Mzuzu University Faculty of Humanities and Social Sciences

Department of Information Science

Knowledge Management Practices at Lilongwe University of Agriculture and Natural Resources (LUANAR) Bunda College

By

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DECLARATION

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ABSTRACT

The purpose of this study was to explore knowledge management (KM) practices at Lilongwe University of Agriculture and Natural Resources' (LUANAR) Bunda College in Malawi. The study was guided by the pragmatic paradigm which led to the use of mixed methods approach and adoption of explanatory sequential design. The study was underpinned by the SECI Model of Knowledge Creation of Nonaka and Takeuchi (1995). The total sample for the whole study was 173 comprising 164 academic staff and 9 senior administrative staff and data was collected using structured questionnaire and interview guide. Quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) software version 21 while qualitative data were analysed thematically. The results were represented quantitatively using tables, graphs, percentages, and qualitatively using themes.

Major findings of the study have revealed that LUANAR, Bunda College creates explicit knowledge in form of theses and dissertations, teaching and learning modules/materials, and curriculum documents while tacit knowledge is created in form of expertise, skills, ideas, values and experiences. This knowledge is shared through email, Internet and Intranet, social media, meetings, conferences, workshops, seminars; training and education. The study further established that KM practices enhance research, curriculum development processes, teaching and learning, decision making processes, and leads to the creation of knowledge bringing about innovation. However, the study revealed that effective KM practices are hindered by inadequate awareness about the importance of Knowledge Management due to lack of top management support, lack of policy, lack of KM champion and unwillingness of academic staff to share their knowledge.

Therefore, the study recommends that top management at LUANAR, Bunda College, should come up with a KM programme to manage different types of knowledge created at the college; facilitate the development of expert databases and other knowledge bases to facilitate ready access to knowledge at college; develop an incentive system to motivate staff and ensure that staff participate willingly in KM activities; develop a KM policy to act as a framework for the KM implementation at the college; develop a knowledge management awareness programme for the college and identify a knowledge management champion or advocate to coordinate KM activities at the college.

DEDICATION

I dedicate this thesis to my wife, Jane, and my sons Sam, Andrew, Neville and Levi for their endurance and encouragement throughout the period of my study.

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I acknowledge God for the gift of life, good health, ability, and patience he gave me to complete my thesis. I would like to acknowledge the following people for their role they played in this study:

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ABBREVIATIONS AND ACRONYMS

CoPs	: Communities of Practice
COVID-19	: Coronavirus Disease of 2019
ICT	: Information and Communication Technology
IFLA	: International Federation of Library Associations
IT	: Information Technology
LUANAR	: Lilongwe University of Agriculture and Natural Resources
KM	: Knowledge management
Mzuni	: Mzuzu University
MZUNIREC	: Mzuzu University Research Ethics Committee
OECD	: Organisation for Economic Co-operation and Development
SECI	: Socialisation, Externalisation, Combination and Internalisation
SPSS	: Statistical Package for Social Sciences
(TVS) Supply Chain Solutions	: (TV Sundram and Sons) Supply Chain Solutions
USA	: United States of America

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.0 Introduction

The aim of this study was to examine knowledge management (KM) practices at Lilongwe University of Agriculture and Natural Resources (LUANAR), Bunda College. Knowledge is a critical factor for organisational success in the knowledge-based economy. It is one of the most treasured human capital and its consolidation leads to innovation and creation of new avenues for organisational development (Ishrat & Rahman, 2020). Universities are considered to be the main centres for imparting, generating and leveraging knowledge (Anvari et al., 2011) since they are in the knowledge business (Ojo, 2016; Rowley, 2000). Although knowledge has existed in all the core functions of universities (Ramanigopal, 2012), many universities are not enjoying full benefits offered by KM due to ineffective KM practices (Agarwal & Marouf, 2014; Kabilwa, 2018; Mvula 2018). KM practices are defined as ways ideas are translated into action in the process of accomplishing specific organisational goals (Sarrafzadeh et al., 2006). KM practices include knowledge generation, acquisition, organisation, storage, transfer, sharing and retention (Branin, 2003). KM is therefore the effective management of these practices that ensures efficient utilisation of organisational resources. Effective KM in universities enhances decision making (Dhamhere, 2015), improves university ranking and its competitive advantage (Laal, 2010), strengthens research capacity and adds value to curriculum design processes (Yaakub et al., 2014), and improves teaching and learning (Dhamdhere, 2015) among others. These benefits can only be realised through implementation of effective KM practices in universities.

1.2 Conceptual setting

The concept of KM was developed from the consulting firms in the late 1980s (Koenig & Neveroski, 2008). It arose in order to recognise the importance of information and knowledge assets and the advent of Internet as a knowledge sharing tool for geographically separated organisations (Cascio & Montealegre, 2016). From the 1990s, several developed countries, such as Germany, Japan, Switzerland, the United Kingdom and the United States started treating and managing knowledge as their prime resource for economic power (Drucker, 1993). Peter Drucker, the management guru was the first one to use the term KM in 1980, but the discipline of KM

gained respect and popularity in the mid 1980's to 1990's due to economic, social and technological changes that were sweeping across the globe then (Dalkir, 2005). The new ways of working through the use of technologies made a lot people to be laid off in organisations, and in the process, walking out with their knowledge and expertise. Managers realised that replacing the intellectual property would be a toll order, hence organisations started looking for ways of retaining this knowledge. That was the beginning of the adoption of KM in organisations (TVS Supply Chain Solutions, 2020). However, Agarwal and Marouf (2014) noted that colleges and universities were still lagging behind in adopting KM as a driver of strategic management regardless that it determines sustained economic advantage and enhanced organisational performance (Agarwal & Marouf (2014).

The Socialisation, Externalisation, Combination, Internalisation (SECI) Model of Knowledge Creation by Nonaka and Takeuchi (1995) recognises two main types of knowledge created in organisations as explicit and tacit knowledge. Examples of explicit knowledge are publications, presentations, modules, curriculum documents, policies, and emails while examples of tacit knowledge are know-how, experiences and intuitions (Omotayo, 2015; Ramachandran et al., 2013). Nonaka and Takeuchi (1995) explain that some mechanisms facilitate knowledge sharing processes, which Adamseged and Hong (2018) exemplify them as conferences, workshops, seminars, and meetings. Similarly, Tan and Noor (2013) mentions networks, computers, web technologies and databases as some of the technological mechanisms that facilitate knowledge sharing processes. The main benefit of implementing KM practices in an organisation is innovation (Nonaka & Takeuchi, 1995). However, it has been noted that a number of barriers are impeding effective implementation of KM practices in universities for example, Agarwal and Marouf (2014) indicates lack of top management support and openness to change as some of the barriers that impede effective KM practices in universities. Similar challenges regarding ineffective KM practices were also observed at Lilongwe University of Agriculture and Natural Resources (LUANAR) in Malawi (Namondwe, 2011).

1.4 Contextual setting

LUANAR is a Public University located in Lilongwe in Malawi. It is a merger between the then Bunda College of Agriculture (which was a constituent college of the then University of Malawi)

and the Natural Resources College (NRC) which culminated into LUANAR in 2012 (Kaude, 2015). LUANAR has three campuses namely, Bunda Campus, Natural Resources Campus and City Campus. Bunda Campus has five faculties with a student population of 5,500; 172 academic staff and 9 senior administrative staff (LUANAR, 2016; LUANAR, 2020a). The mission of LUANAR is "to advance knowledge and produce relevant graduates with entrepreneurship skills for agricultural growth, food security, wealth creation and sustainable natural resource management, through teaching, research, outreach consultancy and sound management" (LUANAR 2020b). The concept of "wealth creation" in the mission of LUANAR rhymes well with KM functions. This motivated the author to examine how KM practices are being implemented at LUANAR, Bunda Campus, realising that efforts of wealth creation would be incomplete if the institution does not formally acknowledge the critical role knowledge plays to create that wealth. However, Namondwe (2011) revealed that KM was not effectively implemented at Bunda College Library. Therefore, given that the first study focused on the library environment, the current study focused on LUANAR, Bunda College Campus as a whole.

1.5 Problem statement

Globally, the implementation of KM practices in universities has been very low (Baquero & Schulte, 2007; Ramanigopal, 2012). Despite the fact that universities are knowledge generators and managers world-wide, only a few universities have fully-fledged KM practices programmes in the developing world (Chong et al., 2011; Ramachandran, 2013). Similarly, studies by Namondwe (2011), Mapulanga (2012), Chipeta and Chawinga (2017), Chipeta (2018) in Malawian Universities have revealed that KM practices are faced with a number of challenges that impede effective implementation. A study that was conducted by Namondwe (2011) at Kamuzu College of Nursing Library and Bunda College Library (now LUANAR Library) revealed that Knowledge Management (KM) practices were not effectively implemented at LUANAR Library. This formed the basis of the current study to investigate KM practices focusing on LUANAR, Bunda Campus as a whole since it remains unknown as to how KM practices could be effectively implemented at LUANAR, Bunda College as a whole, given that Namondwe's (2011) study focused on the library environment, and targeting librarians only. This study was institution-wide, targeting academic staff as well as senior administrative staff.

1.6 Aim of the study

The aim of the study was to examine KM practices at LUANAR, Bunda College.

1.7 Research objectives

Specifically, this study sought to:

- Ascertain types of knowledge created at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus.
- Examine mechanisms used to share knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus.
- Determine the benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus.
- Find out barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus.

1.8 Research questions

Corresponding to the aforementioned research objectives, this study intends to address the following research questions:

1. What types of knowledge are created at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?
2. What mechanisms are used to share knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?
3. What are the benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural resources, Bunda College Campus?
4. What are barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?

1.9 Significance of the study

This study will reveal the current status of KM practices at LUANAR, Bunda College, and their challenges which will enable the researcher to make appropriate recommendations on how to address the shortfalls. Findings of this study may provoke a discourse between academicians and senior administrative staff by providing a trajectory of engagement on the way forward to

instituting effective KM practices in order to derive value from KM practices at the college. Furthermore, the study will also contribute to policy formulation and improvement of best practices that may be required for Bunda College to optimally benefit from its knowledge assets. Finally, findings of this study will contribute to the body of literature on KM in Malawi and globally.

1.10 Scope and Limitations of the study

This study focused on KM practices among academic staff and senior administrative staff at LUANAR, Bunda College. As a single case study, findings of this study will not be generalised but rather limited as a status of KM at LUANAR, Bunda College.

1.4 Structure of thesis

Chapter one : Introduction and background to the study
Chapter two : Literature review
Chapter three : Theoretical framework
Chapter four : Research methodology
Chapter five : Data presentation and analysis
Chapter six : Discussion, recommendations and conclusions

1.15 Chapter summary and conclusion

This chapter has introduced the main research problem and laid the foundation for the subsequent chapters in the thesis. A general background summarising introduction, conceptual setting, contextual setting, statement of the problem, objectives and research questions, significance of the study, scope and limitations of the study and structure of the thesis were provided. The next chapter discusses the literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter was to analyse related literature from some studies that were conducted prior to this study. Fink (2014, p. 243) defines literature review as the "ability of the researcher to demonstrate knowledge about a particular field of study, including vocabulary, theories and key variables of a phenomenon". This chapter also reviews scholarly literature and empirical studies on past research, and expands the foundation for further study thereby determining the importance of the study under investigation (Gravette & Forzano, 2009).

Literature can be extracted from a number of primary and secondary sources (Galvan, 2013). The literature that the current study used was sourced from books, search engines, online journals, databases, and open access journals. The motivation behind the use of these sources was that some of these resources are open access while others are currently being subscribed to by Mzuzu University Library and Learning Resources Centre.

The literature reviewed in the present study covered global and African perspectives. Themes that emanated from the research questions to guide the study are as follows: 1) types of knowledge created in universities; 2) mechanisms for effective knowledge sharing in universities; 3) benefits of implementing KM practices in universities and 4) barriers to effective KM practices in universities.

2.2 Types of knowledge created in universities.

Mitchell and Boyle (2012, p. 4) define knowledge creation as "initiatives and activities undertaken towards the generation of new ideas or objects." The SECI Model of Knowledge Creation presents explicit and tacit knowledge as the two main types of knowledge created in organisations (Nonaka & Takeuchi, 1995). The following sections discuss these types of knowledge created in universities.

2.2.1 Explicit knowledge

Knowledge creation is a continuous process which involves interaction between tacit and explicit aspects. Discussing the SECI Model of Knowledge Creation, Nonaka and Takeuchi (1995) postulate that explicit knowledge is available in the form of documents, collections and databases. Several authors have written on types of explicit knowledge created in universities both from global as well as the African perspectives (Dhamdhere, 2015; Mavodza & Ngulube, 2012; Ramachandran et al., 2013). For example, a mixed methods study by Mavodza and Ngulube (2012) on 'Knowledge management (KM) practices at an institution of higher learning' in the United States of America (USA) reported self-study documents, research articles, conference proceedings and minutes of meetings as some of the explicit knowledge created at the Metropolitan College of New York. In addition, a survey by Dhamdhere (2015) on the 'Knowledge management strategies and process in traditional colleges' identified books, dissertations and thesis as some of the explicit knowledge universities create in India. Further, a survey by Ramachandran et al., (2013) that examined 'Knowledge management practices and enablers in public universities in Malaysia' found that publications, modules, policies, and emails were some of the explicit knowledge created in universities. Similar types of knowledge were reported in some studies from Africa. For instance, Abbas (2015) in Nigeria, Jain (2014) in Botswana, Chipeta and Chawinga, 2017; and Chipeta (2018) in Malawi reported that research, technical reports, books, journal articles, conference papers, theses, dissertations lecture notes, book chapters, emails, memos, manuals, curriculum documents, and workshop reports are the types of explicit knowledge created in universities. The picture the afore-mentioned literature is giving is that the types of knowledge universities create mainly relate to their mandate for which they exist which is teaching, research and training. The paragraph below discusses tacit knowledge created by staff in universities.

2.2.2 Tacit knowledge

Tacit knowledge is the other type of knowledge organisations create according to the SECI Model of Knowledge Creation (Nonaka & Takeuchi, 1995). The current study reviewed a number of studies to establish types of tacit knowledge created in universities and found that Wang (2013) in Sweden conducted a qualitative study on 'Tacit knowledge in community of practice'. Likewise, Ozmen (2010) in Turkey carried out a literature review on 'The capabilities of the educational organisation in making use of tacit knowledge. Similarly, Kurti (2011) in Sweden, through a

qualitative study, examined tacit knowledge created in universities. All these studies established that universities create tacit knowledge in form of competencies, skills, beliefs, values, ideas, experiences, and judgements. However, in their exploratory qualitative study in Hungary, Anand et al. (2018) argue that making knowledge management activities effective for tacit knowledge creation in an organisation tend to be a challenge since tacit knowledge is mostly embedded in employees. Therefore, strong organisational top management support and motivation is recommended to instigate employees' engagement in knowledge creation activities. Some studies in Africa also examined creation of tacit knowledge in universities and found out that universities in Africa create tacit knowledge in form of ideals, skills, best practices, know-how, expertise, lessons learned, outcomes of surveys, and experiments (Chipeta & Chawinga, 2017; Enakrire & Ocholla, 2017; Wamundila, 2008). However, Nonaka and Takeuchi (1995) in the SECI Model of Knowledge Creation observes that for effective creation of tacit knowledge, institutions require developing spaces in which continuous process of interaction between individuals takes place in an organisation for new knowledge to be created.

In summary, literature reviewed on types of explicit and tacit knowledge created in universities show that universities create similar types of explicit and tacit knowledge since their objectives and functions are basically the same. However, it still remains unknown as to what types of knowledge is created and possessed by both academic and senior administrative staff at LUANAR, Bunda College, hence, the present study addresses this knowledge gap by answering research question 1: What types of knowledge are created by staff at LUANAR, Bunda College?

2.3 Mechanisms used to share knowledge in universities

"Knowledge sharing is defined as the act of exchanging experience, events, thoughts or understanding on anything with an expectation to gain more insights and understanding about something for temporary curiosity" (Sohail & Daud, 2009, p. 129). According to the SECI Model of Knowledge Creation, technological and non-technological mechanisms play a crucial role in supporting knowledge conversion stages of the model. The following sections discuss various mechanisms, both technological and non-technological ones used for knowledge sharing in universities.

2.3.1 Technological mechanisms

Technological mechanisms also referred to as ICTs, or as "knowledge sharing enablers" are defined as tools that facilitate knowledge sharing by electronic means (Tabrizi & Morgan, 2014, p. 54). ICTs facilitate knowledge sharing, for example, networks, personal computers, databases, and software. Application architecture links the various software applications and information architecture required to enable the flow of information between various systems (Akinlolu et al., 2018; Chaputula & Mutula, 2018; Chipeta et al., 2009; Enakrire & Ocholla, 2017; Kunda et al., 2018; Ochwo et al., 2018; Ong et al., 2011; Ozmen, 2010; Sommerstein et al., 2017; Supar, 2012; Tan & Noor, 2013; Wedgeworth, 2008). The following section discusses these mechanisms in relation to knowledge sharing.

A survey by Tan and Noor (2013) that examined KM and knowledge sharing enablers in Malaysia, and Ozmen (2010) who examined the role of ICTs in KM in Australia found that ICTs facilitate knowledge processing retrieval, collaboration and sharing of knowledge from repositories, portals, expert systems and other KM systems in universities. This is in line with what Nonaka and Takeuchi (1995) through the SECI Model of Knowledge Creation theorise that ICTs facilitate knowledge sharing processes. In addition, Sommerstein et al. (2017) who explored 'Knowledge sharing in infection prevention in routine and outbreak situations' in Switzerland reported that email was the most effective mechanism for sharing and distributing health knowledge at the University of Bern.

Several studies by Enakrire and Ocholla (2017), Chawinga and Zinn (2016), Mapulanga (2012), Chaputula (2012), Chipeta and Chawinga (2017), Masenya and Ngulube (2019), and Chipetaet al. (2009) in Africa have also reported that digital repositories are a conduit for documenting and disseminating knowledge both within and without universities. However, Masenya and Ngulube (2019) emphasise the need to have good IT infrastructure and training on ICTs to achieve effective knowledge sharing. Similarly, the importance of training on ICTs and the need to have reliable Internet connectivity was also highlighted in a survey that was conducted by Kunda et al. (2018) in Zambia.

2.3.2 Non-technological mechanisms

Non-technological (traditional) mechanisms of knowledge sharing are mechanisms that do not require any ICTs devices to share knowledge (Tabrizi & Morgan, 2014). They are mechanisms that represent sharing of knowledge from one person to another, for example, through conferences, storytelling, brainstorming, and communities of practice, training and education, workshops, seminars, telephone calls, face to face meetings and mentoring (Abbas, 2015; Bagire et al., 2015; Faith & Seeam, 2018; Farris, 2020; Gagné, 2009; Jain, 2014; Jehanzeb & Bashir, 2013; Nunes et al, 2017; Shava, 2016). Sharing of knowledge through face to face interaction occurs through socialisation and externalisation as depicted in SECI Model of Knowledge Creation (Nonaka & Takeuchi, 1995). For instance, Appel-Meulenbroek et al. (2018) who conducted a diary-based study of unplanned meetings to examine knowledge-sharing behaviours within organisations in the Netherlands, and, a survey by Farris (2020) on 'Understanding university committees' in Virginia, USA, report that meetings enable both academic and senior administrative staff to frequently interact when addressing issues affecting their universities. Similarly, a qualitative study by Adamseged and Hong (2018) in China found that knowledge is shared through conferences, workshops and seminars at Central China Normal University. However, Omar and Adruce (2018) who reviewed the knowledge-sharing behaviour concept among public universities in Malaysia, noted that knowledge sharing is mostly mired by the unwillingness of some academicians to share information in fear of losing power.

Knowledge sharing is also achieved through brainstorming. For instance, in New Zealand, Al-Saifi (2014) in his qualitative study on 'The nature of the relationships between social networks and knowledge sharing' found that knowledge is also shared through brainstorming. Relatedly, Almutairi (2015) in Kuwai,t Aming'a (2015) in Kenya, Wamundila (2008) in Zambia and Chipeta (2018) in Malawi also confirm knowledge sharing taking place in universities through brainstorming. However, Mohammed et al. (2018) argues that universities need to put formal strategies to facilitate effective brainstorming. For example, to get a brainstorming team of professionals to work together at the same time and in the same place can be problematic.

Knowledge sharing through Communities of Practice (CoPs) has been exemplified in a case study by Jørgensen (2020) that explored the impact of intentionally developed CoPs on knowledge

sharing practices in Denmark. The author submits that implementing CoPs improves staff performance. In a mixed-method study in Ghanaian Universities, Dei and Walt (2020), and Buckley and duToit (2009) in South Africa report that CoPs improve sharing of tacit knowledge among employees and provide organisations with innovation. However, findings of a descriptive survey study by Bulitia and Kimile (2020) and Chipeta (2018) on 'Knowledge sharing strategies amongst academics in institutions of higher learning' in Kenya and Malawi, respectively, found that CoPs existed but were informal since the universities had no policies to facilitate conversations that make it possible to identify how different tasks are done.

Education and training was also another mechanism for knowledge sharing in universities according to Cabrera (2008) in Cuba and Rawana et al. (2015) in Canada. For instance, a survey by Cabrera (2008) on 'Knowledge creation and knowledge creators within the Cuban higher education system unveiled that education and training is probably one of the most popular means of acquiring new qualifications by university staff despite the fact that training faces challenges due to insufficient funding in universities.

Accordingly, literature discussion above has shown that effective knowledge sharing can be achieved through good and formally managed technological and non-technological mechanisms which is not the case with some universities, especially in Africa. This study, therefore sought to address this knowledge gap through the research question 2: What mechanisms are used to effectively share knowledge at LUANAR, Bunda College?

2.4 Benefits of implementing knowledge management practices in universities

KM practices have immeasurable benefits to offer to universities if effectively implemented and these benefits must be known to employees and the organisation at large as these would help employees understand the need to implement KM (Namondwe, 2011). A number of authors Rahimi et al. (2017) in Indonesia, Nawaz et al. (2014) in Bahrain, Jain (2014) in Botswana and Chipeta (2018) in Malawi have outlined benefits of KM in universities that include the following: bringing about innovations, improving research processes and curriculum development; improving students and alumni services, administrative services, and strategic planning; improving teaching and learning, individual recognition, and university visibility; enhancing team building,

collaboration and communication skills among staff and improvement and development of new services.

