Knowledge retention at the University of Limpopo's Department of Research Administration and Development in the Limpopo Province of South Africa

BY

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DISSERTATION

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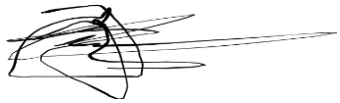
DECLARATION

I, Lesiba Johannes Ngwepe declare that this dissertation is my original effort and has not been submitted for any degree or examination at any other organisation, including the University of Limpopo. All citations, references and borrowed ideas have been appropriately acknowledged.



Wednesday 05 April 223

Mr Ngwepe LJ **Date**

DEDICATION

This dissertation would not have been possible without my parents, Mokgaetji Maria and Eric Ngwepe, my late grandfather Machuene Thomas Ngoepe, my siblings, Mafiri, Vivian, Kwena, Nare, and Mmakolobe Ngwepe, as well as my uncle Thabo Steven Ngoepe and my daughter, Omokgethewa Amari for their motivation and unwavering support.

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ABSTRACT

Knowledge retention (KR), among research departments at higher education institutions throughout the world, has developed into the most important and crucial element for preserving knowledge. The study was conducted at the University of Limpopo research's Department of Research Administration and Development (DRAD) in the Limpopo Province of South Africa. The objectives of the study were to: Identify strategies used at the UL's DRAD to retain knowledge, establish the role of ICTs as tools and enablers of KR, assess the impact of knowledge loss at the UL's DRAD, to determine the barriers of KR within the UL's DRAD and to propose strategies that can improve KR at the UL's DRAD.

This study used a qualitative research approach guided by a conceptual framework derived from the following theories: The KR Framework, the Theory of Organizational Knowledge Conversion, and the Model for Improving Higher Education Research Output, along with an interpretivist paradigm, which works well in qualitative studies. Total population sampling, also known as non-probability sampling, was employed to sample 13 research officials and 5 HR managers. Given the COVID-19 requirements and regulations, the researcher conducted interviews by phone, Zoom, Google Meet, or online questionnaires, depending on the respondent's convenience. Thematic analysis was used to analyse the data.

The found that UL's DRAD use e-mail, computers/ laptops, ITS enabler, workshops, seminars, and internet and intranets as strategies to retain knowledge. The study also found that ICTs is a great enabler of knowledge retention and optimisation of daily duties at UL's DRAD. Moreover, the study established that the impact of knowledge loss at UL's DRAD result in unrecovered expertise. As a results, the researcher recommends the UL's DRAD should put in place knowledge recovery initiatives to deal with the consequences of knowledge loss and stop further occurrences. Other results indicate that UL's DRAD encounters barriers in storing and sharing employees' knowledge. The impediments are a lack of knowledge storage systems and databases to store knowledge of the employees. These impediments have been found to negatively affect the performance of the UL's DRAD officials' duties, since there is lack of knowledge and expertise transfer between co-workers.

Proposed KR strategies which are needed to improve KR were identified as linking ICTs to with the UL's DRAD employees, putting organisational knowledge on electronic databases and HRM initiatives (Performance appraisals and employee rewards). Therefore, the researcher recommends that the UL's DRAD to employ these strategies to maintain the staff as well as the knowledge that their people have acquired.

Keywords: knowledge retention, knowledge loss, knowledge management, human resource practices, Research Administration and Development, University of Limpopo.

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1. CHAPTER ONE: ORIENTATION OF THE STUDY

1.1 INTRODUCTION

Knowledge retention (KR) has evolved into the most essential and critical component for sustaining knowledge among research units of higher learning institutions across the globe (Ngulube, 2005). A research office is a properly formed unit within a university and is responsible for the advancement of scholarly work, primarily through research collaborations, research training, research dissemination, or the creation of knowledge (Sabharwal & Hu, 2013). Research offices execute activities that extend far beyond the purview of particular fields, usually through interdisciplinary collaboration. In most research units, there is often a director or coordinator in charge of the unit. The Senate and University Council must grant their approval for research units to be established in universities. The primary purpose of research units is to foster research on complex, interdisciplinary topics, and issues (Dewah, 2012). Proper KR in research units contributes to a university's agility to respond to and participate in developing research themes. There are numerous reasons for preserving research knowledge. One of them is that, when members of staff, such as lecturers, opt to leave the university, KR ensures knowledge transfer to new employees or even students. When individuals leave an organisation, vital knowledge and expertise are at the risk of being lost (Kim, 2005). Thus, the goal of KR is to keep as much expertise and knowledge as possible from being lost when employees leave. In academia, the idea of managing research units while also retaining knowledge is a novel one (Dewah, 2012).

