them either disagreed or strongly disagreed and 22(20%) of them remained neutral. The position of indecision on such a question can mean lack of awareness. If the memoirs are available uniformly, then it is possible that some of those who disagreed may also not be aware of their availability. There is also a possibility that a fraction of those who disagreed come from the upcoming new universities that are still setting up such facilities.

On visibility of research findings, 87(80%) of the respondents agreed with 22(20%) strongly agreeing) that their various publications could be found at their university websites. The implication is that the universities have already created such a platform, where their scholars can post their publications. Only 22(20%) disagreed with 11(10%) strongly disagreeing. It also implies that the members of teaching staff are keen to advance their careers through publications. This aspect of them is positive especially as far as knowledge creation and dissemination is concerned.

On personal involvement, 44(40%) admitted they were working on their research alone, 44(40%) denied and 22(20%) were non-committal. However, 55(50%) admitted that they had the necessary technological knowledge to carry out their research, 22(20%) preferring to remain neutral, and 33(30%) denying. When asked if they communicate their findings during conferences, 76(70%) agreed with 33(30%) strongly agreeing and 33(30%) remained neutral. None disagreed. This implies a willingness to share knowledge, a factor which can be exploited in reforming knowledge management within universities. Similar results as above showed when the respondents were asked about membership to professional bodies. When asked if their researches were exam oriented, 55(50%) denied with 33(30%) remaining

neutral. Only 11(10%) agreed. This means a majority of the respondents appreciate research as not just a requirement for examination, but for generation of new knowledge and innovations. Eighty seven (80%) of the respondents acknowledged having the technological knowledge required to carry out their research. Despite this position, a strong 65(60%) acknowledged making attempts to collaborate with other researchers working on similar programmes. This is not ironical. It is the humble admission that such collaboration produces a necessary synergy that enables one achieve more than he or she could have achieved while working alone. By observation, the question on collaboration in research attempted to check that on whether the researcher works alone or not, hitherto. The consistency comes out clearly if we assume the 22(20%) non-committal in the earlier case might have denied working alone, making the total to an exact 65(60%), given that 44(40%) had already denied. By extension, it is logical to assume that those who denied working alone are the same ones admitting collaborating with other researchers working on the same programmes. It is worth noting that the majority of those who admitted on research collaborations indicated international organizations –especially via internet as their immediate collaborators. This means that the local research collaboration capacity is not established. When asked about the tools available for knowledge capturing, 33(30%) of the respondents mentioned internet, library, journals, ACTS, regulations, as resource material.

Generally the respondents held the view that knowledge management is something that the universities were making an attempt to practice. They only needed it to be done better. They also generally thought that it was a strategic part of the university business, with over 76(70%) approval to this. Over 55(50%) of them thought that knowledge management was something that could be beneficial for the organization.

Responding on the current status of knowledge management in their universities, 87(80%) of the respondents polled that it was at its growth stage. A paltry 11(10%) polled that knowledge management was at nascent and introductory stages in their respective universities. Both views could be true, given that some of the universities are fairly new. Despite this, some respondents from the first to be established public universities in Kenya felt that they should have surpassed the growth stage.

Despite the relative weak show of the stages of knowledge management development in local universities in Kenya, majority 65(60%) of the respondents were of the view that their universities recognize knowledge as a part of their asset base. Only 44(40%) of them were neutral. This asset, it was assessed, faces various challenges. Over 104(95%) of the respondents pointed out the 'loss of crucial knowledge due to a key employee leaving the university and 'poor sharing of knowledge in the organization' as the main problems or challenges facing knowledge retention. This brings a cross-cutting issue that needs to be discussed in a comparative analysis since a survey with the deans had a related finding. Other polled problems related to knowledge retention include: lack of information 87(80%), information overload 76(70%), and reinventing the wheel 44(40%).

Information retrieval is key to knowledge management. The amount of time it takes to get needed information should be as minimal as possible, just like in a comment made from a section of the respondents. While majority 76(70%) of them stated that it can take at least a week to get a crucial document in the organization, only 33(30%) indicated a few hours, and 11(10%) a few minutes. While it depends on the type of document one is looking for, it should be the goal of any university knowledge management system to make information retrieval as easy and as fast as possible.

A whooping 99(90%) of the respondents held that knowledge creation is part of their performance contract. They however, failed to specify whether or not their delivery on knowledge creation is supported, or monitored by their respective universities. As part of their performance contract, there is need for support to enable them achieve it as the need to monitor their delivery on the same. 87(80%) felt that their university can support knowledge creation and it is part of their top management activity. However, they failed to clarify why the discrepancies come about in the coordination of the entire knowledge management practice. In fact this position is strengthened in a parallel question, when 65(60%) of the respondents poll that the top management sees knowledge management as very important but hardly supports it. That means the willingness to support and failing to actually support are two different things. It may be a matter of realigning priorities, since this is a management issue. To actualize such a project, it takes investment in space and time and it has to be very convincing that it will yield dividends when it comes to budgetary prioritization. This calls for a fresh approach to showcasing the relevance of knowledge management. This opens up an opportunity for fresh ideas on knowledge management to be infused for more support with the universities.

Underlying issues need be ironed out for clarity on strategy on knowledge management. According to results, 76(70%) of the respondents singled out lack of participation and lack of reward/recognition for knowledge sharing as the biggest barrier in their organizations. These strengthen earlier similar positions on lack of motivation. However, though participation can be an individual choice, a policy framework that encourages, rewards and inspires participation is all that is needed to put knowledge sharing on track. Technology related challenges can be identified and sorted out. Challenges such lack of training, complicated IT systems, can be

addressed through short on-purpose refresher training to enable members use the skills in knowledge creation, search and sharing.

Figure (4.4) shows the perception of the respondents on the satisfaction levels on the strategy their respective universities employ for knowledge management:

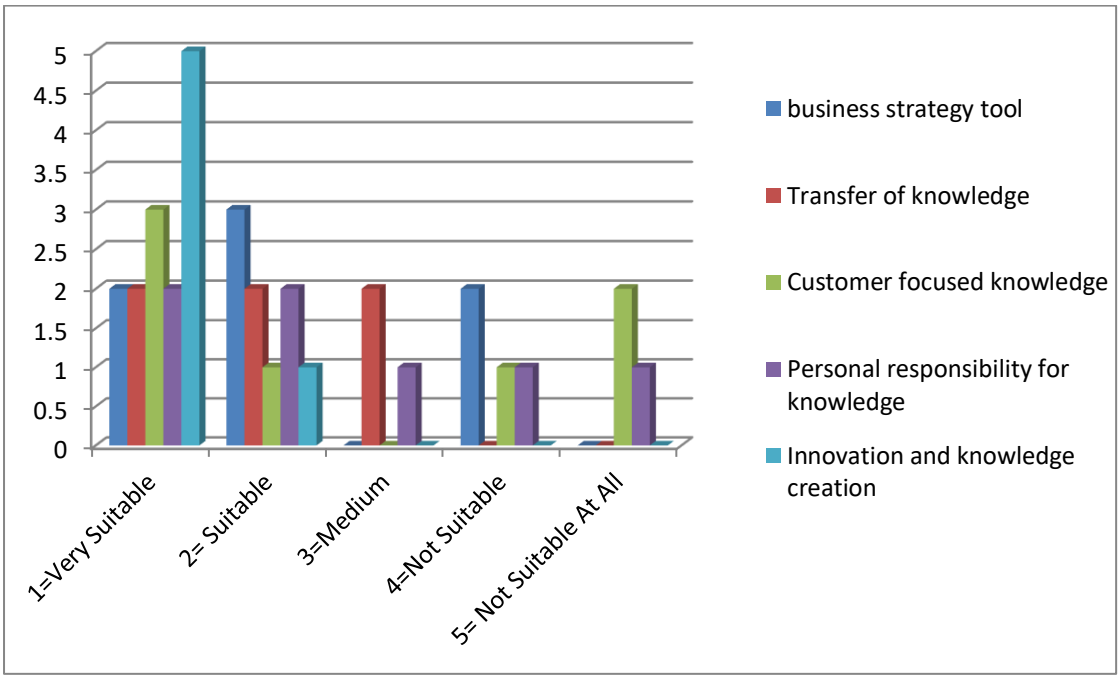

Figure 4.4: Perception on Satisfaction Level of the Strategy of the Organization on Knowledge Management among Heads of Departments

Source: Research data (2017)

From the above figure (4.4), the perception that KM as a tool for innovation and knowledge creation stands tall, leading the perk at the 'Very Suitable' perception index. On the other hand, the perception that KM can be used for customer focused knowledge has mixed reactions with some respondents putting it at 'very suitable', others 'suitable' and others 'not at all suitable'. This variation can be explained in the variations of the sample population, where KM has been practiced in the various

universities uniquely. Sometimes it happens that different organizations have different strategic approaches to similar issues.

4.7.2 Knowledge Management among Teaching Staff

The survey on knowledge management looked into the universities' capacity to store and avail knowledge memoirs, the respondents' personal involvement in knowledge management and the respondents' self-paced delivery. When asked if the university's knowledge memoirs are available and accessible at the repository, 93(60%) of the respondents either agreed or strongly agreed. From the results, 47(30%) of them strongly disagreed and 16(10%) of them remained neutral. If the memoirs are available uniformly, then it is possible that some of those who disagreed may not be aware of their availability. The fact that 93(60%) of the representative sample polled in agreement means that most of the universities must have set up the facilities and the members of their teaching staff are aware of it.

About 89 (90%) of the respondents agreed with 31(20%) strongly agreeing that their various publications could be found at their university websites. The implication is that the universities have already created such a platform, where their scholars can post their publications. Only 31(20%) of those polled disagreed. This implies members of staff who are keen to advance their careers through publications. This aspect is positive especially as far as knowledge creation and dissemination is concerned.

On personal involvement, 109(70%) admitted they were working on their research alone, and 31(30%) denied. When asked if they communicate their findings during conferences, 109(95%) agreed with 31(30%) strongly agreeing and 8(5%) remained neutral. None disagreed. Just like with their heads of departments, it implies a

willingness to share knowledge, a factor which can be exploited in reforming local knowledge management hubs. Similar results as above showed when the respondents were asked about membership to professional bodies. When asked if their researches were exam oriented, 93(60%) denied and 62(40%) agreed. Just like their colleagues who are heads of departments, it means the majority of the respondents appreciate research as not just a requirement for examination, but for career advancement. Nevertheless, the strong showing of 62(40%) of their research for exams means, unlike their colleagues who are heads of departments, more of them than heads of departments are still pursuing higher education. One of the observations made in the demographic data of this survey was on education and experience as determinants to whether one gets promoted in a management position or not. Hence or otherwise, by percentage, there were more PhD holders amongst the heads of departments than there were amongst the members of the teaching staff. It is therefore logical to deduce that part of the 62(40%) of the teaching staff members who are still doing exam oriented research are doing so because of such academic pursuits. Despite this, the capacity of the teaching staff to generate knowledge through research is strengthened by the fact that a good fraction of them admit working on non-exam research.

Sixty percent of the teaching staff population acknowledged having the technical capacity to carry out their research. These results show that 31(20%) remained neutral and a further 20% disagreed. The fraction of the teaching staff population 93(60%) is lower than that of the heads of department, 124(80%) who acknowledged having the technological knowledge required to carry out their research. This can be justified since it is expected that a bigger fraction of the heads of department should be more experienced than that of the entire teaching staff fraternity.

Thirty percent of the teaching staff stated that they work with other researchers. This is consistent with the earlier survey question that revealed that 109(70%) of the teaching staff fraternity work alone on their research. 47(30%) is a lower percentage compared to the 93(60%) of the heads of department who collaborate with other researchers. The difference can be explained in terms of experience in creating a working network. It is because of that a framework for knowledge sharing and mentorship need be established. If senior members of the fraternity have learned the benefits of knowledge sharing across a wider spectrum then such a 'habit' can be passed down through a knowledge sharing platform.

The evidence of research is in the results and publication of the findings, with 124(80%) of the respondents from the teaching fraternity said they have published in peer reviewed journals. Compared with their relatively higher ratio of 140(90%) of them that said had published material on their respective university websites, it shows that more of them published on their own website than they do in other peer reviewed journals. This creates more room for improvement despite the fact that majority of them have taken the right steps in doing the publications. To enhance participation in knowledge generation via research, it is important for the universities to appreciate the researchers in their initiatives. When asked if the universities appreciate them, 62(40%) of the respondents affirmed, and 47(30%) disagreed. The results show that 47(30%) remained neutral. This is coincidentally the same results for the survey on the heads of departments. Those who agreed stated that it is a condition for their promotion, implying it is at a policy level. Others mentioned provision of research grants and being included on certain committees as ways through which they are appreciated. If such is enhanced then that, coupled with other factors, can make a contribution to research development in particular and knowledge generation, as a

whole. In doing this, the researchers need an enabling environment the necessary infrastructure. When asked about the tools available for knowledge capturing, 16(10%) respondents mentioned workshops, seminars, conferences and research publications as proactive means of knowledge tapping.

Among the teaching fraternity, a majority 109(70%) of the respondents held the view that knowledge management is something that the universities were practicing. They only needed it to be done better. They also generally thought that it was a strategic part of the university business, with over 78(50%) approval to this. Unlike their heads of department who polled over 78(50%), only 31(20%) of the teaching staff respondents thought that knowledge management was something that could be beneficial for the organization. This could be just an attitude given their present circumstances. It may or may not change soon depending on how the various universities work out their near future plans on knowledge management.

Responding on the current status of knowledge management in their universities, 93(60%) of the teaching staff respondents polled that it was at its growth stage while 62(40%) each polled that knowledge management was at nascent stage in their respective universities. Both views could be true, given that some of the universities are fairly new. Despite this, some respondents from the first to be established public universities in Kenya felt that they should have surpassed the growth stage. Despite the relative weak show of the stages of knowledge management development in local universities in Kenya, majority 93(60%) of the respondents were of the view that their universities recognize knowledge as a part of their asset base, 63(40%) of them were neutral. This asset, it was assessed, faces various challenges.

Table 4.10 summarizes the comparison between ratios posted by the heads of department and those by the teaching staff on the challenges of knowledge retention:

Table 4.10: Percentage of Response on Problems Related to Knowledge Retention by Heads of Department and Teaching Staff

Problems	**Head of department**	**Teaching Staff**	**Overall**
Lack of information	80	70	74.62
Information overload	70	80	76.14
Reinventing the wheel	40	60	51.89
Knowledge loss when staff exit	95	60	74.62
Poor sharing of knowledge	95	60	74.62

Source: Research Data (2017)

The results show that 124(80%) of the respondents from the teaching staff indicated that knowledge retention is suffering the setback of 'information overload'. This is in comparison with the 76(70%) of the respondents from amongst the heads of department. Other comparisons are as shown in table 4.8. The differences may be as a result of varied roles in teaching and management. It is the same difference that brought about variations in the ratios on published works in peer reviewed journals. Also, generational gaps may bring about differences in opinion.

Seventy percent of the teaching staff respondents held that the university's perception is that knowledge creation is each and everyone's job, compared to 109(90%) of the respondents from among the heads of departments who held that knowledge creation is part of their performance contract is the notion of their respective universities. The two were the views held by the majority from the respective surveyed populations. If

knowledge creation is everyone's job, then to fill the gap left by, for instance more experienced members of teaching staff should be filled by anybody. Yet in reality that cannot be the case. A long serving teaching staff who has climbed through the ranks to re-known researcher, on his exit, cannot be replaced by a less experienced teaching staff. Similarly, if it is part of the employee's contract, then the management has the duty to support the employees deliver on the mandate just as it has the duty to monitor such delivery. This calls for a fresh approach to showcasing the relevance of knowledge management. This opens up an opportunity for fresh ideas on knowledge management to be infused for more support with the universities.

Overall amongst teaching staff and HoDs, effective knowledge management plays a significant role in achieving best results. According to this survey, 211(80%) respondents believe that effective knowledge management can bring about improved competitive advantage; help improve research and development; enhance innovations; bring about employee development; and better decision making. At least 158(60%) of the surveyed representative populations believe it can bring about improved quality, delivery, and cut down on overall operational costs in an educational, research and development organization, like a university. Despite all this great promise, there are a number of hurdles already identified. Top on the list, is what over 198(75%) of the respondents' term as 'lack of top management commitment to KM'. This position does not conflict with the noting that the respondents equally believe top management can act on this. It only strengthens the argument that beyond the capacity to act, and the willingness to do so, there must be commitment. On the other hand, top management may argue in terms of constrained resources and the simple answer lies in analysis of the cost and benefits accrued. This is the position of realigning priorities.

4.8 Policies that are in Place to Manage Knowledge

The study sought to find out the kind of policies that are in place to manage knowledge in public universities in Kenya so as to assess the fifth objective. The data was collected from the academic deans. The question on the existence of a knowledge sharing policy in the respective universities proved that the majority of them (universities) lacked. Only 8(20%) of the respondents answered in the affirmative that their universities had a knowledge sharing policy. Despite their denial of the existence of such a policy, the majority affirmed that it was important to be put in place.

An explorative survey on procedures, policies, manuals and functions being used for various functions across the universities revealed a number of them were indeed being used. Some of the procedures mentioned included quality standards related procedures, disciplinary procedures, course allocation, outline development and teaching procedures, calibration of science equipment procedures, and performance assessment procedures.

On existing policies, the respondents revealed that there are policies on exam setting and marking, grading, human resources training and development, Human Immune-deficiency/Acquired Immune Deficiency Syndrome (HIV/AIDS), gender mainstreaming, public complaints, ethical and anti-corruption policies. On manuals, the respondents mentioned quality manuals, student handbooks, course outlines (as manuals), laboratory practical (as manuals), and manuals for reporting on academic field trips. Some of the processes in place in some universities in Kenya as mentioned in the interviews include curriculum development, teaching and examination processes, exam setting, administration, credit transfer and approval, and processes for issuing transcripts.