The SECI Model of Knowledge Creation considers knowledge as the main requisite for innovation and competitiveness (Nonaka and Takeuchi, 1995). A survey by Easa (2011), who examined knowledge creation processes and innovation in Egypt, observed that innovation should aim at generating ideas related to services, products and performance improvement. This is well acknowledged in a survey by Nawab et al. (2015) in Pakistan, a qualitative study by Okatan (2012) in Turkey, a survey by Ohiorenoya & Eboreime (2014) in Nigeria and a study by Chipeta (2018) in Malawi which reveal that there is strong correlation between knowledge management and innovation since innovative ideas come from knowledge that lead organisations to competitive advantage, innovation and growth. Similarly, KM plays a crucial role in research process since it reduces cost as well as duplication of effort in research. For example, an exploratory study by Bhusry et al. (2011) in India on 'Implementing knowledge management in higher education institutions in India' established that KM reduces overheads when trying to reinvent the wheel in research. Hoq and Akter (2012) who conducted a literature review study on 'Knowledge management in universities in Bangladesh revealed that KM makes huge knowledge repositories accessible to researchers from universities and other research institutions which act as knowledge reservoirs for policy formulation and development. Furthermore, a descriptive study by Aggarwal et al. (2011) on 'Enhancing curriculum and research in higher education with a strategic use of knowledge management' in India discovered that KM enhances curriculum development since knowledge gained from assessment of other curricula is used to improve the existing curricula. This was substantiated by Ramakrishnan and Yasin (2012) in their mixed method study in Malaysia who stated that KM makes knowledge available to experts to use in curriculum development or revision process. Similarly, Krubu and Krub (2011) in Nigeria, Jain (2014) in Botswana and Maiga (2017) in Tanzania all acknowledge that KM enhances curriculum review process, thereby improving the quality of curriculum and programmes. However, according to a mixed study by Pinto (2014), the main challenge in universities is to recognise knowledge as a strategic resource and create a knowledge environment. In the same vein, a cursory examination of literature on KM for enhancement of curriculum shows that none has managed to investigate this in Malawian universities. It is therefore, imperative that this study addresses this gap.

Several studies have also found that KM improves administrative services and strategic planning processes (Cheng, 2013; Kabilwa, 2018; Mapulanga, 2012; Mavodza & Ngulube, 2011; Mvula, 2013; Nafea & Toplu, 2018; Nassuora, 2011; Ramanigopal, 2012; Wamundila & Ngulube, 2011). For example, Nassuora (2011) examined 'Student's attitudes and perceptions towards knowledge sharing in institutions of higher education' in Saud Arabia. Findings of their study revealed that knowledge sharing in universities enhances administrative services. Similar findings were also reported in a case study by Mavodza and Ngulube (2011) on 'Exploring the use of knowledge management practices in an academic library in a changing information environment' in New York. However, in his literature review study on 'Knowledge management strategies in higher education in India', Ramanigopal (2012) observed that it is only when KM implementation is done effectively, that it can improve and make administrative information content available and accessible. Little is known about the benefits of KM in relation to administrative services in Malawian universities. Further, knowledge sharing in universities enhances strategic planning (Cheng, 2013). This is noted in Nafea and Toplu (2018) who conducted a qualitative study on 'Knowledge sharing in Ontario Colleges' in Canada. The findings of the study revealed that KM in universities leads to improved strategic planning development process.

In summary, the literature discussion on global as well as African context confirms the benefits of KM practices in universities, however, the literature has also shown that little has been reported in Malawi about the benefits of KM. Therefore, the current study addresses this knowledge gap through research question 3: What are the benefits of implementing KM practices at LUANAR?

2.5 Barriers to effective KM practices in universities

Implementation of KM practices brings immeasurable benefits to universities, but there are several barriers that affect it. For example, a survey by Khalil and Shea (2012) on 'Knowledge sharing barriers and effectiveness at a higher education institution' in USA reveals that confined individual capacity, inadequate organisational capability and fear of knowledge revelation are some of the barriers of KM implementation. The study reports that out of these barriers, fear of revealing knowledge among academicians is the most prevailing barrier to the effective KM initiatives. In the same vein, a survey by Fullwood et al. (2013) on KM barriers in the United Kingdom among

academic staff found that universities in the United Kingdom (UK) had unsupported organisational structure and were working in isolation which were the major barriers to KM practices. In addition, a survey study by Ujwary-Gil (2017) which analysed the barriers of knowledge management in Poland found that limited resources, lack of reward and motivation for seeking and sharing knowledge, unawareness of where the knowledge-base of the institution is and organisational culture negatively impacted KM practices in Poland.

Further, in India a study by Santosh and Panda (2016) on 'Sharing of knowledge among faculty members in Mega Open University' revealed lack of interest, lack of infrastructure, lack of trust, lack of policy and priority, lack of communication, lack of collaboration and lack of time as some of the barriers that inhibited implementation of KM practices in India. However, the study reports that out of these barriers, inadequate rewards and recognition, lack of supportive knowledge sharing culture, lack of interest and lack of collaborative environment were found to be the prominent barriers to KM practices. These findings point to the fact that in universities where there is no relevant organisational culture and structures supported by top management, implementation of KM programme would always be difficult.

From the African perspective, a number of barriers to effective KM implementation in universities have also been reported. Lawal et al. (2015) conducted a survey on 'Knowledge sharing among academic staff in Nigerian University of Agriculture'. The study reveals poor attitude among academic staff towards knowledge sharing and inadequate awareness about the importance of knowledge sharing as the major barriers of KM in Nigeria. In Kenya, Yusuf and Wanjau (2014) conducted a survey that examined factors that affect implementation of KM in universities. Findings revealed that inadequate ICT skills and lack of defined KM responsibilities were the barriers to KM practices in Kenya. Besides, a survey study by Buckley and DuToit (2009) on 'Higher education and knowledge sharing' in South Africa reported that unwillingness to share knowledge among academics, time constraints, and lack of top management support were some of the barriers to effective KM practices. However, ineffective KM practices in Malawian context, according to Namondwe's (2011) study, was attributed to lack of policy and strategies at Kamuzu College of Nursing and Bunda College of Agriculture due to failure of library managers to drive the KM agenda leading to informal KM practices.

Literature from the global and African perspectives show that effective KM is negatively impacted by a number of barriers including organisational culture, structure, attitudes of academic staff towards KM practices, top management support, policies and strategies. However, there is very little that has been written on Malawi about barriers to effective KM practices in Malawian Universities. This study therefore addresses this knowledge gap by answering research question 4: What are the barriers to effective KM practices at LUANAR?

2.6 Conclusion of the chapter

In summary, this chapter has reviewed literature in five thematic areas of the study: knowledge created in universities; mechanisms for sharing knowledge; benefits of implementing KM practices and finally barriers to effective KM practices in universities. The literature review has covered global and African contexts of KM practices. The reviewed studies show that universities globally and locally are managing knowledge at different levels, and therefore, the extent to which they implement KM practices determines how much benefits they derive from KM activities. The next chapter discusses the theoretical framework.

CHAPTER THREE

THEORETICAL FRAMEWORK

3.1 Introduction

The purpose of this chapter is to review and examine some models that underpin research in KM. Three models have been discussed citing strengths and weaknesses of each model and studies in which they were used in KM practices in order to justify the suitability of the model the current study adopted. The models that have been discussed include the Wiig (1993) Model for Building and Using Knowledge, Skandia's 1994 Intellectual Capital Model (Edvinsson, 1997) and the SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995).

3.2 Importance of theoretical framework

Theoretical frameworks are crucial in research since they help to explain predict and understand issues that a study desires to address (Abend, 2008). Lester (2005) postulates that theoretical frameworks offer guidelines to answer the why questions which do not have to be simply speculated by the researcher from the outcomes of the study. Therefore, theoretical frameworks act as a blueprint of the research.

3.3 The Wiig (1993) Model for Building and Using Knowledge

Wiig (1993) Model for building and using knowledge proposes that the foundation of KM comprises the way knowledge is created, used in problem solving and decision making, and manifested cognitively as well as in culture, technology and procedures (Wiig, 1997). Wiig (1997) points out that knowledge must be organised in order for it to be useful and valuable. He proposed an organisational KM model of four consecutive stages from i) building, ii) holding, iii) pooling, and iv) using knowledge (Wiig, 1993). Building knowledge deals with obtaining, analysing, reconstructing, synthesizing, organizing, codifying and modelling knowledge. In holding, knowledge is remembered, accumulated and embedded in storehouses or documents. In pooling knowledge is coordinated, assembled, and accessed (Podgórski, 2010; Wiig, 1993; Wiig, 1997). Some studies in KM have supported this model, for example, a study by Chahal and Bakshi (2016) on measurement of intellectual capital in India found that intellectual capital model can help scholars, managers and others to have a clear understanding of how intellectual capital develops and drives organisational performance. In Malawi, Namondwe (2011) used Wiig's (1993) model

as one of the useful frameworks that can support KM implementation in an organisation. The major strength of the Wiig approach to KM, according to Mohajan (2017), is its strong and comprehensive account of how institutional memory is put into use in order to create value and in decision making processes. The major weakness of this model is the lack of research and/or practical experience involving the implementation of this model (Alosaimi, 2016). Secondly the model's emphasis on knowledge building leaves out a very important aspect of KM which is knowledge sharing. Therefore, this model was deemed inappropriate for the current study.

3.4 Skandia's (1994) Intellectual Capital Model

The other model the current study examined is the Intellectual Capital Model which was developed in 1994 by a giant Swedish insurance and financial services company called Skandia as an approach for measuring its intellectual capital (Mohajan, 2017). The model has a strong focus on measurement of intellectual capital associated with decomposed elements of (human, customer, and structure) of KM. According to the model, intellectual capital is made up of human capital and structural capital (Edvinsson, 1997). Human capital comprises knowledge, know-how, skills and personnel expertise of an organisation. The human capital does not belong to an organisation but it is hired by an organisation for a period of time and is taken away when staff resign or retire from the organisation (Edvinsson et al., 2004). Structural capital, on the other hand, which is a combination of the elements of organisational capital and customer capital, comprises information and communication systems, management systems, patents and everything that systemizes knowledge of the company and makes it internal and explicit. Several studies support the Intellectual Capital's Model in KM. For instance, a study by Lin (2004) that intended to provide empirical evidences on how an organisation enhances its innovation capabilities through management of intellectual capital within its components (human capital, structural capital, relational capital) found that intellectual capital enhances innovation. In the same vein, Amiri and Ramezan (2011) who investigated the impact of intellectual capital on organisational innovation in India found that there was positive relationship among all components of intellectual capital. However, the weaknesses of Skandia model are its emphasis on tacit knowledge (intellectual capital) and leaving out explicit knowledge. Therefore, this model rendered itself unsuitable for the current study as the current study examines both tacit and explicit types of knowledge.

3.5 The SECI Model of Knowledge Creation (Nonaka and Takeuchi, 1995)

The last model the current study examined was the SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995). This model conceptualises knowledge creation in two types: tacit knowledge and explicit knowledge. The purported tacit knowledge in this case falls into the category of subjective, cognitive and experiential learning which are intangible forms of tacit knowledge like insights, intuitions, expertise, skills, values, experiences, metaphors, and analogies while explicit knowledge comprises objective, rational, and technical knowledge which are tangible forms of explicit knowledge like data, policies, procedures, software and documents, among others. The model posits further that tacit knowledge can be converted to explicit knowledge by the process of socialisation while tacit knowledge can be transformed from tacit to explicit through a process known as externalisation. Similarly, the Model also postulates that explicit knowledge can be converted from explicit to tacit knowledge by combination process and finally, explicit knowledge can also be converted from explicit to tacit knowledge through a process of internalisation (Nonaka & Takeuchi, 1995; Nonaka et al., 2000). Therefore, the interaction between tacit and explicit knowledge results in personal knowledge becoming organisational or community knowledge. This process forms a "knowledge spiral" which takes place mainly through informal networks of relationships in the organisation starting from the individual level, then moving on to group (collective) level and eventually to the organisational level (Nonaka, 1991; Nonaka & Takeuchi, 1995; Nonaka et al., 2000). According to Wagner et al. (2014), information technology may help organisations to manage their knowledge resources since all the SECI processes can be supported by relevant technologies. Figure 3.1 below depicts the SECI processes:

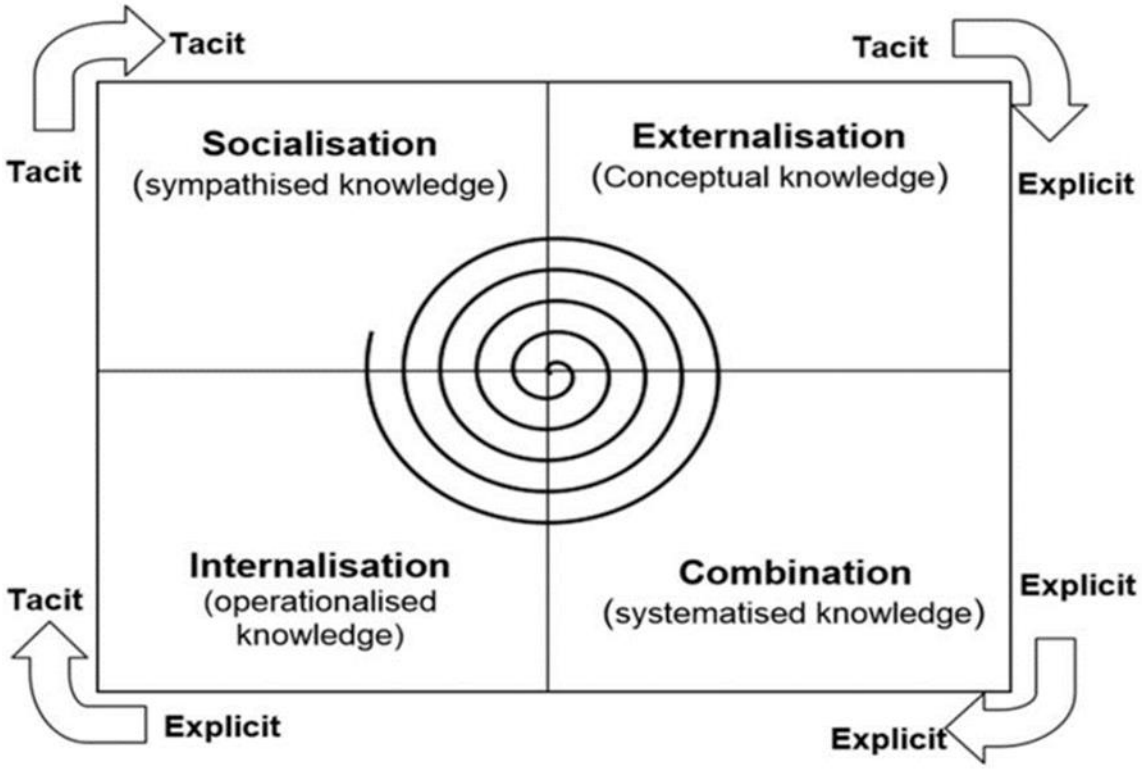

Fig. 3: The SECI Process

3.5.1 Socialisation

According to Nonaka and Takeuchi (1995), socialisation represents tacit to tacit communication which takes place in face-to-face interaction between people in a meeting or through dialogue and sharing of best practices, experiences and lessons learned. The goal of this process is to "build a field of interaction which facilitates the sharing of members' experiences and mental models" (Nonaka & Takeuchi, 1995, pp. 70–71). Technologies used to share knowledge during socialisation include social networks, online discussion forums, groupware and conference systems (Natek & Zwilling, 2016). This knowledge conversion process shows tacit knowledge generation; creation of new knowledge, infrastructure and strategies used for creation and sharing of that knowledge which were the variables this study intended to examine at LUANAR, Bunda College Campus (see Table 3.1 below on mapping research questions to the model: Research question 1-3).

3.5.2 Externalisation

Externalisation represents tacit to explicit communication through dialogue such as brainstorming sessions. In externalisation, tacit knowledge is converted into explicit knowledge by expressing it in a language or symbols that can be understood and shared through accessible formats. Technologies that are used in this knowledge conversion process include: blogs, wikis, decision support systems, expert systems and knowledge warehouses (Natek & Zwilling, 2016). This tacit to explicit knowledge conversion process shows creation of new explicit knowledge and the technological mechanisms used for creation and sharing of that knowledge which were the variables this study intended to examine at LUANAR, Bunda College Campus (see Table 3.1 below on mapping research questions to the model: Research question 1-3)

3.5.3 Combination

This is the simplest form of knowledge conversion process in which explicit knowledge is converted to explicit knowledge. According to Nonaka and Takeuchi (1995) in this conversion process, explicit knowledge is collected, combined, modified, and even processed to form a more complicated and systematic knowledge system (Nonaka, et al., 2000). Technologies that can be used to facilitate this process include: databases, knowledge management systems, email, document management systems, and intranets (Natek & Zwilling, 2016). This knowledge conversion process shows creation of explicit from explicit knowledge and the technological infrastructure used for the creation and sharing the knowledge. These are some of the variables this study intended to examine at LUANAR, Bunda College Campus (see Table 3.1 below on mapping research questions to the model: Research question 1-3).

3.5.4 Internalisation

According to Nonaka and Takeuchi (1995), internalisation happens when "when experiences, through socialization, externalization, and combination, are internalized into individuals' tacit knowledge bases in the form of shared mental models or technical know-how" (Nonaka & Takeuchi, 1995, p. 69). Technologies that can be used to facilitate this process include: e-learn portals, Internet, expert systems, document management system, wikis and social networks (Natek & Zwilling, 2016). This knowledge conversion process shows creation of knowledge from explicit source to tacit knowledge through the process of learning by doing and experimenting. This is in

line with the variables this study intended to examine at LUANAR, Bunda College Campus (see Table 3.1 below on mapping research questions to the model: Research question 1-3).

3.6 Weaknesses of the SECI Model of Knowledge Creation

Andreeva and Ikhilchik (2011) have pointed out that the SECI Model was specifically developed for the knowledge-creating company in a Japanese context, which relies heavily on tacit knowledge. In spite of this weakness, the SECI model has been empirically tested in different business contexts for example, López-Sáez et al. (2010) investigated the use of the SECI Model of Knowledge Creation in several knowledge intensive organisations, which suggest that the use of this model is important to support general performance in organisations. Similarly, in Zimbabwe, Chinkono (2018) who examined 'Knowledge sharing practices amongst academics at the Zimbabwe Open University' adopted the SECI Model of Knowledge Creation because of its ability to recognise the ever-changing nature of knowledge and knowledge creation as well as its ability to provide a framework for management of KM processes. In addition, Chipeta (2018) and Namondwe (2011) in Malawi also made use of the SECI model. Therefore, the SECI Model of Knowledge Creation was adopted in the current study because it addresses the major knowledge themes which are types of knowledge created in organisations; knowledge sharing mechanisms; benefits of KM (innovation and new knowledge creation) as stated by Nonaka and Takeuchi (1995). Finally, this model was also adopted because similar studies also used the same model (Chinkono, 2018; Dei, 2017; Gourlay, 2013; Namondwe, 2011; Chipeta, 2018).

Table 3.1 shows how research questions were mapped against the variables being addressed and sources of the variable.

Table 3.1: Mapping research questions to the model

QN	Research Question	Variables being addressed	Source of Variables
1	What are the types of knowledge created at Lilongwe University of Agriculture and Natural Resources?	Tacit and explicit knowledge	SECI Model and Literature
2	What mechanisms are being used to effectively share knowledge at Lilongwe University of Agriculture and Natural Resources?	IT Infrastructure, knowledge sharing strategies	SECI Model and Literature
3	What are the benefits of implementing KM practices at Lilongwe University of Agriculture and Natural Resources?	Creation of new knowledge and/or innovation	SECI Model and Literature
4	What are the barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources	Knowledge sharing factors, organisational culture, organisation climate, organisational structure	Literature

3.7 Conclusion of the Chapter

This chapter has reviewed some models that are mostly used in KM; it has provided a statement of the models, and has also specified theoretical assumptions underlying the models. The chapter has also discussed studies in which the models were used and identified strengths and weaknesses of the models. Finally, the chapter has chosen the model for the current study and has justified its choice. The next chapter will discuss research methodology.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

Chapter three discussed theoretical framework. The purpose of this chapter is to discuss the methodology that was used to implement this study. O'Sullivan and Berner (2007) define research methodology as the steps researchers use to collect and analyse data.

This chapter has been organised into the following sub-sections: research paradigm, research design the study, research method/approach, research site and study population, sampling technique and sample size, data collection procedure, data collection tools and methods, data analysis, reliability and validity of the data collection instruments, ethical issues, dissemination of results and conclusion of the chapter.

The current study intended to answer the overarching research question: What are the Knowledge Management practices at LUANAR, Bunda College? The main research question was further broken down into the following specific research questions:

1. What types of knowledge are created at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?
2. What mechanisms are used to share knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?
3. What are the benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural resources, Bunda College Campus?
4. What are barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?

4.2 Research paradigm

According to Kivunja & Kuyini (2017), a paradigm constitutes the abstract beliefs and principles that shape how a researcher sees the world, and how one interprets and acts within that world. It examines the methodological aspects of one's research project to determine the research methods that will be used and how the data will be collected and analysed (Kivunja & Kuyini, 2017). Paradigms play a crucial role in placing a study within a specific theoretical framework. To this

end, Creswell (2014) provides four major paradigms or philosophical worldviews used in research discussed in the following sections.

4.2.1 Positivism

As defined by Denscombe (2008) positivism is a paradigm that seeks to apply the natural science model of research to investigate social phenomena and explain the social world. The main principles of this paradigm include objectivity and independence. Positivism states that true knowledge is that which can be arrived at through use of the senses and gathering of facts through natural laws of cause and effect (Strydom, 2011). The main approach of arriving at this knowledge is experiment which is an attempt to discern natural laws through direct manipulation and observation. As such, taking a positivistic approach to a study requires one to be independent of his/her research. Independence in this wise means maintaining very little interaction with one's research participants when carrying the research. Therefore, the current study found this paradigm inappropriate since it will interact with participants at some stage to get in-depth information about KM practices at LUANAR, Bunda College Campus.

4.2.2 Postpositivism

The second paradigm is the Postpositivism. According to Panhwar et al. (2017), postpositivism is a philosophical view that balances both the positivism and interpretivism approaches. Guba and Lincoln (1994) argue that although postpositivism proponents strive to scientifically explore the phenomena they believe, absolute truth is nowhere to be found and, therefore, postpositivists' paradigm promote the triangulation of qualitative and quantitative methods. The common characteristic of postpositivists is that they still believe in pure scientific measurement of the research valuables. As such, postpositivist approach was not appropriate for this study since the current study did not only use pure quantitative measurements of valuables but also qualitative measurements. While the current study used mixed methods approach to data collection and analysis, the approach differed slightly with that used in the post-positivist approach in that qualitative data was not quantified as is implied in this paradigm (Creswell, 2013), but was analysed and presented thematically.