Knowledge, competence, and skills can be located in the brains of organisation employees (tacit knowledge) (Stephen, 2016) and in documentation (explicit knowledge). The documentation of knowledge helps with the retrieval and transfer of this knowledge when employees leave the organisation. This then means that, information is lost unless the organisation takes steps to collect, maintain, and transfer that knowledge to a secure location. Higher education institutions can produce high-quality research output by involving researchers in research-based projects that are directed by experienced supervisors, members of the faculty and industrial associates (Stephen, 2016). Consequently, academic institutions, particularly research units, are among the primary sectors that must use KR

approaches (Wamundila & Ngulube, 2011). To remain strong and competitive in the area of research, research institutions must focus on preserving their research knowledge in both explicit and tacit forms. Despite the fact that universities generate new information through research, there are still various challenges faced when preserving organisational knowledge, both tacit and explicit. When employees retire, for example, they leave with a wealth of expertise, which if not transferred, deals an institution a deadly blow. Consequently, the quality of research will suffer due to the loss of personal and un-transferred research knowledge (Ngcwane, 2015). Ngulube (2015:25) proffers that, “Badly lost knowledge creates a depleted research output in institutions of higher learning, both in terms of quality and quantity.” Deprivation or poor KR in the same field will have an impact on the quality of research published by academics and postgraduate students (Ngcwane, 2015). In light of this, the research at the University of Limpopo (UL), Department of Research Administration and Development (DRAD) should govern knowledge resources to build strategic knowledge management plans to increase KR, which will result in knowledge-sharing among experienced and inexperienced researchers (Suppiah & Sandhu, 2010).

The UL academic structure comprises the Faculties of Health Sciences, Humanities, Management and Law, and Science and Agriculture (UL, 2021). All these faculties play an important part in the production, dissemination, and retention of the University’s knowledge and research outputs. This study investigated KR methods and strategies at the UL’s DRAD.

1.2 RESEARCH PROBLEM

Resignations, dismissals, retirements, turnover of well-experienced researchers, generational differences, retention challenges in a period of skills shortage, and, most importantly, poor KR procedures, are all issues that various organisations encounter. Poor KR practices cause vital knowledge to be lost in organisations (De Long, 2004; Smith, 2005). Failure to apply correct KR techniques and procedures in the DRAD at the UL will result in the loss of core knowledge (tacit) through departing staff, a reduction in research output quality, and knowledge gaps among remaining supervisors. Nagadevara (2012) agrees that losing personnel increases expenses, such as the cost of having a post remaining vacant, the cost of employing a new person, of training the new person, of lost knowledge, and of lost productivity. Like

any organisation, the UL's DRAD is also experiencing the loss of experienced staff due to retirements, resignations, and other reasons. When retired employees depart the institution with much of their knowledge unrecorded and un-transferred, the institution's research quality suffers. Therefore, there is a dire need for organisations to ensure that retiring, and perhaps even retired employees share their knowledge and expertise with the organisation's remaining employees, as a way of retaining their expertise. It is largely unknown which strategies and methods are used at the UL, particularly at the DRAD for KR purposes, including the barriers encountered. To the researcher's knowledge, there are minimal studies on the KR practices of research units at higher education institutions. Therefore, there was a need to investigate the KR practices of such units. For this reason, the study investigated KR at the UL's DRAD.

1.3 PURPOSE OF THE STUDY

According to Levitt (2021), the purpose statement is the core governing idea that puts forth the objective of the entire research investigation.

1.3.1 AIM

The study aimed to explore KR at University of Limpopo's Department of Research, Administration and Development.

1.3.2 Objectives of the study

The objectives of the study were to:

- Identify strategies used at the UL's DRAD to retain knowledge.
- Establish the role of ICTs as tools and enablers of KR.
- Assess the impact of knowledge loss at the UL's DRAD.
- Determine the barriers of KR within the UL's DRAD.
- Propose strategies that can improve KR at the UL's DRAD.