4.9 Knowledge Sharing Strategies

Objective six was to propose knowledge sharing strategies that are integrative of inputs and outputs in public universities in Kenya. The study requested respondents to suggest strategies to drive knowledge sharing which were captured here under.

For academic heads of departments (HoDs), in order to entrench the benefits, existing and upcoming communities of practice (CoEs) need to be made better, especially at identifying, creating, storing, sharing, and using knowledge. The respondents, too, supported this view. Ninety percent supported the view that CoEs, organize conferences, meetings, and workshops. While 87(80%) supported the view that CoEs should strive to offer professional development opportunities (outside their universities). A big proportion, 66(60%) proposed that CoEs need to sponsor more brief seminars for members and potential members; systematically review work with peers before, during, and after; and link more to other CoEs to encourage collaboration. While 55(50%) supported the position that CoEs use information, communication, and technology more actively and innovatively, at least 33(30%) of the respondents held the view that CoEs should customize learning and development programs at headquarters and in the field.

It is important that the experienced, and/or innovative members of teaching staff be given a chance to share out such knowledge so that in the event of their exit, the system is not hit in terms of the loss of knowledge. Knowledge leakage is a reality as observed in this survey and it can be averted through meticulous planning to put in place solutions responsive of the loopholes through which it is expressed. Ensuring staff retention and continuity, a question that borders on human resources policy of an institution is important but most important is the enabling of the sharing platforms.

Both these interventions call for substantive policy framework. It is based on this that the research surveyed the status of relevant institutional policy enactment viz a viz knowledge sharing and management. Knowledge leakage is a reality as evidenced in this survey and it can be averted through meticulous planning to put in place solutions responsive of the loopholes through which it is expressed. This brings us to knowledge management; the holding ideology that should encompass what ought to be done to avert knowledge leakage.

The respondents, therefore contributed that staff retention strategy needs to address issues like adherence to employment policy; timely payment; review of promotion on merit regularly; facilitation to attend learning conferences; exit interviews to get cases of issues; guidance and counseling; and salary and allowance improvement. On knowledge retention, they quipped that improved process documentation, and record keeping; facilitation of lecturers to publish their works; good preservation of thesis at the university would help tap knowledge for future use. They affirmed that the existing policy framework is important but needs to be updated to reflect the needed changes as they suggested.

The seemingly mixing up of whether a piece is a manual, procedure or a process is insignificant. The overriding issue is that they all constitute efforts towards policy enactment. When proper policy structures are put in place, as far as knowledge sharing and management is concerned, it will ensure that there is a flow and a system of knowledge transfer from more experienced members of the academic societies that are in universities, unto those in need of such knowledge. That is the essence of sharing of knowledge internally.

Nevertheless, the failure to purposely institutionalize knowledge sharing policies by the universities can bring lead to setbacks especially, when challenges due to resignation, death, dismissal, and transfer of members of staff occur. The policies, procedures, manuals and processes put in place need be organized alongside available hierarchical structures, to ensure documentation, and even encourage the creation of forums for knowledge sharing. Facilitating knowledge sharing can, therefore yield dividends in knowledge management. That is why, the strategy a university chooses to execute such policy framework is important.

4.10 Inferential Analysis

The study sought to establish the level of association between the independent variables and related dependent variable (Figure 2.2) indicators. Chi Square was used to address whether any relationship in the sample population was strong enough for the study to justify making inferences about the larger population from which the sample had been drawn (Newmark, 1975).

The study first obtained contingency table for each association to explain the relationship and then produced chi-square results. The Chi-Square ($\chi 2$) is given by:

$\chi 2$ = S (Observed Frequency - Expected Frequency)^2 / Expected Frequency (Kingoriah, 2004).

The importantly considered interpretation of Chi-Square ($\chi 2$) output is the significance probability, which should be *less than 0.05* for the association to be translated as being significant (Garth, 2008). That is the study used the 5% (0.05) level of significance (95% confidence level).

Before interpreting Chi-Square it is important to look at the "Minimum Expected counts". Chi-Square test requires that the value for the expected count should not fall below 5 in more than 25% of the cells, to justify in carrying on with the interpretation of the Chi-Square statistics.

4.10.1 Chi-Square for Knowledge Communities and Enhancement of Social Capital amongst Teaching Staff

The study first obtained contingency table for Enhancement of Social Capital amongst teaching staff by Knowledge Communities which was shown in Table 4.11

Table 4.11: Enhancement of Social Capital by Knowledge Communities

			Enhance Social Capital amongst teaching staff					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Knowledge Communities	Strongly Disagree	Count	1	0	5	6	3	15
		% within Knowledge Communities	6.70	0.00	33.30	40.00	20.00	100.00
	Disagree	Count	8	5	9	6	9	37
		% within Knowledge Communities	21.60	13.50	24.30	16.20	24.30	100.00
	Neutral	Count	1	0	4	14	17	36
		% within Knowledge Communities	2.80	0.00	11.10	38.90	47.20	100.00
	Agree	Count	1	1	5	0	6	13
		% within Knowledge Communities	7.70	7.70	38.50	0.00	46.20	100.00
	Strongly Agree	Count	0	0	2	2	4	8
		% within Knowledge Communities	0.00	0.00	25.00	25.00	50.00	100.00

Most of those who indicated that there were no knowledge communities 6(40%) at all showed that knowledge communities would enhance social capital amongst teaching staff. As most of those who said that there were no knowledge communities 9(24.30%) showed that they were not sure whether knowledge communities enhanced social capital amongst teaching staff or not while another 9(24.30%) showed that it highly enhanced social capital amongst teaching staff. Most of those who were not sure whether there were knowledge communities or not 17(47.20%) showed that knowledge communities very highly enhanced social capital amongst teaching staff. As most of those who showed that there were knowledge communities 6(46.20%) showed that knowledge communities enhanced social capital amongst teaching staff a majority of 4(50%) of those who had indicated that there were very strong knowledge communities showed that it highly enhanced social capital amongst teaching staff.

The results show that those who indicated that there were no knowledge communities indicated that it would enhance social capital amongst teaching staff, those who strongly agreed that there were knowledge communities indicated that it significantly would enhance social capital amongst teaching staff. The trend of those who believed that knowledge communities would enhance social capital amongst teaching staff rose from high to highest as the trend on existence of knowledge communities also rose from strongly disagree to strongly agree.

Chi-Square tests were then carried to establish the associations between the knowledge communities available and their enhancement of social capital amongst teaching staff in Kenyan public universities. The results are captured in table 4.12.

Table 4.12: Chi-Square Tests on Knowledge Communities and Enhancement of Social Capital

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.657[a]	16	0.008
Likelihood Ratio	38.429	16	0.001
Linear-by-Linear Association	5.187	1	0.023
N of Valid Cases	109		

a. 18 cells (72.0%) have expected count less than 5. The minimum expected count is .44.

Source: Research data (2017)

The case of the association between knowledge communities available and their enhancement of social capital amongst teaching staff, the expected count was 18 cells (72.0%), which is above 5(25%),

The Chi-Square value obtained for the association Knowledge communities and enhancement of social capital was 32.657 with 16 degrees of freedom (df) and a significance probability of 0.008, which was less than 0.05. That is $\chi 2(16) = 32.657$, p=.008 (P-value <.05), which showed a very highly significant association. Based on these results, there is enough evidence that there is an association between Knowledge communities and enhancement of social capital in the public universities of Kenya. The study concludes that there is a very high significant association between knowledge communities and enhancement of social capital in the public universities of Kenya.

Those public universities of Kenya which have well established and effectively running knowledge communities would highly enhance social capital. The size effect is moderate at 0.547, based on Phi test ($\phi = 0.547$), as shown in table 4.13.

Table 4.13: Symmetric Measures on Knowledge Communities and Enhancement of Social Capital

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	0.547			0.008
	Cramer's V	0.274			0.008
Interval by Interval	Pearson's R	0.219	0.08	2.323	0.022[c]
Ordinal by Ordinal	Spearman Correlation	0.251	0.089	2.683	0.008[c]
N of Valid Cases		109			

Source: Research data (2017)

4.10.2 Chi-Square for Information Communication Technology Infrastructure and Enhancement of Collaborations, Linkages and Partnerships amongst Teaching Staff

The study obtained the contingency for the association between the Information communication technology infrastructure and enhancement of collaborations, linkages and partnerships amongst teaching staff. The results obtained were captured in Table 4.14.

Table 4.14: Enhancing Collaborations, Linkages and Partnerships using ICT

			Enhanced collaborations, linkages and partnerships amongst teaching staff					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Information Communication Technology infrastructure	Strongly Disagree	Count	4	11	2	0	0	17
		% within ICT	23.50	64.70	11.80	0.00	0.00	100.00
	Disagree	Count	5	13	4	4	1	27
		% within ICT	18.50	48.10	14.80	14.80	3.70	100.00
	Neutral	Count	0	17	12	4	0	33
		% within ICT	0.00	51.50	36.40	12.10	0.00	100.00
	Agree	Count	0	0	7	8	3	18
		% within ICT	0.00	0.00	38.90	44.40	16.70	100.00
	Strongly Agree	Count	0	0	2	6	5	13
		% within	0.00	0.00	15.40	46.20	38.50	108.00

The results in table 4.14 show that majority 11(64.70%) of those who showed that there was no Information communication technology infrastructure at all showed that ICT infrastructure did not enhance collaborations, linkages and partnerships amongst teaching staff. Most of those who showed that there was no ICT infrastructure 13(48.10%) indicated that ICT infrastructure did not enhance collaborations, linkages and partnerships amongst teaching staff. A majority of 17(51.50%) of those who

indicated that they were not sure whether there was ICT infrastructure or not showed that ICT infrastructure did not enhance collaborations, linkages and partnerships amongst teaching staff. As most of those who showed that there was ICT infrastructure 8(44.40%) showed that ICT infrastructure enhance collaborations, linkages and partnerships amongst teaching staff, 6(46.20%) of those who strongly showed that there was ICT infrastructure indicated that ICT infrastructure enhanced collaborations, linkages and partnerships amongst teaching staff

From these results, it can be observed that those who had indicated that there was no ICT infrastructure showed that ICT infrastructure did not enhance collaborations, linkages and partnerships amongst teaching staff. However, those who indicated that there was ICT infrastructure showed that ICT infrastructure enhanced collaborations, linkages and partnerships amongst teaching staff.

The study carried out chi-square tests to assess the existence and nature of association between information communication technology infrastructure and its capacity to enhance collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya. The chi-square results are captured in table 4.15.

Table 4.15: Chi-Square Results on ICT and collaborations, linkages and partnerships

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	71.456[a]	16	0
Likelihood Ratio	84.042	16	0
Linear-by-Linear Association	48.094	1	0
N of Valid Cases	108		

a. 17 cells (68.0%) have expected count less than 5. The minimum expected count is 1.08.

The results in table 4.15 show that the Chi-Square value obtained for the association between information communication technology infrastructure and collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya was 71.456 with 16 degrees of freedom (df) and the p-value was 0.000, which was less than 0.05. That is $\chi 2(16) = 71.456$, p=.000 (P-value <.05), which showed a very highly significant association. Based on these results, there is enough evidence to conclude that there is a very high significant association between information communication technology infrastructure and collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya.

The symmetric measure results are shown in table 4.16.

Table 4.16: Symmetric Measures for ICT and Collaborations, Linkages and Partnerships

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	0.813			0
	Cramer's V	0.407			0
Interval by Interval	Pearson's R	0.67	0.052	9.303	0.000[c]
Ordinal by Ordinal	Spearman Correlation	0.667	0.056	9.216	0.000[c]
N of Valid Cases = 108					

The results in table 4.16 show that there is a very high size effect of 0.813 (based on Phi test, $\phi = 0.813$). Based on these results, the study concludes that an effective information communication technology infrastructure has very high capacity to enhance collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya. Thus reliable information communication technology infrastructure in the public universities of Kenya would significantly enhance collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya.

4.10.3 Chi-Square for Knowledge Leakage and Impact on Innovations

The study obtained the contingency for the impact of Knowledge leakage on innovations amongst teaching staff and the results captured in Table 4.17.

Table 4.17: Knowledge Leakage and Impact on Innovations Cross Tabulation

			Impacted on innovations			Total
			Strongly Disagree	Neutral	Agree	
Knowledge Leakage	Disagree	Count	0	0	1	1
		% within Knowledge Leakage	0.00	0.00	100.00	100.00
	Neutral	Count	0	0	4	4
		% within Knowledge Leakage	0.00	0.00	100.00	100.00
	Agree	Count	1	4	2	7
		% within Knowledge Leakage	14.30	57.10	28.60	100.00
	Strongly Agree	Count	11	3	1	15
		% within Knowledge Leakage	73.30	20.00	6.70	100.00

The results in table 4.17 show all those who indicated that there was no knowledge leakage 1(100%) indicated that knowledge leakage impacted on innovations amongst teaching staff. The results show that all those who showed that they were not sure on whether there was knowledge leakage 4(100%) indicated that knowledge leakage had an impact on innovations amongst teaching staff. A majority of those who indicated that there was knowledge leakage 4(57.10%) indicated that knowledge leakage did not impact on innovations amongst teaching staff. Majority of those who indicated that there was knowledge leakage 11(73.30%) indicated that knowledge leakage did not impact on innovations amongst teaching staff.

Chi-Square tests were carried to establish relationship between knowledge leakage and its impact on innovations amongst teaching staff in public universities. The Chi-Square tests results are shown in table 4.18

Table 4.18:Chi-Square Tests Knowledge Leakage and Impact on Innovations

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.631[a]	6	0.001
Likelihood Ratio	22.548	6	0.001
Linear-by-Linear Association	13.119	1	0
N of Valid Cases	27		

a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is .26.

The Chi-Square value obtained in Table 4.18 show that the association between knowledge leakage and impact on innovations was 21.631 with 6 degrees of freedom (df) and a significance probability of 0.001, which was less than 0.05. That is $\chi 2(6) = 21.631$, p=.001 which less than 0.05. These results show a high significant association between knowledge leakage and impact on innovations. Based on these result, there is enough evidence that there is an association between knowledge leakage and impact on innovations in the public universities of Kenya. The study concludes that there is a very high significant association between knowledge leakage and impact on innovations in the public universities of Kenya.

The results on the symmetric measures are shown in table 4.19

Table 4.19: Symmetric Measures for Knowledge Leakage and Impact on Innovations

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	0.895			0.001
	Cramer's V	0.633			0.001
Interval by Interval	Pearson's R	0.71	0.093	-5.046	0.000[c]
Ordinal by Ordinal	Spearman Correlation	0.744	0.109	-5.563	0.000[c]
N of Valid Cases		27			

The symmetric measures results in table 4.19 indicate that the size effect based on phi test was very high at 0.895 ($\phi = 0.895$). Thus, according to these results, mitigation of knowledge leakage within the public universities of Kenya would significantly impact on the innovations positively.

4.10.4 Chi-Square for Best Knowledge Management Practices and Promoting Learning, Research and Innovations amongst Teaching Staff

Before testing for the association between best knowledge management practices and promoting learning, research and innovations amongst teaching staff, the study first obtained the contingency shown in table 4.20.

Table 4.20: Effect of Best Knowledge Management (KM) Practices on Promoting Learning, Research and Innovations in Public Universities

			Promote learning, research and innovations amongst teaching and non-teaching					Total
			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Best KM Practices	Strongly Disagree	Count	5	5	6	2	0	18
		% within Practices	27.80	27.80	33.30	11.10	0.00	100.00
	Disagree	Count	1	16	14	3	1	35
		% within KM Practices	2.90	45.70	40.00	8.60	2.90	100.00
	Neutral	Count	1	6	11	7	0	25
		% within KM Practices	4.00	24.00	44.00	28.00	0.00	100.00
	Agree	Count	1	4	6	6	6	23
		% within KM Practices	4.30	17.40	26.10	26.10	26.10	100
	Strongly Agree	Count	0	1	3	2	2	8
		% within Practices	0.00	12.50	37.50	25.00	25.00	100.00

Most of those who showed that there were no best knowledge management practices at all 6(33.30%) indicated that best knowledge management practices sometimes promoted learning, research and innovations amongst teaching staff. The results show that most of those who showed that there were no best knowledge management practices at all 14(40.00%) indicated that best knowledge management practices sometimes promoted learning, research and innovations amongst teaching and non-teaching. Most of those who showed that there were moderate best knowledge management practices at all 11(44.00%) indicated that best knowledge management practices sometimes promoted learning, research and innovations amongst teaching staff. As 6(26.10%) of those who showed that there were best knowledge management practices showed that best knowledge management practices sometimes promoted learning, research and innovations, another 6(26.10%) showed that it highly promoted learning, research and innovations and another 6(26.10%) indicated that it very highly promoted learning, research and innovations amongst teaching staff. Most of those who strongly showed that there were best knowledge management practices showed that knowledge management practices promoted learning, research and innovation amongst teaching staff. These results show that for all cases, the knowledge management practices moderately promoted learning, research and innovations amongst teaching staff.

The study further carried chi-tests to establish the relationship between best practices used in knowledge management in public universities and their ability to promote learning, research and innovations amongst teaching staff.

The chi-test results are captured in table 4.21

Table 4.21: Chi-Square Tests Knowledge Management Practices and Learning Research and Innovation in Public Universities

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.934[a]	16	0.001
Likelihood Ratio	36.669	16	0.002
Linear-by-Linear Association	20.037	1	0
N of Valid Cases	109		

a. 16 cells (64.0%) have expected count less than 5. The minimum expected count is .59.

The results in table 4.21 show that the Chi-Square value for the association between best practices used in knowledge management in public universities and ability to promote learning, research and innovations amongst teaching staff was 39.934 with 16 degrees of freedom (df) and the p-value was 0.001, which was less than 0.05. That is $\chi 2(16) = 71.456$, p-value = .000 (P-value <.05), implying that there was a very highly significant association. There is therefore enough evidence to conclude that there is a very significant association between best practices used in knowledge management in public universities and ability to promote learning, research and innovations amongst teaching staff in public universities in Kenya.