4.2.3 Social Constructivist or Interpretivist

The social constructivist or interpretivist worldview is another paradigm the current study examined. It is a paradigm that emphasises qualitative methods only (Creswell, 2014). Social constructivists believe that measurement is not perfect and, therefore, a researcher should instead be encouraged to look for a variety of data sources and methods to strive for validity. Due to this fact, social constructivists make use of interviews as a technique for collecting data from participants to gather data of varying perspectives in order to capture the insider knowledge about the phenomenon under study. The current study found this paradigm inappropriate because of its focus on qualitative data only.

4.3.4 Pragmatism

The last paradigm the current study examined was the pragmatism Pragmatism is an approach to research practice that calls to researchers to mix research components in ways that will work for their research problem, question and circumstances (Hibberts & Johnson, 2012). According to Creswell (2013), a researcher using this worldview uses multiple methods of data collection to best answer the research question. Pragmatists also make use of mixed methods in order to collect data, for example, administering questionnaires and conducting interviews and the results are integrated in answering the research questions. Pragmatic researchers tend to address what and how research questions (Creswell, 2014). Therefore, since the main research question of this study was "what are the knowledge management practices at LUANAR, Bunda College, the current study was guided by the pragmatic paradigm. In addition, the pragmatic paradigm was selected over other paradigms because of the nature of the research questions which necessitated collection of data from multiple perspectives. For example, quantitative and qualitative data was collected from both academic and senior administrative staff. Furthermore, pragmatism paradigm was chosen because related studies by Pasha and Pasha (2012), Ramakrishnan et al. (2013) and Chipeta (2018) used the same philosophical world view in their studies which validates use of the paradigm in the current study.

4.3 Research design

Research design is a blueprint for conducting a study. It is a plan for collecting, analysing, interpreting and reporting data in a research study (Creswell & Plano-Clark, 2011). There are a number of research designs that are used in empirical studies which vary according to research method chosen. For example, quantitative researchers use survey designs; qualitative researchers use case studies while mixed methods researchers use explanatory sequential research designs (Long, 2014). The following paragraphs discusses research designs that go along with mixed methods research since the current study adopted mixed methods research approach.

4.3.1 Explanatory sequential design

An explanatory sequential design, according to Plano-Clark (2011), consists of first collecting quantitative data and then collecting qualitative data to help explain, expand or elaborate on the quantitative results. The rationale for this approach is that the quantitative data results provide a general picture of the research problem, therefore, more analysis, especially through qualitative data collection is needed to refine, extend or explain the general picture. The merits of this design are that it is easy to implement, describe and report while the demerits are that the design has two distinct phases which makes it time consuming to implement (Chaputula, 2016).

4.3.2 Exploratory sequential design

The other mixed methods design that researchers use is exploratory sequential design. According to Creswell and Plano-Clark (2011), in exploratory sequential design, the researcher collects qualitative data initially and then proceeds to collect quantitative data. The purpose of an exploratory sequential mixed methods design, which involves gathering qualitative data first, is to explore a phenomenon in detail and then collecting quantitative data to explain relationships found in the qualitative data. The merits and demerits of the explanatory design also applies to exploratory sequential design (Creswell & Plano-Clark, 2011).

4.3.3 Embedded design

The next design mixed methods researchers use is the embedded design. The purpose of embedded design, as Creswell and Plano-Clark (2011) state, is to collect quantitative and qualitative data simultaneously or sequentially, but to have one form of data play a supportive role to the other

form of data. The reason for collecting the second form of data is that it augments or supports the primary form of data. Within this type of study, the researcher gathers and analyses both quantitative and qualitative data. The qualitative data can be integrated into the study at the beginning of the study. In this way, the qualitative data supplement the outcomes of the study, which is a popular approach within implementation and dissemination research (Palinkas, et al., 2011).

The current study adopted the explanatory sequential mixed method because it explains, expands or elaborates on quantitative results. Finally, the use of this design was also motivated by related studies to the current study which also used the sequential mixed methods designs (Bates, 2017; Lehman, 2017; Ramakhrishnan, 2013; Subedi, 2016).

4.4 Research method/approach

Research methods are tools and techniques for doing research (Walliman, 2015). They comprise forms of data collection, analysis and interpretation of the results. There are three main methods/approaches to research namely: quantitative, qualitative and mixed methods (Creswell, 2014). The research method one uses is determined by the researcher's paradigm adopted. For example, researchers who are not bound by either the positivist or constructivist worldviews tend to be pragmatically inclined to use mixed methods (Chaputula, 2016). The three research methods are discussed below.

4.4.1 Quantitative research methods

Quantitative research methods are research techniques that are used to gather quantitative data which can be sorted, classified and measured (MacDonald & Headlam, 2014). Quantitative methods quantify data and generalise results from a sample to the study population. The strength of quantitative method is that they are mainly suitable for studying large groups of people and give an objective perspective of a research problem. However, since this study adopted pragmatic paradigm that calls for the use of methods that suit a particular study, quantitative method was deemed not suitable for this study since its singular use would not have helped to address the research questions in this study which require both quantitative and qualitative data (Creswell, 2014).

4.4.2 Qualitative research methods

According to Crossman (2018), qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or a human problem. Qualitative researchers use their own eyes, ears, and intelligence to collect in-depth perceptions and descriptions of targeted populations, places, and events (Creswell, 2014). The strength of qualitative research method is that it enables in-depth study of selected cases and descriptions of complex phenomena in local contexts, however, one of its weakness it that it is difficult to generalise findings to different people, contexts and situations. Therefore, research questions posed in this study could not have been adequately addressed through the use of purely qualitative methods as they also required the collection of quantitative data to get views of a wider population. Therefore, the method could not be adopted singularly in this study.

4.4.3 Mixed method research

Mixed methods research is an approach to an inquiry that involves gathering of quantitative and qualitative data and integrating the two types of data at interpretation or discussion stages (Creswell, 2014). The findings from the qualitative data help to contextualise and augment findings from the quantitative data and increase validity when interpreting the data (Bowen et al., 2017). Using mixed methodology helps to comprehend the topical area in greater depth (Hoover and Krishnamurti, 2010). Creswell and Plano-Clark (2011), Doyle and Byrne (2016) and Ngulube (2013) suggest that the justification for using mixed methods are offsetting weakness and providing stronger inferences, explanation, complementarity and completeness. The disadvantage of mixed methods according to Hibberts and Johnson (2012) is that it is expensive to implement and time consuming. However, the current study used the mixed method to examine knowledge management practices at LUANAR, Bunda College, because the questions guiding this study necessitated the combination of both quantitative and qualitative methods. Quantitative data was collected through a questionnaire while qualitative data was collected through interview guide. Table 4.1 shows how research questions were mapped against sources of data and analysis.

Table 4.1: Mapping research questions on to sources of data

Question	Respondents	Data sources	Data analysis
What types of knowledge are created at LUANAR, Bunda College?	Academic Staff	Questionnaire	SPSS
	Senior Administrative staff	Interview	Thematic
What mechanisms are used to share knowledge at LUANAR, Bunda College?	Academic Staff	Questionnaire	SPSS
	Senior Administrative Staff	Interview	Thematic
What are benefits of implementing KM practices at LUANAR, Bunda College?	Academic Staff	Questionnaire	SPSS
	Senior Administrative Staff	Interview	Thematic
What are barriers to effective knowledge management practices at LUANAR, Bunda College?	Academic Staff	Questionnaire	SPSS
	Senior Administrative Staff	Interview	Thematic

4.5 Target population.

Abutabenjeh (2018) defines study population as the group or objects about which the researcher wants to study and draw conclusions from. Examples of a population in a research study may include person, a group, an organisation, records or even an action that is being studied by the researcher (Levy & Lemeshow, 2013). The reason for defining a population for a research project arises from the need to specify a group to which the results of the study could be applied. The target population for this study comprised academic and senior administrative staff of LUANAR, Bunda College.

4.5.1 Academic staff

The Organisation for Economic Co-operation and Development (OECD) (2001) defines academic staff as personnel whose primary assignment is instruction, research, or public service. This study

targeted academic staff at the ranks of professors, associate professors, senior lecturers and lecturers. These were targeted because at this rank it is believed that they are engaged in research and other knowledge creating activities. Staff associate and assistant lecturers were not included because at that level they are understudying senior academic staff pending further studies to acquire a higher qualification of a Master's degree which is a requirement for a lecturer. The total number of academic staff was 164. A breakdown of academic staff according to faculty and rank is provided in Table 4.2.

Table 4.2: Academic Staff Population (**N=164**)

Faculty	**Rank**	**Number**
Faculty of Agriculture	Professors	3
	Associate Professors	6
	Senior Lecturers	15
	Lecturers	36
Faculty of Developmental Studies	Professors	3
	Associate Professors	5
	Senior Lecturers	4
	Lecturers	30
Faculty of Natural Resources	Professors	3
	Associate Professors	3
	Senior Lecturers	4
	Lecturers	10
Faculty of Food And Human Sciences	Professors	0
	Associate Professors	4
	Senior Lecturers	2
	Lecturers	13
Faculty of Postgraduate Studies	Professors	3
	Associate Professors	0
	Senior Lecturers	8
	Lecturers	12
Total		**164**

Source: LUANAR, Bunda College staff list, 2018.

4.5.2 Senior administrative staff

According to Jaramogi Oginga Odinga University of Science and Technology (JOOUST) (2013), administrative staff means the employees of a university who are appointed on administrative

terms of service and are not engaged in teaching and research. This study targeted senior administrative staff at LUANAR, Bunda College, who included the College Director, Registrars, Librarian, Director of Finance and ICT Manager. The College Director was targeted because he is responsible for strategic direction of the College and, therefore, can influence policy matters on KM. In the same vein, the Registrar was targeted because he coordinates daily functions of the college, while the College Librarian was targeted because he manages the library which is at the centre of knowledge acquisition, preservation and dissemination in the university. Similarly, the ICT Manager was targeted because he manages the ICT infrastructure that enables knowledge creation and sharing while the Director of Finance was targeted because he is responsible for managing financial resources of the college which are critical in implementing KM practices. Breakdown of senior administrative staff population is provided in Table 4.3.

Table 4.3: Senior Administrative Staff Population (N=9)

College Director	2
Registrar	4
College Librarian	1
ICT Manager	1
Director of Finance	1
Total population for senior administrative staff	**9**

Source: LUANAR, Bunda College Staff List, 2018.

4.6 Sampling technique and sample size

According to Mugera (2013), sampling is the use of a subset of a population to represent the whole population. The purpose of sampling is to get a manageable and representative sample that can be used to draw conclusions of the research within available time and financial resources. Furthermore, use of practicable samples leads to accurate results since effort, time and monetary resources are better utilised to generate quality results (Strydom, 2011).

4.6.1 Sampling Technique

Crossman (2018) states that there are two major types of sampling, namely: probability and non-probability sampling. Probability sampling is where samples are gathered in the process that gives

all individuals in the population equal chance of being included in the sample. Examples of probability sampling include simple random, systematic, stratified and cluster sampling. Non-probability sampling is a sampling technique where the probability of any member being selected for a sample cannot be calculated. Examples of non-probability sampling are convenience, purposive, quota and snowball. However, Israel (2013) recommends that when a population of a study is less than 200, there is no need of sampling, all the elements of a study population should be included. Therefore, there was no need of sampling in the current study since the population was below 200. This type of strategy of using the entire population of a study is called a census.

4.6.2 Respondents of the study

This study used the entire population of academic and senior administrative staff at LUANAR, Bunda College, since the population was less than 200 (Israel (2013). There were 164 academic staff in the ranks of professors, associate professors, senior lecturers, lecturers and 9 senior administrative staff comprising the College Director, Registrars, College Librarian, Director of Finance and ICT Manager. The total population was 173. Table 4.4 shows the total population of the study.

Table 4.4: Respondents of the study (n=173)

Category of population	**Number**
Academic staff	164
Senior Administrative staff	9
Total	**173**

The total number of the respondents of the study was **173** comprising **164** academic staff and **9** senior administrative staff at LUNAR, Bunda College.

4.7 Pre-testing

Casper and Peytcheva (2011) define pre-testing as an activity that evaluates research instruments' capability to collect appropriate data. Before commencement of the actual data collection from the field, data collection tools were pre-tested. The researcher pre-tested the questionnaire on 10 academic and 2 senior administrative staff at Mzuni. Pretesting was done at Mzuni because both

Mzuni and LUANAR are public universities in Malawi and hence, have similar structure of academic and senior administrative staff. Pre-testing of the instruments helped the researcher to find out if the chosen instrument are unambiguous, reliable and valid for data collection (Connaway & Powell, 2010).

4.8 Data collection tools/instruments

The adoption of an explanatory sequential research design in this study meant that the study had two phases of data collection, one following the other. Questionnaires were formulated to collect data from both academic and senior administrative staff in first phase. There were two sets of questionnaires: the first set was questionnaire for academic staff (see Appendix 1) and the second one was questionnaire for senior administrative staff (see Appendix 2). The questionnaires were used because they gather quantitative data from a larger sample to ensure representativeness (Van Dessel, 2013). Both (questionnaire for academic staff and questionnaire for senior administrative staff) were divided into five sections: Section A contained demographic information; section B contained questions on types of knowledge created at LUANAR, Bunda College; section C contained questions on mechanisms used to share knowledge; section D contained questions on the benefits of implementing KM practices and finally section E contained questions on barriers to effective KM practices. The second phase of data collection involved collecting qualitative data from both academic and senior administrative staff by the use of interview guides, one for academic staff and the other one for senior administrative staff. The interview guides were divided into four sections: section A contained questions on types of knowledge created at LUANAR, Bunda College; Section B contained questions on mechanisms used for sharing knowledge; Section C contained questions on benefits of implementing KM practices and finally Section D had questions on barriers to effective implementation of KM practices (see Appendix 3, interview guide for academic staff and Appendix 4, interview guide for senior administrative staff). Interviews were used because they deepen the scope of understanding to provide more details on the investigated phenomena (Alshenqeeti, 2014).

4.9 Data collection procedures

Data collection procedures are methods that researchers use to systematically collect information or data about objects of study and about the settings in which they occur (Chaleunvong, 2009). To

collect data for this study, the researcher constructed two sets of questionnaire: one for academic staff and the other one for senior administrative staff. Before administering the questionnaires, they were scrutinised by peers and pretested on 10 academic and 2 senior administrative staff at Mzuni with an aim of refining them as recommended by Creswell (2014).

When the ethical clearance and gatekeeper's permission were granted, the researcher engaged a research assistant to physically distribute 164 questionnaires to academic staff and 9 questionnaires to senior administrative staff at LUANAR, Bunda College. Distribution and collection of questionnaires was done for a period of 3 weeks in the first phase of data collection. Since this study adopted sequential mixed methods design, the researcher conducted interviews with five (5) academic staff and two (2) senior administrative staff in the second phase of data collection from the same groups that initially responded to the questionnaires. Appointments were made prior to the interview sessions to ensure availability of the respondents. Interviews were conducted with five (5) academic staff and two (2) senior administrative staff. After obtaining permission from the respondents, the interviews were recorded with a digital voice recorder and a diary was also used to record supplementary points. Each interview session took approximately 30 minutes. The qualitative data collection exercise took one (1) week to complete.

4.10 Validity

Validity has been defined by Creswell (2014) as the accuracy or correctness or truthfulness of the findings of a research study. Validity is achieved by triangulating different data sources, clarifying the bias, presenting negative or discrepant information and spending long time in the field (Creswell, 2014). Validity for this study was be achieved by triangulating methods, data sources and subjecting the instruments to peer review. Mixing methods and data sources were employed to provide evidence to build a coherent justification for the themes. Themes that converged based on several sources of data from participants added to the validity of the study (Creswell, 2014).

4.11 Reliability

Mohajan (2017) explains that reliability measures consistency, precision, repeatability and trustworthiness of a research. Types of reliability may include test-retest where reliability is obtained by repeating the same measure second time to get the test-retest reliability. Secondly, parallel-forms reliability is where reliability is obtained by administering different versions of an

assessment tool to the same group of individuals. Inter-rater reliability is another type of reliability in which rating instrument is used by different observers and reliability is obtained by correlating scores from two or more independent ratters (Ganesh, 2009). Reliability for this study was achieved by adopting and adapting research items from similar studies (Badaway & Magdy, 2015; Chipeta & Chawinga, 2017; Chipeta, 2018).

4.12 Data analysis

Quantitative data for this study was analysed using Statistical Package for Social Sciences (SPSS) version 21.0. SPSS was selected due to its flexibility in terms of data processing capability that allows various types of analyses, data conversions, and many forms of output to be generated. On the other hand SPSS is popular and has been used extensively in the social sciences research (Bala, 2016). Quantitative data was analysed to produce descriptive and inferential statistics. Frequency tables, graphs and pie charts formed the basis for the discussion of this study. Qualitative data collected through interviews were analysed thematically. The researcher used Google voice writer to transcribe voice data from voice recorder into text form in Google docs. Microsoft Word 2016 was used to categorise transcribed text data into themes because it was the only latest version available to the researcher. Codes were used to identify respondents instead of their real names. The themes that came out from the qualitative data analysis represented the major findings of the study and formed the basis for discussion. The qualitative data complemented the quantitative data to explain KM practices at LUANAR, Bunda College.

4.13 Ethical issues

Ethical considerations protect research participants, develop trust between a researcher and research participants, and promote integrity of research. Ethics also guard against misconduct and impropriety that might reflect on an organisation (Aluwihare-Samaranayake, 2012). The current study adhered to the Mzuni Research Ethics Committee (MZUNIREC) guidelines as well as getting the gatekeeper's permission from LUANAR. A letter was written to the University Registrar seeking permission to use LUANAR, Bunda College, as a research site. Thereafter, the proposal, with an attachment of the letter from the University Registrar was sent to MZUNIREC for approval as required. Data was only collected upon getting clearance from MZUNIREC. Participants were required to sign a declaration form to voluntarily participate in the study having

read and understood the purpose of the study and what was expected of them as participants. Participants were assured that participation was voluntary and that they reserved the right to withdraw from the study at any time as they wished without any consequences. The researcher also ensured that the right to privacy of the participants was respected. To protect anonymity of research participants, the researcher assigned codes to participants especially those who were interviewed. Participants who responded to the questions were encouraged not to write their names on questionnaire to maintain anonymity of their identity.

4.14 Conclusion of the chapter

The chapter has described the methodology used in the current study on KM practices at LUANAR, Bunda College. It has outlined and discussed the methodology used, the research paradigm used, the type of design the study adopted, research method employed, research sites and target population, sampling techniques and sample size, data collection tools and methods, data analysis, validity and reliability and ethical issues. The next chapter presents analysis and presentation of findings for the study.

CHAPTER FIVE

DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.1 Introduction

The purpose of this chapter is to analyse and present findings of data that were collected through questionnaire and interviews on KM practices at LUANAR, Bunda College Campus. A researcher in quantitative studies can use various statistical and mathematical techniques, to analyse variables in the data set (Moore, 2009). In qualitative studies, this involves organising data, conducting a preliminary read-through of the database, coding and organising themes, representing data, and forming an interpretation (Creswell, 2013). Data collected through questionnaire was analysed using IBM SPSS Version 21 to generate frequencies, percentages, inferential statistics, tables and charts. Data collected through interviews were transcribed in verbatim. The study addressed the following research questions:

5. What types of knowledge are created at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?
6. What mechanisms are used to share knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?
7. What are the benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural resources, Bunda College Campus?
8. What are barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?

The presentation of this chapter has been organised as follows: first part presents the demographic profile of respondents, second part presents types of knowledge created by both academic and senior administrative staff, third part presents mechanisms used for sharing knowledge, the fourth part presents benefits of implementing knowledge management practices and the last part presents barriers to effective KM practices at LUANAR, Bunda College Campus. The results are organised and presented according to the themes obtained from research questions outlined above and from variables gleaned from the theoretical framework in Chapter Two. For each of the research questions, data from the survey questionnaire were presented first, followed by qualitative data from the interviews. The study targeted 164 academic staff and 9 senior administrative staff.

Therefore, 164 questionnaires were distributed to academic staff and 109 questionnaires were returned giving a response rate of 64.7%. Similarly, 9 questionnaires were also distributed to senior administrative staff and 6 were returned representing a response rate of 66.6%. The study also conducted interviews with 4 academic staff and 3 senior administrative staff to collect qualitative data. Dillman (2000) advocates for 50% as the minimal acceptable response rate. Since this study adopted an explanatory sequential design, it meant that the two data sets were collected at two different phases: quantitative data were collected in the first phase using the questionnaires while qualitative data were collected after data analysis of phase one. Two interview guides, one for academic staff and the other one for senior administrative staff were formulated. Each interview guide had four sections: section A, B, C, and D. Section A contained questions on types of knowledge created; section B had questions on mechanisms for knowledge sharing, section C contained questions on benefits of implementing KM practices and finally section E had questions on barriers to effective KM practices. The section below presents the demographic details of respondents.

5.2 Demographic details of respondents

The data that is presented in this section pertains to the demographic characteristics of the respondents. It, among others, covers the faculties the respondents belonged to, gender, age category, position or rank (for academic staff) and number of years in service (for senior administrative staff).

5.2.1 Demographic details for academic staff

Section A (Question 1: Appendix 1) questionnaire for academic staff sought to solicit the demographic details for academic staff. Questionnaires were distributed to 164 academic staff while interviews were conducted with 4 academic staff. Table 5.1 shows the response rate and data collection method for academic staff.

Table 5.1 Response rate, faculty and data collection method for academic staff (n=109)

Faculty Name	Sample size	Number of responses	Response rate (%)	Data collection Method
Faculty of Agriculture	60	49	29.87	Administering questionnaire and conducting interviews
Faculty of Development Studies	42	21	12.8	Administering questionnaire and conducting interviews
Faculty of Natural Resources Management	20	20	12.19	Administering questionnaire and conducting interviews
Faculty of Postgraduate Studies	23	6	3.65	Administering questionnaire and conducting interviews
Faculty of Food and Human Sciences	19	10	6.09	Administering questionnaire and conducting interviews
Total	164	109	64.7	Administering questionnaire and conducting interviews

Table 5.1 shows that out of the 164 questionnaires that were distributed to academic staff, 109 were returned representing a 64.7% response rate. In qualitative data, 4 academic staff who were conveniently selected from the 109 respondents, were interviewed. Results presented in Table 5.1 also shows that Faculty of Agriculture had 49 (45%) respondents, Faculty of Natural Resources 23 (21.1%), Faculty of Development Studies 21 (19.3%), Faculty of Food and Human Sciences 10 (9.2%) and Faculty of Postgraduate Studies 6 (5.5%). The results show that many respondents came from Faculty of Agriculture. This could be so because Faculty of Agriculture is the first, biggest and oldest faculty at LUANAR, Bunda College Campus.