1.4 SIGNIFICANCE OF THE STUDY

According to Creswell (2009), the significance of the study is intended to produce and convey a proper description of the study's necessity, usually by giving multiple arguments for the study's contribution to academic research, practice, and policy. The significance of a study is clarified by its reasoning (Creswell, 2014). The study examined the KR at the UL's DRAD. The study will fill gaps in research on this topic

and improve current KR in the research unit at UL and hopefully at other institutions of higher learning in Africa and world as whole. The study identified barriers such as lack of knowledge storage facilities, high turnover rate, etc., which other universities and organisations can note and try to avoid. Furthermore, the study provides solutions to the challenges faced at DRAD concerning KR. Hence, the findings of this study might assist UL's DRAD to devise ways of retaining the knowledge possessed by employees, including research experts. Thus, the study may assist UL's DRAD in increasing the quality of their research output. Universities, as indicated in Section 1.1, are knowledge innovators, and due to retirement, personnel issues, and employee turnover, they are losing knowledgeable employees.

Other universities can benefit from this study by employing best KR strategies, Human resource management (HRM) practices and strategies recommended in the study. Hopefully, the "well-experienced staff" will share their experience and expertise with juniors, and that might result in improved KR and research development as well. According to Tavares (2022), many multinational organisations find it difficult to deploy and develop people in emerging regions, with most organisations failing to adapt successful recruitment, retention, and training strategies for KR.

1.5. SCOPE OF THE STUDY

The components of a research endeavour that will be covered are referred to as its scope (Maree, 2014). Therefore, the scope of the study specifies the limitations on the research and normally in the preliminary stages of a study, the scope is stated (Maree, 2014). The researcher explored KR at the UL's DRAD. The intention was to identify strategies used at the DRAD to retain knowledge, establish the role of ICTs as tools and enablers of KR, assess the impact of knowledge loss at the UL's DRAD, determine the barriers of KR within the DRAD at UL and propose strategies that can improve KR at the UL's DRAD. Data were collected from the UL's DRAD officials and Human Resource (HR) managers.

1.6. DEFINITION OF KEY TERMS

1.6.1. Knowledge

Knowledge is defined in epistemology theory as a "justified true belief" (Nonaka 1994:15). It is the ability or knowledge to act (Pritchard, 2013). Individuals with

knowledge have the ability to make decisions that are either based on a comprehension of the context or are the outcome of theory or practice (Becerra-Fernandez & Sabherwal, 2014). Human knowledge, often known as human capital in the knowledge management literature, is classified into two types: tacit knowledge and explicit knowledge. Explicit knowledge has been codified in numbers, graphics, and text and delivered as information, mathematical equations, standards, handbooks, and the like (Becerra-Fernandez & Sabherwal, 2015). Tacit knowledge is resultant from individuals' lived experiences, making it subjective and difficult to capture. Thus, tacit knowledge is frequently accumulated through shared, lived, and interactive individual experiences (Nonaka, 1994).

1.6.2 KR

KR, according to Levy (2011), is a sub-discipline of knowledge management that deals with situations where expert knowledge workers depart organisations after long durations of service. DeLong (2004:23-24) says "KR consists of three activities: knowledge acquisition, storage, and retrieval". According to Phaladi (2021), *Knowledge acquisition* refers to the activities, processes, and routines that are used to convert knowledge into a state where it can be utilised in the future. *Knowledge storage* represents the processes and facilities used to keep knowledge and information until it is needed (Phaladi, 2021).

Storage entities include individuals, groups, cultures, work processes, routines, and systems such as a database. *Knowledge retrieval* includes behaviours, routines, and processes used to access and reuse information and knowledge in new situations such as searching an expert database, calling a colleague, remembering a past experience, brainstorming with a group about past experiences, or searching a document database. In this study, these tasks were utilised to characterise organisation and performance, which is equated to organisational retention.

1.6.3 Knowledge sharing

Knowledge sharing is the deliberate application and transmission of one (or more) person's ideas, insights, solutions, and experiences (knowledge) to another person (or more), either through an intermediary such as a computer-based system or directly (Phaladi, 2021).

1.6.4 Knowledge loss

Knowledge loss, according to Durst and Henschel (2020), “is a predicament in which an organisation loses some or all of its vital knowledge as a result of the holder leaving”. Knowledge loss is mostly related with the departure of human resources (workers) from firms for a variety of reasons, including resignations, retirements, deaths, downsizing, and job rotation (Massingham, 2018). When people leave, they take significant organisational knowledge with them, resulting in its loss.