The symmetric measure results are shown in table 4.22.

Table 4.22: Symmetric Measures for Knowledge Management Practices and Learning, Research and Innovation in Public Universities

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	0.605			0.001
	Cramer's V	0.303			0.001
Interval by Interval	Pearson's R	0.431	0.083	4.937	0.000[c]
Ordinal by Ordinal	Spearman Correlation	0.412	0.086	4.678	0.000[c]
N of Valid Cases 109					

The results in table 4.22 show that there is a moderate size effect of 0.605 (based on Phi test, $\phi = 0.605$), leading to conclusion that best practices used in knowledge management in public universities have a moderate ability to promote learning, research and innovations amongst teaching staff in public universities in Kenya.

4.10.5 Chi-Square for Available Policies and Managing Knowledge

The contingency table for association between available policies and enhancing management of knowledge in public universities in Kenya was captured in Table 4.23.

Table 4.23: Available Policies and Managing Knowledge in Public Universities

			Enhanced manage knowledge in public universities in Kenya	
			Not Important	Important
Available Policies	No	Count	14	14
		% within Available Policies	50.00	50.00
	Yes	Count	0	7
		% within Available Policies	0.00	100.00
Overall		Count	14	21
		% within Available Policies	40.00	60.00

As 50.00% of those who showed that there were no policies available showed that the policies were not important in enhancing management of knowledge, the other 50% indicated that they were important in enhancing management of knowledge. All those who showed that there were policies indicated that the policies were important in enhancing the management of knowledge. On average, the respondents indicated that the policies were important in enhancing management of knowledge.

Finally Chi-Square tests were carried to establish relationship between policies that were in place and their importance in managing knowledge in public universities in Kenya and the results captured in Table 4.24

Table 4.24: Chi-Square Tests for Policies and Managing Knowledge

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.833[a]	1	0.016		
Continuity Correction[b]	3.936	1	0.047		
Likelihood Ratio	8.295	1	0.004		
Fisher's Exact Test				0.027	0.017
Linear-by-Linear Association	5.667	1	0.017		
N of Valid Cases	35				

[a]. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.80.

[b]. Computed only for a 2x2 table

The results in table 4.24 show that the Chi-Square value obtained for the association between policies that were in place and its importance in managing knowledge in public universities in Kenya was 5.833 with 1 degrees of freedom (df) and the p-value was 0.016, which was less than 0.05. That is $\chi 2(1) = 5.866$, p=.000 (P-value <.05), which showed a significant association. Based on these results, there is enough evidence to conclude that there is a significant association between policies that were in place and importance in managing knowledge in public universities in Kenya.

The symmetric measure results are shown in table 4.25

Table 4.25: Symmetric Measures for Policies and Managing Knowledge

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	0.408			0.016
	Cramer's V	0.408			0.016
Interval by Interval	Pearson's R	0.408	0.086	2.569	0.015[c]
Ordinal by Ordinal	Spearman Correlation	0.408	0.086	2.569	0.015[c]
N of Valid Cases		35			

The results in table 4.25 show that there is a moderate size effect of 0.408, based on Phi test ($\phi = 0.408$). Based on these results, the study concludes that putting KM policies in place have a moderate importance in managing knowledge in public universities in Kenya. Thus putting policies in place moderately influences managing knowledge in public universities in Kenya

4.11 Chapter Summary

The chapter presented the data and the analysis of the research.First it presented the characteristics of the respondents of the research. It also presented data on knowledge communities; university librarians as knowledge communities and academic heads of departments as communities of experts. Status of information communication technology physical infrastructure was reported. Knowledge leakage and the causes

were reported. Data on knowledge management practices among teaching staff and status of policy frameworks and strategies was also reported. Inferential analysis was carried out using chi square test to establish the dependence of social capital on knowledge communities; collaborations, linkages and partnerships on information communication technology physical infrastructure; innovations on knowledge leakage; learning, research and innovations on knowledge management and good knowledge management practices on policies. Analysis showed strong relationships between knowledge communities and social capital, information communication technology physical infrastructure and collaborations, linkages and partnerships; knowledge leakage and innovations; knowledge management and learning, research and innovationsand good knowledge management practices and policies.

In the next chapter, the implications of the findings for effective knowledge sharing amongst teaching staff in public universities are discussed.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1. Introduction

This chapter provides discussion of findings based on the following study objectives; examine kinds of knowledge communities that are available for enhancement of social capital amongst teaching staff in public universities in Kenya; assess the information communication technology physical infrastructure used to enhance performance amongst teaching staff in public universities in Kenya; determine ways in which knowledge leakage has impacted performance amongst teaching staff in public universities in Kenya; assess knowledge management practices used to enhance performance amongst teaching staff; examine existing and suitable policy frameworks that are used to manage knowledge in public universities in Kenya and; propose suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in Kenyan public universities. This study discusses these findings with reference to the literature reviewed in chapter two. Thus the study sought to establish the relationship between these findings with regard to what had previously been established.

5.2 Knowledge Communities for Enhancement of Social Capital amongst Teaching Staff in Public Universities

This study ascertained that knowledge communities currently available in public universities in Kenya are dependent upon the success of knowledge sharing and knowledge management practices in the selected public universities in Kenya. Choi et. al. (2010) referred to them as communities that pull knowledge from team members on what one knows well and use the knowledge to solve a problem. This sentiment is echoed by other authors who add that the establishment of these

knowledge communities is built on knowledge from team members based on areas of expertise and effectively applies it towards problem solving. Dewar (2012) reinforce that since most of organizational knowledge is tacit, organizations can only retain it by sharing through team members.

Empirical studies group these team members into knowledge communities; communities of practice and communities of experts (Goh & Sadhu, 2013; Noor& Salim, 2011). According to these authors, knowledge communities come together for the purposes of sharing knowledge to solve a problem. The argument stems from knowledge based theory of the firm through which Bosch-Sijtsema & Postman (2004) state that organizations should apply the available resources; physical, human and intellectual to achieve their objectives. Knowledge based theory of the firm advices organizations not to treat human resources just like other resources because humans create knowledge on which organizations thrive.

On the other hand, Gregson et. al. (2015) compare knowledge sharing with real knowledge sharing platforms like Open and Collaborative Science in Development Networks (OCSDNet) in Kenya and Open Data for Developing Countries (ODDC) among others. Although CoEs in Public universities are expected to belong to such knowledge sharing platforms, research findings in this study revealed that knowledge communities are not recognized in public universities in Kenya. Although Blau and Emerson in the SET are not ignorant that there may be resistance by those who know to interact with those who do not, the theory advocates for recognized interactions amongst individuals with a common interest so as to achieve a common goal.

Whereas the teaching staff 132(85%) appreciated the role communities of experts play in enhancing performance through innovations and development of intellectual

property, leadership to link them with likeminded views was missing. The gap to link the teaching staff with their peers can be bridged by the universities through financing development and publicity of their (teaching staff) intellectual property. Publishing and innovations require both financial and human resources and if the universities do not give enough time and financial support to the teaching staff, the gap may not be filled. KBV's view on interactions has not been embraced by universities. The theory advocates for maximum use of the knowledge that resides in people through interactions for competitive advantage.

Objective number 1: examine kinds of knowledge communities that are available for enhancement of social capital acknowledges that universities need to build strong social capital through knowledge communities. In support, Kagwira (2016) and Sirorei (2017) have shown the importance of knowledge communities in Kenyan universities setup but failed to establish the kinds of available knowledge communities. Additionally, Mbhalati (2012), illustrates that it is through CoEs that universities can combine varying opinions by staff into entities that are visible to not only themselves but to other users. However, findings revealed that although communities of experts in universities give team members a sense of belonging, most teaching staff 132(85%) in universities rated CoEs as insignificant against SET which advocates for recognition of these teams by the mother organization. KBV theory views that such opinions put together lead to openness, an idea favoured by social exchange theory. Failure to establish the kinds of knowledge communities that exist within the Kenyan public universities setup is an indication of not well established knowledge communities. Dewar (2012) warns that such a failure diminishes retention of knowledge within organizations.

The findings revealed that communities of experts 124(80%) in universities give team members a sense of belonging yet the universities did not prioritize them (CoEs).Failure to recognize these communities cannot stimulate them to learn what they do not know. When they learn together, they brainstorm solutions to the problems thus facilitating knowledge creation (Wamititu, 2015; Mugalavai & Muleke, 2016). Again failure to recognize CoEs is against both SET and KBV views. SET and KBV stress that it is through recognition of teams that interactions would be visible leading to development of social capital, a product of knowledge communities.

The revelation that the team members 78(50%) were not sure whether the communities of experts had benefited them in their daily works was a confirmation that the public universities in Kenya have not taken the lead in sensitizing and publicizing the importance of the CoEs. According to Raja and Issa (2008) organizations have to be encouraged tocreate an environment for social interactions. Similarly, findings further confirm that the CoEs in public universities in Kenya create a sense of belonging amongst team members (Wenger-Trayner E, &Wenger-Trayner R., 2015). According to these authors, knowledge communities have shared domain of interests that distinguish them from others. However, according to the findings, the community of experts are not supported by the university management (Table 4.5). This lack of support has denied public universities in Kenya the social capital that can generate research and development.

Knowledge communities in public universities encounter other challenges such as; lack of awareness 29(26.67%) leading to limited members' participation; lack of management support 25(23.33%); communication barriers 11(10%); and lack of incentives 2(7%) in that order in their resolve to knowledge sharing (Frappaolo, 2006;

Ho et al., 2006; King, 2009; Koulikov, 2011 & Frost, 2014). Such incentives are built on the premises of social exchange theory (SET). Social exchange theory advocates for appreciation of workers who share their knowledge maximum gains by the universities. However, the community of experts are motivated by career development and learning and development 93(85%); meeting work goals 55(50%); deriving solutions to work challenge; staying current in sector or theme 44(40%); supporting for daily activities 33(30%); and expanding personal network 11(10%) in support of other studies (as cited in Noor & Salim, 2011).

The community of experts contribute 33(30%) helped in the capture and storage of tacit and explicit knowledge so that it can be easily accessed and applied by others. These findings confirm the assertion by Dalkir (2005) that the community of experts have the ability to access valuable knowledge, disseminate it, reproduce and re-apply the knowledge throughout the organization. According to these findings, the communities of experts have the ability 33(30%) to strengthen relationships across departments, offices, and units within the university while creating a rich source of knowledge economy. The community of experts 44(40%) also has the capacity to identify, create, store, and use knowledge as enable accelerated learning and research. This role by community of experts is confirmed by Dalkir (2005) who asserts that members engage in their domain through joint activities, discussions, help each other to learn as they have the right platform to connect research to action and enable organizational competence, reduce duplication and prevent reinvention of the wheel and enable professional development. According to Supar (2012), knowledge shared in this way leads to enhancement of social and intellectual capital.

This study also established that the inclusion of communities of practice (CoPs) amongst Kenyan universities in knowledge management practices enables both students and staff to have a conducive and enabling atmosphere for education and research. These findings indicate that not only do communities of practice develop social capital but also accelerate learning and research as conceptualized in figure 2.2. Further, the findings show these librarians (CoPs) were competently trained in information science, library service and knowledge management practices. These findings are in line with Frappaolo (2006) who asserts that trained personnel have a sound organized and positive impact on knowledge organizations.

This study also established that there were consultations amongst the communities of practice (CoPs) when difficulties or problems arose during knowledge management (KM) exercises. These findings are supported by Goh and Sadhu (2013) who found decreased tension amongst community members when common job related problems arose. According to these findings knowledge sharing across the ranks in the universities makes problem solving activity, within a community of practice easy, reliable, and fast as found by earlier studies (Dalkir, 2005; Goh & Sadhu, 2013).

The study established that the strong resolve by the communities of practice (CoPs) to share expertise, significantly enhanced knowledge preservation for posterity as it also strengthened knowledge sharing amongst members of a CoP. Findings in the present study show that in an effort to ensure acquisition of knowledge the librarians employed mechanisms such as teaching others, encouraging each other to attend short course training and workshops; and encouraging free communication within the knowledge community as was earlier found by other studies; Dalkir (2005) states that tacit knowledge can be transformed into explicit knowledge through externalization.

In externalization, expert databases are organized stored and accessed by like-minded people to solve a common problem. The study found that there were common engagements amongst the librarians that included; writing of papers, meetings to resolve career related issues, and sharing other forms of knowledge other than profession related. These findings echo knowledge based view (KBV) theory of the firm which advocates for setting up strategies through which knowledge can be shared to yield good performance (Bosch-Sijtsema & Postma, 2004).

According to the study findings, there was bound to emerge new roles and leadership opportunities to enhance communities of practice (CoPs') participation in knowledge management activities. However this change is not forthcoming because of the challenges CoPs encounter. These challenges include inadequate WIFI and internet connectivity, inadequate knowledge on communication gadgets, inadequate financial incentive and lack of communication in the universities which hindered development of the new roles. The universities fall short of the following: avenue for sharing best practices; research opportunities; scholarships; innovations and competitive research grants. Other studies also confirm these views and identify other negative attitudes towards knowledge sharing such as ignorance among workers (Frappaolo, 2006; Gagne, 2009; Koulikov, 2011; Frost, 2014).

The study further established that although CoPs, were involved in knowledge management processes such as: circulation, referencing, cataloguing and classification of information material refining activities that include contextualization, compacting and mining (Table 2.1) were missing (Wamitu, 2015). Wamitu summarises the knowledge creation processes into four namely: gathering process view, organizing process, refining process and disseminating processes views. According to King

(2009), CoPs have a common interest as they learn through regular interactions. The study further established that the librarians, as CoPs only understand their role as organizers and disseminators of knowledge, a duty that has been overtaken by events. In addition to organizing and disseminating knowledge, Giluninia, Renkouh & Gilden (2013) asserts that librarians need to share, interpret, maintain and utilize knowledge.

Research findings further indicate that librarians' proficiency in knowledge management practices perfected their specified tasks. According to Dalkir, 2005; Frost, 2014; Wenger-Trayner and Wenger-Trayner, (2015) communities of practice have a common and shared domain of interests and shared competences that enable them to solve their job related problems. Additionally, librarians are members of their respective professional bodies and this helps them improve their skills in knowledge management practices such as identification, acquisition, organization and dissemination of knowledge. These findings concur with social exchange theory (SET) which premises on sharing knowledge with one who has other knowledge to give back. This means that to belong to a professional association, team members must share their knowledge at a common platform. It is not free (Noor &Salim, 2011).

There was found to be team work, knowledge sharing and picking of delegated tasks amongst the librarians. Such harmonious working and sharing time together, helping each other are all aspects of CoPs. It is a way of easily merging formality and informality in tasks and knowledge sharing, therefore sharing knowledge in informal forums (King, 2009).The study further established that other than such informal meetings, the librarians also meet during welfare group meetings and meetings with section heads. These findings confirm the point by King (2009) that Communities of practice are groups of persons with common interest who come together to learn and

perfect their work. The most common engagements amongst librarians include writing of papers, meetings to resolve career related issues, and sharing other forms of knowledge. Librarians share knowledge through; emails, social media updates, verbal; newsletters, fliers, mass media, journals, conference papers, and workshop write ups. They share journals and attend exhibitions; stages of knowledge management.

The findings of the study (Table 4.1): Knowledge communities and enhancement of social capital concludes that there is a very high significant association between knowledge communities and enhancement of social capital in the public universities of Kenya. This approves the hypothesis that knowledge communities have an association with social capital as was conceptualized in Figure 2.2. These findings are built on social exchange theory (SET) premises which postulate that when individuals interact, they maximize their profits and get solutions to their problems (Noor & Salim, 2011).

5.3 Information Communication Technology Physical Infrastructure for Enhancement of Collaborations, Linkages and Partnerships amongst Teaching Staff in Public Universities

The present study established that public universities in Kenya 93(60%) have information communication technology (ICT) physical infrastructure in place that supports the functions of the universities. The finding support technology and adaptive structural theory (AST) emphasis on human beings interaction with technology for enhanced performance. Contrary, 47(30%) denied that ICT physical infrastructure is well developed in their universities; a disconnect between infrastructure and performance. This is an indication that although ICT stimulates innovation and achievement of knowledge access, ICT physical infrastructure within the Kenyan public universities does not measure up to the expectations of the teaching

staff. Shu-Hung.(2014) found possible causes of such a gap to be; either the level of individuals' ICT knowhow is low, or individuals have negative attitude towards ICT use or there is inadequate ICT physical infrastructure applications like knowledge repositories and expert networks in libraries. Findings in show that there is inadequate ICT infrastructure 47(30%), an approval of Hu et al. (2006) preposition that inadequate ICT physical infrastructure reduce performance in universities.

With regard to the gap between the available ICT physical infrastructure and the teaching staff, the present study established that only 78(50%) of the teaching staff have the capacity to use ICT for research, teaching, learning and innovation, 31(20%) remained neutral while 47(30%) denied that they can comfortably use ICT to run their day to day errands. These findings support Hu et al. (2006). The authors clearly tell that the teaching staff in public universities cannot appropriately achieve their performance targets in terms of research, learning, teaching and innovation if their ICT knowledge level is low. In addition, the findings are not supportive to knowledge sharing and management with reference to Goh, and Sadhu, (2013) who found ICT to be the cornerstone of knowledge sharing and management. Neither do the findings embrace AST's advocacy that enhanced outcome is achieved through human interaction with technology.

The present study appreciates the presence of information communication technology physical infrastructure because it influences and improves performance. Further, Koulikov (2011) had earlier stressed that as new knowledge is generated and modified, sharing technologies should also be modified and accommodated by knowledge workers. Thus, with only 78(50%) of teaching staff having the capacity to appropriately us the ICT for teaching, learning, research and innovation is a drawback

to AST and Koulikov (2011) who acknowledge the use of ICT physical infrastructure for enhanced performance.