The study also sought to establish the rank of academic staff. The results are presented in Table 5.2.

Table 5.2 response rate by rank **(n= 109)**

Rank	***f***	**%**
Professor	37	33.9
Associate Professor	28	25.7
Senior Lecturer	31	28.4
Lecturer	13	11.9
Total	109	100.0

The results presented in Table 5.2 show that 37 (33.9%) of the respondents were professors; 28 (25.7%) Associate professors; 31(28.4%) senior lecturers and 13 (11.9%) lecturers. The participation of more professors than other categories of staff could be explained by the fact that professors value the works of research and they have great passion to support research works of other researchers.

The study sought to establish the gender of respondents. Figure 5.1 below presents the gender of academic staff.

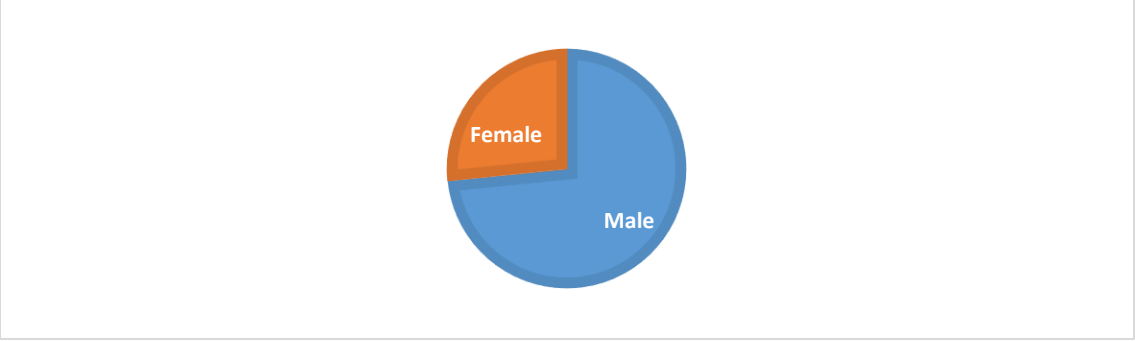

Fig.5.1. Gender of academic staff **(n =109)**

Results presented in Figure 5.1 shows that there were 80 (73%) male respondents and 29 (27%) female respondents. The results show that LUANAR, Bunda College Campus, has more male lecturers than female academics. This could mean that although there has been heavy campaign of

gender equality, in practice, it is not like that in many institutions. The study also sought to find out the age groups of academic staff. The results are presented in Table 5.3 below.

Table 5.3 Age group of academic staff respondents (n=109)

Category of age group	*f*	%
25-35	7	6.4
36-50	54	49.5
51 Above	46	42.2
Total	109	100.0

Results presented in Table 5.3 shows that 7 (6.4%) of the respondents belonged to the age group of 25-35, while 54 (49.5%) of the respondents belonged to the age group of 36-50 and 46 (42.2%) respondents belonged to the age group of 51 and above. The results shows that LUANAR, Bunda College Campus, has a lot of academic staff who are in the middle ages of 36-50 years.

The study also sought to establish the qualifications of academic staff. The results are presented in Figure 5.2.

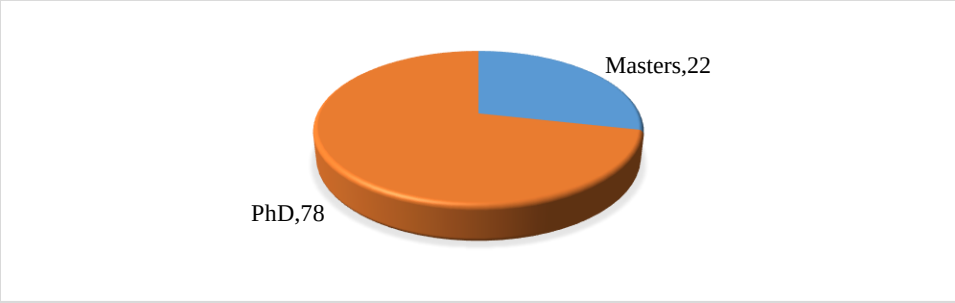

Fig. 5.2 Qualifications of academic staff (n =109)

The results presented in Figure 5.2 show that 78 (72 %) respondents were PhD degree holders while 22 (28%) respondents were Master's degree holders. The results show that most respondents had PhD's probably because LUANAR, Bunda College Campus, has been in existence for a long time as part of University of Malawi, hence, over the years it had developed its academic staff to PhD level.

5.2.2 Demographic details of senior administrative staff

Section A (Question 1: Appendix 2 questionnaire for senior administrative staff) sought to find out the demographic details of senior administrative staff. Nine (9) senior administrative staff from the office of the College Director, Registrar, College Librarian, Director of Finance and ICT manager were targeted for the survey. Six (6) responded to the questionnaire. The results are presented in Table 5.4.

Table 5.4. Rank and response rates of senior administrative staff (n=9)

Rank of respondents	Sample size	responses	Response rate (%)	Data collection Method
College Director	2	1	11.11	Administering questionnaire & conducting interviews
Registrar	4	2	22.21	Administering questionnaire & conducting interviews
College Librarian	1	1	11.11	Administering questionnaire & conducting interviews
ICT Manager	1	1	11.11	Administering questionnaire & conducting interviews
Director of Finance	1	1	11.11	Administering questionnaire & conducting interviews
Total	9	6	66.66	

Results presented in Table 5.4 show that 9 senior administrative staff were targeted. However, only 6 responded to the questionnaire representing a 66.6% response rate. Interviews were also conducted with 3 senior administrative staff who were conveniently selected from the 6 that participated in the survey. The study also sought to establish the gender of the senior administrative staff who participated in the study. Results are presented in Figure 5.3.

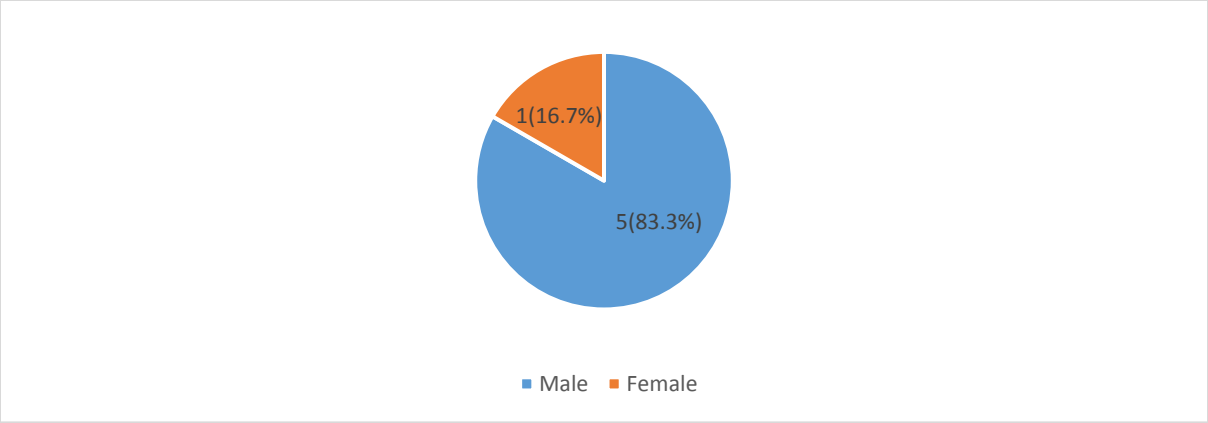

Fig. 5.3: Gender of senior administrative staff (n=6)

The results presented in Figure 5.3 show that 5 (83.3%) respondents were male and 1 (16.7%) was a female person. Participation of females was very low probably because the issue of gender equality is not seriously being followed in the institutions. The study also intended to find out the number of years in service by senior administrators. A Cross-tabulation was conducted to establish the number of years in service by rank of senior administrative staff. The results are presented in Table 5.5.

Table 5.5. Cross-tabulation of rank against number of years in service (n=6)

Rank	Number of Years in Service						Total
	6	8	14	17	18	24	
College Director	0	0	0	0	0	1	1
Registrar	0	1	0	0	1	0	2
College Librarian	0	0	0	1	0	0	1
Director of Finance	0	0	1	0	0	0	1
ICT Manager	1	0	0	0	0	0	1
Total	1	1	1	1	1	1	6

Results of the Cross-tabulation presented in Table 5.5 shows that the College Director, Registrar, Assistant Registrar, College Librarian, Director of Finance, and ICT Manager have been with the college for 24 years, 18 years, 8 years, 17 years, 14 years and 6 years, respectively. The results show that the majority of senior administrative staff had sufficient work experience with the

college to provide the needed information about the study. The study also sought to find out the qualifications of senior administrative staff. The results on qualifications of senior administrative staff are presented in Figure 5.4.

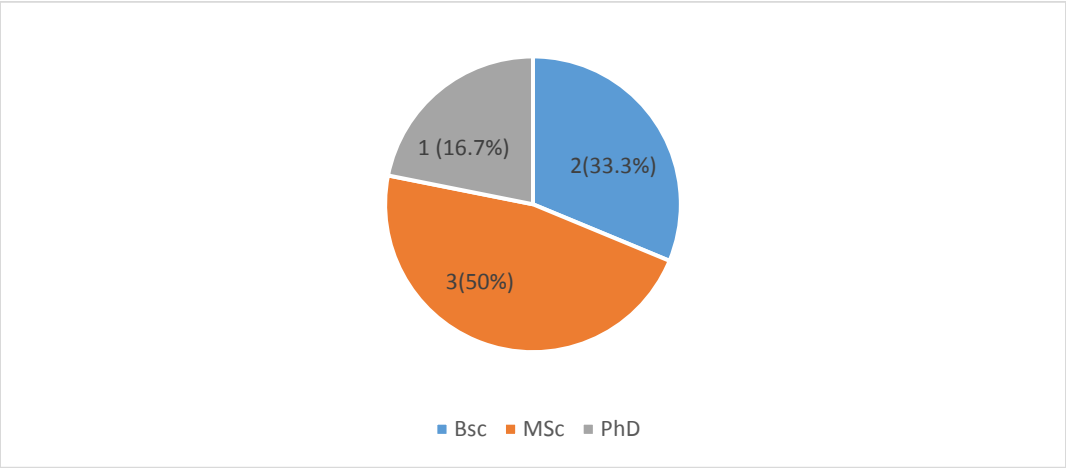

Fig. 5.4: Qualifications of senior administrative staff (n=6)

The results presented in Figure 5.4 show that 3 (50%) of the respondents were master's (MSc) degree holders, 2 (33.3%) were bachelor's (BSc) degree holders while 1(16.7%) was a PhD degree holder. The results show that the majority had master's degrees.

5.3 Types of knowledge created by staff at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus.

This objective of the study intended to find out types of knowledge created at LUANAR, Bunda College Campus. This objective was addressed through research question 1: *What types of knowledge are created at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?* The questions that were formulated to address this research question are contained in the following appendixes:

- Section B (questions 2-3: Appendix 1 questionnaire for the academic staff)
- Section B (questions 2-3: Appendix 2 questionnaire for the senior administrative staff)
- Section A (question 1: Appendix 3 interview guide for academic staff) and
- Section A (question 1: Appendix 4 interview guide for senior administrative staff.)

Academics staff findings are presented first, followed by those of senior administrative staff.

5.3.1 Types of knowledge created by academic staff

According to Nonaka and Takeuchi (1995) Knowledge Creation Model, the major types of knowledge are explicit and tacit knowledge. The question that sought to find out types of explicit and tacit knowledge created by academic staff at LUANAR, Bunda College Campus, required respondents to select their choices from a list of multiple answers. Results presented in Table 5.6 and 5.7 denote that academic staff create explicit and tacit knowledge.

Table 5.6. Types of explicit knowledge created by academic staff (n=109)

Explicit knowledge type	***f***	**%**
Theses and dissertation	108	65.85
Teaching and learning modules/materials	108	65.85
Curriculum documents	108	65.85
Public lectures	102	62.19
Conference/Workshop proceedings	100	60.97
Lecture notes	100	60.97
Journal articles	99	60.36
Emails and memos	98	57.75
Books and book chapters	98	57.75
Inaugural lectures	94	57.31
Curations of plant and animal specimen	94	57.31

Results presented in Table 5.6 show that academic staff at LUANAR, Bunda College Campus, create knowledge in the form of theses and dissertations 108 (65.85%); teaching and learning modules/materials 108 (65.85%); curriculum documents 108 (65.85%); public lectures 102 (62.19%); conference/workshop proceedings 100 (60.97%); lecture notes 100 (60.97%); journal articles 99 (60.36%); emails and memos 98 (57.75%); books and book chapters 98 (57.7%); inaugural lectures/speeches 94 (57.31%) and curations of plant and animal specimen 94 (57.31%). The results show that academic staff at LUANAR, Bunda College Campus, mainly creates knowledge in the form of theses and dissertations, teaching and learning modules/materials and curriculum documents. The majority of academic staff may have indicated thesis as main type of knowledge because of the nature of their job which is mainly concerned with teaching, learning

and conducting research. Further, academic staff who participated in this study had already acquired a PhD or Master's degree (see Fig. 5.2) in which the production of a thesis is one of major requirements.

Table 5.7. Types of tacit knowledge created by academic staff (n=109)

Type of tacit knowledge	*f*	%
Expertise	109	100
Skills	108	99.1
Ideas	108	99.1
Values	102	93.6
Experiences	102	93.6

The results presented in Table 5.7 show that academic staff create tacit knowledge in the form of: expertise 109 (100%), skills 108 (99.1%), ideas 108 (99.1%), values 102 (93.6%) and experiences 102 (93.6%). These results show that expertise is the main type of tacit knowledge created by academic staff at LUANAR, Bunda College Campus.

Interviews that were conducted with academic staff to establish types of knowledge created by academic staff revealed that databases, skills, experiences and lesson learned are some of the specific knowledge created at the college. Excerpts of the responses are presented below:

ACADEMIC 4 said:

> *We have a database in the registrar's office where somebody can see types of skills, experience and knowledge some other people have in the college. This database also helps in performance management issues.*

ACADEMIC 3 said:

> *One type of knowledge we create are the experiences and lessons learned. I think the best to achieve this is coming up with small seminars, not university-wide, but faculty-wide to share this knowledge.*

The interview results also show that both types of knowledge tacit and explicit are created by academic staff in the institution under study. The results of the interviews show that they complement the quantitative results.

5.3.2. Types of knowledge created by senior administrative staff

The question that sought to find out types of knowledge created by senior administrative staff at LUANAR, Bunda College Campus, required respondents to select their choices from a list of multiple answers. Results are presented in Table 5.8 and 5.9.

Table 5.8. Types of explicit knowledge created by senior administrative staff (n=6)

Type of explicit knowledge created	*f*	%
Emails	6	100
Memos	6	100
Policies	6	100
Minutes	6	100
Reports	5	83.5

Results presented in Table 5.8 show that the types of knowledge created by senior administrative staff are: emails 6 (100%), memos 6 (100), policies 6 (100%), minutes 6 (100%) and reports 5 (83.3%). Results show that respondents mainly create knowledge in the form of emails, memos, policies and minutes. This knowledge denotes creation of explicit knowledge. Respondents indicated that email, memos, policies and minutes as the most common types of explicit knowledge created by senior administrative staff probably because this cadre of staff spend much of their time communicating, organising and conducting meetings.

Table 5.9: Types of tacit knowledge created by senior administrative staff (n=6)

Type of tacit knowledge	*f*	%
Skills	6	100
Experiences	6	100
Expertise	6	100
Ideas	5	83.5
Values	1	16.7

Results presented in Table 5.9 show that senior administrative staff create knowledge in the form of skills 6 (100%), experiences 6 (100%), expertise 6 (100%), ideas 5 (83.3%) and values 1

(16.7%). These results show the creation of tacit knowledge by senior administrative staff in the institution.

Interviews conducted with senior administrative staff to establish types of knowledge created at LUANAR, Bunda College Campus, revealed that policy briefs, prospectuses, newsletters, brochures and library guides, are some of the specific publications produced at the college. Presented below are the results in verbatim:

SADMIN 4 said:

> *I know one or two publications that the institution produces. Especially from the marketing office. They do produce a newsletter for the university. I also know that some departments produce policy briefs and we used to have a journal.*

SADMIN 1 said:

> *The registrar's office produces a prospectus. The library produces brochures and guides but we don't have enough stationary to print out these items as often as we want to and that has been the challenge for us.*

Interview results also show that senior administrative staff create explicit knowledge and that there is a complementary relationship between survey and interview results.

In summary results on types of knowledge created have shown that both academic and senior administrative staff at LUANAR, Bunda College Campus, create explicit knowledge in form of theses and dissertation, teaching and learning modules/materials, curriculum documents, public lectures, conference/Workshop proceedings, lecture notes, journal articles, emails and memos, books and book chapters, inaugural lectures, curations of plant and animal specimen, emails, memos, policies, minutes, and reports. Similarly, the college also creates tacit knowledge in form of expertise, skills, ideas, values and experiences.

5.4. Mechanisms used to share knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus

This objective of the study intended to find out mechanisms used to share knowledge at LUANAR, Bunda College Campus. The objective was addressed through research question 2: W*hat mechanisms are used to share knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda Campus?* Questions that were formulated to address this objective are contained in the following appendixes:

- Section C (questions 4-5: Appendix 1 questionnaire for the academic staff)
- Section C (questions 4-5: Appendix 2 questionnaire for senior administrative staff)
- Section B (questions 2-3: Appendix 3 interview guide for academic staff) and
- Section B (questions 2-3: Appendix 4 interview guide for senior administrative staff).

Results for academic staff are presented first, followed by results of the senior administrative staff. Technological and non-technological mechanisms are two ways used for sharing knowledge (Supar, 2012; Tabriz & Morgan, 2014). According to the SECI Model of Knowledge Creation, technology plays a crucial role in facilitating knowledge sharing (Nonaka & Takeuchi, 1995). Technology facilitates knowledge sharing to geographically dispersed organisational units (Cascio & Montealegre, 2016).

5.4.1 Mechanisms for sharing knowledge by academic staff

The question that sought to find out mechanisms used for sharing knowledge by academic staff gave options to respondents to choose their responses from a multiple-choice question. The results on technological mechanisms are presented first and results on non-technological mechanisms are presented later. Results on technological mechanisms for sharing knowledge are presented in Table 5.10.

Table 5.10: Technological mechanism used to share knowledge by academic staff (n=109)

Technology	*f*	%
Email	105	96.5
Internet or Intranet	105	96.5
Social media	103	94.5
Institutional repository	99	90.8
Document management systems	95	87.2
Expert databases	91	83.5

Results presented in Table 5.10 show that technological mechanisms used for sharing knowledge at LUANAR, Bunda College Campus are as follows: email 105 (96.5%); Internet or Intranet 105 (96.5%); social media 103 (94.5%); institutional repository 99 (90.8); document management systems 95 (87.2%); and expert databases 91 (83.5%). The results show that email, Internet and Intranet and social media are major technologies available to promote effective knowledge sharing at LUANAR, Bunda College Campus.

A Cross-tabulation and Chi-Square tests were also conducted to establish the relationship between adequacy of IT infrastructure and email performance and, the relationship between adequacy of IT infrastructure and Internet or Intranet. The results are presented in Table 5.11, Table 5.12, Table 5.13 and Table 5.14, respectively.

Table 5.11. Cross-tabulation on adequacy on IT infrastructure and email performance (n=109)

		Email		Total
		No	Yes	
Adequate IT infrastructure	Strongly Disagree	0	4	4
	Disagree	0	5	5
	Uncertain	2	2	4
	Agree	0	68	68
	Strongly Agree	2	26	28
Total		4	105	109

Results from the Cross-tabulation in Table 5.11 indicate that 105 (96%) respondents who chose email as the main mechanism for sharing knowledge; 28 (26%) strongly agreed, 68 (62%) agreed, 4 (4%) were uncertain, 5 (5%) disagreed while 4 (3%) strongly disagreed to the statement that LUANAR, Bunda College Campus has adequate IT infrastructure. This shows that LUANAR,

Bunda College Campus has adequate IT infrastructure that can support effective email performance to promote sharing of knowledge.

Table 5.12 Chi-Square on adequacy of IT infrastructure and email performance (n=109)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.177[a]	4	.000
Likelihood Ratio	14.337	4	.006
N of Valid Cases	109		

The results of the Chi-square tests presented in Table 5.12 show that (N=109, df=4, X^2=28.177, p=0.000), meaning that the results are statistically significant and therefore, there is a significant relationship between IT infrastructure and effective email performance.

Other results of the Cross-tabulation and Chi-square tests which were conducted to establish relationship between IT infrastructure and Internet or Intranet are presented in Table 5.13 and Table 5.14.

Table 5.13. Cross-tabulation of IT infrastructure and Internet or Intranet (n=109)

		Internet or Intranet		Total
		No	Yes	
Adequate IT infrastructure	Strongly Disagree	0	4	4
	Disagree	2	3	5
	Uncertain	2	2	4
	Agree	0	68	68
	Strongly Agree	0	28	28
Total		4	105	109

Results presented in Table 5.13 indicate that 105 (96%) chose Internet or Intranet as one of the main mechanisms for sharing knowledge; 28 (26%) strongly agreed, 68 (62%) agreed, 4 (4%) were uncertain, 5 (5%) disagreed while 4 (3%) strongly disagreed to the statement that LUANAR, Bunda College Campus has adequate IT infrastructure that can support effective internet/intranet to promote sharing of knowledge.

Table 5.14. Chi-Square Tests results of IT infrastructure and Internet or Intranet (n=109)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.766[a]	4	.000
Likelihood Ratio	22.017	4	.000
N of Valid Cases	109		

The results of the Chi-square tests presented in Table 5.14 show that (N=109, df=4, X^2=46.766, p=0.000), meaning that the results are statistically significant. Therefore, there is a significant relationship between IT infrastructure and Internet or Intranet to promote sharing of knowledge.