1.6.6 Knowledge management

Gürlek (2020) refers to the use of a collection of management methods to generate organisational knowledge. Hislop (2016:56) defines knowledge management as *“*an umbrella term which refers to any deliberate effort to manage knowledge of an organisation’s workforce, which can be achieved through a wide range of methods including directly, through the use of particular types of ICT, or more indirectly through the management of social processes, the structuring of organisations in particular ways or via the use of particular culture and people management practices”. Though the difference in the definition is apparent, it becomes clear that knowledge management is simply about providing the means to facilitate the management of organisational knowledge resources for the benefit and survival of the organisation (Phaladi, 2021).

1.6.7 Human resource practices

Human resource management practices are methods used by organisations to manage their human resources. The activities include, but are not limited to, the facilitation and development of company-specific capabilities that build complex social capital and knowledge to sustain competitive advantage (Lindblom & Martins, 2022). Firliandini and Ahman (2022) define Human resource management (HRM) practices as specialised procedures, formal rules, and philosophies aimed to attract, develop, motivate, and retain personnel who assure the organisation’s effective functioning and survival.

1.6.8 Research output

Textual outputs are referred to as research outputs, where research is defined as an original, methodical investigation done to develop information and insight. Peer

review of research is a crucial need for all recognised outputs and is the mechanism for quality assurance (UP, 2022).

1.6.9 Research office/unit

A research office/unit is a properly formed unit within a university and is responsible for the advancement of scholarly work, primarily through research collaborations, research training, research dissemination, or creation of knowledge (Moutinho & Rabechini, 2022). Research offices execute activities that extend far beyond the purview of particular fields, including interdisciplinary collaboration (Campbell, 2022).

1.7 OUTLINE OF THE CHAPTERS

This section gives a summary of the chapters in the study, which are presented below.

Chapter 1: Background and motivation of the study

The first chapter of the study presents the study's background and motivation, problem statement, role of theory, purpose, significance, scope, and definition of key concepts.

Chapter 2: A literature review

This chapter includes a review of literature based on the study's objectives, which are divided into subheadings. The literature is reviewed in time sequence by year of publication.

Chapter 3: Research methodology

This chapter outlines the research methodology that was adopted in the study. It discusses the research paradigm, research approach and design, population, sampling, data collection, quality criteria and ethical considerations of the study.

Chapter 4: Data analysis and discussion of the findings

This chapter covers data analyses as well as a discussion of the findings. The presentation is established in qualitative data collected through semi-structured interviews. The data were analysed using descriptive analysis and thematic analysis techniques, where the researcher organised, sorted, and categorised raw data obtained in the first step, interpreted the data obtained in the second step, coded

data obtained in the third step, integrated, and summarised data through inductive reasoning in the fourth step, and made an interpretation or understanding of the data in the final step.

Chapter 5: Summary of findings, conclusion, and recommendations

This chapter concludes the study by presenting fundamental findings in lieu of the objectives of the study. This chapter also gives the conclusion and recommendations of the study concerning KR at UL's DRAD.

1.8 CHAPTER SUMMARY

This chapter provided an introduction and orientation to the study. It also outlined the rationale, scope, limitations, and significance of the study. The chapter further gave operational definitions i.e., knowledge, KR, knowledge sharing and research output and discussed the research problem, aim and objectives of the study. The next chapter reviews literature on KR in organisations, with a focus on institutions of higher learning and their research units.

2. CHAPTER TWO: A REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

The preceding chapter provided an orientation to the study, elucidated the context of the study, the problem statement, research objectives and questions, justification for the exploration, research methods, and definitions of key terms. This chapter reviews literature on KR in organisations, with specific focus on institutions of higher learning. A literature review is an important phase in any research since it contextualises a study in relation to what others have written (Machi & McEvoy, 2021). Moreover, studying literature supports the researcher in determining how other researchers have approached comparable issues (Machi & McEvoy, 2021). Sources utilised for this literature review are print books and electronic materials such as websites, e-journals and e-books accessed from Google Scholar and those on the UL's subscribed databases such as Sabinet and ProQuest. The first subsection introduces the conceptual framework that underpinned this study and shows how it applies to discussions of KR in organisations, with an emphasis on research units in higher education institutions. The second subsection looks at prior research on the relationship between research centres and KR in institutions of higher learning, both globally and locally. Finally, the last section of this chapter discusses recent research on KR in higher education institutions, both internationally and locally, as well as the findings and methodologies employed in those studies.