Further, Goh, and Sadhu, (2013) believe that IT infrastructure influences integration of knowledge to solve complex problems and invent new innovation. The authors add that organizations that have built repositories promote knowledge sharing based on use of IT. Based on the revelation by Goh, and Sadhu (2013), the present study (Table.4.12) comprehends that availability of ICT physical infrastructure effectively promote knowledge sharing and management among the Kenyan universities.

The study established that universities had incorporated research activities within their calendar of activities. Besides the efforts by the universities to have supportive ICT physical infrastructure to enhance collaborations and partnerships, the study found there are no established links between universities and organizations for research collaboration. To some extent, these findings concur with technology and adaptive structural theory (AST). On the other hand, they are contrary to AST which state that such structures determine and influence the capabilities of staff within a given organization. The contradiction is failure of universities to establish visible linkages with research organizations. This has created a gap on enabling research and other knowledge acquisition pursuits. According to Gregson et. al., (2015) internet connectivity enables communication of knowledge and interaction with other users using ICT platforms as a break or make in knowledge sharing and management.

The study established that knowledge owners in the Kenyan public universities do not communicate their knowledge and interact with others using information communication technology (ICT) platforms because they are not given incentives. This view is confirmed by Noor and Salim (2011) who established that where

knowledge owners and learners are not given incentives to use the new technology they remain information technology (IT) illiterate while those who are technology literate fear sharing the know-how in fear of losing their jobs.

This study links failure to share research findings to social exchange theory (SET) where knowledge owners demand compensation for what they share (Noor & Salim, 2011). In addition, Nonaka and Takeuchi model of knowledge sharing (Figure 2.1) clearly defines how knowledge can be transmitted from one level to another thus the question of inability to communicate should not arise. However, the findings of the present study confirm that individuals have negative attitudes towards sharing knowledge in fear that the knowledge may be used negatively against them (Wenger et al., 2002).

The study further demonstrates (Table 4.13) that there is a very high significant association between information communication technology (ICT) infrastructure and collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya. These findings confirm the conceptual framework that guided the study (Figure 2.2). The framework assumes that well designed infrastructure and technology yield research, collaborations, social capital and innovations on which university performance is gauged. To address the hypothesis in the conceptual framework, the present study established that various universities have incorporated research activities within their calendars.

Incorporating research activities within the calendar without supporting with infrastructure and research funding cannot promote the morale of the participants. The study established that research funding by public universities in Kenya is low. Findings show that 47(40%) funded themselves, 31(20%) funded by the government,

47(30%) not funded at all, 16(10%) funded through competitive research grant while none was funded by their universities. These findings reflect Mbhalati (2012) study which found that failure by organizations to provide adequate funding and information communication technology (ICT) resources negatively affect the knowledge sharing. Mbhalati's findings were further confirmed by the present study (Table 4:13), that there is a very high significant association between ICT infrastructure and collaborations, linkages and partnerships amongst teaching staff in public universities. Collaborations, linkages and partnerships are the major platforms where knowledge can be shared. They also form the major outputs of knowledge sharing and a measure of university outputs.

These findings further established that knowledge sharing (KS) entirely depends on the organization's integration of knowledge sharing and management into the goals and strategy of the organization (Figure 4.4). Some forms of research-like scientific research are heavily reliant on availability of equipment and material (Gregson, et al., 2015). However, the findings showed 47(30%) ICT physical infrastructure to be insufficient while 93(60%) found it sufficient contrary to technology and adaptive structural theory (AST) advocacy on development of strong ICT physical infrastructure for enhanced performance.

The study established that there were no established links between universities for research and collaboration (Table 4.12). This means that there is a gap as far as enabling research and other knowledge management pursuits are concerned. According to Ho et al. (2006), knowledge owners can communicate their knowledge and interact with others using information communication technology (ICT) platforms. The findings of the present study revealed that ICT infrastructure was not

sufficient enough to support research and other KM pursuits against Ho et al. who articulated that the strength of research and linkages is enhanced through ICT platforms. The success of research can be strengthened through research linkages with other local and international research organizations, a concept articulated by knowledge based view (KBV) theory of the firm (Mbhalati, 2012).

The findings approved the hypothesis (Figure 2.2) which stated there is an association between ICT physical infrastructure and its capacity to enhance collaborations, partnerships and linkages amongst teaching staff in public universities in Kenya (Table 4.12 & Table 4.13) on which university performance is gauged. These partnerships, linkages and collaborations are linked to KBV which advocates for amplification of organizational knowledge through interactions, a revelation approved by literature reviewed Gregson et al. (2015) who advocate for strong ICT infrastructure network that facilitate collaborations.

5.4 Impact of Knowledge Leakage on Innovations amongst Teaching Staff in Public Universities in Kenya

The study sought to determine the ways in which knowledge leakage had impacted on innovation amongst teaching staff in public universities in Kenya. Mbhalati, (2012) in KBV advises organizations to transform any new knowledge owned by members or organizations into products that enhance performance. Earlier studies, Durst et al. (2015) found that loss of such knowledge affects organizations either positively or negatively contrary to the findings of the present study.

The study established that there was knowledge leakage among the teaching staff of the Kenyan public universities both internally and externally. Such knowledge could be rare, valuable, non-imitable and non substitutable (Ndegwa, 2015).This leakage led

to loss of knowledge intended to stay within the university. The findings further showed that the leakage affected the university negatively (table 4.15).The present study describes how knowledge is leaked within the Kenyan public universities; through resignation, retirement, and transfer of members of staff. Tettey (2009)adds other means through which knowledge is leaked to be through going to other countries for employment and local competition with employees moving from one university to another and even to corporate sector.

Further, the present study established that the public universities faced challenges of lack of specialized expertise within the teaching, administrative and research ranks of the universities as a result of knowledge leakage. These findings confirm earlier studies which found knowledge leakage to be a drawback to universities' performance (Sveiby, 2001; Mbhalati, 2012; Ndegwa, 2015). Contrary to the challenge established in the present study, Hammad (2015) has the solution. Hammad demonstrates that like at the university of Gaza, knowledge is constantly created, staff skills that should be retained identified and the rights of innovation and excellence to their employees sponsored.

With reference to knowledge based view (KBV) theory of the firm, university performance is measured against practical working projects and innovation. This implies that failure to tame expertise, knowledge does not yield fruits (Mbhalati, 2012). Based on objective 3 of the study: to determine the ways in which knowledge leakage had impacted on innovations amongst teaching staff in public universities in Kenya, the present study conceptualized (Figure 2.2) that knowledge leakage has a relationship with innovations in public universities in Kenya. This concept was applauded by Noor and Salim (2011) who in social exchange theory (SET)

demonstrate that there is no reason to share expertise when the sharer has nothing to benefit. Indeed an expert does not expect anything from inexperienced colleague. This is against proponents of knowledge leakage who emphasized that knowledge should be retained through training of new hires and transferees (Mohamed et al., 2007; Anderson, 2012 & Durst et al., 2015).

The present study established that knowledge leakage is a potential risk that needs mitigation. The study further established that crucial knowledge is leaked when members retire, transfer to other institutions, are dismissed or even die (Table 4.7). Ng'ethe (2013) adds that more knowledge is leaked due to leadership style where training, promotion and remuneration do not influence staff retention. Ng'ethe established that those leaving for studies abroad do not come back. When this knowledge leaks out, Mohamed et al. (2007) observed that innovations, a measure of performance amongst public universities are not visible.

To mitigate knowledge leakage, authors, Ho et al. (2006) encourages employees and employers to create an environment where such knowledge, especially tacit knowledge can be passed over to the other members of staff. Ho et.al. remind organizations that tacit knowledge owned by individuals cannot be easily transformed into organizational knowledge thus need to embrace trainings, workshops and seminars to tap it. Ng'ethe (2013) also wants the universities enhance leadership style and promotion to alleviate knowledge leakage. Such sentiments are also encroached in knowledge based view theory of the firm (KBV) which states that when such knowledge is retained, it continually generate increased returns.

The study (Table 4.15) demonstrates that there is an association between knowledge leakage and innovations as earlier conceptualized by the present study (Figure 2.2).

The findings postulate that knowledge leakage denies universities dynamic knowledge that could otherwise be transferred into innovations. To mitigate knowledge leakage, while. Hammad (2015) suggests to universities to embrace knowledge retention as a sector within their organizations, Frost (2014) postulate that universities should enhance levels of interaction amongst teaching staff. Frost is against the mentality of knowledge owners refusal to share what they know with those who do not know as postulated in SET by George Casper Horman 1974 (as cited in Noor & Salim, 2011).

Still on mitigation of knowledge leakage, Frost (2014) proposes to the universities to withdraw some of the universities' culture that restrict interactions of teaching staff that slow the process of passing the knowledge from one level to another. Frost's argument is also in line with Nonaka and Takeuchi model of knowledge conversion whose emphasis is on sharing knowledge through various interactions (Dalkir, 2005). Dalkir outlines such interactions as socialization, externalization, internalization or a combination of any two as demonstrated in Figure 2.1. Such interactions cannot allow knowledge to be static but be rampant and explorative which is what knowledge sharing is all about. KBV rounds it by advising universities to transform the knowledge they own into services.

5.5 Knowledge Management Practices that Promote Learning, Research and Innovation amongst Teaching Staff

The study further sought to assess the universities' capacity to store and avail knowledge memoirs as carry out research. The study established that knowledge memoirs required capacity and competences to manage. The Kenyan public universities were found to maintain knowledge memoirs 44(40%), which are available and accessible at the repository. These findings support other studies that advocate for

development of more sharing systems and digital repositories (Gregson et al., 2015). To back this, Elica and Hosseini (2015) pronounce that dynamic knowledge repositories with a wide range of knowledge need to be developed in universities.

The Kenyan public universities repositories facilitated re-use of the knowledge and collaboration, and the staff 55(50%) in these universities had the technological knowledge required to carry out their research. This is in adherence to the findings of Giluninia, Rankouh & Gildeh, (2013) that there is pressure facing modern organization to develop knowledge management in order to remain relevant in the current competitive environment. Other proponents of knowledge management focus on library staff to take responsibility of building visible repositories that can enhance research and development (Gaveli, 2016).

Contrary, Elica and Hosseini (2015) only appreciate knowledge management practices as a performance booster but failed to attribute learning, research and innovation to knowledge sharing. Their proponents Omogeafe (2014) found that good knowledge management practices enhance organizational performance. These authors did not specify the outcomes of good knowledge management practices, a gap filled by the present study. This study has associated knowledge repositories, an outcome of good knowledge management practices with research, learning and innovations.

The study established that knowledge repositories and university websites created a platform for scholars to post their publications. This had a positive impact on knowledge creation and dissemination. The study further established that the teaching staff 87(80%) who were members of professional bodies, had the capacity to generate knowledge through research and also published in peer reviewed journals

(Wamitu,2015).Other studies state that in addition to knowledge creation, knowledge repositories prevent loss of knowledge (Elica & Hosseini, 2015).

Also the universities appreciated the researchers in their initiatives, which enhanced their contribution to research development in particular and knowledge generation. Incentivizing knowledge creators was applauded by other studies (Gregson et al., 2015). Gregson et al. encourages universities to incentivize teaching staff and encourage publishing through cooperative, peer reviewed and open access platforms. This study confirmed that KM practice in the Kenyan public universities was at its growth stage and was fairly new in some of the universities, posing challenges to these institutions of higher learning. The present finding replicate earlier finding by Anna and Puspitasari (2014) in their study on adoption of knowledge management practices in libraries in Surabaya not to be formally adopted. The failure to wholly implement knowledge management practices amongst the teaching staff in selected public universities in Kenya has resulted into information overload, lack of information, knowledge loss when staff exit, poor sharing of knowledge, and reinventing the wheel in that order.

The study established that it took a considerably long time to obtain crucial information in the universities. This finding applauds earlier studies (Ryan et al., 2010; Travica, 2013 and Gregson et al., 2015) which found that although performance in universities is measured against their research output that is visible and accessible, the universities have not yet embraced good knowledge management practices. Good knowledge management practices require universities to equip their staff with information literacy skills that will empower the staff to carry out their research

effectively. The findings in the present study imply that local research capacity skills are not well developed.

Wijetung, (2012) in his earlier investigation suggested to the universities to create awareness of the initiatives of knowledge management to all their staff through seminars and trainings. Wijetung prefers awareness to all staff whereas the present study targets only the teaching staff. Sirorei (2014) on the other hand recommends that universities should carry out publicity campaigns on the importance of knowledge management. Such sensitization need to involve all university stakeholders including the management since they are responsible of development of policies.

The study found that various challenges hinder the effectiveness of the knowledge management (KM) practices in public universities. They include; lack of top management commitment to KM, lack of participation and lack of reward/recognition for knowledge, lack of training, and complicated IT systems. Despite the teething problems currently being faced by some public universities in Kenya, most 65(60%) of the respondents recognized knowledge as a part of their asset base. This was applauded by the findings of the present study that there is a significant association between best practices in knowledge management in public universities in Kenya and ability to promote learning, research and innovations amongst teaching staff in public universities in Kenya (Table 4.20).

This study, to some extent replicates Omogeafe and Ohimai (2014). Their studyto assess the relationship between management practices and effectiveness on performance in Nigerian universities established a relationship between knowledge management practices and performance while the present study established the

relationship between knowledge management practices and learning, research and innovation.

5.6 Policies that are in Place to Manage Knowledge in Public Universities in Kenya

The study examined existing and suitable policy frameworks needed to manage knowledge in public universities in Kenya. The study established that the universities have documented procedures, policies and manuals that are used for various functions across the universities. According to the findings of the study, public universities have documented; quality standards related procedures, disciplinary procedures, course allocation, outline development and teaching procedures, calibration of science equipment procedures, and performance assessment procedures. Additionally, universities prepare other manuals such as; quality manuals, student handbooks, course outlines, laboratory practical manuals and reports for academic field trips. Other policies include; exam setting and marking, grading, human resources training and development, human immune-deficiency virus/acquired immune deficiency syndrome (HIV/AIDS), gender mainstreaming, public complaints, and ethical and anti-corruption policies.

The above findings are in line with Dalkir, (2005) and Gregson et al. (2015) who state that organizations that have embedded policies in their operations have a competitive advantage over those that do not have. The present study further established that processes prescribed in the policy manuals include: curriculum development; teaching and examination processes; exam setting; administration; credit transfer and approval and processes for issuing transcripts. These universities therefore ensure that policies, procedures, and manuals are well documented and also encourage the creation of forums for knowledge sharing.

Based on objective number 5 of the present study: examine existing and suitable policy frameworks needed to manage knowledge in public universities in Kenya, the study established that specific policies on knowledge acquisition, knowledge sharing, knowledge interpretation, knowledge maintenance and utilization were missing. Such gaps were noted in empirical studies (Sirorei, 2017). In his study on knowledge management processes at St. Paul's university in Kenya, a policy on knowledge retention was totally missing. Sirorei recommended that the university library needed to develop the policy in order to achieve expected knowledge management standards. Chigada (2014) adds that failure to have knowledge management policy denies workers guidance on how they can preserve the knowledge they own. Like Sirorei, (2017) and Giluninia, Rankouh & Gildeh, (2013) observed that knowledge management policies bridge knowledge sharing and management for improved performance.

On the contrary, Dewah (2011) found community of practice to be a knowledge retention policy while the present study acknowledges community of practice as an independent variable with an association with social capital. Community of practice as a policy fits in the present study on the assumption that the community will be guided by regulations in her activities.

The prescribed processes in the policy manuals in the present study; curriculum development, teaching and examination processes, exam setting, administration, credit transfer and approval, and processes for issuing transcripts do not embrace all the knowledge sharing and management processes expressed by earlier studies (Noor & Salim, 2011; Giluninia, Rankouh & Gildeh, 2013;Obasola et al., 2014 & Wamitu, 2015).While Sirorei (2017) failed to reveal a suitable policy framework to manage

knowledge in the universities. Chigada (2014) identified policies for knowledge management. Chigada's policies were limited to the banking industry. Contrary to the present study's investigation on the relationship between knowledge sharing and knowledge management policies, Sirorei's and Chigada's studies investigated the wider knowledge management policies. None the less, the two studies, Sirorei's and Chigada's imply that KM policies have an influence on performance.

According to social exchange theory (SET), George Casper Homans 1974 argued that individuals and organizations share knowledge when they know how they are going to benefit from the sharing partner (as cited by Noor & Salim, 2011). Such agreement needs to be transcribed in a clearly agreed upon policy that describes the sharing terms that include the benefits that come with sharing. The present study confirms that there is a high association between knowledge communities and enhancement of social capital (Table 4.10) in public universities. However, the study has no evidence of the existing polices on the benefits that come with sharing, a finding that concurs with earlier studies (Sirorei, 2017; Chigada 2014). Instead, the study identifies the undocumented knowledge sharing activities like organization of knowledge by university librarians, conference attendance by teaching staff and academic publishing among others. In addition, the study did not find incentives (Table 4.5) to be a limiting factor to knowledge sharing which could be a possible reason to the absence of policies on benefits from sharing.

Nonaka and Takeuchi model of knowledge sharing prescribe procedures (Figure 2.1) through which tacit and explicit knowledge can be transformed, stored and accessed by likeminded people for improved performance (Dalkir, 2005). The present study acknowledges that there exist likeminded teaching staff and has shown evidence of

manuals and procedures that can be followed to transform tacit into explicit and explicit into tacit knowledge. These universities had policies, procedures, manuals and processes that were not specific to knowledge sharing and management. In addition, the study established that respondents did not appreciate the importance of such policies against Dalkir, (2005) who found well defined policies on knowledge management to be the cornerstone for enhanced performance.