Interviews were also conducted with academic staff to find out the technologies used for knowledge sharing. The results revealed that academic staff also use Moodle which is an electronic content management system for uploading content in an information system to facilitate knowledge sharing. Members of staff also use Zoom for conducing virtual meetings to share knowledge, and they also use emails and social media to communicate or share knowledge. Below are the results presented in verbatim:

ACADEMIC 1 said:

> *We have Moodle which we use to upload content for teaching and learning. Since the COVID-19 pandemic we have other means of sharing information. We also use Zoom and we have other electronic means of teaching and learning.*

ACADEMIC 3 said:

> E*mail or social media is used for sharing messages but usually email is used. We also have some management WhatsApp groups, which are used for sharing messages. Personally, I prefer the University email for communication.*

The researcher sought to find out the non-technological mechanisms used by academic staff to share knowledge. This question required respondents to answer on a Likert scale ranging from strongly agree to strongly disagree. The results are presented in Table 5.15.

Table 5.15. Non-technological mechanisms for knowledge sharing by academic staff (n=109)

Mechanism	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
	f	%	*f*	%	*F*	%	*f*	%	*f*	%
Workshops, conferences and seminars	34	31.2	75	68.8	0	0	0	0	0	0
Training and education	36	33.0	69	63.3	4	3.7	0	0	0	0
Mentoring	38	34.9	67	61.5	4	3.7	0	0	0	0
Brainstorming	32	29.4	66	60.6	11	10.1	0	0	0	0
Meetings – formal and informal	25	22.9	80	73.4	2	1.8	0	0	0	0
Communities of Practice (CoPs)	28	25.7	68	62.4	13	11.9	0	0	0	0

The results presented in Table 5.15 on the use of workshops, conferences and seminars for sharing knowledge show that 34 (31.2%) of respondents strongly agreed, 75 (68.8%) agreed, 0 (0%) were uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. On training and education as mechanism for sharing knowledge, 36 (33.0%) strongly agreed, 69 (63.3%) agreed, 4 (3.7) were uncertain, 0 (0%) disagreed, and 0 (0%) strongly disagreed. On the use of mentoring mechanism for sharing knowledge, 38 (34.9%) strongly agreed, 67 (61.5%) agreed, 4 (3.7) were uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. On the use of brainstorming for sharing knowledge, 32 (29.4%) strongly agreed, 66 (60.6%) agreed, 11 (10.1) were uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. On the use of meetings, both formal and informal, for sharing knowledge, 25 (22.9%) strongly agreed, 80 (73.4%) agreed, 2 (1.8) were uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. On the use of communities of practice for sharing knowledge (CoPs), 28 (25.7%) strongly agreed, 68 (62.4%) agreed, 13 (11.9) were uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. The study has established that academic staff at LUANAR, Bunda College Campus, mainly uses meetings (formal and informal), conferences, workshops and seminars, training and education as main ways of sharing knowledge.

Interviews conducted with academic staff to find out the non-technological mechanisms used for knowledge sharing revealed that academic staff use seminars and conferences. Below are the results presented verbatim:

ACADEMIC 3 said:

> *But I remember before COVID-19, the university would organize small seminars and do the sharing of knowledge but since COVID-19 it has actually stopped.*

ACADEMIC 1 said:

> *We have shared numerous research papers through conferences that take place locally or internationally and that's why people elsewhere know about LUANAR, Bunda College Campus because we do it that way.*

The researcher also inquired from the participants how good the Internet is at LUANAR, Bunda College Campus. Results revealed that internet is slow and intermittent. Below were the responses verbatim:

ACADEMIC 2 said:

> *It's not reliable, it is very slow and intermittent, it even prevents the students from accessing the information that lecturers have uploaded on time to access on the website.*

ACADEMIC 3 said:

> *It is not good, it's not as easy. As I have said, it is not good. On my computer here, I don't have internet you can imagine that the internet I am using is personal.*

The researcher asked a follow up question to find out what could be the cause of the internet problem. Below are the responses verbatim:

ACADEMIC 3 said:

> *First, and foremost it is very expensive and most of the organisations and companies are failing to have a reliable internet connection that can support a large number of people.*

ACADEMIC 2 said:

> *Management is not serious about the effectiveness of the internet. Secondly the charges that the internet service providers are charging are too high for our economy.*

Qualitative results on mechanisms used by academic staff for sharing knowledge seem to complement the quantitative findings. In addition to quantitative results, qualitative results have added Zoom, Moodle and WhatsApp on the mechanisms used for knowledge sharing.

5.4.2. Mechanisms used for sharing knowledge by senior administrative staff

The question that was posed, sought to find out from respondents the mechanisms used for sharing knowledge by senior administrative staff. The results indicate that senior administrative staff use technological and non-technological mechanisms for sharing knowledge as presented in Table 5.16 and Table 5.17.

Table 5.16. Technological mechanisms for sharing knowledge by senior administrative staff (n=6)

Mechanism	***f***	**%**
Email	6	100
Internet/Intranet	6	100
Document management systems	5	83
Social media	3	50

Results presented in Table 5.16 show that senior administrative staff share their knowledge through the following means: email 6 (100%), Internet/Intranet 6 (100), document management systems 5 (83%), and social media 3 (50%). These results show availability of knowledge sharing through technological means.

Interviews with senior administrative staff on mechanisms for sharing knowledge revealed that social media, Microsoft team, Zoom and telephone system were some of the technological mechanisms used to share knowledge at LUANAR, Bunda College Campus. Below are their responses verbatim:

SADMIN 1 said:

> *Apart from the institutions network, which the students also use, we have the social media and we have a telephone system.*

SADMIN 3 said:

We are using a Microsoft platform called Microsoft teams. We also have Google platform and Zoom.

The researcher also sought to find out from senior administrative staff the effectiveness of their technological infrastructure. Below were the responses:

SADMIN 1 said:

We have a very good communicating system.

SADMIN 3 said:

We have an effective meetings platform which is used to disseminate information or share information within or outside the organization. For example, we are using a Microsoft platform called Microsoft teams. We also have Google platform and Zoom.

Respondents were also asked to indicate the non-technological mechanisms that are used by senior administrative staff for sharing knowledge. Respondents were provided with options to choose their answers from. The results are presented in Table 5.17.

Table 5.17. Non-technological mechanisms by senior administrative staff (n=6)

Mechanism	***f***	**%**
Meetings (formal and informal)	6	100
Brainstorming	5	83
Training and education	4	66
Workshops, conferences and seminars	3	50

Results presented in Table 5.17 show that senior administrative staff share knowledge through meetings 6 (100%), brainstorming 5 (83%), training and education 4 (66%), and workshops, conferences and seminars 3 (50%). These results show that senior administrative staff mainly use meetings, brainstorming and training and education to share knowledge.

Interviews with senior administrative staff on non-technological mechanisms used to share knowledge revealed that meetings and brainstorming were some of the non-technological mechanisms used to share knowledge at LUANAR, Bunda College Campus. Below were their responses verbatim:

SADMIN 2 said:

> *Meetings are main ways management solicit ideas from members of staff where we brainstorm on various option on an issue in order to come up with good solutions on issues that are affecting the college*

SADMIN 2 said:

> *Meetings are a communication and knowledge sharing tool when management wants to consult on a wide range of issues affecting the university. These meetings range from council meetings, management meetings, faculty meetings, departmental meetings and so on.*

ADMIN 3 said:

> *You know management spends most of its time in attending and organising meetings. In academic institution like this one, management has a schedule of planned meetings. This is one way of ensuring that issues affecting us are given the urgency they deserve.*

The qualitative results in section 5.4.2 above agree with quantitative results from section 5.4.1. Both academic and senior administrative staff at LUANAR, Bunda College Campus, use emails, internet/intranet, social media, document management systems, telephone system, zoom, and Microsoft teams technologies for knowledge sharing. The results also show that both academic and senior administrative staff use meetings, conferences, workshops, seminars, and training and education as the non-technological mechanisms for sharing knowledge.

5.5. Benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural Resource, Bunda College Campus.

This objective of the study intended to find out benefits of implementing knowledge management practices at LUANAR, Bunda College Campus. This objective was addressed through research question 3: *What are the benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?* The questions that were formulated to address this research question are contained in the following appendixes:

- Section D (question 6: Appendix 1 questionnaire for academic staff)
- Section D (question 6: Appendix 2 questionnaire for senior administrative staff)

- Section C (question 4: Appendix 3 interview guide for academic staff) and
- Section C (question 4: Appendix 4 interview guide for senior administrative staff).

Academic staff findings are presented first, followed by results of the senior administrative staff.

5.5.1 Benefits of implementing knowledge management practices by academic staff.

Benefits of KM in universities include innovations, improving research processes, curriculum development, students and alumni services (Chipeta, 2018; Jain, 2014; Nonaka & Takeuchi, 1995; Nawaz et al, 2014; Rahimi et al., 2017)). In order to establish benefits of KM practices at LUANAR, Bunda College Campus, a Cross-tabulation and Chi-square tests of rank of academic staff and benefits of KM were conducted. The results of the Cross-tabulation are presented in Table 5.18, while those of the Chi-square tests are presented in Table 5.19.

Table 5.18 Cross-tab of knowledge management benefits and rank of academic staff (n=109)

Rank	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Total
Improving teaching and facilitating learning						
Professor	8 (7.3%)	29 (26.6%)	0 (0%)	0 (0%)	0 (0%)	**37**
Ass Prof.	10 (9%)	18 (16.5)	0 (0%)	0 (0%)	0 (0%)	**28**
Senior Lecturer	5 (4.5%)	24 (22%)	2 (1.8%)	0 (0%)	0 (0%)	**31**
Lecturer	7 (6.4%)	6 (5.5%)	0 (0%)	0 (0%)	0 (0%)	**13**
Total	**30 (27.5)**	**77 (70.6%)**	**2 (1.8%)**	**0 (0%)**	**0 (0%)**	**109**
Enhancing research						
Professor	8(7.3%)	29 (26.6%)	0 (0%)	0 (0%)	0 (0%)	37
Ass Prof.	8(7.3%)	20 (18.3%)	0 (0%)	0 (0%)	0 (0%)	28
Senior Lecturer	7(6.4%)	24 (22%)	0 (0%)	0 (0%)	0 (0%)	31
Lecturer	5(4.5%)	8 (7.3%)	0 (0%)	0 (0%)	0 (0%)	13
Total	**28 (25.6%)**	**81 (74.3%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**109**
Help in curriculum development process						
Professor	6 (5.5%)	31 (28.4%)	0 (0%)	0 (0%)	0 (0%)	37
Ass Prof.	12 (11.0%)	16 (14.6%)	0 (0%)	0 (0%)	0 (0%)	28
Senior Lecturer	7 (6.4%)	24 (22%)	0 (0%)	0 (0%)	0 (0%)	31
Lecturer	7(6.4%)	6(5.5%)	0(0%)	0(0%)	0(0%)	13
Total	**32 (29.3%)**	**77(70.6%)**	**0(0%)**	**0(0%)**	**0(0%)**	**109**
Performance Improvement						
Professor	10 (9.1%)	27 (24.7%)	0 (0%)	0 (0%)	0 (0%)	37
Ass Prof.	10 (9.1%)	18 (16.5)	0 (0%)	0 (0%)	0 (0%)	28
Senior Lecturer	8 (7.3%)	17 (15.5%)	2 (1.8%)	2 (1.8%)	0 (0%)	31
Lecturer	8 (7.3%)	5 (4.5%)	0 (0%)	0 (0%)	0 (0%)	13
Total	**36 (33.0%)**	**67 (61.4)**	**2 (1.8%)**	**2 (1.8%)**	**0 (0%)**	**109**
Improving University ranking and visibility						
Professor	20 (18.3%)	17 (15.5%)	0 (0%)	0 (0%)	0 (0%)	37
Ass Prof.	8 (7.3%)	20 (18.3%)	0 (0%)	0 (0%)	0 (0%)	28
Senior Lecturer	13 (11.9%)	12 (11.0%)	6 (5.5%)	0 (0%)	0 (0%)	31
Lecturer	7 (6.4%)	4 (3.6%)	2 (1.8%)	0 (0%)	0 (0%)	13
Total	**48 (44.0%)**	**53 (48.6%)**	**8 (7.3%)**	**0 (0%)**	**0 (0%)**	**109**
Creation of new knowledge and innovation						
Professor	19 (17.4%)	18 (16.5)	0 (0%)	0 (0%)	0 (0%)	37
Ass Prof.	14 (12.8%)	14 (12.8%)	0 (0%)	0 (0%)	0 (0%)	28
Senior Lecturer	10 (9.1%)	19 (17.4%)	2(1.8%)	0 (0%)	0 (0%)	31
Lecturer	7 (6.4%)	4 (3.6%)	2 (1.8%)	0 (0%)	0 (0%)	13
Total	**50 (45.8%)**	**55 (50.4%)**	**4 (3.6%)**	**0 (0%)**	**0 (0%)**	**109**
Improving decision making in the university						
Professor	2 (1.8%)	35 (32.1%)	0 (0%)	0 (0%)	0 (0%)	37
Ass Prof.	12 (11.0%)	16 (14.6%)	0 (0%)	0 (0%)	0 (0%)	28
Senior Lecturer	10 (9.1%)	16 (14.6%)	5 (4.5%)	0 (0%)	0 (0%)	31
Lecturer	3 (2.7%)	8 (7.3%)	2 (1.8%)	0 (0%)	0 (0%)	13
Total	**27 (24.7%)**	**75 (68.8%)**	**7 (6.4%)**	**0 (0%)**	**0 (0%)**	**109**

The results of the Cross-tabulation presented in Table 5.18 could be explained as follows: In response to the assumption that KM improves teaching and facilitating learning, 30 (27.5%) of academic staff strongly agreed, of these 8 (7.3%) were Professors, 10 (9%) were Associate Professors, 5 (4.5%) were Senior Lecturers and 7 (6.4%) were Lecturers. Out of 77 (70.6%) academic staff who agreed, 29 (%26.6) were Professors, 18 (16.6%) were Associate Professors, 24 (22%) were Senior Lecturers and 6 (5.5%) were Lecturers. Out of 2 (1.8%) academic staff who were uncertain, 2 (1.8%) were senior lecturers and 0 (0%) of all categories of academic staff were either uncertain, disagreed or strongly disagreed to the statement.

In response to the inquiry that KM enhances research, 28 (25.7%) strongly agreed, of these, 8 (7.3%) were Professors, 8 (7.3%) were Associate Professors, 7 (6.4%) were Senior Lecturers and 5 (4.5%) were Lecturers. Out of 81 (74.3%) who agreed, 29 (26%) were Professors, 20 (18.3%) were Associate Professors, 24 (22%) were Senior Lecturers and 8 (7.3%) were Lecturers; 0 (0%) of all categories of academic staff were either uncertain, disagreed or strongly disagreed to the statement.

There was also an attempt to find out if KM helps in curriculum development process. In response to this inquiry, 32 (29.4%) strongly agreed, of these, 6 (5.5%) were Professors, 12 (11.0%) were Associate Professors, 7 (6.4%) were Senior Lecturers and 7 (6.4%) were Lecturers. Out of the 77 (70.6%) who agreed, 31 (28.4%) were Professors, 16 (14.6%) were Associate Professors, 24 (22%) were Senior Lecturers and 6 (5.5%) were Lecturers; and 0 (0%) categories of all academic staff were either uncertain, disagreed or strongly disagreed to the statement.

In terms of the assumption that KM improves University ranking and visibility, 48 (44.0%) strongly agreed, of these 20 (18.3%) were Professors, 8 (7.3) were Associate Professors, 13 (11.9%) were Senior Lecturers and 7 (6.4%) were Lecturers; 53 (48.6%) agreed, of these, 17 (15.5%) were Professors, 20 (18.3%) were Associate Professors, 12 (11.0%) were Senior Lecturers and 4 (3.6%) were Lecturers; 8 (7.3%) were uncertain, of these 0 (0%) were Professors, 0 (0%) were Associate Professors, 6 (5.5%) were Senior Lecturers and 2 (1.8%) were Lecturers; and 0 (0%) of all categories of academic staff either disagreed or strongly disagreed to the statement.

The researcher also wanted to find out if KM leads to creation of new knowledge and innovation. In response to this inquiry, 50 (45.9%) strongly agreed, and of these 50, 19 (17.4%) were Professors, 14 (12%) were Associate Professors, 10 (9.1%) were Senior Lecturers, 7 (6.4%) were Lecturers; 55 (50.5%) agreed of these, 18 (16.5%) were Professors, 14 (12.8%) were Associate Professors, 19 (17.4%) were Senior Lectures and 4 (3.6%) were Lecturers; while 4 (3.7%) were uncertain and these, 0 (0%) were Professors, 0 (%) were Associate Professors, 2 (1.8%) were Senior Lecturers and 2 (1.8%) were Lecturers, and 0 (0%) of all categories of academic staff either disagreed or strongly disagreed to the statement.

In response to the statement that KM improves decision making in the university, 27 (24.8%) strongly agreed of these, 2 (1.8%) were Professors, 12 (11.0%) were Associate Professors, 10 (9.1%) were Senior Lecturers and 3 (2.9%) were Lecturers; 75 (68.8%) agreed and of these, 35 (32.1%) were Professors, 16 (14.6%) were Associate Professors, 16 (14.6%) were Senior Lecturers and 8 (7.3%) were Lecturers and 0 (0%) categories of all academic staff were either uncertain, disagreed or strongly disagreed to the statement. Results show that the majority of all academic staff across all ranks agreed with benefits of implementing KM at the college.

Results of the Chi-Square test to establish the relationship between ranks of academic staff and benefits of KM is presented in Table 5.19 below.

Table 5.19: Chi-Square test on knowledge management benefits and rank of academic staff (n=109)

Knowledge management benefit	**Value**	**df**	**Asymp. Sig. (2-sided)**
Improving teaching and facilitating learning	12.697[a]	6	.048
Enhancing research	1.710[a]	3	.635
Help in curriculum development process	9.987[a]	3	.019
Performance Improvement	21.424[a]	9	.011
Improving University ranking and visibility	19.222[a]	6	.004
Creation of new knowledge and innovation	11.424[a]	6	.076
Improving decision making in the university	25.926[a]	6	.000

The results of the Chi-Square test on benefits of implementing KM presented in Table 5.19 show that there is a statistically significant relationship between rank of academic staff and improvement of teaching and facilitation of learning (N=109, df=6, X2=12.697, p=0.048). However, the Chi-Square test that shows (N=109, df=3, X2 =1.710, p=0.635) means there was no statistically significant relationship between rank of academic staff and the statement that KM enhances research. Another Chi-Square test shows (N=109, df=3, X2 =9.987, p=0.019) implying that there was a statistically significant relationship between rank of academic staff and the statement that KM practices help in curriculum development process. The Chi-square test further shows (N=109, df=9, X2 =21.424, p=0.011) indicating that there was a statistically significant relationship between rank of academic staff and the statement that KM leads to performance improvement. Furthermore, the Chi-square test shows (N=109, df=6, X2=19.222, p=0.004) which entails that there was a statistically significant relationship between rank of academic staff and the statement that KM improves University ranking and visibility. The Chi-square test on rank of academic staff and the statement that KM creates new knowledge and innovation shows (N=109, df=6, X2 =11.424, p=0.076) meaning that there was no statistically significant relationship, lastly, the Chi-square test shows (N=109, df=6, X2 =25.926, p=0.000) indicating that there was a statistically significant relationship between rank of academic staff and the statement that KM improves decision making in the university.

The Chi-square test results in Table 5:19 show that, except for enhancing research and creation of new knowledge and innovation, which were not statistically significant, all the other benefits of KM were statistically significant.

Interviews conducted with academic staff revealed that implementing KM practices would improve knowledge sharing, increases chances of being promoted among academic staff and improve research activities. Responses verbatim are presented below:

ACADEMIC 1 said:

> *KM promotes knowledge sharing through seminars that are carried out at faculty level and we are encouraged to do research and share the outcome through these platforms.*

ACADEMIC 3 said:

> *Depending on the number of publications you produce, one can increase chances of being promoted from one level to another maybe from lecture to senior lecturer and to associate professor and professor.*

ACADEMIC 4 said:

> *I think KM can enhance the research activities right from departmental level to the institutional level as academic staff members try to do research and publish in reputable journals.*

Results from qualitative findings of academic staff appear to support quantitative findings that implementing KM practices enhances research activities and increases academic staff opportunities for promotion and knowledge sharing.

5.5.2 Benefits of implementing knowledge management practices by senior administrative staff

A Cross-tabulation was conducted between rank of senior administrative staff and benefits of implementing KM. Results are presented in Table 5.20.

Table 5.20 A Cross-tabulation of knowledge management benefits and rank of senior administrative staff (n=6)

Rank	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Total
Knowledge management assists the university in its endeavors to improve visibility						
College Director	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**1**
Registrar	0 (0%)	2 (33.3)	0 (0%)	0 (0%)	0 (0%)	**2**
College Librarian	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	**1**
Director of Finance	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**1**
ICT Director	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	**1**
Total	**2 (33.3%)**	**4 (80%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**6**
Knowledge management supports strategic planning process						
College Director	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
Registrar	2 (33.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2
College Librarian	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
Director of Finance	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
ICT Director	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	**1**
Total	**3 (50%)**	**3 (50%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**6**
Knowledge management contributes to effective decision making at the university						
College Director	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
Registrar	1 (16.7%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	2
College Librarian	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
Director of Finance	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
ICT Director	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
Total	3 **(50%)**	3 **(50%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**6**
Knowledge management brings about Innovation and wealth creation						
College Director	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
Registrar	0 (0%)	2 (33.3%)	0 (0%)	0 (0%)	0 (0%)	2
College Librarian	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
Director of Finance	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
ICT Director	0 (0%)	1 (16.7%)	0 (0%)	0 (0%)	0 (0%)	1
Total	**1 (16.7%)**	**5 (83.3%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**6**

Cross-tabulation results on rank of senior administrative staff and benefits of implementing KM practices in Table 5.20, in terms of the statement that KM assists the university in its endeavours to improve visibility, 2 (33.3%) strongly agreed, of these, 1 (16.7%) was the College Director and 1 (16.7%) was the Director of Finance; out of 4 (80%) who agreed, 2 (33.3%) were Assistant Registrars, 1 (16.7%) was the College Librarian, 1 (16.7%) was the Director of ICT and the results of the rest of the respondents show 0 (0%) responses; and 0 (0%) of all categories of senior administrative staff were either uncertain, disagreed or strongly disagreed to the statement.

In response to the statement that KM supports strategic planning process, 3 (50%) strongly agreed, of these, 1 (16.7%) was the College Director, 2 (33.3%) were Registrars, 0 (0%) was the College Librarian, 0 (0%) was the Director of Finance and 0 (0%) was the Director of ICT; 3 (50%) agreed, of these 0 (0%) was the College Director, 0 (0%) Assistant Registrar, 1 (16.7%) was the College Librarian, 1 (16.7%) was a Director of Finance, and 1 (16.7%) was the Director of ICT; and 0 (0%) of all categories of senior administrative staff were either uncertain, disagreed or strongly disagreed to the statement.