A literature review essentially summarises the finest research on published studies that are pertinent to a certain area and reflects current knowledge on the issue (Baker, 2016). To determine the already published research and to establish what is already known about the topic, a focused critical examination of the literature is required (Paul & Criado, 2020). When evaluating the literature, it is important to base the current research on relevant prior work to give the reader a clear understanding of the theoretical framework for the topic being presented for study (Nord, Koohang & Paliszkiewicz, 2019). The objectives outlined in Chapter one, Section 1.3.2, serve as the structure for how the literature is organised.

2.1.1 Knowledge

Knowledge is essential to research units because it increases accountability and facilitates planning, policy development, and strategy execution in the pursuit of high-quality research processes (De Graaf, 2021). Understanding the concept ‘knowledge’ is crucial if one intends to develop a successful plan for keeping research knowledge in higher education institutions. According to Shah and Hussin (2018), knowledge is the cognitive recognition of experiences gained through informal and formal learning processes, coupled with the possessor’s ability to act. Shah and Hussin (2018) assert that knowledge is a composite of incomplete experiences, norms, conventions, contextualised information, expertise, perceptions, and learned intuitions for the purpose of integrated evaluative measures necessary for the generation of new knowledge. Knowledge is viewed as dependent for the purposes of this study because it depends on human perception. This contradicts the idea that knowledge does not develop independently of individual practices; instead, it develops through the social development of denotations and conceptions, which leaves out a general objective peculiarity (Dietel, 2017). There are two types of knowledge, namely; tacit knowledge and explicit knowledge.

- Tacit knowledge

Dietel (2017) defines tacit knowledge as knowledge that resides in a person’s intellectual milieu but cannot be expressed verbally. Perumal and Nair (2022) concur that tacit knowledge is an elusive, abstract idea that is difficult for co-workers to exchange through formal and informal dialogue, narrative, or face-to-face engagement. According to Ributhi (2017), because tacit knowledge is firmly ingrained in people’s personal lives, including co-workers and team members, it is extremely difficult to transfer from one person to another. Contrary to explicit knowledge, tacit knowledge is more difficult to remember, record, and encode in manuals, publications, and recommendations (Ributhi, 2017). The tacit dimension of research knowledge plays a significant role in all research units at higher education institutions. It provides direction that has been learned from years of experience in the field of research. It is gradually acquired via passion and regular connections among the researchers, research facilitators, and a particular institution. It is crucial for research organisations all over the world to put policies in place with the aim of transferring and keeping such information to maintain continuity.

- Explicit knowledge

Dietel (2017) says explicit knowledge refers to the type of knowledge that can be quickly expressed in words, numbers, and concepts to convey shared experiences, lessons learned, and significance. Contrary to tacit knowledge, explicit knowledge has tangible aspects that make it simple to retain, record, and codify for communicative purposes (Ributhi). It is the knowledge that offers readers guidelines, directions, and procedures on how to carry out or complete a task (Frank & Pushpam, 2018). One of the key characteristics of research departments in higher education institutions continues to be the clear nature of research knowledge. It is a component of the fundamental and standard operating procedures in research that are used by qualified researchers to conduct research at their respective institutions. This type of knowledge must be preserved for future continuity to guarantee the ongoing effectiveness in research units.

2.1.2 KR's value to an organisation

The main process used in this study is KR. Shah and Hussin (2018) define KR as the process of preserving individuals' valuable knowledge and skills that run the danger of being lost when they leave the company. Additionally, they assert that it is standard executive practice to guarantee that information is maintained and protected before workers in various specialties depart from companies. Senevirathna (2017) avers that a key aspect of KR is identifying the important knowledge that is at the risk of being lost when employees depart organisations. KR is therefore crucial to the operation of any organisation, particularly research units situated at universities. Mamabolo (2021) asserts that, KR places a thorough focus on organisational knowledge that is at risk of being lost and implementing measures to retain the knowledge to prevent the impact that may arise with the loss. Shah and Hussin (2018) agree that KR, as one of the fundamental processes of knowledge management, is implemented in organisations to capture the knowledge and experience of departing and retiring employees. In the case of research units, where research officials decide to leave the research units via numerous forms of abrasions, KR enables continuous sustainability and preservation of knowledge within the research unit. The repercussions of knowledge loss are unavoidable and can result in replicating work actions, exclusive exploration for expertise, and

employees not learning from the veteran; thus, it is significant to have KR measures to circumvent such implications (Mamaboo, 2021).