Findings in the present confirm that there exists a gap of well established knowledge policies within the existing ones that specifically address knowledge sharing and management. For example processes and activities like knowledge creation processes (Table 2.1) and the activities involved, knowledge management stages (Figure 2.2) and knowledge conversion model (Figure 2.1) were not evident to have been integrated within the existing procedures and manuals (Dalkir, 2005; Giluninia, Rankouh & Gildeh, 2013 & Wamitu, 2015).

Institutional repositories are tools within universities that are charged with the processes of collection, preservation, monitoring and access to knowledge by teaching staff (Ryan et al., 2010). In support, Wamitu (2015) describes knowledge creating processes as gathering, organizing, refining and dissemination. Wamitu's processes were also modeled in Nonaka and Takeuchi model of Knowledge conversion (Dalkir, 2005). These processes involved in institutional repositories and knowledge creation were not found to exist in the present study which demonstrates a significant association between policies and knowledge sharing and management (Table 4.22). The findings of the study concur with the conceptual framework (Figure 2.2) that informed the study. The framework conceptualized that well defined policies on

knowledge communities; technology and infrastructure, knowledge leakage and knowledge management enhanced performance in public universities.

5.7 Knowledge Sharing Strategies

The study sought to propose suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in selected Kenyan public universities.This has a foundation of adaptive structural theory which factors on formulation of rules that guide production (Tzanaki (2013). The study ascertained that there were no working strategies for knowledge management in public universities in Kenya. In a study on emerging problems in knowledge sharing and transfer, Koulikov (2011) state that since knowledge generation is a costly venture to organizations, workers should develop strategies that can keep the organizations in business

With absence of knowledge strategies as established by the present study, this implies that the public universities in Kenya have not put value to the knowledge they own. If they did value their knowledge, then the workers would strive to lay down strategies to guide them on how and with whom they will share their knowledge. In his model of knowledge sharing motivation, Gagne (2009) proposes that a reward system and sharing opportunities within organization strategy be developed. Such a strategy if adopted would enhance knowledge sharing in public universities hence enhanced performance. This view was confirmed in a study (Kombo, Kobonyo and Ogutu, 2015). In their study on knowledge strategy and innovation in management firms, these authors acknowledge that knowledge strategy has an association with innovation. These findings imply that knowledge strategy enhances innovation as conceptualized by the present study (Figure 2.2).

The investigation established proposals for strategies that can enhance knowledge sharing and management from the respondents. 87(80%) proposed external staff development opportunities, 66(60%) sponsorship to seminars and enhanced collaborations while 55(50%) proposed enhanced use of ICT physical infrastructure. These proposals were made to fill the strategy gap ascertained by the study. Other studies proposed community of practice as a strategy to enhance knowledge sharing (Chigada, 2014). Chigada noted that CoP as a strategy for enhanced knowledge sharing had been adopted by the banks contrary to the present study which did not propose CoP as a strategy for sharing knowledge.

The proposed knowledge sharing strategies in the present study were general to performance. Other studies aligned specific strategy to a given performance output. For example, Agarwal and Islam (2015) set strategies for knowledge retention to be through documentation, digital repositories and training. The present study concurs with Agarwal and Islam on improvement of documentation and record keeping processes.

On knowledge leakage, the respondents proposed that the university management adhere to employment policy. Employment policy deals with issues concerning payment, promotion, conference attendance, exit interviews and guidance and counselling. If adopted, this would mitigate knowledge leakage challenges (Table 4.8). The table confirms that knowledge is leaked out of the public universities. Empirical studies caution the university management to re-examine their leadership style in pursuit of staff retention (Ng'ethe, 2013).

The present study proposed that financing of publishing cost be met by the universities in pursuit of visibility on research findings. A proponent of this proposal,

Sirorei (2017) advocates for introduction of incentives for outstanding utilisation of academic library repositories. This proposal was as a result of underutilised knowledge repository at St. Paul's University library in Kenya. These proposals built the base for the development of the knowledge sharing model by the researcher as presented on page 166.

5.8 Chapter Summary

This chapter discussed the study findings based on the objectives. The findings were discussed with reference to the literature reviewed in chapter two. The discussion committed that knowledge sharing had an effect on performance amongst teaching staff in public universities. The discussion approved there were relationships between knowledge communities and social capital; information communications technology physical infrastructure with collaborations, linkages and partnerships; knowledge leakage with innovations; knowledge management practices with learning, research and innovations and the effect of knowledge management policies on performance. Findings from this study wereprofound to be consistent with the findings of several related studies on knowledge sharing.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter provides the summary of findings, conclusions reached from the study findings as the recommendations based on the research questions of the study as set out in chapter 1.6. Recommendations made were informed by the finding discussed in chapter five. The research questions were:

1. How do knowledge communities relate to social capital amongst teaching staff in selected public universities in Kenya?
2. In what ways does information communication technology physical infrastructure influence collaboration, linkages and partnerships amongst teaching staff in public universities?
3. How does knowledge leakage relate to research and innovation amongst teaching staff in public universities?
4. What is the influence of knowledge management on learning, teaching, research and innovations in public universities?
5. How do knowledge sharing and knowledge management policies influence research and development amongst teaching staff in public universities?
6. How will the findings of this study influence policy makers and administrators in public universities?

6.2 Summary of Findings

The structure of the presentation of the summary of the findings was based on the research questions of the study.

6.2.1 How Knowledge Communities Enhance Social Capital in the Universities

The study found out that the success of availing valuable Knowledge was vested in the willingness of knowledge communities to actively participate in knowledge generation and sharing. As in any other knowledge environment, the Kenyan public universities had the two major categories of knowledge communities namely communities of practice and communities of experts. The study established two key players namely; heads of department (HoDs) and the librarians. While the HoDs play the role of the communities of experts, the librarians play the role of communities of practice.

According to the findings heads of departments, represent an area of common interest for a number of university teaching staff. However, the heads of departments were not recognized in their positions as communities of experts within these universities as their functions were not prioritized. The study found that even though the universities had not formally recognized the function of communities of experts, the communities of practice had a sense of belonging. The communities of experts were able to enhance social capital by building relationships and networks with their peers across the board, within their universities and other universities. These relationships and networks share their work-related knowledge in form of encouraging publications of research findings and financing knowledge sharing and management forums. The study found that the motivation to knowledge sharing and management amongst the communities of experts was a three-fold benefit: directly gaining from the knowledge; experts getting motivated when their effort is honored; and the organizing institution benefits from the brain pool it was creating through shared knowledge.

The present study established that communities of experts in the Kenyan public universities helped their communities to achieve better results in terms of quality, productivity, and organizational satisfaction, in their respective day to day operations. This was through capturing and storing of tacit and explicit knowledge so that it could be easily accessed and applied by others. The communities of experts were found to have the capacity to identify, create, store, and use knowledge as enable, accelerated learning and research. Thus, they (communities of experts) had the ability to access valuable knowledge, disseminate it, reproduce and re-apply the knowledge throughout the universities.

The study further established that communities of experts(CoEs) encountered challenges such as lack of awareness of existence of communities of experts leading to limited members' participation; limited management support; communication barriers; and lack of incentives in that order in their resolve to knowledge sharing. However, the communities of experts were motivated by career development and learning and development; meeting work goals; deriving solutions to work challenge; staying current in sector or themes; supporting for daily activities; and expanding personal network.

The present study established that Kenyan university communities of practice (CoPs) were involved in all knowledge sharing services. Their active involvement in dissemination and management of the knowledge resources enabled both students and staff to have a conducive and enabling environment that enhanced their social capital with the outcome of education and research. It was found that librarians, as CoPs clearly understood their role in knowledge sharing and therefore employed their skills in organizing knowledge information. Further, the findings show that these librarians

(CoPs) were competently trained in information science, library service and knowledge management. These competences ensured proficiency in knowledge management practices, needed to affect the specified tasks.

The study established that there were consultations amongst the communities of practice (CoPs), especially in times of difficulties or when problems arose during their knowledge management (KM) exercises. They frequently held consultations, discussions and cordial communication in their cadre. The universities provided for unlimited access to knowledge, makes problem solving activities within a community of practice easy, reliable, and fast. In their efforts to improve their careers and professionalism in sharing forums, the CoPs had registered as members of their respective professional bodies.

The study established that the strong resolve by the communities of practice (CoPs) to share expertise, significantly enhanced knowledge preservation for prosperity as it also strengthens knowledge sharing amongst members of a CoP. In an effort to ensure acquisition of knowledge the librarians employed mechanisms such as teaching others, encouraging each to attend short course training and workshops and encourage free communication within the knowledge community. The study found that knowledge sharing among the CoPs was anchored on cooperation, team work, and picking of delegated tasks in their respective areas of practice. Librarians come together to learn how to work better through regular interactions. The most common engagements included writing of papers, meetings to resolve career related issues, and share knowledge electronically, verbally or in form of workshop write ups.

According to study findings, there was bound to emerge new roles or leadership opportunities. Such leadership in a community can be cultivated through practice,

peer to peer mentorship, looking up to role models, and engaging change agents. However, the communities of practice encounter challenges of; WIFI and internet connectivity, inadequate knowledge on communication gadgets, lack of adequate financial incentive and lack of communication in the universities. The universities fall short of: avenue for sharing best practices (benchmarking), research opportunities, scholarships, innovations, competitive research grants. These challenges hinder improved participation in meetings and forums.

6.2.2 The Influence of Information Communication Technology Physical Infrastructure on Collaborations, Linkages and Partnerships amongst Teaching Staff in Public Universities

The study established that Kenyan public universities have conventional information communication technology (ICT) infrastructure and facilities which are being used for teaching, learning and research. These facilities include libraries, laboratories and equipment, departmental plants, and institutional repositories. The ICT infrastructure has the capacity for knowledge management (KM) practices such as: enhancing knowledge creation, integration of knowledge, and building repositories. The study further established that the capacity to effectively use the ICT infrastructure depended on the ability of the individual members of staff to conduct credible research and availability of funding. Survey results further indicate that due to isolated and competitive government research grants, academic staff are not guaranteed of executing their desired research. This limitation led to weak links between the academic/research institutions and the industrial firms both locally and globally.

6.2.3 Impact of Knowledge Leakage on Innovations amongst Teaching Staff in Public Universities

This study sought to determine the ways in which knowledge leakage had impacted on innovations amongst teaching staff in public universities in Kenya. Findings

indicate that there is knowledge leakage amongst teaching staff in Kenyan public universities as staff members are constantly moving from one school to another and also from departments and universities. This has deprived universities of valuable operational knowledge. The study further established that knowledge leakage within Kenyan public universities is perpetuated through resignations, retirement and transfer of members of staff. Findings indicate that retirement, dismissal, and death are not common challenges within Kenyan public universities. Nonetheless, the lack of expertise in specific fields of science and technology, administration and also research, is still a major obstacle in Kenyan public universities.

6.2.4 The Influence of Knowledge Management Practices on Promoting Learning, Research and Innovation amongst Teaching Staff in Public Universities

The study sought to assess the universities' capacity to store and avail knowledge memoirs to conduct research. The survey results show that Kenyan public universities maintain knowledge memoirs, which are available and accessible through knowledge repositories. These knowledge repositories post various publications to university websites, and also create platforms for scholars to post their publications. This process has had a positive impact on knowledge creation and dissemination. Study findings further revealed that staff who are members of professional bodies underscored the value of conducting research. Most of them also publish in peer reviewed journals.

However, the study found that knowledge management (KM) practice in Kenyan public universities is at its growth stage and is fairly new. This poses challenges that result into: information overload, knowledge loss when staff exit and poor sharing of knowledge. Other challenges that hindered the effectiveness of knowledge

management practices included: limited top management commitment to KM, inadequate participation and reward/recognition for knowledge, short of training and complicated IT systems. Despite these challenges, universities in Kenya recognize knowledge as part of their asset base.

6.2.5 Policies that are in Place to Manage Knowledge in Public Universities in Kenya

The study sought to establish whether there are sustainable policy frameworks used to manage knowledge in public universities in Kenya. The study established that the universities have documented procedures, policies, and manuals that are used for various functions across the universities. These include disciplinary procedures, course allocation guidelines, course outline development and teaching procedures, calibration of science equipment procedures, performance assessment procedures, curriculum development, teaching and examination processes, exam setting, administration, credit transfer and approval, and processes for issuing transcripts. Among the manuals are: student handbooks, course outlines, laboratory practical, and manuals for reporting on academic field trips. Policies in place in most universities include: exam setting and marking, grading, human resources training and development, human immune-deficiency virus /acquired immune deficiency syndrome (HIV/AIDS), gender mainstreaming, public complaints, and ethical and anti-corruption policies. However, specific policies and procedures on knowledge management and sharing are lacking.

6.3 Conclusion

The study which set out to assess knowledge sharing practices and their effect on teaching staff performance in selected public universities in Kenya concludes that the Kenyan public universities have two major categories of knowledge communities

namely: community of practice and community of experts who enhance the social capital amongst university teaching staff. While heads of departments are the role models of the community of experts, the librarians are the community of practice. The community of experts, captures and stores tacit and explicit knowledge for ease of access and application by knowledge consumers. This enables dissemination, reproduction and re-application of knowledge throughout the universities. The community has the ability to strengthen collaborations across departments, offices, and units within the university, therefore creating a rich source of knowledge economy that enhances better performance. Communities of experts are the right platforms to connect research to action and enable organizational competence, reduce duplication, promote professional development and better development of social capital.

The communities of practice are involved in knowledge sharing services such as: circulation, referencing, cataloguing and classification of information material. They are also involved in dissemination and management of the knowledge resource in the entire university. These communities clearly understand their role in knowledge sharing as they proficiently employ their skills in organizing knowledge information for better performance. They are competently trained in information science, library services and knowledge management.

Frequent consultations, discussions and cordial communication among the communities of practice and unlimited access to knowledge simplify problem solving activity within a community making work easy, reliable, and fast. Other factors enhancing the performance of knowledge management (KM), within the ranks of communities of practice (CoPS) are sharing expertise, teaching each other, team

work, delegation of tasks, regular interactions, writing of papers, encouraging each other to attend short course trainings and workshops, and encouraging free communication within the knowledge community. The CoPs are driven by change management and engaging change agents, leadership opportunities, inspiration by role models, and peer to peer mentorship. Other enablers of KM to the CoPs are stable and fast WIFI and internet connectivity, adequate communication resources, adequate financial incentives, effective communication in the universities, avenue for sharing best practices (benchmarking), research opportunities, scholarships, innovations, and research grants.

The study concludes that an established information communication technology (ICT) infrastructure is needed to enhance collaborations, linkages and partnerships amongst teaching staff in public universities in Kenya. The appropriate features and facilities include: libraries, laboratories and equipments, departmental plants, and institutional repositories. The study concludes that availability of this ICT infrastructure enhances knowledge creation, integration of knowledge, and building repositories, promoting knowledge sharing in the Kenyan public universities. Other requirements for better performance of knowledge sharing are: capacity to effectively use the ICT infrastructure to conduct credible research, and availability of funding. A linkage between the academic/research institutions, industrial firms, and leading members of staff, enables one to achieve higher levels of research. Thus, adequate ICT infrastructure positively affects the knowledge sharing.

The study concludes that knowledge leakage highly impacts on innovations amongst teaching staff in public universities in Kenya. Knowledge leakage leads to loss of specialized expertise within the teaching, administrative and research ranks of the

universities. Knowledge leakage is a potential risk under certain operational conditions. The knowledge is leaked within the Kenyan public universities through resignation, retirement and transfer of members of staff.

The study concludes that there are knowledge management best practices used in Kenyan public universities that promote learning, research and innovations amongst teaching staff. The Kenyan public universities maintain knowledge memoirs, which require capacity and skilled competences to manage. The effectiveness of the knowledge repositories positively affects the knowledge creation and dissemination as they also facilitate knowledge re-use and collaboration. The repositories are comfortably used by staff with technological knowledge required to carry out their research, to freely publish in peer reviewed journals.

The authors have the capacity to generate knowledge through research and the university appreciates the researchers in their initiatives. The appreciation by the universities motivates the researcher to make more contribution to research development in particular knowledge generation. Failure to address certain prevalent issues significantly affects the performance of knowledge sharing negatively. The most common issues include; information overload, lack of information, knowledge loss when staff exit, poor sharing of knowledge, long time to obtain crucial information in the universities, lack of top management commitment to KM, lack of participation and lack of reward/recognition for knowledge, lack of training, and complicated IT systems. The study concludes that effective (best) KM practice significantly improves the competitive advantage of the Kenyan universities by helping improve research and development enhance innovations bring about employee development and better decision making. It also helps in improving quality,

delivery, and cut down on overall operational costs in an educational, research and development of the university. The study concludes that the public universities in Kenya have in place knowledge management processes and procedures that are not sufficient enough to provide for knowledge management and sharing.

6.4 Recommendations

Based on the foregoing discussions the study made recommendationsthatshould be used to address the existing information sharing gaps among the teaching staff in public universities in Kenya. The recommendations addressed the role that should be played by the stakeholders who hold responsibilities of running and managing knowledge related matters in the universities. These stakeholders include university management, academic deans, academic heads of departments, teaching staff, university librarians and the government.

6.4.1 The University Management should create an Environment for Knowledge Sharing

The university management should create effective avenues for knowledge sharing within their universities. They should create common rooms and allow time for workers to brainstorm and talk about what they do in their respective departments. The staff should productively utilize their free time like lunch time or any other time they may have through work related discussions. This will allow members to learn and seek to understand how to improve their work.

The university management should finance the teaching staff who contribute to knowledge sharing initiatives. Such initiatives include publishing their research findings, presenting papers in conferences, developing new innovations, initiating collaborations, partnerships and linkages. The university should finance this by providing working tools like computers, printers, offices, stationery, paying for their

return tickets where the staff will to meet to negotiate partnerships or linkages and subsistence for the staff.