The statement that KM contributes to effective decision making in the university, 3 (50%) strongly agreed of these, 1 (16.7%) was the College Director, 1 (16.7%) was an Assistant Registrar, 0 (0%) was the College Librarian, 1 (16.7%) was the Director of Finance and 0 (0%) was the Director of ICT; 3 (50%) agreed, of these 0 (0%) was the College Director, 1 (16.7%) was Assistant Registrar, 1 (16.7%) was the College Librarian, 0 (16.7%) Director of Finance, and 1 (16.7%) was the Director of ICT; and 0 (0%) of all categories of senior administrative staff were either uncertain, disagreed or strongly disagreed to the statement.

In response to the statement that KM brings about innovation and wealth creation, 1 (16.7%) strongly agreed of these, 1 (16.7%) was the College Director, 0 (0%) Assistant Registrar, 0 (0%) College Librarian, 0 (0%) Director of Finance and 0 (0%) Director of ICT; 5 (83.7%) agreed, of these 0 (0%) was the College Director, 2 (33.3%) were Assistant Registrars, 1 (16.7%) was the College Librarian, 1 (16.7%) was Director of Finance, and 1 (16.7%) was the Director of ICT; and 0 (0%) of all categories of senior administrative staff were either uncertain, disagreed or strongly disagreed to the statement.

Cross-tabulation results of rank and benefits of KM show that the majority of senior administrative staff agreed that KM assists the university in its endeavours to improve visibility, supports strategic

planning process, contributes to effective decision making and brings about Innovation and wealth creation.

Senior administrative staff were asked to indicate through a survey whether there is anyone at LUANAR, Bunda College Campus, who advocates for the implementation of KM system or programme or not. The Majority 5 (83.3%) indicated none while 1 (16.7%) indicated positively. These results show that there is nobody who advocates for implementation of KM system or programme at LUANAR, Bunda College Campus. Therefore, it can be concluded that there is nobody advocating for KM at Bunda Campus.

Interviews conducted with senior administrative staff on benefits of implementing KM practices revealed that KM is important in knowledge retention and ensures continuity in work processes. The following were the responses verbatim:

SADMIN 1 said:

> *KM practices, in my own view, I think, can be helpful in knowledge retention. That is to say, when somebody is about to go out of the system, here at Bunda College we make sure that he hands over to an appropriate person all his or her knowledge pertaining to the position.*

SADMIN 3 said:

> *I think it's an important function and necessary for an academic institution like this one. It ensures continuity of the university's business. We make sure that we train others to do what is required even in our absence.*

Results from qualitative findings of senior administrative staff on benefits of implementing KM seem to expand on quantitative results by adding knowledge retention and ensuring continuity of organisational business.

In a nutshell, results from both academic and senior administrative staff on benefits of KM show that implementation of KM improves teaching and facilitates learning. KM enhances research, helps in curriculum development process, influences performance improvement, and improves University ranking and visibility. Furthermore, KM leads to creation of new knowledge and

innovation, improves decision making in the university, helps in retention of staff knowledge, promotes knowledge sharing and increases chances of promotion among academic staff.

5.6 Barriers to implementation of knowledge management practices at Lilongwe University of Agriculture and Natural Resources' Bunda College Campus.

This objective of the study intended to find out barriers to effective KM practices at LUANAR, Bunda College Campus. This was addressed through research question 4: *What are the barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus?* The questions that were formulated to address this research question are contained in the following appendixes:

- Section E (question 7: Appendix 1 questionnaire for academic staff)
- Section E (question 7: Appendix 2 questionnaire for senior administrative staff)
- Section D (question 6: Appendix 3 interview guide for academic staff) and
- Section D (question 6: Appendix 4 interview guide for senior administrative staff).

The question that sought to find out barriers to effective KM practices from the questionnaire required respondents to give responses on a Likert scale ranging from Strongly Agree to Strongly Disagree. During the interviews, respondents were asked to mention some barriers to effective KM practices and offer solutions to the barriers they had identified. Firstly, academic staff findings are presented, followed by results of the senior administrative staff.

5.6.1 Barriers to effective knowledge management practices by academic staff

The survey results by academic staff are presented in Table 5.21 followed by interview results.

Table 5.21. Barriers to effective knowledge management practices by academic staff (n= 109)

Factor	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Inadequate awareness about the importance of knowledge management	15	13.8	85	78.0	6	5.5	3	2.8	0	0
Lack of top management support towards knowledge management practices can affect knowledge management activities at Bunda College Campus	33	30.3	70	64.2	4	3.7	2	1.8	0	0
Lack of rewards and incentives affects knowledge management practices at Bunda College Campus	32	29.4	65	59.6	8	7.3	2	1.8	2	1.8
Unwillingness of academic staff to share their knowledge	24	22.0	67	61.5	12	11.0	6	5.5	0	0

The results presented in Table 5.21 show various responses to the different inquiries. In response to the statement that inadequate awareness about the importance of knowledge Management affects KM practices, 15 (13.8%) strongly agreed, 85 (78.0%) agreed, 6 (5.5%) were uncertain while 3 (2.8%) disagreed, 0 (0%) strongly disagreed. In response to the statement that lack of top management support towards knowledge management practices affects KM activities, 33 (30.3%) strongly agreed, 70 (64.2%) agreed, 4 (3.7%) were uncertain, 2 (1.8%) disagreed and 0 (0%) strongly disagreed. In response to the statement that lack of rewards and incentives affects KM practices, 32 (29.4%) strongly agreed, 65 (59.6%) agreed, 8 (7.3%) were uncertain, 2 (1.8%) disagreed, while 2 (1.8%) strongly disagreed. In response to the statement that unwillingness of academic staff to share their knowledge affects KM practices, 24 (22.0%) strongly agreed, 67 (61.5%) agreed, 12 (11.0%) were uncertain while 6 (5.5%) disagreed and 0 (0%) strongly disagreed. Overall, the results show that respondents agreed to the barriers of KM practices at LUANAR, Bunda College Campus.

Interviews, conducted with the respondents revealed lack of KM advocate/champion, lack of KM awareness activities, lack of policy and resources to be some of the barriers effecting KM practices at LUANAR, Bunda College Campus. Below were the responses verbatim:

ACADEMIC 1 said:

> *Well, there are no advocates for KM at LUANAR, Bunda College Campus. I have not heard somebody advocating for it. In terms of who can do this, I think the best advocates are in the library amongst the library personnel.*

ACADEMIC 2 said:

> *There is lack of awareness about KM activities, for example, we don't know about KM policy, we don't know the whereabouts of our institutional repository. It might be there but most of us have not heard about it and have not used it before. We need to develop a policy to guide these activities.*

ACADEMIC 4 said:

> *Possibly one barrier could be resources. We are not able to do meaningful research because we do not have enough resources. Management needs to increase funds for research.*

Solutions to KM barriers mentioned in the interviews are summarised in Table 5.22.

Table 5.22 Solutions on barriers to effective knowledge management practices by academic staff

Barrier	**Suggested Solution**
Lack of awareness about knowledge Management activities	*The library should conduct awareness activities on knowledge management throughout the University.*
Lack of a knowledge management advocate	*The library personnel should take up advocacy initiative*
Lack of resources to conduct research	*Management should increase funding for research to support knowledge creation*
Lack of knowledge management policy	*Management should develop a knowledge management policy*

Results from qualitative findings on barriers to effective KM practices seem to agree with quantitative findings on the major barriers. The results show lack of policy and awareness about KM activities affect KM activities. In addition, the qualitative findings have also shown that there is an absence of KM advocates or champions and lack of resources to support KM activities. To address these barriers, academic staff suggested that Management should develop a knowledge management policy and that the library should conduct KM awareness activities throughout the

college, and exercise the role of KM advocates. In addition, academic staff also suggested that management should increase funding for research to support knowledge creation.

5.6.3 Barriers to effective knowledge management practices by senior administrative staff

In this section the researcher sought to find out barriers to effective KM practices from senior administrative staff at LUANAR, Bunda College Campus. To collect this data, a questionnaire and interviews were employed. The questions from the questionnaire required respondents to indicate their answers on a Likert scale ranging from strongly agreed to strongly disagree. The results are presented in Table 5.23.

Table 5.23. Barriers to effective knowledge management practices by senior administrative staff (n=6)

Barrier	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Lack of policy and organizational commitment	4	66.6	1	16.7	1	16.7	0	0	0	0
Inadequate awareness about the importance of knowledge management	0	0	5	83.3	1	16.7	0	0	0	0
Unwillingness among academics to share their knowledge	1	16.7	4	66.6	1	16.7	0	0	0	0
Lack of knowledge management champion or leadership support and commitment	0	0	4	66.7	2	33.3	0	0	0	0

The results presented in Table 5.23 on barriers to effective KM practices identified by senior administrative staff are in response to some of the questions written in this section. For example, in response to the inquiry that lack of policy and organizational commitment affect KM practices, 4 (66.6%) strongly agreed, 1 (16.7%) agreed, 1 (16.7%) was uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. In response to the inquiry that inadequate awareness about the importance of sharing knowledge affects KM practices, 0 (0%) strongly agreed, 5 (83.3%) agreed, 1 (16.7%) was uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. In response to the statement that unwillingness among academics to share their knowledge affects KM practices, 1 (16.7%) strongly agreed, 4 (66.6%) agreed, 1 (16.7%) was uncertain, 0 (0%) disagreed and 0 (0%) strongly

disagreed. In response to the statement that lack of KM champion or leadership support and commitment affects KM practices, 0 (0%) strongly agreed, 4 (66.7%) agreed, 2 (33.3%) were uncertain, 0 (0%) disagreed and 0 (0%) strongly disagreed. These results show that, KM practices at LUANAR, Bunda College Campus are negatively affected by lack of awareness about the importance of KM, lack of KM policy and organizational commitment; unwillingness among academics to share their knowledge and lack of KM champion or leadership support.

Interviews conducted with senior administrative staff revealed that there are a number of barriers that impede effective KM practices including high cost of internet subscription and insufficient bandwidth that leads to slow internet. Below are excerpts from the verbatim responses:

SADMIN 1 said:

> *Internet is very expensive in Malawi. So, the bandwidth which we subscribe to is not what we would want to have because it's very expensive. We subscribe to something basic that does not cost much. We are limited with the amount of money that we can pay the subscriber*

SADMIN 3 said:

> *It is true Internet is slow, we have a challenge that it is very expensive. Apart from that I can say it is not just the University's challenge, but we can talk about it in general that we have faced with an internet challenge in our country.*

Findings from qualitative and quantitative results on barrier to effective KM practices by senior administrative staff seem to complement each other. The overall results from both academic and senior administrative staff on barriers to effective KM practices show that KM practices are impeded by lack of awareness about the importance of KM, lack of top management support, lack of KM advocate, lack of policy, lack of resources to support research and unwillingness of academic staff to share their knowledge at Bunda Campus.

During interview sessions with senior administrative staff the researcher asked them to suggest solutions to barriers identified. The suggested solutions are presented in Table 5.24.

Table 5.24. Solutions by senior administrative staff on barriers to effective knowledge management practices

Barrier	Suggested Solution
Lack of policy and organisational commitment	*Management should develop a knowledge management policy and the process should be consultative. The college should also appoint a knowledge manager from the existing staff complement.*
Lack of awareness about the importance of knowledge management	*Organise mentorship programmes and institute a knowledge awareness campaign*
Unwillingness among academic staff to share their knowledge	*Nurture the spirit of knowledge sharing from departmental level to institutional level*
Lack of knowledge management champion or leadership support and commitment	*Identify and deploy a knowledge management Champion and establish a Unit to coordinate knowledge management activities*

In summary, suggestions from both academic and senior administrative staff point to the fact that LUANAR, Bunda College Campus, needs a KM policy and a Knowledge Manager to advocate and promote KM initiatives. Furthermore, academic and senior administrative staff also suggested that management should launch a KM awareness campaign throughout the college to enhance understanding of the importance of KM, increase funding for research initiatives, organise mentorship programmes and nurture the spirit of knowledge sharing from departmental level up to college level.

5.7 Conclusion of the chapter

This chapter has presented data analysis and presentation of findings from the questionnaires and interview guides. The data analysis and presentation of findings were presented based on the research questions in section 5.1. Since this study used sequential explanatory design, quantitative data was concurrently collected from academic staff and administrative staff, and analyzed using IBM SPSS software Version 21. Results from quantitative data analysis informed qualitative data collection in the second phase. Findings have revealed that LUANAR, Bunda College Campus, creates teaching and learning modules/materials, curriculum documents, reports, policies, newsletters, and tacit knowledge in form of skills, expertise, experiences and ideas. This knowledge is mainly shared through emails, Internet or Intranet, social media, meetings (both informal and formal). However, the College does neither have a KM unit nor policy and KM

advocate to coordinate KM activities. The study had established that members of staff are able to see benefits of implementing KM but top management must play a good supportive role in order to realise these benefits. In implementing KM practices, the study has revealed that there are a number of barriers that need to be considered by management if KM implementation proposal is to be actualised. The next chapter discusses findings from this chapter.

CHAPTER SIX

DISCUSSION OF THE FINDINGS, CONCLUSION, AND RECOMMENDATIONS

6.1 Introduction

This chapter discusses findings of the study presented in chapter five. The purpose of the study was to explore knowledge management practices at LUANAR, Bunda College Campus. The SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995) provided the lens for discussing the findings. Data was collected through questionnaires and interview guides from academic and senior administrative staff. Validation of the result was based on the triangulation of data sources. Quantitative and qualitative data sets were collected at two different phases and also analysed separately. Quantitative data were collected and analysed in the first phase while qualitative data were collected after data analysis of quantitative data in phase one. The two data sets were merged at interpretation and discussion stage. Descriptive data collected through questionnaires were analysed using IBM SPSS Version 21 to generate frequencies, percentages, inferential statistics, tables and charts. Interview data were transcribed verbatim and presented thematically. Themes that were derived from research questions constituted the framework that was employed to arrange this chapter. The themes included types of knowledge created at LUANAR, Bunda College, mechanisms used for knowledge sharing, benefits of implementing KM practices and barriers to effective KM practices.

6.2 Discussion

The purpose of this discussion section is to interpret and describe the significance of the findings of this study with literature and research problem being examined. The section explains any new understanding or insights that came out as a result of this study (Annesley, 2010).

6.3 Demographic profile

The demographic data comprised the faculties/departments the respondents belonged to, their gender, age category, rank, years of service, and the number of publications produced. The findings of the present study have revealed that there were more academic staff from the Faculty of Agriculture than others. This could be so because the Faculty of Agriculture was the first to be established and hence it is the biggest at the college. In terms of gender, there were more male

academic staff than female academic staff who participated in the study. This could be so because the college employed more male staff than their female counterparts.

The study also unveiled that there were more academic staff participants between the age group of 36-50 than other age groups. The majority of the respondents were Ph.D. holders implying that the college might have a good staff development policy that encourages professional development.

Findings on senior administrative staff revealed that most of the respondents came from the Registrar's Office while the rest of the departments had one each. Pertaining to gender of respondents, the findings of the study revealed that there were more male respondents than female respondents. This entails that the college has more male senior administrative staff than their female counterparts. The data revealed further that the longest-serving officer was the College Director. This could be because she had been there since the college was part of the University of Malawi. Finally, the findings revealed that more senior administrative staff had master's degrees than Ph.D. and bachelor's degrees. This shows that the college employed more administrative staff at masters and bachelor's degree levels.

6.4 Types of knowledge created at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus

The first research question of this study sought to find out the types of knowledge created at LUANAR, Bunda College Campus. The SECI Model of Knowledge Creation states that explicit and tacit knowledge are the main types of knowledge created in organizations (Nonaka & Takeuchi, 1995). The findings of the current study established that types of knowledge created denote two main types of knowledge, namely: explicit and tacit knowledge. The two types of knowledge are discussed below starting with explicit knowledge and then tacit knowledge.

6.4.1 Explicit Knowledge

The findings of the study revealed that both academic and senior administrative staff at LUANAR, Bunda College Campus create knowledge in form of theses and dissertations, teaching and learning modules/materials, curriculum documents, public lectures, conference/Workshop proceedings, lecture notes, journal articles, emails and memos, books and book chapters, inaugural

lectures, policies, minutes, reports and curations of plant and animal specimen. Production of curations of plant and animal specimen was very particular to LUANAR, Bunda College. The explanation for these findings could be that while undertaking teaching, research, and community service as the core mandate of the University, academic staff create this knowledge as the output of their activities. This is consistent with the SECI Model of Knowledge Creation which proffers that explicit knowledge is manifested in tangible forms like data, policies, procedures, software, and documents (Nonaka & Takeuchi, 1995). The findings of the current study are similar to those of Mavodza and Ngulube (2012) in the United States of America, Ramachandran et al. (2013) in Malaysia, Dhamdhere (2015) in India, Abbas (2015) in Nigeria, Jain (2014) in Botswana and Chipeta (2018) in Malawi who found that books, dissertations and thesis, teaching and learning modules, policies, emails, reports, publications, journal articles, inaugural lectures, lecture notes, conference proceedings, minutes of meetings, memos, policy documents, and curriculum documents are some of the explicit knowledge created in universities. The similarities between the present study findings and those of Mavodza and Ngulube (2012), Ramachandran et al. (2013) Dhamdhere (2015), Abbas (2015), Jain (2014) and Chipeta (2018) could be attributed to the fact that universities' mandate namely teaching, research, and community service is the same elsewhere. However, the current study identified curations of plant and animal specimens as a unique type of knowledge created at Bunda College Campus which was difficult to link to literature on types of explicit knowledge under discussion. This was so because little research has been published in this area.

6.4.2 Tacit knowledge

Apart from explicit knowledge created at LUANAR, Bunda College Campus, the current study also found that academic and senior administrative staff at the College create tacit knowledge in form of expertise, skills, ideas, lessons learned, values, and experiences. Respondents may have indicated these because they are the types of knowledge that are mainly created or acquired as people interact socially with one another. This is in line with what the SECI Model of Knowledge Creation postulates that tacit knowledge is also manifested in intangible forms like insights, intuitions, expertise, skills, values, experiences and metaphors that people acquire through socialization (Nonaka & Takeuchi, 1995). The discussion above illuminate similarities of global

and African literature probably because the studies were conducted in university environments, whose mandate and functions are similar.

6.5 Mechanisms used to share knowledge created at Lilongwe University of Agriculture and Natural Resources, Bunda Campus

The second objective of the study intended to find out mechanisms used for sharing knowledge at LUANAR, Bunda College. The mechanisms were divided into two parts. The first part intended to determine the technological mechanisms used for sharing knowledge while the second part intended to establish non-technological mechanisms used for sharing knowledge.

6.5.1 Technological infrastructure

The findings of the current study established staff at LUANAR, Bunda College Campus, use email, Internet or Intranet, social media, institutional repository, document management and expert databases for knowledge sharing. These technologies are used may be because LUANAR, Bunda College management is keen in ensuring that knowledge sharing in the college is done effectively. These results conform to the SECI Model of Knowledge Creation which proffers that technologies help organisations to manage their knowledge resources (Nonaka & Takeuchi, 1995), hence organisations exploit the recent technologies in order to achieve efficiency (Wagner et al., 2014).

Findings of the present study revealed that emails constituted the major technological mechanism for knowledge sharing at LUANAR, Bunda College Campus. Most members of staff preferred emails to any technological means of sharing information because email is the most and widely used technology that has been accepted in organisations for official electronic communications. According to the SECI Model of Knowledge Creation, emails play an important role in sharing explicit knowledge. For example, in the combination stage, explicit knowledge in form of documents can be attached and shared via email within and outside an organisation (Nonaka & Takeuchi, 1995). The findings on email are consistent with a study by Sommerstein et al. (2017) that examined knowledge sharing in infection prevention in Switzerland and found that email was the most effective mechanism for sharing and distributing health knowledge at the University of Bern. The findings of the present study are further supported by Ochwo et al. (2018) in Eastern Uganda; Chaputula (2018), and Chipeta and Chawinga (2017) in Malawi. For instance, a

quantitative study by Ochwo et al. (2018) that examined the efficacy of ICTs in digitalised students' records management among university staff in Eastern Uganda established that the use of email improves collaboration with other stakeholders of the university. In addition, a survey by Chaputula and Mutula (2018) on 'eReadiness of Public University Libraries in Malawi to use mobile phones in the provision of library and information services' in Malawi revealed that most academic libraries were either planning or offering library services through email using mobile phones. Correspondingly, a survey by Chipeta and Chawinga (2017) that examined knowledge management capability in higher education, suggested that the use of email technology for sharing experiences by academic staff promoted social interaction and knowledge sharing. The findings on email were cross-tabulated with IT infrastructure and subsequently subjected to a Chi-square test to find out if IT infrastructure had a bearing on effective email provision. It was discovered that email performance and IT infrastructure were statistically significant (p=0.000), implying that where there is good IT infrastructure, use of email is expected to be good.

Although email was used at LUANAR, Bunda College, for knowledge sharing, some factors affected its effective use. For example, respondents cited that Internet was slow and intermittent. Therefore, the slow and intermittent Internet shows that effective knowledge sharing activities might have been negatively affected at LUANAR, Bunda College. This situation is similar to what Adamseged and Hong (2014) in China, Gupta (2011) in India, Akinlolu et al. (2018) in Nigeria and Chipeta et al., (2009) in South Africa and Malawi found that high cost of Internet, inadequate IT infrastructure and low bandwidth affect Internet connectivity which consequently affect knowledge sharing activities in universities.

The current study also found that Internet/Intranet was the other major technology used for knowledge sharing at LUANAR, Bunda College Campus. Respondents may have indicated these technologies because Internet is an information resource which people depend on to satisfy their information curiosity. It is one of the tools individual as well as originations use to access and exchange business information. According to the SECI Model of Knowledge Creation (Nonaka & Takeuchi, 1995), Internet is a technology that facilitates knowledge sharing. In support of the present study findings a literature based study by Alipour et al. (2011) on the 'Knowledge creation and transfer: role of learning organization' in Malaysia, noted that one of the technologies mangers

use for effective communication and knowledge sharing is the Internet. Alipour et al. (2011) declare that without Internet, effective communication of ideas and knowledge would not be easy among members of an organization, especially when they are geographically dispersed. The role of Internet has further been acknowledged by Alksasbeh et al. (2018) in Jordan, Namondwe (2011) Chipeta and Chawinga (2017) in Malawi who revealed that university staff use ICT tools such as the Internet for knowledge retrieval, sharing and collaboration.