2.1.3 Knowledge management

Knowledge management is defined as the extremely cautious and logical blending of an organisation's employees, knowledge, processes, and organisational structures to add relevance through recuperation and advancement (Shah & Hasin, 2018). The American Productivity and Quality Centre (APQC, 2011) defines knowledge management as an acquisition of organised strategies that assist information to move to and among the right people at the right time, allowing them to act more effectively and efficiently to create value for the organisation. Knowledge management is still relevant across research units of institutions of higher learning since its main goal is to develop over time to retain and preserve indispensable knowledge that is required to sustain operations in research units of institutions of higher learning like the UL. According to Mamabolo (2021), knowledge management fosters the development of tools, processes, systems, philosophies, and goals for promoting the generation, diffusion, and utilisation of organisational knowledge. It gives research units the capacity to sustain the process of transferring, sharing, distributing, and preserving research knowledge, which is essential for universities to produce new knowledge. Knowledge management also plays a significant role in the research area.

2.2 CONCEPTUALISATION OF THEORETICAL FRAMEWORK

Stewart and Klein (2016) emphasise that a theoretical framework conveys diligence and rigour in research, and it links elements of research findings to produce results that are harmonious with a broader outline of other studies.

This study could not be guided by any single theory. As a result, the researcher drew on conceptual frameworks from three theories. The KR Framework was employed to identify programmes and practices that are in place and have a direct impact on KR at the UL research unit. The Theory of Organisational Knowledge Conversion helped the researcher to explore the transfer, exchange, storage, and KR by the UL research unit. Lastly, the Model for Improving Higher Education Research Output was employed as a tool for raising research performance and publishing, as well as enhancing research productivity in the UL research unit.

2.2.1 KR FRAMEWORK

De Long (2004) developed the KR framework as a technique for activities conducted to retain knowledge. The KR Framework includes four initiatives that create an organisational knowledge strategy (De Long, 2004). The KR Framework is among the three theories used by the researcher. The researcher used this framework to identify programmes and behaviours at the UL research unit that have a substantial impact on KR. Each initiative provides a set of programmes that an organisation might utilise to prevent knowledge loss (Stephen, 2016). This framework is used to control and coordinate organisational knowledge. The framework and its initiatives are depicted in Figure 2.1.

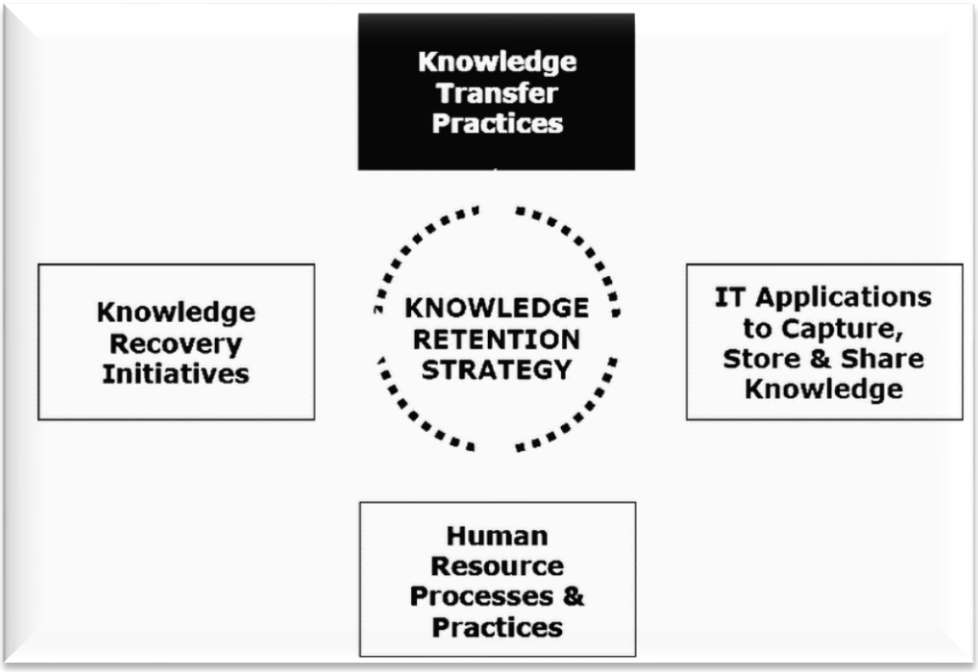

Figure 2.1: KR framework (De Long, 2004)