The university management should build modern working libraries, laboratories, departmental plants with well-equipped internet connectivity. These modern facilities should be run and managed by well-trained competent personnel. The management should also create working university websites where teaching staff and other university will post and share their publications. Such websites will be used by the university to publicize any other knowledge related activity.

Universities' management should provide favourable remunerations to curb resignations. Teaching staff work for long hours within and away from office hence their efforts should be recognized through attractive and competitive salaries and allowances. The salaries of these teaching staff in all public universities should be harmonized to counter resignation of staff to other public universities. The universities should review university staff salaries and allowances regularly.

The university management should provide the teaching staff with good working environment. For example the university management should create an environment where teaching staff interact with the management to discuss the philosophy, mission and values of the university. This is the platform where free flow of ideas and brainstorming that will improve the performance of the university shall be tabled. Such platform should provide an open and transparent communication. In such a case the staff will have that sense of belonging and ownership hence work towards improving their performance. They should start long term projects that will keep them in one university for a longer period.

The universities should provide general physical facilities like spacious offices with good lighting and well-connected internet, well equipped libraries, departmental plants and well equipped laboratories working offices. Such facilities will make the teaching staff enjoy their work. This will motivate and encourage them (teaching staff) to work towards multidisciplinary researches with their counterparts from other universities leading to collaborations and partnerships.

The university management should keep abreast of changes and focus on training and development accordingly. Such trainings lead to sustainability of employees and enhance performance. Positive work environment requires routine training that improves efficiency and instills good attitudes among the staff. After training the academic deans and heads of department should then advocate for staff promotions. If staff are trained, have good working environment and are paid competitive remunerations and allowances, knowledge leakage will be very minimal.

The university management should track and acquire all knowledge that is created within the university. Such knowledge should then be directed to the library where it will be repackaged, organized and disseminated to its users. The universities will achieve this by empowering the librarians with capabilities of carrying out such exercises. Such empowerment involves hiring competent librarians capable of handling knowledge management activities while adhering to intellectual rights and benefits of the creators. Creators of knowledge should not just release their knowledge to the library without being assured of proper use of the knowledge.

The university management should document the existence of knowledge communities within their universities detailing when to have common staff meetings, common extra-curricular activities, seminars and conferences. Such meetings should

be very specific to what they are meant to achieve. This will give staff time to interact with others with common interest thus building strong knowledge communities. The staff will know that their meetings and discussions are appreciated and recognized by their universities. They will use such forums to know whom they can collaborate, partner and create linkages with. The universities should encourage such meetings by giving some prizes or remunerations to those who participate productively. This will later be developed into a working policy that can be used to guide activities of knowledge communities.

6.4.2 Academic Deans and Academic Heads of Departments Should Provide Direction for Achievement of Learning, Research, Collaborations and Innovations.

The academic deans and heads of departments should tap knowledge from all the teaching staff by ensuring the teaching staff deposit their research publications to the university library. The library shall then become a rich ground where workers within the university will access the knowledge created by their peers.

The academic deans together with the heads of departments should revise their curricula with the universities offering the same programmes so that each university builds on the strengths of each other while mitigating the shortfalls of each ones programme. This will allow universities develop complete and inclusive programmes.

The academic deans, academic heads of departments and the teaching staff should draw a programme where every teaching staff should be given an opportunity to showcase their research and innovations. The programme should advocate for multidisciplinary researches where industries will be brought on board.

6.4.3 Teaching Staff should engage in Intellectual Activities Dedicated towards Development of Knowledge Sharing

The teaching staff must endeavor to farmiliarise and adjust to the fast changing trends in information communication technology. These are the capabilities that will enable them to disseminate their research findings to facilitate access by others. They will achieve this by posting the findings to university websites, posting them to their knowledge community walls, giving public lectures, presenting their findings in conferences and sending copies to the library for inclusion in the university repository. This will curb bad knowledge management practices like duplication and selfishness of fear to share.

The teaching staff should document all processes through which they carry out their duties. This will be a guideline for the teaching staff to refer to whenever they are working. Such guidelines should include course outlines, exams setting, preparation of marking scheme, students' supervision guidelines, writing funding research proposal guidelines, manuals and handbooks. These documentations will be advanced to policy documents.

6.4.4 University Librarians Should Provide Quality Learning and Research Environment that Meet University Needs

The university librarians should develop working institutional repositories where all knowledge created by the university staff shall be stored and accessed. The librarians should benchmark with other libraries to acquaint with the current working institutional repository access tools to ensure the staff within their universities access the collection.

The university librarians should endeavor to utilize the best knowledge management practices to link every knowledge with its user and potential users. This shall be

achieved by mining knowledge, selective dissemination of information, auditing information within the university and organizing that information for easy retrieval among others.

The librarians must put modern working knowledge management systems in place. They must have working repositories, repackage information and systems that facilitate the needs of their users

The university librarian should endeavor to facilitate access to all knowledge deposited to the library. The librarians should process the knowledge immediately it is deposited in their custody and sensitize the teaching staff of their availability. The librarian must know who else apart from those in her university utilize such knowledge for the country's economic benefits. He should know which industries will benefit from such knowledge and repackage the knowledge for those who may need in a different format other than the one the original knowledge appears.

University librarians should document a university repository policy that will guide all the university staff on the importance of the repository to the staff. The document should state what kind of knowledge should be given to the library for inclusion in the repository, and how such knowledge will be accessed. This will work only when the university librarian has convinced and requested university management to finance the required infrastructure for the repository.

6.4.5 The Government Should Increase Funding for the Universities

The government should allocate enough resources to the universities so that the university management will have enough to support knowledge related activities. The government should increase budgetary allocations to institutions that support

knowledge initiatives in the universities. Such institutions include government research institutions that have been instrumental in collaborating with universities in financing research conferences.

The government must prioritise university resource allocations. It should allocate enough funds because all the performance outputs at the university are dependent on finances. In addition, teaching, research and capture of research outputs through publishing require financial support.

The government should regulate salaries of all employees within the country based on their expertise and the tasks they are supposed to execute. Disparities in remuneration cause resentment and dissatisfaction. They (disparities) also lead to reduction in production. When there are disparities in remuneration, employees look out for greener pastures. The government should therefore come up with policies that allow all staff with same capabilities and same duties to start their salaries at a level that will have a long term negative impact in terms of pension but instead have structures that allow for the regular reviews and promotions. All government staff including the university teaching staff will not hop from one employer to another because they shall be satisfied of the fair treatment in terms of remunerations and other allowances.

The government should enhance knowledge sharing by investing in information communication technology countrywide. This is because knowledge that may be useful to a dispersed geographical location cannot be accessed if information communication infrastructure is not in place. Again with Kenya aiming at becoming a twenty four hour economy knowledge users shall access it (information) remotely.

6.5 Proposed Knowledge Sharing Strategies that are Integrative of Inputs and Outputs in Public Universities

The study proposed knowledge sharing strategies that should be utilized to enhance performance in universities. The proposed strategies address knowledge communities, information communication technology physical infrastructure, knowledge leakage, knowledge management practices and knowledge sharing policies.

6.5.1 University Management Should Encourage Various Forms of Knowledge Sharing and Map Networks of Experts From the Teaching Staff, Industries and other Universities

University management should endeavor to visualise and interpret the two knowledge communities; communities of experts and communities of practice and strengthen them for effective performance. Such groups will use the connections to improve on how they work. This will be possible if the university management and the teaching staff ensure there is the right information telecommunication technology physical infrastructure. The teaching staff will give the specifications of the infrastructure while the university management shall procure the infrastructure.

The university management should work with the help of academic deans and academic heads of departments to identify leadership roles within the teaching staff. This will inform the university management of who the experts in various specializations are and who is not participating in the activities. This will also inform the university management who can be a mentor of others and who shall be innovators. The university should then ensure ideas are shared and acted upon promptly. These networks should then discuss innovations, publishing, teaching research and embark on their real execution. The universities should adapt innovations that have proven successful in one university or organization. Such

innovations will serve as an inspiration to other universities as long as it is adapted, modified and customized.

The universities should link teaching staff with innovators amongst themselves. There may be some individuals among the teaching staff who challenge the current way the universities are doing things, passionate amateurs who disrupt innovations and may hop from one university to another. To tame them, the academic deans and heads of departments should link them to those innovators within the university and mentor these disruptive innovators. The experienced innovators should translate ideas of disruptive innovators in ways that they are assimilated into productive enhanced innovations for the university.

The university management should acquire enough knowledge from both teaching and non-teaching staff and also through subscription. The knowledge will be obtained from university files, capture of working processes and be stored in university repositories. These include all the projects databases and theses databases to facilitate the re-use of the knowledge. Such knowledge will be a very rich base for intellectual property creation. Intellectual property is one of the outputs university performance is measured against.

The university management should motivate the staff to reinforce their working towards achievements of their set goals. Such goals should be set in the teaching performance contracts. They (goals) should include developing innovations, publishing, participating in research activities and supporting learning. This will involve communicating with the teaching staff on what is expected of them and how the staff should contribute towards achievement of the universities' target goals.

University management should create conducive work environment by designing and building working offices with enough physical staff for the teaching staff. They should set out tea and coffee rooms which will bring staff together. The universities should also set conference rooms with neatly set casual sitting which will also attract staff to relax and talk to their peers. They (university management) should also create space online where staff will share their experiences. Such environment will boost knowledge sharing in universities.

With regards to policy, the management must have an elaborate staff retention strategy, addressing; adherence to employment policy; timely payment; review of promotion on merit regularly; facilitation to attend learning conferences; exit interviews; guidance and counseling; and salary and allowance improvement.

6.5.2 University Librarians to Build and Mine University's Knowledge Base through Interaction with all University Staff

The university librarians must know university teaching staff and their expectations; establish what motivates them to use the institutional repositories or library; know their knowledge needs and how these needs change over time. This will enable the university librarians to develop a better knowledge base based on the needs of the teaching staff. The more the university librarian knows his/her clients, the higher his/her chances of promoting excellent information service; a feeder to enhanced performance.

The interaction between the librarian and the teaching staff will help to identify the existing knowledge sources and unearth hidden data and knowledge that resides both in the teaching staff and outside the university. Assuming the library established

internet connectivity, the librarian should upload the knowledge to the university website where the teaching staff will access remotely

With appropriate information communication technology physical infrastructure, the university librarian must know how his/her clients use the knowledge repository. The librarian should monitor reviews and assess the usage online. He will track trends and specific teaching staff behavior while interacting with the knowledge repository and ask them for feedback. Librarians should use the feedback to improve, to learn more and prevent more negative issues from happening. This is a way of instilling good knowledge management practices.

Direct contact between teaching staff and university management will allow a lot of exchange of ideas across the university. Collaboration between university staff should allow members to learn from one another which forms a rich ground for enhancing performance. This will be enabled by community discussions and team spaces. Social networks will also be built and expanded to create valuable links.

The university librarian should repackage knowledge to make it be re-used in a different situation. Such knowledge should then be disseminated widely to inform the users. Awareness of such knowledge should be through newsletters, websites and emails. The university librarian must capture information and work related information and store in repositories and also capture tacit knowledge and convert it to tacit knowledge by recording conversations and presentations of what people say

6.5.3 Teaching Staff to Create New Knowledge and Services to Substitute the Already Existing Knowledge

The members of the teaching staff should be inducted on course preparation and class control; teaching techniques; how to handle students; and modern teaching techniques

for lecturers. The recommended mechanism of tapping the knowledge should be documented at every stage. Creation of opportunities to showcase and promote innovations in various capacities will be a way of tapping and retaining knowledge from more experienced scholars and researchers. Importantly, experienced and innovative members of staff will be given a chance to share out such knowledge so that in the event of their exit, the system is not badly hit in terms of the loss of knowledge.

6.5.4 Academic Deans and Academic Heads of Departments can Revamp Training on New Hires

When new staff are hired, the academic deans should create a rapport with them and ask for their input. The deans should be approachable to allow the new staff to feel free to share their new ideas. The new staff should be allowed to acclimate to the university culture and build workspace and mentorship relationships. The deans should match staff expectations and responsibilities with rewards.

The academic deans should give each new hire a mentor cultivating a good relationship between the mentor and the mentee. This will give a positive impact on the new staff. The academic deans should also create policies and procedure documents that show step by step processes on daily basis. They should prepare desk manuals, standard working procedures and simple aid flow charts and checklists. These documents should be revised regularly to remain current. They should then be made accessible for working reference. The documents will also revamp training of the teaching staff more so with the new trends. Such documents will maintain standards while enhancing performance among staff at the public universities.

6.6 Knowledge Sharing Strategies

The study embarked on collecting data from six Kenyan public universities and contributes to the knowledge by developing a knowledge sharing model (figure 6.1). The model is an advancement and growth of knowledge sharing within institutions of higher learning in Kenya for the benefit of enhanced research, innovations, social capital, learning, linkage and collaboration.

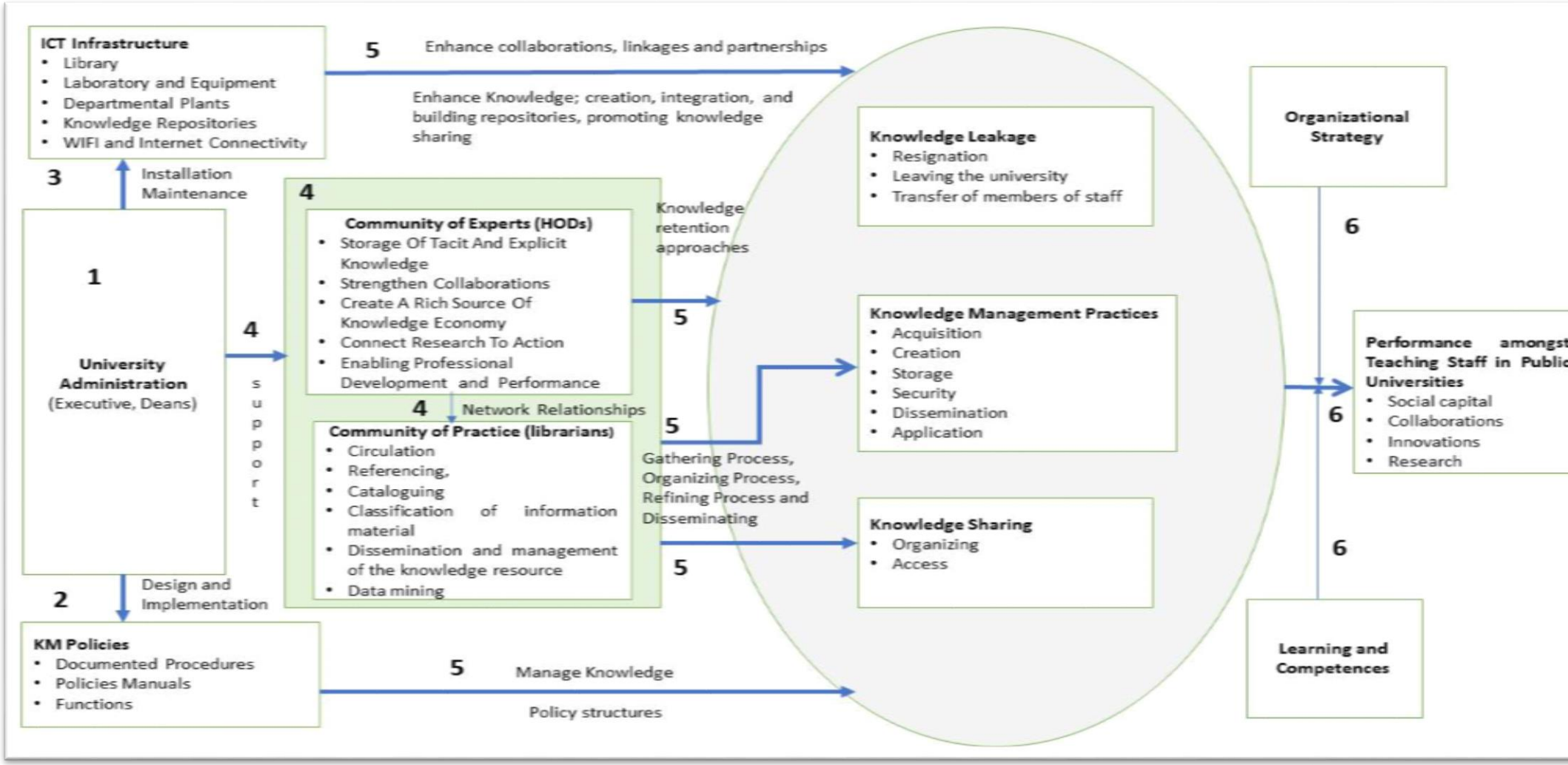

Figure 6.1.Mugalavai Knowledge Sharing Model

1. The university executives are the principal initiator of knowledge management activities, holding the primary position of the knowledge sharing and management exercise. Although the ideas, programs and strategies may be developed outside the precincts of the executives, the university executives authorize review of knowledge sharing and management and receive feedback on the progress on the performance as challenges faced. Such a group would provide the premise for the knowledge sharing and management exercise, making them accountable to the university governance system.
2. The university executive initiates the design and implementation of KM policies. This is through setting up forums and meetings to spearhead the knowledge sharing and management policies within the universities. They are be able to oversee the setting up of the various groups of KM specialists to design, develop and implement these policies. The group of KM specialists undertaking the KM policies design and implementation reports back to their respective university executives.

   The KM policies design and implementation team carry out such activities as designing and developing the necessary knowledge sharing and management, preparation on policy manuals to be used during the knowledge sharing and management exercise and documenting the knowledge sharing and management procedures. This comprises of professional, specialists, staff, knowledge community (CoPs, CoEs), and to some extent users of the KM system. That is, a diversity of stakeholders are involved in the KM policies design and implementation. Any challenges faced are immediately reported back to the respective university executive

The KM policy design and implementation team start implementing suggested KM policies immediately the university executive is satisfied that they are in order. The implementation may require the involvement of all the stakeholders to get their views on the KM policies being initiated. The stakeholders air their views and any new ideas are comfortably accommodated into the new KM policies by the KM policies design implementation team

Once convinced that the KM policy design and implementation exercise is successfully completed, the KM policies design and implementation team submits its report to the university executive. Over time the university executive ensures that the KM policies are reviewed and frequently updated to reflect the current status of information. The outcomes from the KM policies design and implementation is available for use by the university.