Other technologies the current study established that they are being used for knowledge sharing at LUANAR, Bunda College, include social media, institutional repository, document management system and expert databases. These findings denote availability and use of knowledge communication and preservation technologies that help in the sharing of knowledge. Respondents may have chosen these technologies because of their familiarity with the technologies at the college. According to the SECI Model of Knowledge Creation, technologies enable knowledge sharing in organisations starting from the socialisation to internalisation stages of knowledge conversion (Nonaka & Takeuchi, 1995). In support of the findings, Omona et al. (2010) who examined the use of ICT in KM discovered that social media facilitates KM processes such as knowledge sharing and collaboration in universities. Furthermore, Gaál et al. (2015) in Hungary, Evans et al. (2014) in Canada and Buckley (2012) in South Africa, discovered that social media, institutional repository, document management are the technologies that are used for knowledge sharing in universities.

However, the current study found that expert databases were the least popular technology among the technologies used for knowledge sharing at LUANAR, Bunda College. This is contrary to what Evans et Al. (2014) in Canada and Buckley (2012) in South Africa who found that development of expert databases is pivotal in facilitating access, retrieval and sharing of knowledge in an organisation. Therefore, these findings show lack of expert databases at LUANAR, Bunda College.

6.5.2 Non-technological mechanisms

The second part of the second research question addressed the non-technological mechanisms used for knowledge sharing at LUANAR, Bunda College Campus. The findings of the current study

revealed that academic and senior administrative staff use formal and informal meetings; conferences, workshops, and seminars; training and education, mentoring, and brainstorming for knowledge sharing and communities of practice (CoPs) (See Tables 5.15 and 5.17).

The findings of the present study have indicated that meetings, both formal and informal, are the major non-technological mechanisms used for knowledge sharing at LUANAR, Bunda Campus, however, CoPs were the least rated. Meetings are forums that allow people to come together either face to face or virtually by the use of other technologies to discuss issues of common interest. Meetings allow people to express their views, brainstorm on ideas and make decisions. In the current study respondent may have chosen meeting as the major non-technological mechanism for knowledge sharing because universities operate on committees and meetings are the commonest discussion forum on which academic and administrative staff meet to discuss issues affecting their universities. The SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995) states that during meetings knowledge sharing takes place in face-to-face interaction between people or virtually by the use of technology. In line with the present study findings, a survey by Farris (2020) on 'Understanding university committees – how to manage and participate constructively in institutional governance' in Virginia, USA, reports that meetings enable both academic and senior administrative staff to frequently interact when addressing issues affecting their universities. In support of the findings, Savolainen (2017) in Sweden, Appel-Meulenbroek et al. (2018) in Netherlands, Bagire (2018) in Uganda, Aming'a (2018) in Kenya and Chipeta (2018) in Malawi revealed that a lot of knowledge sharing, and generation of ideas through brainstorming and decision making are facilitated in meetings. These findings show that meetings are fundamental forums organisations use for sharing knowledge. The similarities between the findings of the current study on meetings and studies by Aming'a (2018), Appel-Meulenbroek et al. (2018), Bagire (2018), Chipeta (2018), Farris (2020), and Savolainen (2017) prove that meetings are widely used for knowledge sharing in universities.

The study also ascertained that workshops, conferences, and seminars were the other main non-technological mechanisms used for knowledge sharing at LUANAR, Bunda College Campus. Workshops, conferences, and seminars are common forums academicians use for knowledge sharing. They help in showcasing research and publication output by academic staff in universities.

In these forums, academic staff learn from one another, thereby increasing the command of their tacit knowledge. Upholding the findings of the current study, the SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995) proffers that during workshops, conferences, or seminars, knowledge is shared through socialisation. Consistent with the present study findings, a survey by deVriesa and Pieters (2017) that examined knowledge sharing in universities in the Netherlands found that conferences are a means for bridging the gap between research and practice because that is where researchers meet practitioners to share their knowledge. In support Adamseged and Hong (2018) in China, Bulitia and Kimile (2020) in Kenya, Dei and Walt (2020) in Ghana, Chipeta (2018) and Chipeta and Chawinga (2017) in Malawi confirm that university staff share their knowledge through conferences, seminars and workshops. The discussion above confirms that universities use common strategies for knowledge sharing since these are common strategies to educators or trainers in knowledge sharing.

Similarly, the current study also found that knowledge sharing at LUANAR, Bunda College Campus, is achieved through training and education, mentoring, brainstorming and CoPs. Nevertheless, the findings show a variety of knowledge sharing mechanisms in use at LUANAR, Bunda College. Therefore, availability of a variety of these mechanism at LUANAR offers workers the flexibility to choose the most effective mode of knowledge sharing to use when sharing knowledge. For example, Shava (2016) on 'Enhancing learning achievement through professional development experience' in Zimbabwe found that National University of Science and Technology University developed training and education programme to improve teaching skills of academic staff. Similarly, a survey by Jain (2014) on 'Knowledge management practices among academic staff found that knowledge is shared through mentorship programmes at University of Botswana, and such sessions give an opportunity for new staff members to familiarise themselves with job processes faster when they learn from a mentor.

Findings of the current study have, however, shown that CoPs are not popular at LUANAR, Bunda College; they were the lowest ranked. This is contrary to what Aljuwaiber (2016) in Saudi Arabia, Dei (2017) in Ghana and Buckley and du Toit (2009) in South Africa found. Studies by Aljuwaiber (2016), Dei (2017) and Buckley and du Toit (2009) found that one of the major strategies for sharing knowledge in universities is CoPs. According to Dei (2017), CoPs provide opportunities

for employees to interact, collaborate and share knowledge while learning from one another. The findings show that CoPs are not yet formally developed and instituted at LUANAR, Bunda College, as a strategy for knowledge sharing.

6.6 Benefits of implementing knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus

The third objective of the study sought to establish the benefits of implementing KM practices at LUANAR, Bunda College Campus. Findings from both academic and senior administrative staff revealed that KM improves teaching, facilitates learning, enhances research, helps in the curriculum development process, influences performance improvement, improves University ranking and visibility, leads to the creation of new knowledge and innovation, improves decision making in the university, helps in retention of staff knowledge, promotes knowledge sharing and increases chances of promotion among academic staff. However, the claim that KM increases chances of promotion among academic staff was the least ranked and this could be so due to the fact the staff have not yet connected the benefits of KM to their professional development.

The study found that KM improves teaching and facilitates learning. Teaching results in the creation of knowledge in the learner. Therefore, when the correct knowledge is shared with a teacher, he can use that knowledge to enrich his presentation skills or content of his or her expertise. The majority of the respondents may have indicated this aspect because universities are teaching and research institutions, and therefore, knowledge that is shared among staff can improve their teaching which brings about learning. The findings of the present study are consistent with the SECI Model of Knowledge Creation which states that during externalisation, and conversion processes, knowledge is shared through the use of language or symbols to facilitate learning (Nonaka & Takeuchi, 1995). This is done through discussions, dialogues or sharing experiences, among others. The findings of the present study agree with the findings of a mixed-method study by Pinto (2014) that examined knowledge management in universities in Portugal. The study revealed that KM practices enhance teaching, learning, research, and administrative services. The findings of the present study also mirror those of Argawal and Marouf (2014) in India, Jain (2014) in Botswana, Ojo (2016) in Nigeria, and Chipeta (2018) in Malawi who found that KM practices help academic staff to improve teaching and learning especially when they use feedback from

students in form of evaluations. The findings of the present study are also supported by those of Jain (2014) in Botswana whose study revealed that KM improves teaching, and accelerates learning. The similarities between the findings of the current study and those of Pinto (2014), Argawal and Marouf (2014), Jain (2014), Ojo (2016), and Chipeta (2018) are due to the fact that universities are dynamic teaching and research institutions whose mandate of teaching, research, and community service is also similar.

Research is one of the core business of universities and therefore, it requires ready access to knowledge repositories, databases and other sources to facilitate the process. The present study also established that KM leads to enhanced research. Therefore, KM ensures the acquisition/creation, preservation/storage, use and dissemination of knowledge which can be assessed by researchers. The respondents may have indicated this because knowledge access and availability is crucial for one to conduct research. This is consistent with the SECI Model of Knowledge Creation in the combination stage where knowledge is systematised in knowledge bases or repositories that are accessed by researchers (Nonaka & Takeuchi, 1995). The present study findings resonate with those of a survey by Bhusry et al. (2011) on 'Implementing knowledge management in higher educational institutions in India'. The study revealed that KM reduces duplication of research since researchers are able to consult what other researchers have done before they write. In the previous findings, Hoq and Akter (2012) in Bangladesh, Ojo (2016) in Nigeria, Kithuka (2020) in Kenya and Chipeta and Chawinga (2017) in Malawi revealed that KM improves research by making huge knowledge repositories available to researchers. The similarities between the findings of the studies and the foregoing literature confirms that research is one of the core business of all universities the world over.

Findings of the current study also established that KM practices help in the curriculum development process, influence performance improvement, improve University ranking and visibility, lead to the creation of new knowledge and innovation, improve decision making in the university, help in retention of staff knowledge, promote knowledge sharing, and increase chances of promotion among academic staff. These findings simply show that there are a lot of benefits accrued from KM practices. In line with the finding of the current study, the SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995) states that during the conversion stages

(socialisation, externalisation, combination and internalisation) of knowledge, various forms of knowledge are created. This knowledge is used to benefit organisations in various ways. The findings of the current study are supported by Kurniawan (2014) in Indonesia who established that KM in universities leads to enhanced curriculum development process while Farnese et al. (2019) in Italy noted that through management of knowledge resources, performance in an organisation can be improved. Similarly, Laal (2010) in Iran also found that KM improves university ranking and visibility while Chipeta (2018) in Malawi reported that KM leads the creation of new knowledge and innovation. A study by Jain (2014) in Botswana revealed that KM improves knowledge sharing and decision making. Similarly, Kabilwa (2018) in Zambia reported that KM helps in retention of productive staff's knowledge.

However, the claim that KM leads to promotions of staff was the least cited by the respondents. This is contrary to Todorova and Mills (2014) and Mugalavai (2020) in Kenya who established that teaching staff in universities are stimulated to participate in KM activities because they are rewarded with incentives like promotion, therefore, promotion is one of the main benefits of academic staff while participating in KM practices. These studies have demonstrated that management of knowledge in organisation brings a lot of benefits in different areas of operations in an organisation.

6.7 Barriers to effective knowledge management practices at Lilongwe University of Agriculture and Natural Resources, Bunda College Campus

The fourth research objective sought to establish barriers to effective KM practices at LUANAR, Bunda College Campus, among academic and senior administrative staff. The findings revealed the following barriers: lack of awareness about the importance of KM; lack of top management support; lack of KM advocate or champion; lack of policy; lack of resources to support research and unwillingness of academic staff to share their knowledge. It is surprising that unwillingness to share knowledge was the least barrier in the current study showing that academic staff have the willingness to share their knowledge at the college.

One of the main barriers to effective KM practices the current study found was lack of awareness about the importance of KM. Lack of awareness means no university-wide support towards the

KM programme because people cannot support something they do not know. Respondents may have indicated this barrier because there was no department or an officer charged with the responsibility of coordinating KM activities at the College. Therefore, lack of awareness about the importance of KM at LUANAR, Bunda College, suggests that KM activities were being practiced informally at the College. These findings are consistent with a survey study by Bhusry et al. (2011) which revealed that lack of KM awareness hampered KM activities in India. Similarly, Ling et al. (2014) in Malaysia, Agawin et al (2019) in Philippines, Masenya (2021) in South Africa, Maiga (2017) and Charles and Nawe (2015) in Tanzania found that there was lack of awareness of the importance of KM in the universities studied. The similarities between the current study and studies highlighted above on lack of awareness in KM can be attributed to the fact, maybe, these studies were mainly conducted in universities where KM practices are conducted without formal procedures and organisational strategies leading KM practices being done arbitrarily.

The findings of the current study also found that lack of top management support was one of the main barriers that affected KM practices at LUANAR, Bunda College. Lack of top management support can affect KM practices if top managers do not see the value of the programme. According the SECI Model of Knowledge Creation by Nonaka and Takeuchi (1995), one of the outcome of a KM programme is the formation of an organisational memory and this could not be produced without the involvement of top management. In line with the findings of the current study, a survey by Mas-Machuca (2014) that assessed the role of leadership in knowledge-intensive organisations found that there was lack of top management support for KM practices at Universitat Internacional de Catalunya in Spain. Similarly, lack of top management support was also reported in other studies by Akhavan et al. (2014) in USA, Kiwelu (2020) in Uganda, Ogendi (2017) in Kenya who established that lack of top management support hampered tacit knowledge transfer efforts. Therefore, Ogendi (2017) recommends that top management should be involved in every step of KM implementation process. The findings of the current study only underscore the importance of top management support as one of the core requisite factors for effective implementation of KM in an institution.

The present study also found that lack of policy was also one of the main barriers to effective KM practices at LUANAR, Bunda College. KM policy provides a framework for operating guidelines

to ensure that there is uniformity and conformity in KM practices consistent with the goals and objectives of an organisation. However, lack of policy means operating a programme without direction which is prone to failure and confusion. According the SECI Model of Knowledge Creation, an organisation wishing to increase its knowledge output ought to promote policies relating to KM processes (Nonaka & Takeuchi, 1995). Respondents may have indicated this barrier because services and programmes are usually governed by their corresponding policies and guidelines in universities. The findings of the present study agree with a survey by Santosh and Panda (2016) on 'Sharing of knowledge among faculty members at Mega Open University' that revealed lack of policy as the major challenge that affected KM practices at Indira Gandhi National Open University in India. Supporting findings of the current study is Mavodza and Ngulube (2012) in USA, Farradillah et al. (2019) in Indonesia, Kabilwa (2018) in Zambia, and Jain (2013) in Botswana who revealed that lack of policy inhibited the implementation of effective KM practices in universities. As such, Mavodza and Ngulube (2012), Farradillah et al. (2019), Kabilwa (2018) and Jain (2013) recommend that universities should fully internalise a KM culture by coming up with clearly written KM policies and strategies aligned to universities' overall strategic plans. These results show that most universities in developing countries only have ad hoc and haphazard KM practices that cannot be reckoned as KM programmes at all.

Other barriers to effective KM practices at LUANAR, Bunda College, that the present study revealed were lack of KM advocate or champion, lack of resources to support research and unwillingness of academic staff to share knowledge. It appears that barriers to effective KM outnumber the benefits of KM benefits in the section above. It can, therefore, be alleged that these can be ascribed to lack of top management support and policy at the college. According to the SECI Model of Knowledge Creation, KM programme requires top management support who can formulate KM policy (Nonaka & Takeuchi, 1995). It is the policy that can address bottlenecks of lack of resources, lack of KM champion or advocate, as well as unwillingness of academic staff to share their knowledge. In support of the current study findings, Agarwal and Marouf (2014) in India, Laal (2010) in Iran, Anduvare (2015) in Kenya and Kruger and Johnson (2010) in South Africa revealed that implementation of KM practices need someone from the top management to lead the initiative. Whereas Walters (2013) in USA, Chugh (2018) in Australia, Ogbonna (2020)

in West Africa and Mosha (2017) in Tanzania found that lack of resources for research led to low research and placed research under pressure in the surveyed countries.

Therefore, the current study found that unwillingness as a barrier to effective KM practices was the least rated by respondents, yet, this is one of the main barriers to KM. For example, a survey by Davidaviciene (2020) in Middle East universities, Fullwood et al. (2019) in the UK, Buckley (2012) in South Africa and Ndeto and Mwania (2018) in Kenya collaborate that unwillingness of academic staff to share their knowledge was one of the major barriers to KM practices in universities.

To address some of the above-cited barriers, respondents suggested that the KM awareness programme should be developed to appraise members of staff about the importance of KM at LUANAR, Bunda College Campus; a KM policy should be developed to guide and enhance KM practices at LUANAR, Bunda College Campus; a KM officer or champion should be deployed to advocate KM programme in the college; a KM unit should be established to coordinate all KM activities in the college and that the college should negotiate with Internet Service Providers to subsidise Internet charges to academic institutions to ensure effective access to knowledge.

The first suggestion was that KM awareness programme should be developed at LUANAR, Bunda College, in order to appraise members of staff about the importance KM. Awareness programme is very important in any new initiative to implement KM practices in a university. It ensures that all staff members are on board because they know what is happening. It also ensures that the programme has support of staff from the grassroots since they understand the benefits. This suggestion is supported by Agarwal and Marouf (2014) and Dhamdhere (2015) in India who recommend the introduction of KM awareness campaigns to help organisational members know what knowledge is created and where it is located in order to improve KM sharing culture in universities. Other studies by Charles and Nawe (2015) in Tanzania, and Muchaonyerwa (2015) in South Africa established that conducting KM awareness in the universities enables staff to recognise the value of knowledge as an incredible asset. However, Ling et al. (2014) who reviewed the level of awareness of knowledge management in the higher education institutions in Malaysia noted that awareness on the essentials of knowledge management was still a concern among many

organizations, especially universities. It can, therefore, be summarised that since the findings of the current study contradict studies by Agarwal and Marouf (2014), Dhamdhere (2015), Charles and Nawe (2015) and Muchaonyerwa (2015), there is need for LUANAR, Bunda College Campus, to establish a campus-wide KM awareness programme to introduce the concept of KM and ensure that all staff members understand the individual and organisational value of KM in the institution and participate in the programme effectively.

The other solution was the need to develop a KM policy in order to provide a framework for operating guidelines that would ensure uniformity and conformity in KM practices consistent with the goals and objectives of the organisation. In support of this suggestion, Dhamdhere (2015) in India recommend designing of an appropriate KM policy that would lead to successful implementation of a KM strategy. Similarly, Muchaonyerwa (2015) in South Africa and Wamundila (2008) in Zambia recommend the development of a KM policy which would support the laying down of procedures, rules, guidelines and regulations on KM practices to overcome ineffective KM practices.

The findings of the current study also established that a KM officer or champion should be deployed to advocate for a KM programme in the college. This suggestion underscores the importance of leadership in KM programme. Without a leader, the whole programme would not succeed since there is nobody to advocate for it. Respondents may have suggested this because currently there is no one to lead KM programme in the college. Supporting this suggestion is the study by Laal (2010) in Iran which suggests that identification of a high level champion to spearhead KM programme should be a prerequisite. However, Gan et al. (2006) argues that a project like KM programme need not only have one champion to avoid a situation whereby when one retires or leaves the institution, then the project suffers. Therefore, Shah (2018) in a Ph.D. study on 'Knowledge management practices in Universities of Pakistan' recommends appointment of a team of KM champions to drive the KM agenda. In Africa Anduvare (2015) also acknowledges the role of a KM Champion and explains that in a situation where an organisation has decided to implement KM, roles and responsibilities ought to be assigned to specific people in the organisation to ensure accountability. It is encouraging to note that in a mixed methods study by Dei and Walt (2020) in Ghana, senior university officers were directly involved in KM

initiatives; they also acted as KM champions in selected universities. This is a good example that other universities from Africa can emulate.

The findings of the study also found that the respondents proposed the establishment of a KM unit to coordinate KM activities at LUANAR, Bunda College. KM unit is like a secretariat for a KM programme. It is where all KM activities are coordinated from, hence a very important facility to go along with any initiative of implementing a KM programme. In support of this solution, Shah (2018) in Pakistan, Jain (2013) in Botswana also supports the establishment of a knowledge management unit to coordinate and promote the successful implementation of KM programme in universities.

The final suggested solution to the last-mentioned barrier to effective KM practices was that the College should negotiate with Internet Service Providers to subsidise Internet service charges to academic institutions to ensure effective access to knowledge. This suggestion may have been proposed because the respondents were aware of the financial hardships the College was going through. This suggestion agrees with International Development Research Centre Gakio (2006) of Canada, a report on 'African tertiary institutions connectivity survey' which recommend that educational institutions need to form a consortium to negotiate with government to eliminate some license fees and monopoly pricing for educational institutions bandwidth. However, a report by International Network for Advancement of Scientific Publications (INASP) (2003) on 'Optimising Internet bandwidth in developing countries' higher education' argues that what academic institutions from developing countries need is not more bandwidth, but bandwidth management. INASP (2003) suggests that bandwidth is an invaluable institutional resource that needs to be managed through appropriate institutional policies. In support of the foregoing arguments, a survey by Echezona and Ugwuanyi (2010) in Nigeria also recommends prudent management of bandwidth and the formation of Consortium to encourage economies of scale to lower the cost of the Internet.

6.8 Conclusion

In conclusion, the current study has revealed that LUANAR, Bunda College Campus, creates different types of explicit and tacit knowledge. This knowledge is shared mainly through email to

fulfil the following: enhance research, help in the curriculum development process, and improve teaching and learning, among others. However, the study revealed that there is no KM awareness among staff, nor KM policy, and there is nobody to advocate for KM activities, just to mention, but a few barriers.

6.8.1 Demographic profile

The study targeted academic and senior administrative staff. There were more academic staff who participated in the study than senior administrative staff. In terms of gender, there were more male participants than female participants in the study. Furthermore, more Ph.D. holders, especially those aged between 36-50 years participated in the study.

6.8.2 Types of Knowledge created at Lilongwe University of Agriculture and Natural Resources, Bunda Campus

The study has established that LUANAR, Bunda College, create explicit knowledge in form of theses and dissertations, teaching and learning modules/materials, curriculum documents, public lectures, conference/workshop proceedings, lecture notes, journal articles, emails and memos, books, and book chapters, inaugural lectures, curations of plant and animal specimen, policies, minutes and reports. The College also creates tacit knowledge in form of expertise, skills, ideas, lessons, values and experiences. Both academic and senior administrative staff create explicit and tacit knowledge at LUANAR, Bunda College.

6.8.3 Mechanisms used for sharing knowledge at Lilongwe University of Agriculture and Natural Resources, Bunda Campus

The current study has revealed that different types of explicit and tacit knowledge created at LUANAR, Bunda College is shared through email, Internet/Intranet, social media, meetings, conferences, workshops, and seminars.

6.8.4 Benefits of implementing knowledge management at Lilongwe University of Agriculture and Natural Resources, Bunda Campus

The study has established that KM has the following benefits: improves teaching and facilitates learning; enhances research; helps in the curriculum development process; influences performance

improvement; improves university ranking and visibility; leads to the creation of new knowledge and innovation; improves decision making in the university; helps in retention of staff knowledge; promotes knowledge sharing and increases chances of promotion among academic staff

6.8.5 Barriers to effective knowledge management at Lilongwe University of Agriculture and Natural Resources, Bunda Campus

Final analysis has shown ineffective KM practices has led LUANAR, Bunda College, to experience the following barriers: lack of awareness about the importance of KM, lack of top management support, lack of KM advocate or champion, lack of policy, lack of resources to support research, and unwillingness of academic staff to share their knowledge.