2.2.1.1 HR processes, policies, and practices

The first initiative of De Long's framework for organisational retention is HR processes, policies, and practices. This initiative is considered as a tool for capturing all human-related concerns by establishing procedures for assessing capabilities or knowledge bases (Stephen, 2016). All formal and professional organisations must have the HR department for tracking human related matters such skills and recruitment. Several authors believe that the HR identifies the most vulnerable areas of an organisation, tracks existing skill inventories, predicts future knowledge

shortages based on retirement eligibility and prior retirement patterns, and supports widespread succession planning for all professionals (DeLong, 2004; Abkian, Turshollow & Umphres, 2007; Stephen, 2016). According to the framework, the HR must embrace a new practice, employ an adequately skilled and competent knowledge manager to achieve successful information retention and sharing.

The HR develops a learning culture in the organisation (DeLong, 2004). A learning atmosphere encourages adaptability and the urge to innovate (Agarwal & Marouf, 2014). When HRM processes are not carried out properly, employees may become less dedicated and loyal to their firm, risking the loss of expertise that these employees possess due to factors such as staff turnover (De Graaf, 2021). This condition can be measured using one of the five constructs (Doan, Rosental-Sabroux & Grundstein, 2011): 1. Staffing; 2. Job design; 3. Performance evaluation systems; 4. Reward and compensation systems; and 5. Training and development. Staffing is defined as “the extent to which businesses consider person-environment fit to ensure congruence of individual and organisational values and goals” (Doan et al., 2011: 310). Job design is concerned with the extent to which employees have interesting, challenging jobs that provide high autonomy while encouraging and requiring interpersonal collaboration (Hislop, Bosua & Helms, 2018). These factors determine employee motivation and provide possibilities for employees to put their expertise to use (Hislop et al., 2018; DeLong, 2011). Team-based work design, for example, could promote dialogue between generations (Levy, 2011).

The extent to which corporations evaluate individual performance when knowledge-sharing ability is one of the major performance criteria is referred to as performance appraisal systems (Dangol, 2021). Thus, in this regard, the UL HR department is in charge of assessing the performance of the entire University, including the DRAD, as well as staff retention, the assessment system, and other aspects. The degree to which people engaging in knowledge transfer activities will be recognised and rewarded is referred to as the reward and compensation system (Doan et al., 2011; Levy, 2011; Dangol, 2021). The extent to which employees will be given excellent possibilities for personal growth and career success is referred to as training and development (Doan et al., 2011). When all these are utilised and met, employees in the UL’s DRAD will likely remain in the organisation.

2.2.1.2 Knowledge transfer practices/ sharing practices.

The framework's second initiative is knowledge-sharing techniques. According to Delong (2004), organisations must encourage acceptable knowledge-sharing practices in institutions that are integrated in the daily work environment. Interviews/videotaping, storytelling, mentoring, and communities of practice have all been highlighted by DeLong (2004) as useful means for passing on tacit knowledge. This practice ensures that adequate knowledge-sharing processes are in place throughout the organisation. This section deals with knowledge acquisition, knowledge transfers and sharing. It also discusses the techniques for knowledge acquisition, transfer and sharing.

1) Knowledge acquisitions

According to Stephen (2016), organisational knowledge acquisition can be alienated into double types: explicit to tacit and tacit to explicit. The training and development initiatives inside an organisation typically represent the transition from the explicit to tacit stream as one form of organisational learning (Phaladi, 2021). The tacit to explicit form of organisational learning or acquisition is typically represented by the organisational commemoration creation efforts of an organisation (Stephen, 2016). Organisational knowledge is found in many "agents" that are usually not easily accessible when problem solving is required, a situation that necessitates knowledge acquisition to provide a means of integrating knowledge available in different parts of organisations; hence, providing managers with different perceptions of issues they are considering on every occasion (Wamundila, 2008). Recruitment, training and development, brainstorming, expert systems, subject matter experts, and after-action reviews are all examples of knowledge acquisition processes (Stephen, 2016).