3. After knowledge management (KM) policies design and implementation, the university executive ensures that appropriate KM information communication technology (ICT) Infrastructure is availed to support knowledge sharing and management. The university executive facilitates the installation of; library, laboratory and equipment, departmental plants, knowledge repositories, WIFI and internet connectivity, which is done by ICT professionals and specialists assisted by the stakeholders and prominently, the knowledge community.

   Communities of practice (CoPs) with help from ICT staff is responsible for the daily running of the automated KM systems and report back to the university executive regularly on the activities taking place. The CoPs keep track of the usage as supported by the transaction log and other ICT system use integrity measures. The CoPs are proficient in KM and ICT to dispense their services competently. The university executive initiates maintenance of ICT infrastructure

after getting sufficient information, on the need for maintenance, from the communities of practice.

4. The university executive provides adequate support to Knowledge community. These include; availability of all necessary resources, opportunity for career development and growth and unlimited access to knowledge. They are allowed opportunity to attend short course training and workshops; and allowed to engage as change agents in change management; have leadership opportunities; get adequate financial incentive towards research opportunities, scholarships, innovations, and research grants.

   As earlier stated, the knowledge community are competent in discharging its duties. Firstly, the communities of experts (CoEs) are effective and efficient; enhance storage of tacit and explicit knowledge, strengthen collaborations, create a rich source of knowledge economy, connect research to action, enable professional development and better performance. They also ensure effective network relationships with the communities of practice (CoPs).

   Additionally, the CoPs are effective and efficient in their core activities of knowledge management that include; referencing, cataloguing, classification of information materials, dissemination, auditing and data mining among others

5. This far, the knowledge sharing and management is functional as support by the sound KM policies, an enabling ICT infrastructure, and competent and proficient knowledge community. The ICT infrastructure enhances; collaborations, linkages and partnerships for a sustainable knowledge sharing and KM management practices that drive the performance of the teaching staff. In so doing, it enhances; knowledge; creation, integration, and building repositories, promoting knowledge sharing.

The knowledge community actively execute their respective roles with CoEs utilizing their Knowledge retention approaches to ensure; reduction (minimization) of knowledge leakage, effectiveness on knowledge, good management practices, and adequacy in knowledge sharing. This shall enhance knowledge practices, capture, and storage of tacit and explicit knowledge, disseminate, reproduce and re-apply knowledge throughout their universities for ease of access and application by knowledge consumers and retaining knowledge that would have been lost on resignation or leaving staff.

The communities of practice (CoPs) shall on the other side actively engage in; gathering process, organizing process, refining process and disseminating to enhance the knowledge management practices and knowledge sharing. This will help; knowledge management practices in ensuring effective acquisition, creation, storage, security, dissemination, and application. Importantly, the proficiency of the CoPs effectively support the knowledge sharing for the purposes of organizing and accessing.

The knowledge management (KM) policies are important for managing knowledge and providing policy structures which ensure that the knowledge leakage resulting from; resignation, staff retirement, and transfer of members of staff is mitigated accordingly. These policies also manage knowledge and provide policy structures to improve the knowledge management practices in facilitating acquisition, creation, storage, security, dissemination, and application. Knowledge management and well signed policy structures shall ensure effective knowledge sharing and guidelines for organizing and accessing knowledge.

6. Proficient knowledge management practices, appropriate knowledge leakage mitigation strategy and prudent knowledge sharing strategy enhance the

performance amongst teaching staff in public universities in Kenya in terms of; social capital, collaborations, innovations and research. Teaching staff comfortably; post knowledge memoirs and peer reviewed research publications into university websites and have unlimited access to the repository, participate in publishing in peer reviewed journals, and promote learning, research and innovations. However, performance amongst teaching staff in public universities in Kenya will be moderated by organizational strategy for learning and competences. Therefore it is vital to mitigate the organizational strategy towards learning and competences for improvement of performance amongst teaching in public universities in Kenya.

6.7 Suggestions for Further Research

1. Although recommendations have been made in this study on knowledge sharing practices and their effect on teaching staff performance among teaching staff in public universities in Kenya, important information is still lacking. Additional research on impact of knowledge leakage on innovations among various subject disciplines; for example in science and technology should be conducted.

2. The study on knowledge sharing practices and their effect on teaching staff performance amongst teaching staff in public universities collected data from teaching staff in public universities alone. Another interesting study of further research should therefore be conducted to provide further insights on the effect of knowledge sharing between knowledge workers and students in public universities.

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APPENDICES

Appendix 1: Research Objectives, Questions and Possible Sources of Data

Research objective	**Research question**	**Possible source of data**
Examine kinds of knowledge communities that are available for enhancement of social capital amongst teaching staff in selected public universities in Kenya;	How do knowledge communities relate to social capital amongst teaching staff in selected public universities in Kenya?	Interview/questionnaire
Assess the information communication technology physical infrastructure used to enhance collaborations, linkages and partnerships amongst teaching staff in selected public universities in Kenya;	To what extent does information communication technology physical infrastructure influence collaboration, linkages and partnerships amongst teaching staff in selected public universities in Kenya?	Observation/Interview Questionnaire
Determine ways in which knowledge leakage has impacted innovations amongst teaching staff in selected public universities in Kenya;	How does knowledge leakage relate to research and innovation amongst teaching staff in selected public universities in Kenya?	Literature

Assess knowledge management practices used to promote learning, research and innovations amongst teaching staff;	What is the influence knowledge management on learning, teaching, research and innovations in selected public universities in Kenya?	Observation/Questionnaire Interview
Determine existing and suitable policy frameworks that are used to manage knowledge in selected public universities libraries in Kenya and;	How do knowledge sharing and knowledge management policies influence research and development amongst teaching staff in selected public universities in Kenya?	Observation/interview/ Questionnaire
Propose suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in selected public universities in Kenya.	How will the findings of this study influence policy makers and administrators in selected public universities in Kenya?	Literature/interview Questionnaire

Appendix II: Letter of Introduction

Introduction

Dear Respondent.

My name is Anne Mugalavai. I am carrying out a research for my Doctor of Philosophy in Information Science Library and Information Studies at Moi University Kenya. The topic of my research is**: *Assessing knowledge sharing practices and their effect on teaching staff performance in selected public universities in Kenya.***

The objectives of my research are to:

1. Examine kinds of knowledge communities that are available for enhancement of social capital amongst teaching staff in selected public universities in Kenya;
2. Assess the information communication technology physical infrastructure used to enhance collaborations, linkages and partnerships amongst teaching staff in selected public universities in Kenya;
3. Determine ways in which knowledge leakage has impacted innovations amongst teaching staff in selected public universities in Kenya;
4. Assess knowledge management practices used to promote learning, research and innovations amongst teaching staff;
5. Determine existing and suitable policy frameworks that are used to manage knowledge in selected public universities libraries in Kenya and;
6. Propose suitable knowledge sharing and management strategies that can be used to enhance performance of knowledge workers in selected public universities in Kenya.

Your selection to participate in this research was by purposive sampling. I therefore look forward to your support in this noble cause. Please note that your views in this questionnaire shall not be used for any other purpose that might cause damage to your reputation, integrity, emotions, or professional conduct. The information you give will be treated with high level of confidentiality. Individual responses will not be identifiable but treated in aggregate when reporting the findings.

Your participation in this research is voluntary. Your comments are an **important contribution** as we design knowledge sharing strategies to enhance research, innovations and intellectual property in Public universities in Kenya. Your participation should take around 20 minutes of your time and would make a major contribution to the outcome of my research study. A summary of results will eventually be available to all who participate.

My research supervisors *are Dr. Alice Wafula* and *Professor Cephas Odini* who can be contacted for any enquiries related to the research or its adherence to the formal privacy and ethical policies at the School of Information Science, Moi University.

Thank you.

Anne Mugalavai

Appendix III: Instructions (All Participants)

Assessing knowledge sharing practices and their effect on teaching staff performance in selected public universities in Kenya.

1. Please take a moment to answer the following questions
2. Definitions of terms that you may not be familiar with have been given at the beginning of each section

SECTION A: PERSONAL DATA

1. University Name:……..……..….
2. School/Faculty……...…..…..
3. Department……....…….
4. Respondent's Name (optional): ……..……..…
5. Date: ……..…..
6. Your Title…….…….…….…….
7. Your Work Station……..…….…..
8. Indicate the period worked in present position (in Years). please tick (✓) the right answer

Less than 1 Year❒1 -3 Years❒ 3 – 5 Years❒6- 8 Years ❒Over 9 Years ❒

9. Highest Academic qualification by ticking (✓) in the box corresponding to correct answer Certificate ❒ Diploma ❒ Bachelors Degree ❒ Masters ❒ PHD ❒

Others ❒specify…….

10. Please indicate your age bracket by ticking(✓) in the box corresponding to correct answer

Less than 26 years❒26 -35 years❒36 - 45 years❒46 - 55 years❒above 55 Years ❒

11. May you indicate your gender Male ❒ Female❒
12. Number of years you have worked in university

Less than 1 year❒1-5 years❒6-10 years❒11-15 years❒ more than 15 years❒

Appendix IV: Questionnaire for Deans

SECTION C: KNOWLEDGE LEAKAGE (DEANS)

Tacit knowledge is the knowledge we each carry in our heads about how to do things, who to call and the lessons learned through experience.

Explicit knowledge is recording of the tacit knowledge in some media that allows another person to use it.

1. Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
Leaving members of staff from my Department/School/university to another department/school/university deprived the school/department/university of valuable operational knowledge					
I have created innovations					

Please list the innovations you have created

……

……

……

Please tick the challenges that your School/Department/university have faced?

Challenge	**Yes**	**No**
Retirement		
Transfer		
Resignation		
Dismissal		
Death		

2. How has each of the challenges mentioned in question 2 above affected the operation the activities of your School/Department

Challenge	**Effect on work activities**
Retirement	
Transfer	
Resignation	
Dismissal	
Death	

3. What measures has your department/school/Faculty put in place to address the challenges mentioned in question 2?

Challenge	**Control measures**
Retirement	
Transfer	
Resignation	
Dismissal	
Death	

4. In order to sustain effective operations in the university, certain mechanisms or systems must be put in place to retain relevant knowledge. Based on your own past observation and experience, list any mechanisms you are aware of that your school/department used to retain a departing member of staff's knowledge that was necessary to run the operations and academic work of your school/department.

i. ……
ii. ……
iii. ……
iv. ……

.

5. If you are not aware of any mechanisms used in your school/department to retain the knowledge of departing member of staff, kindly state the relevant /critical knowledge that you feel should be captured from the departing staff as that which

should be made available to the new employees/lecturers. State your recommended method that should be used to retain knowledge that may be lost.

i. Critical knowledge that your school/department should tap from a departing lecturer

……

……..……

ii. Critical knowledge that the school/department should acquire for use by the new lecturers

……

……

ii. Recommended mechanism for retaining knowledge that is lost

……

……

SECTION D: POLICY (DEANS)

6. Do you have a knowledge sharing policy in your department/school/university. Tick your response appropriate

Yes ❒ No ❒

7. To ensure that operations of organizations are effectively and efficiently executed, organizations organize their work by way of policies, manuals and procedures. There are those that have documented their processes to enhance performance. In your case, in thinking in terms of innovations, research, teaching and any other academic related operations, kindly list the documents, processes, procedures, manuals that are used in your department/school?

<u>Documented procedures on how work is done</u>

i…….

ii……

iii……..…..

<u>Policies</u>

i…….

ii……

iii……..

Manuals

i…….

ii……

iii……..….

Processes

i…….

ii……

iii……...……

8. Based on the listed documented processes in question 2 , do you think they have enhanced your performance in your department/school/faculty? (Tick your response to every item).

Opinion	**Yes**	**No**
Procedures		
Policies		
Manuals		
Processes		

9. Please indicate your rating of documented processes, policies, manuals and procedures are in enhancing the work in your school/department

   Scale: 1= Very important, 2= important, 3= No opinion, 4= Somewhat important, 5= Not important

Statement	1	2	3	4	5
documented processes, policies, manuals and procedures are in enhancing the work in your school/department					

STRATEGY

10. In order to ensure continued operations in organizations there are certain mechanisms put in place to retain valuable organizational knowledge. Based on your observation and past experience, list any mechanisms you are aware of that

your department/school has put in place to retain members of staff who would have otherwise left with the valuable knowledge from the university

i…….

ii……

iii……...

iv……...

v……

11. If you are not aware of any measures taken by your department/school/faculty to retain knowledge that leave with members of staff , please state the valuable knowledge that you feel your department/school should acquire from the leaving employees?

<u>Valuable knowledge that should not leave the department/school/faculty</u>

i……..…...

ii……..….

12. What is the critical knowledge that you feel your department/school /faculty should acquire to be used by new employees?

i……..…...

ii……..….

iii……..……

13. What methods do you propose should be applied to retain knowledge ?

i……..…

ii……..…...

iii……

iv……

14. What do you think of existing policies and procedures of knowledge management in your University?

It's quite important, relevant and latest. ❒

It's quite important, relevant but not updated regularly. ❒

It's just trivial, a part of formalities and of no use. ❒

Your Expert Comments:

……

……

……

……

Appendix V: Heads of Departments Questionnaire

SECTION B: KNOWLEDGE COMMUNITIES-(COMMUNITIES OF PRACTICE AND COMMUNITIES OF EXPERTS)

Communities of Experts

Group of professional who come together to share and exchange their knowledge for enhancement of their professionalism

Explicit knowledge is recording of the tacit knowledge in some media that allows another person to use it.

Institutional repository is an online archive for collecting, preserving and disseminating digital copies of the intellectual output of an institution, particularly a research institution

Knowledge management (KM) is doing what is needed to get the most out of knowledge resources. It is the systematic process of finding, selecting, organizing, distilling and presenting information.

Tacit knowledge is the knowledge we each carry in our heads about how to do things, who to call and the lessons learned through experience.

1. Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

   Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
Communities of experts represent an area of common interest for a number of university teaching staff					
Currently communities of experts have been recognized in my university					
Communities of Experts give me a sense of belonging					
They help me build relationships and network with my peers within my university and other universities					
Communities of experts have benefited my daily work from the relationships established					
My community is mainly driven by the willingness of members to participate					

Are mainly driven by the willingness of the university to finance participate					
The community to which I belong motivates me to share work-related knowledge					
They help me achieve better results (quality, productivity, organizational satisfaction) in day to day operations					
They have enabled the capture and store of tacit and explicit knowledge so it can be easily accessed and applied by others					
They have strengthened collaboration across departments, offices, and units within my university					
They have strengthened research across departments, offices, and units within my university					
They have strengthened collaboration across other universities within and outside Kenya					

Participation

2. Please indicate what *strongly* limits your ability to participate in your CoEs? (Tick all that apply)

   Time ❒
   Lack of management support ❒
   Low awareness of activities ❒
   Lack of incentives ❒
   Communication barriers/jargon ❒
   Groups appear to be exclusive ❒

3. Please what would *strongly* motivate you to participate in CoEs? (Tick all that apply)

   Meeting work goals ❒
   Staying current in the sector or theme ❒
   Career development ❒
   Solutions to work challenges ❒
   Learning and development ❒
   Expanding personal network ❒
   Support for daily activities ❒

4. What might be done to attract new members?

……

……

…….

5. Please suggest ways to marry formality and informality in CoEs.

i…….

ii. ……..….

iii. …….

iv. …….

6. Please suggest ways in which your university management might assist your CoEs.

i…….

ii. ……..….

iii. ……..…

iv.……..….

7. Please give other recommendations you have to strengthen your CoEs' effectiveness

i. ……..

ii. ……..…

iii. ……

iv. ……....

8. Please indicate the relationship between your CoE and any other regional or international university

None ❒

Occasional communication ❒

Regular communication ❒

The activities of my CoEsare well integrated with a regional knowledge hub ❒

Unknown ❒

9. Indicate what describes you best

I have a particular role or function in a CoE in my university. ❒

My primary role is as a participant in activities and events organized by CoEs. ❒

I am working alone on my research ❒

I do not fit in any of my university CoEs ❒

I do not know ❒

10. How long have you been involved in your CoEs?

Less than 1 year ❒

2 - 5 years ❒

1 - 2 years ❒

Over 5 years ❒

Not involved ❒

11. How often are you involved in CoE activities?

Daily ❒

Monthly ❒

Yearly ❒

Weekly ❒

Never ❒

12. Indicate the number years of experience do you have that relate to your CoEs

Less than 1 year ❒

2 - 5 years ❒

Over 10 years ❒

1 - 2 years ❒

5 - 10 years ❒

13. Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
CoEs help my university to Capture and store tacit and explicit knowledge so it can be easily accessed and applied					
CoEs help my university to Build knowledge sharing and learning into work life					
CoEs help my university to Strengthen collaboration across offices, departments, and units.					

CoEs help my university to Leverage knowledge management to improve performance					
CoEs help my university to become more adept at strategy development					

14. The value of CoEsis that they ?(Tick all that apply)

Identify, create store, share, and use knowledge.