6.9 Recommendations

Based on the findings, effective KM practices at LUANAR, Bunda College, may be achieved if top management can do the following:

1. Come up with a knowledge management programme to manage the different types of knowledge created at LUANAR, more especially curations of plant and animal specimens which was found to be a unique type of knowledge created at the college.
2. Facilitate the development of expert databases and other knowledge bases to facilitate ready access to knowledge at college.
3. Develop an incentive system in inform of promotions or special awards to motivate staff and ensure that staff participate willingly in KM activities.
4. Consult information professionals in the library and together develop a KM policy to act as a framework for the implementation of KM at the college and ensure that KM activities are properly funded, best practices are documented and shared throughout the college to ensure consistency.
5. Develop a knowledge management awareness programme for the college.
6. Identify a knowledge management champion or advocate to coordinate KM activities.

6.10 Areas for further studies

The present study examined knowledge management practices at LUANAR, Bunda College Campus. Future research may consider researching on:

- Knowledge management system at LUANAR, Bunda College Campus.
- The impact of the absence of a KM policy at LUANAR, Bunda College Campus.

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APPENDICES

APPENDIX 1 Questionnaire for Academic Staff

Mzuzu University Research Ethics Committee (MZUNIREC)

Informed Consent Form for Research in Masters in Library and Information Science

Introduction
I am Allan Kanyundo from Mzuzu University and am doing research on Knowledge management practices at Lilongwe University of Agriculture and Natural Resources (LUANAR). This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research
This research aims at examining Knowledge management practices at Lilongwe University of Agriculture and Natural Resources.

Type of Research Intervention
This research will involve your participation in filling the questionnaire.

Participant Selection
You are being invited to take part in this research because your views will help in establishing good knowledge management practices that will help improve employee performance to meet university objectives at LUANAR.

Voluntary Participation
Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate nothing will change. You may skip any question and move on to the next question.

Duration
The research takes place for a period of three months.

Risks
You do not have to answer any question or take part in the discussion/interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable.)

Reimbursements
You will not be provided any incentive to take part in the research.

1

Sharing the Results
The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following, we will publish the results so other interested people may learn from the research.

Who to Contact
If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: Dr George Chipeta on gchipeta5@gmail.com.
This proposal has been reviewed and approved by Mzuzu University Research Ethics Committee (MZUNIREC) which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find more about the Committee, contact Mr. Gift Mbwele, Mzuzu University Research Ethics (MZUNIREC) Administrator, Mzuzu University, P/Bag 201, Luwinga, Mzuzu 2, Phone: 0999404008/0888641486

Do you have any questions?

Part II: Certificate of Consent
I have been invited to participate in research about Knowledge management practices at Lilongwe University of Agriculture and Natural Resources. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Signature of Participant .....

Date ....

Day **month** **year**

Statement by the researcher/person taking consent
I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the research project. I confirm the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent.....

Date ....

Day/ **month/** **year**

QUESTIONNAIRE FOR ACADEMIC STAFF

SECTION A: DEMOGRAPHIC INFORMATION

1. Show your demographic details in the table below.

Section	Description	Response (tick)
Faculty	Faculty of Agriculture	
	Faculty of Development Studies.	
	Faculty of Food and Human Sciences	
	Faculty of Natural Resources Management	
	Faculty of Postgraduate Studies.	
Rank	Professor	
	Associate Professor	
	Senior Lecturer	
	Lecturer	
Gender	Male	
	Female	
Age group	25 --- 35 years	
	36 --- 50 years	
	51 above	
Qualification and Publications	Masters' Degree	
	PhD	
	Number of publications produced	

SECTION B: TYPES OF KNOWLEDGE CREATED OR ACQUIRED AT LUANAR

Knowledge Management is the systematic and clear process for the creation and use of knowledge to maximize knowledge-related effectiveness of an organization. It involves the capture of an organization's collective expertise wherever it resides – in people's heads, or in databases, on paper and distribution of the same to wherever it can produce the biggest returns.

2. Indicate types of explicit knowledge created at LUANAR (multiple answers are allowed) ***Explicit knowledge is documented knowledge expressed in words or numbers and can be shared in form of books, articles, minutes, rules, reports, policies etc.***

   a) Public lectures [ ]
   b) Conference/workshop proceedings [ ]
   c) Inaugural lectures/speeches [ ]
   d) Thesis and dissertations [ ]
   e) Emails and memos [ ]
   f) Books, book chapters [ ]
   g) Journal articles [ ]
   h) Teaching and learning modules/materials [ ]
   i) Curriculum documents [ ]
   j) Lecture notes [ ]
   k) Curations of plant and animal specimen [ ]
   l) Others……

3. Indicate types of tacit knowledge staff possess at LUANAR (multiple answers are allowed) ***Tacit knowledge is undocumented, personal knowledge that cannot be communicated in written form and therefore, difficult to share*** *(Adhikari, 2010)*

   a) Values [ ]
   b) Skills [ ]
   c) Ideas [ ]
   d) Experiences [ ]
   e) Expertise [ ]
   f) Others……

SECTION C: MECHANISMS FOR EFFECTIVE KNOWLEDE SHARING AT LUANAR

4. Please indicate the ICTs available for promoting effective knowledge sharing at LUANAR among the following: (multiple answers are allowed)

Technological infrastructure	**Response (tick)**
Email	
Internet or Intranet	
Document management systems	
Institutional repository	
Social media	
Expert databases	

5. To what extent do you agree with the following mechanism as the most effective ways for knowledge sharing at LUANAR:

SA: strongly agree A: agree U: uncertain D: disagree SD: strongly disagree

Mechanism	**SA**	**A**	**U**	**D**	**SD**
a) Workshops, conferences and seminars					
b) Training and education					
c) Mentoring					
d) Brainstorming					
e) Meetings – formal and informal					
f) Communities of Practice (CoP)					

SECTION D: BENEFITS OF IMPLEMENTING KM PRACTICES AT LUANAR

6. To want extent do you agree with following as the benefits of knowledge management?

SA: strongly agree A: agree U: uncertain D: disagree SD: strongly disagree

Benefit	**SA**	**A**	**U**	**D**	**SD**
a) Improving teaching and facilitating learning					
b) Enhancing research					
c) Help in curriculum development process					
d) Performance Improvement					
e) Improving University ranking and visibility					

f) Creation of new knowledge and innovation					
k) Improving decision making in the university					

SECTION E: BARRIERS TO EFFECTIVE KNOWLEDGE MANAGEMENT PRACTICES AT LUANAR?

7. Please show the extent to which you agree with the following barrier to effective knowledge management practices at LUANAR.

SA: strongly agree A: agree U: uncertain D: disagree SD: strongly disagree

BARRIER	SA	A	U	D	SD
a) Inadequate awareness about the importance of knowledge Management					
b) Lack of top management support towards knowledge management practices can affect KM activities at LUANAR					
c) Lack of rewards and incentives affects KM practices at LUANAR					
d) Unwillingness of academic staff to share their knowledge					

Thank you very much for your time in completing the questionnaire. Please, if you have any other relevant comments, give them in the space below.

……
……
……

Thank you,
Regards
Allan J Kanyundo
ajkanyundo@yahoo.com/ kanyundo.a@mzuni.ac.mw
+265996707884

APPENDIX 2 Questionnaire for Senior Administrative Staff

Mzuzu University Research Ethics Committee (MZUNIREC)

Informed Consent Form for Research in Masters in Library and Information Science

Introduction
I am Allan Kanyundo from Mzuzu University and am doing research on Knowledge management practices at Lilongwe University of Agriculture and Natural Resources (LUANAR). This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research
This research aims at examining Knowledge management practices at Lilongwe University of Agriculture and Natural Resources.

Type of Research Intervention
This research will involve your participation in filling the questionnaire.

Participant Selection
You are being invited to take part in this research because your views will help in establishing good knowledge management practices that will help improve employee performance to meet university objectives at LUANAR.

Voluntary Participation
Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate nothing will change. You may skip any question and move on to the next question.

Duration
The research takes place for a period of three months.

Risks
You do not have to answer any question or take part in the discussion/interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable.)

Reimbursements
You will not be provided any incentive to take part in the research.

Sharing the Results
The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following, we will publish the results so other interested people may learn from the research.

Who to Contact
If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: Dr George Chipeta on gchipeta5@gmail.com.
This proposal has been reviewed and approved by Mzuzu University Research Ethics Committee (MZUNIREC) which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find more about the Committee, contact Mr. Gift Mbwele, Mzuzu University Research Ethics (MZUNIREC) Administrator, Mzuzu University, P/Bag 201, Luwinga, Mzuzu 2, Phone: 0999404008/0888641486 Do you have any questions?

Part II: Certificate of Consent
I have been invited to participate in research about Knowledge management practices at Lilongwe University of Agriculture and Natural Resources. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant……..

Signature of Participant …….

Date …… …… …….

Day **month** **year**

Statement by the researcher/person taking consent
I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the research project. I confirm the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent……

Date ……. …….. ……

Day/ **month/** **year**

QUESTIONNAIRE FOR SENIOR ADMINISTRATIVE STAFF

SECTION A: DEMOGRAPHIC INFORMATION

1. This section attempts to solicit background information. Fill in the blank spaces provided:

Background Information aspect	Response
Gender	
Position	
Number of years in service	
Highest Education Qualification (eg. MA/PhD)	

SECTION B: TYPES OF KNOWLEDGE CREATED OR POSSESSED BY STAFF AT LUANAR

Knowledge Management is the systematic and clear process for the creation and use of knowledge to maximize knowledge-related effectiveness of an organization. It involves the capture of an organization's collective expertise wherever it resides – in people's heads, or in databases, on paper and make it available wherever it can produce the biggest returns.

2. Indicate types of explicit knowledge administrative staff create at LUANAR's Bunda College (multiple answers are allowed)

Explicit knowledge is documented knowledge expressed in words or numbers and can be shared in form of books, articles, minutes, rules, reports, policies etc.

a. emails [ ]
b. memos [ ]
c. reports [ ]
d. policies [ ]
e. minutes [ ]
f. Others……

3. Tacit knowledge is undocumented, personal knowledge that reside in people's heads and is difficult to share or communicate. Indicate the types of tacit knowledge senior administrative staff at LUANAR' Bunda College create (multiple answers are allowed).

a) Values [ ]
b) Skills [ ]
c) Ideas [ ]
d) Experiences [ ]
e) Expertise [ ]
f) Others.....

SECTION C: MECHANISMS FOR EFFECTIVE KNOWLEDGE SHARING AT LUANAR'S BUNDA COLLEGE

4. Indicate the types of technological mechanisms senior administrative staff use for knowledge sharing at LUANAR's Bunda Campus.

Mechanism	**Response (tick)**
Email	
Internet/Intranet	
Document management systems	
Social media	

5. Indicate the types of non-technological mechanisms senior administrative staff use For knowledge sharing at LUANAR's Bunda Campus.

Mechanism	**Response (tick)**
Meetings (formal and informal)	
Brainstorming	
Training and education	
Workshops, conferences and seminars	

D: BENEFITS OF IMPLEMENTING KM PRACTICES AT LUANAR

As universities operate in the knowledge era they must focus on retaining their institutional knowledge both in the tacit and explicit format. For instance, the retention and management of knowledge enhances performance.

6. In your understanding of knowledge management indicate to what extent you agree with the following as the benefits of knowledge management practices if implemented.

SA: strongly agree **A:** agree **U:** uncertain **D:** disagree **SD:** strongly disagree

Benefits	**SA**	**A**	**U**	**D**	**SD**
a) Assists the University in its endeavour to improve its visibility					
b) Supports in strategic planning process					
c) Contributes to effective decision making in the University					
d) Brings about innovation and wealth creation					

E BARRIERS TO EFFECTIVE KNOWLEDGE MANAGEMENT PRACTICES AT LUANAR

7. To what extend to you agree with the following as barriers to effective knowledge management practices at LUANAR's Bunda College.

SA: strongly agree **A:** agree **U:** uncertain **D:** disagree **SD:** strongly disagree

Barrier	**SA**	**A**	**U**	**D**	**SD**
a) lack of policy and organisational commitment					
b) inadequate awareness about the importance of knowledge management					
c) Unwillingness among academicians to share their knowledge					
d) lack of knowledge management champion or leadership support and commitment					

Thank you very much for your time in completing the questionnaire.

APPENDIX 3 Interview Guide for Academic Staff

Mzuzu University Research Ethics Committee (MZUNI)

Informed Consent Form for Research in Masters in Library and Information Science

Introduction
I am Allan Kanyundo from Mzuzu University and am doing research on Knowledge management practices at Lilongwe University of Agriculture and Natural Resources (LUANAR). This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research
This research aims at examining Knowledge management practices at Lilongwe University of Agriculture and Natural Resources.

Type of Research Intervention
This research will involve your participation in filling the questionnaire.

Participant Selection
You are being invited to take part in this research because your views will help in establishing good knowledge management practices that will help improve employee performance to meet university objectives at LUANAR.

Voluntary Participation
Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate nothing will change. You may skip any question and move on to the next question.

Duration
The research takes place for a period of three months.

Risks
You do not have to answer any question or take part in the discussion/interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable.)

Reimbursements
You will not be provided any incentive to take part in the research.

Sharing the Results
The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following, we will publish the results so other interested people may learn from the research.

Who to Contact
If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: Dr George Chipeta on gchipeta5@gmail.com.
This proposal has been reviewed and approved by Mzuzu University Research Ethics Committee (LUANARREC) which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find more about the Committee, contact Mr. Gift Mbwele, Mzuzu University Research Ethics (LUANARREC) Administrator, Mzuzu University, P/Bag 201, Luwinga, Mzuzu 2, Phone: 0999404008/0888641486

Do you have any questions?

Part II: Certificate of Consent
I have been invited to participate in research about Knowledge management practices at Lilongwe University of Agriculture and Natural Resources. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant……..

Signature of Participant …….

Date …… …… ……

Day **month** **year**

Statement by the researcher/person taking consent
I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the research project. I confirm the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent……

Date …… …….. ……

Day/ **month/** **year**

INTERVIEW GUIDE FOR ACADEMIC STAFF

SECTION A Types of knowledge created at LUANAR's Bunda College

1. Mention specific types of publications or official documents created at LUANAR's Bunda College.

SECTION B Mechanism used to effectively share knowledge at LUANAR's Bunda College

2. What technologies are used by academic staff to share knowledge?
3. Specifically, how good is internet at Bunda?

SECTION C Benefits for implementing knowledge management practices at LUANAR

4. Mention some of the benefits that can be brought about by implementing KM practices at LUANAR's Bunda College.

SECTION D Barriers to effective knowledge management practices at LUANAR

5. What do you think are the main barriers to effective KM practices at LUANAR's Bunda College?
6. What can be done to address these barriers of knowledge management?

APPENDIX 4: Interview Guide for Senior Administrative Staff

Mzuzu University Research Ethics Committee (MZUNI)

Informed Consent Form for Research in Masters in Library and Information Science

Introduction
I am Allan Kanyundo from Mzuzu University and am doing research on Knowledge management practices at Lilongwe University of Agriculture and Natural Resources (LUANAR). This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research
This research aims at examining Knowledge management practices at Lilongwe University of Agriculture and Natural Resources.

Type of Research Intervention
This research will involve your participation in filling the questionnaire.

Participant Selection
You are being invited to take part in this research because your views will help in establishing good knowledge management practices that will help improve employee performance to meet university objectives at LUANAR.

Voluntary Participation
Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate nothing will change. You may skip any question and move on to the next question.

Duration
The research takes place for a period of three months.

Risks
You do not have to answer any question or take part in the discussion/interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable.)

Reimbursements
You will not be provided any incentive to take part in the research.

Sharing the Results
The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following, we will publish the results so other interested people may learn from the research.

Who to Contact
If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: Dr George Chipeta on gchipeta5@gmail.com.
This proposal has been reviewed and approved by Mzuzu University Research Ethics Committee (LUANARREC) which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find more about the Committee, contact Mr. Gift Mbwele, Mzuzu University Research Ethics (LUANARREC) Administrator, Mzuzu University, P/Bag 201, Luwinga, Mzuzu 2, Phone: 0999404008/0888641486

Do you have any questions?

Part II: Certificate of Consent
I have been invited to participate in research about Knowledge management practices at Lilongwe University of Agriculture and Natural Resources. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant……..

Signature of Participant ……

Date …… …… ……

Day **month** **year**

Statement by the researcher/person taking consent
I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the research project. I confirm the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent……

Date …… …….. ……

Day/ **month/** **year**

INTERVIEW GUIDE FOR SENIOR ADMINISTRATIVE STAFF

SECTION A Types of knowledge created at LUANAR's Bunda College

1. Mention specific types of publications created or produced by senior administrative staff at LUANAR's Bunda College campus.

SECTION B Mechanism used to effectively share knowledge at LUANAR's Bunda College

2. What technological mechanisms are used to share knowledge or messages by senior administrative staff at LUANAR's Bunda College
3. How good is the technological infrastructure for knowledge sharing

SECTION C Benefits for implementing knowledge management practices at LUANAR

4. What do you think are the benefits of implementing knowledge management at LUANAR's Bunda College?

SECTION D Barriers to effective knowledge management practices at LUANAR

5. What do you think are the main barriers to effective KM practices at LUANAR's Bunda College?
6. What can be done to address these barriers of knowledge management?

APPENDIX 5: A letter Seeking Ethical Clearance from Mzuzu University Ethical Committee

Mzuzu University
Private Bag 201
Luwinga
Mzuzu
8th Jan, 2021

To: The Chairman
Research Ethics Committee
Mzuzu University
Private Bag 201
Luwinga
Mzuzu

Dear Sir,

Application for research ethics clearance

I would like to apply as indicated in the subject in order to be allowed to conduct a study about Knowledge management practices a Lilongwe University of Agriculture and Natural Resources. This study will be carried out in partial fulfillment of the requirement for the award of a Master of Library and Information Science.

Your favourable consideration will be highly appreciated.

Allan Kanyundo (MLIS 2B/05/14)

Master Library and Information Science Student

APPENDIX 6: Ethical Clearance

MZUZU UNIVERSITY

DIRECTORATE OF RESEARCH

Mzuzu University
Private Bag 201
Luwinga
Mzuzu 2
MALAWI
TEL: 01 320 722
FAX: 01 320 648

MZUZU UNIVERSITY RESEARCH ETHICS COMMITTEE (MZUNIREC)

Ref No: MZUNIREC/DOR/20/17 **9th Feb, 2021.**

Mr. Allan James Kanyundo,
Mzuzu University,
P/Bag 201,
Luwinga,
Mzuzu 2.

Email:
ajkanyundo@yahoo.com

Dear Mr. Kanyundo,

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL REF NO: MZUNIREC/DOR/20/17: KNOWLEDGE MANAGEMENT PRACTICES ATLILONGWEUNIVERSITYOFAGRICULTUREANDNATURALRESOURCES

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the Mzuzu University Research Ethics Committee (MZUNIREC) in a format that is available at the Secretariat. Once the study is finalised, you are required to furnish the Committee with a final report of the study. The Committee reserves the right to carry out compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

Committee Address:
Secretariat, Mzuzu University Research Ethics Committee, P/Bag 201, Luwinga, Mzuzu 2; E-mail address: mzunirec@mzuni.ac.mw

Wishing you a successful implementation of your study.

Yours Sincerely,

Gift Mbwele

MZUZU UNIVERSITY RESEARCH ETHICS ADMINISTRATOR

For: CHAIRMAN OF MZUNIREC

APPENDIX 7: Seeking Permission From Gatekeeper Letter

MZUZU UNIVERSITY

FACULTY OF HUMANITIES AND SOCIAL SCIENCES

Department of Information Science

P/Bag 201
Luwinga
Mzuzu2
MALAWI
Tel: (265) (01) 320 105
Fax: (265) (01) 320 497/568/505
Email: ur@mzuni,ac.mw

11 November, 2020

The Registrar
Lilongwe University of Agriculture and Natural Resources
P.O. Box 219
Lilongwe

Dear Sir,

RE: APPLICATION FOR RESEARCH DATA COLLECTION

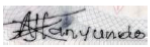
Reference is made to the above subject.

My name is Allan Kanyundo (Student registration number: BLIS/2B/05/14), a duly registered masters student in the Library and Information Science Programme at the Mzuzu University. As part of the requirement for the award of the master's degree, I am undertaking a study on "knowledge management practices at LUANAR". The study will be limited to LUANAR Bunda campus only.

The purpose of this letter is to kindly request a written permission from your office to enable me collect data from your University. Possible dates for data collection are flexible within November, 2020 to early December 2020. The data will be collected through survey questionnaire, interviews, and observations. Your authorization to this request will be highly appreciated. The data collected will be treated with utmost confidentiality and anonymity. Please find attached proposal for your information.

I shall be very grateful for your assistance and I appreciate your cooperation in advance.

Yours sincerely,



Allan Kanyundo
Mzuzu University
Email:ajkanyundo@yahoo.com
or kanyundo.a@mzuni.ac.mw
Cell: 0996707884

Supervisor:
Assoc. Prof George Chipeta
Head of Department
Information Sciences
Mzuzu University, Malawi.

APPENDIX 8: Permission Letter

VICE CHANCELLOR
Prof. G Y Kanyama-Phiri, Dip., BSc., MSc.,Ph.D.

BUNDA COLLEGE OF AGRICULTURE A/
P.O. BOX 219, LILONGWE, MALAWI, MA

Telephone : (265) 277 222
Fax : (265) 277 364
Email : vr@bunda.luanar.mw

Our Ref.: BC/PF

24th November 2020

Lilongwe University of Agriculture and Natural Resources (LUANAR)
College Librarian
2020 -11- 24
Bunda College
P.O. Box 219, Lilongwe

To :

Allan Kanyundo
MZUZU UNIVERSITY

Dear Mr Kanyundo,

RE: APPLICATION FOR RESEARCH DATA COLLECTION

Reference is made to your letters dated 11th and 20th November 2020 on the same subject.

Please be advised that permission has been granted and Bunda College has no objection for you to collect data on its Library.

Yours sincerely,

College Registrar
2020 -11- 23
Bunda College
P.O. Box 219, Lilongwe - Malawi

J K Phaso
For: UNIVERSITY REGISTRAR

Cc: Acting College Librarian

ACR
Is it possible to share more information on the study?
- What is it about?
- When would the data be collected?
25/11/2020