Reduce the learning curve for new employees. ❒

Enable professional development. ❒

Reduce duplication and prevent reinvention of the wheel. ❒

Permit faster problem solving and better response times. ❒

Showcase good practices. ❒

Spawn new ideas for products and services. ❒

Enable accelerated learning and research. ❒

Connect research to action. ❒

Enhance organizational competencies. ❒

15. Recommendations for strengthening CoEseffectiveness (List them)

……

……

……

16. How might CoEsbecome better at identifying, creating, storing, sharing, and using knowledge? (Tick all that apply)

Involve external partners. ❒

Customize learning and development programs at headquarters and in the field. ❒

Offer professional development opportunities (outside headquarters). ❒

Organize conferences, meetings, and workshops. ❒

Link more to other CoEs(across sectors and themes). ❒

Sponsor more brief seminars. ❒

Provide direct support to project and country teams. ❒

Use information, communication, and technology more actively and innovatively. ❒

Systematically review work with peers before, during, and after. ❒

Develop mechanisms for sharing ideas with management. ❒

As a scholar, how do you share your knowledge?

17. Which other university in Kenya has the same program that you offer? List them.

1 ……..…

2 ……..…

3 ……

18. How often do you interact with the lecturers from the other universities that offer the same program?

Daily ❒

Monthly ❒

Yearly ❒

Weekly ❒

Never ❒

19. Where do you meet to compare notes?

Office ❒

Conferences ❒

Social platforms ❒

University's conference hall ❒

Never ❒

20. What teaching and learning resources have you been able to exchange with them?

Lecture notes ❒

Curriculum ❒

My publication ❒

Text books ❒

None ❒

21. To what extent have you connected your students with the students from other universities in Kenya and internationally

Shared debates ❒

Shared notes ❒

Projects ❒

Benchmarking ❒

None ❒

22. Of what use is the university learning repository to your day to day work?

Teaching ❒

Research ❒

Learning ❒

Leisure ❒

Never ❒

23. What is your contribution towards university's intellectual property?

Publications ❒

Innovations ❒

Management ❒

Initiator of research funding ❒

None ❒

24. What innovation have you created that you feel proud of? List them

……

……

……

……

Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
The meetings are facilitated in terms of venue, time and financial					
Your university appreciate your efforts towards teaching					

Appendix VI: Interview Schedule for Librarians

SECTION B: COMMUNITIES OF PRACTICE (LIBRARIANS)

Communities of Practice

Community of practice is a self-organized group of persons with a common interest who come together to share the knowledge they own with an aim of improving their profession

Knowledge management (KM) is doing what is needed to get the most out of knowledge resources. It is the systematic process of finding, selecting, organizing, distilling and presenting information.

1. What is your role in this University? What exactly do you do?

……

……..……

2. Of what importance are you to the University?

……

……

3. What is unique about what you do?

……

……

……

4. Who else can do exactly the same work you do at the university or in any other university?

……

……

5. What do you do when you have a trouble solving work problem?

……

……

……..

6. How did you handle a work situation where you tried and failed but knew someone within the university library who does it better?

……

……

7. Suppose your library did not have this better performer/person.

i. How would you seek for help from another university that has this better performer?

……

……

ii. How would you keep connected to this person?

……

……

……

iii. Of what importance will this better performer be to other workers of your University library?

……

……

8. What would you change about other workmates?

……

……

9. Suppose you told your supervisor about your work situation, what would you expect her/him to do?

……

……

……

10. Do you have a personal hero?

Yes ❒ No ❒

11. How do your colleagues assist you to achieve your set work goals

……

……

12. How do you interact with your work mates during your free time?

……

……

13. To what extent have your colleagues shared with you what they know about work?

……

……

14. Other than your work mates at this university, who else do you discuss with your work issues?

……

……

……

15. Tell me about your university. Work, recreation and free/break times. What do you do during this time

……..

……

……

16. How able are you to hold gatherings where you can exchange work ideas with your colleagues?

……

……

……

17. What are the available forums that you interact? How often?

……

……

……

18. What are the ongoing practices and processes that contribute to the "life" of the community and keep members engaged?

……

……

……

19. How does your organisation actively create and support "Communities of Practice?

……

……

……

20. How is knowledge being shared within the community?

……

……

……

……

21. Beyond the community?

……

……

……

22. Are leaders or roles emerging in the community?

Yes ❒ No ❒

If answer to this question was yes, in what ways?

……

……

……

How are they being cultivated?

……

……

23. How are members being supported in the community?

……

……

24. How are members contributing?

……

……

Posting?

……

……

Replying?

……

……

When? How often?

……

……..

25. What are the prevalent patterns of interactions?

……

……

…….

26. How much of members' online time is spent connecting to others in the community (e.g., reading and/or posting in forums, attending webinars)?

……

……

27. What are members doing in the community?

……

……

……

28. What are the popular trends in posts?

……..….

Blogs?

……..

Forums?

…….……

29. What resources are being used?

……

……

……

……

30. What are members' technical issues?

……

……

31. How are the gatherings facilitated in terms of venue, time and financial?

……
……
……

32. How often does the Vice Chancellor gather staff to convey to them his experiences with the outside world?

……

……

……

How else does he/her communicate these experiences?

……

……

……

33. Who organizes the meetings?

……

……

……

34. What makes a good worker?

……

……

35. What is your overall evaluation view about your work performance?

……

……..

36. Tell me a person or event in your university that has markedly improved your work?

……

……

……..……

How can I access this person or past event?

……

…….

37. If you were to list things that you would like to say that you have done before you retire, what would they be?

……

……

Where would one find this list?

……

……

……

38. Who else has done the same things?

……

……

39. What are the major issues affecting your work?

……

……

40. Suggest some of the possible solutions

……

……

……

41. What has being a member of a profession taught you?

……

……

……

42. How does the university benefit from this professional membership?

……

……

43. Other than your professional association, how else do you interact with your peers

……

……

……

Thank you for your cooperation

Appendix VII: Teaching Staff Questionnaire

SECTION B: INFORMATION COMMUNICATION TECHNOLOGY ORGANIZATIONAL RESOURCES

25. Does the university have sufficient facilities for teaching, learning and research?

Yes ❒ No ❒

26. May indicate whether your university has each of the following facilities. please tick (✓) in the box corresponding to the correct answer

	Yes	**No**
Laboratories		
Library		
Institutional repository		
Equipment		
Departmental plants		

27. Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
My university has all the required physical resources that enable me perform my work					
The library resources in my university are up to date					
I have the technological knowledge required to carry out my teaching and research					
The university has incorporated research programmes within her calendar					
The University has a research coordinating and planning office within her structure					
My university has linked me to other universities.					

28. May you indicate your source of financial support for your research from the following sources? Please indicate the source of funding by ticking (✓) in the box corresponding to the right answer

Source of financial support	**Please tick (✓) as appropriate**
Government sponsorship	
Industrial firm	
Research grant from the University	
Self	
None of the above	

29. What is the equipment like in your laboratories?

……

……

……

30. How equipped are the laboratories

……

……

……

SECTION C: KNOWLEDGE LEAKAGE (TEACHING STAFF)

Tacit knowledge is the knowledge we each carry in our heads about how to do things, who to call and the lessons learned through experience.

Explicit knowledge is recording of the tacit knowledge in some media that allows another person to use it.

31. Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
Leaving members of staff from my Department/School/university to another department/school/university deprived the school/department/university of valuable operational knowledge					
I have created innovations					

Please list the innovations you have created

……

……

……

32. Please tick the challenges that your School/Department/university have faced?

Challenge	**Yes**	**No**
Retirement		
Transfer		
Resignation		
Dismissal		
Death		

33. How has each of the challenges mentioned in question 2 above affected the operation the activities of your School/Department

Challenge	**Effect on work activities**
Retirement	
Transfer	
Resignation	
Dismissal	
Death	

34. What measures has your department/school/Faculty put in place to address the challenges mentioned in question 2?

Challenge	**Control measures**
Retirement	
Transfer	
Resignation	
Dismissal	
Death	

35. In order to sustain effective operations in the university, certain mechanisms or systems must be put in place to retain relevant knowledge. Based on your own past observation and experience, list any mechanisms you are aware of that your school/department used to retain a departing member of staff's knowledge that was necessary to run the operations and academic work of your school/department.

i. ……..….

ii. ……..

iii. ……..……

iv. ……..……

36. If you are not aware of any mechanisms used in your school/department to retain the knowledge of departing member of staff, kindly state the relevant /critical knowledge that you feel should be captured from the departing staff as that which should be made available to the new employees/lecturers. State your recommended method that should be used to retain knowledge that may be lost.

i. Critical knowledge that your school/department should tap from a departing lecturer

……

……

……..

ii. Critical knowledge that the school/department should acquire for use by the new lecturers…….

……..

iii. Recommended mechanism for retaining knowledge that is lost

……

……

SECTION D: KNOWLEDGE MANAGEMENT (TEACHING STAFF)

Knowledge management (KM) is doing what is needed to get the most out of knowledge resources. It is the systematic process of finding, selecting, organizing, distilling and presenting information.

37. Please indicate, according to your opinion, the level of agreement or disagreement with following statements by ticking (✓) against the spaces corresponding to the correct answer

Scale: 1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5= Strongly Disagree

Statement	1	2	3	4	5
My publications are available at the university website					
Personal involvement I belong to my professional associations					
During our professional conferences, I communicate my findings					
My research is exam oriented					
I have the technological knowledge required to carry out my research					
I interact with other researchers working on the same programme					
I have published in peer reviewed journals					
I have created innovations					

Knowledge memories The university's knowledge memories are available and accessible at the repository					
My publications are available at the university website					
Self-paced delivery The university appreciates my research contributions					
My organization recognizes knowledge as a part of their asset base					

38. If you have interact with other researchers working on the same programmelist their institutions

……

……

……

……

……

39. If you have published in peer reviewed journals list the articles and journals you published with

……

……

……

……

……

……

40. If you have created innovations list them

……

……

……

……

……

……

41. If the university appreciates you research contributions, State how the university appreciates you.

……

……

……

……

……

……

42. What other improvements would you recommend in this research?

……

……

……

……

43. What is least valuable about research?

……

……

44. What is most valuable about research?

……

……

45. What other specific comments do you have?

……

……

46. What tools are available for knowledge capturing? List

……

……

……

47. Please indicate by ticking (✓) in the appropriate box they way you think about Knowledge Management (KM)

Never heard of it	❒
Something they are already doing but not under the same name	❒
It is just a management fad	❒
It is strategic part of the university business.	❒

Something that could be beneficial for the organisation ❒

Any other please specify_____

Please give your expert comments:

_____

_____

_____

48. What is the current status of Knowledge Management in your organization? (Tick one)

Not in existence at all ❒

Nascent stage ❒

Introduction stage ❒

Growth stage ❒

Well established ❒

Your Expert Comments:

_____

_____

_____

49. What are the problems related to knowledge retention? (Rank the factors given below from 1 – 5 on your choice of preference)

Problems Related To Knowledge Retention	Please rank between 1 and 5. Lowest is 1 and highest is 5
Lack of Information	
Information overload.	
Reinventing the wheel.	
Loss of crucial knowledge due to a key employee leaving the organisation	
Poor sharing of knowledge in the organisation.	
If any other, please specify _____	

Your Expert Comments:

_____

_____

_____

50. How much time does it take for an employee to get the relevant knowledge document in your organization ?

A few minutes ❒

A few days ❒

A few hours ❒

Week or more ❒

Never ❒

Your Expert Comments:

_____

_____

_____

51. Which of the following best describes your organization with regard to new knowledge creation? (Rank the factors given below from 1 – 5 on your choice of preference)

Item	Please rank between 1 and 5. Lowest is 1 and highest is 5
It's the job of R&D department only.	
They view it as everyone's job and everybody contributes to it.	
Top management takes active interest in it and supports it continuously.	
It's part of our organisational philosophy & culture.	
Part of performance contract.	
Any other, please specify	

Your Expert Comments:

_____

_____

_____

52. Please indicate your perception on the satisfaction level of the strategy that your University use for KM?

Scale: 1= Very Suitable, 2= Suitable, 3= Medium, 4= Not Suitable, 5= Not Suitable at all

Statement	1	2	3	4	5
KM as a business strategy.					
Transfer of knowledge & best practices.					
Customer focused knowledge.					
Personal responsibility for knowledge.					
Innovation and knowledge creation.					
If any other, please specify _____					

Your Expert Comments:

_____

_____

_____

53. What is the attitude of senior management with regard to KM in your organization ?

Sees it as very important and provides full support. ❒

Sees it as very important but hardly supports it. ❒

Sees it as a waste and hardly bothers. ❒

Was very supportive in the beginning but now lost interest ❒

Is not aware of it. ❒

Your Expert Comments:

_____

_____

_____

54. Which of the following best describes your organization culture? (Rank the factors given below from 1 – 5 on your choice of preference)

Their basic values & purpose emphasis on sharing of knowledge ❒

They have an open, encouraging & supportive knowledge management culture. ❒

They think knowledge management is each and everybody's job and so everybody have the best of knowledge. ❒

The prevailing notion is that the knowledge management is the task of a few designated ones and there is no need for knowledge sharing. ❒

Knowledge management is not recognized ❒

Any otherplease specify _____

Your Expert Comments:

_____

_____

_____

55. Which one is the biggest barrier in knowledge management in your organization? (Tick all that apply)

Functional silos. ❒

Lack of participation. ❒

Not willing to share knowledge. ❒

Lack of trust. ❒

Knowledge sharing not a part of daily work ❒.

Lack of training. ❒

Lack of rewards/ recognition for knowledge sharing ❒

Your Expert Comments:

_____

_____

_____

Which technologies have you implemented in your organisation? (please tick whichever is applicable)

Internet ❒

Data warehousing ❒

Intranet ❒

Knowledge management software ❒

Extranet ❒

Decision support system ❒

Groupware ❒

Data management system ❒

Any otherplease specify _____

Your Expert Comments:

_____

_____

_____

56. What are the problems faced by you in using IT for Knowledge Management? (Rank the factors given below from 1 – 8 on your choice of preference)

Lack of training. ❒

System too much complicated. ❒

Lack of identifying the proper IT tool ❒

Lack of time to learn. ❒

Lack of user uptake due to insufficient communication. ❒

Every day usedid not integrate into normal working practice. ❒

Unsuccessful due to technical problems. ❒

Any other please specify_____

Your Expert Comments:

_____

_____

_____

57. How significant is the role that effective KM can play in achieving the best result with regard to the following in your organisation? (Tick all that apply)

Improving competitive advantage ❒
Improving research and development ❒
Innovations ❒
Developed institutional repositories. ❒
Employee development. ❒
Cost reduction. ❒
Better decision-making. ❒
Intellectual property rights management. ❒
Faster response to key business issues. ❒
Improving quality ❒
Improving delivery ❒

Your Expert Comments:

_____

58. What is the biggest hurdle in effective implementation of KM in your organization?

Changing people's behaviour from knowledge hoarding to knowledge sharing ❒
Lack of understanding of KM and its benefits ❒.
Determining what kind of knowledge to be managed and making it available ❒.
Justifying the use of scarce resources for KM ❒.
Lack of top management commitment to KM ❒.
Overcoming technological limitations ❒.
Attracting & retaining talented people ❒.
Any other please specify_____

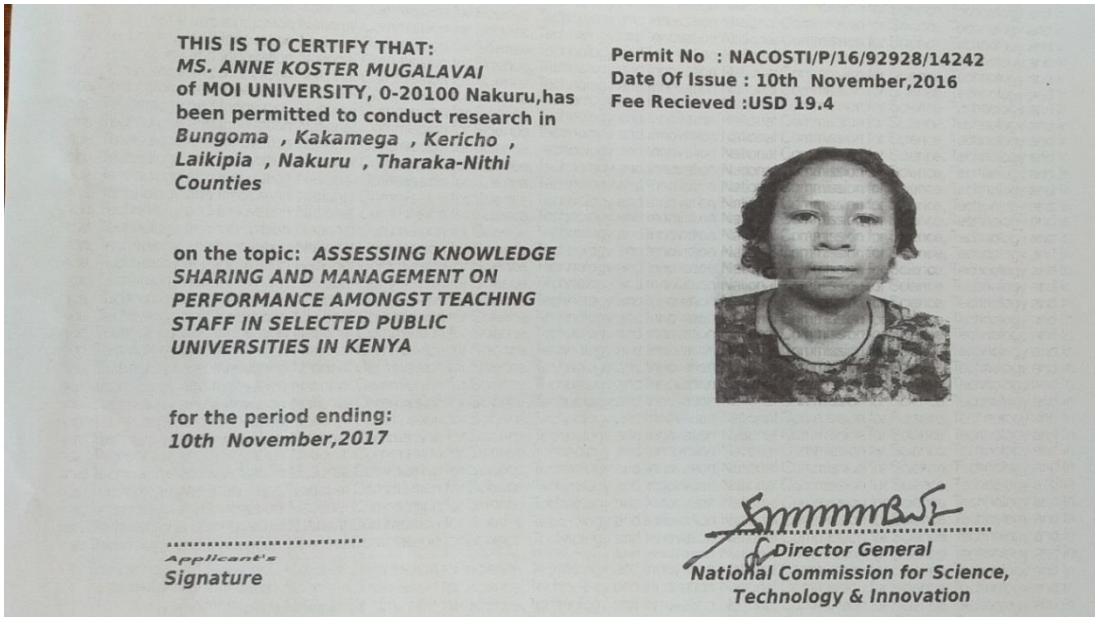
Your Expert Comments:

_____

_____

_____

Appendix VIII: NACOSTI Permit



THIS IS TO CERTIFY THAT:
MS. ANNE KOSTER MUGALAVAI
of MOI UNIVERSITY, 0-20100 Nakuru,has
been permitted to conduct research in
Bungoma , Kakamega , Kericho ,
Laikipia , Nakuru , Tharaka-Nithi
Counties

on the topic: *ASSESSING KNOWLEDGE SHARING AND MANAGEMENT ON PERFORMANCE AMONGST TEACHING STAFF IN SELECTED PUBLIC UNIVERSITIES IN KENYA*

for the period ending:
10th November,2017

.....
Applicant's
Signature

Permit No : NACOSTI/P/16/92928/14242
Date Of Issue : 10th November,2016
Fee Recieved :USD 19.4

Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 11739

CONDITIONS: see back page