A. Knowledge acquisition techniques

Stephen (2016) claims that there are numerous methods for acquiring information in organisations. Authors including Harman and Brelade (2000) claim that among the many knowledge acquisition strategies include recruitment, training, and development. Jayashri and Kalaiselvi (2018) impose that intuitive, incidental, retrospective, and prospective approaches facilitate work-based knowledge acquisition such as in research units of institutions of higher learning. Stephen (2016) added that, multiple techniques exist because there are many distinct forms of knowledge in organisations that require different techniques to obtain.

- *Recruitment*

Recruitment is defined as “the technique of determining what the organisation requires in a candidate and instituting procedures to attract the most qualified individual for the job” (Nohuddin, Zainol, Lee, Nordin & Yusoff, 2018:12). Recruitment, according to Ohara and Bai (2019), is the activity utilised to assure the availability of tacit knowledge within an organisation. Using this strategy, research units can benefit by attracting the most qualified and productive research mavens. According to DeLong (2004:166), recruitment should be driven by an organisation’s knowledge requirements. As a result, the DRAD should have a selection criterion on knowledge acquisitions.

- *Training and Development.*

In organisations such as UL’s DRAD, there comes a time when either new roles are introduced, or operations are altered as a result of changes in the workplace. Given that, the research units may lose staff, creating a space for new employment. Therefore, it will be necessary to train and develop the new employee to fit the organisational culture. There are other occasions when operations stay unaltered, but the organisation loses workers with important operational knowledge and must hire new employees (Wamundila, 2008). These instances result in a knowledge gap between the employee and the expected employee performance. Given the predicament, existing personnel must acquire new operationally relevant information (De Graaf, 2021).

- *Interviews*

Hon, Fung and Senbeto (2022) discovered that there are many forms of interviews, or protocol-generation procedures, as De Graaf (2021) refers to them. These include unstructured and structured interviews. Interviews are a frequent strategy in human resources for collecting knowledge (Hon, Fung, & Senbeto, 2022). They are frequently utilised while on-boarding a new employee, developing knowledge repositories, or when a person is departing the organisation (Phaladi, 2021). This technique encourages the organisations such as UL’s DRAD to conduct interviews with departing research officials for the securement of their knowledge. An expert could be interviewed on the job concerning the creation of a knowledge repository (Baharun, Hefniy, Silviani, Maarif & Wibowo, 2021). The interviews for this part ought to be based on the knowledge of the research that the departing research official is

likely to have. Exit interviews are the most typical sort of interviews conducted with departing personnel.

- *Observations*

In this strategy, an expert in a specific industry edifies a new employee by allowing the new employee to observe the expert perform the job. This method, according to Hon, Fung, and Senbeto (2022), works effectively in a novice-expert setting. To ensure that the novice masters the activity, the key steps involved in accomplishing such a work, as well as recording the expert, are ensured (De Graaf, 2021). Certain employees (juniors) are therefore obliged to observe senior with crucial skills so that the knowledge can be retained within the cycle.

2) Knowledge transfer and sharing

Knowledge sharing is the purposeful use and transmission of one's notions, insights, solutions, and experiences (knowledge) to another individual, or through an intermediary medium such as a computer-based system or directly (Stephen, 2016). This sharing is critical, particularly in a setting where new staff join and others leave. Those quitting could be retirees with years of expertise and information that new employees will need to apply in the workplace. Much of the organisational knowledge is tacit (rather than explicit), and in order for organisations to preserve the knowledge and profit from it, individuals who possess it must be willing to share it (Dikotla, 2016). For the research units in the institutions of higher learning, knowledge can be disseminated through storytelling, job rotation, community of practice formation, and intranets.

Knowledge transfer has been described as an endeavour that enables the flow of information within organisations (Phaladi, 2021; Dikotla, 2016). The same authors contend that knowledge transfer corresponds to the transmission of knowledge between units within a corporation (internal transfer) or between firms (external transfer) (external transfer) (De Graaf, 2021). Knowledge transfer can be used as a tool for problem solving and operational enhancement. Knowledge transfer, according to Gatiti (2021), is a part of organisational learning or knowledge acquisition in an organisation. According to Stephen (2016), investments in employee training and development activities are a favourable feature for knowledge

transfer in the form of on-the-job training or off-the-job training. Such training ensures that skills are kept up to date.

- *Knowledge transfer and sharing techniques.*

With many institutions, academics, and practitioners underlining the necessity of managing knowledge (DeLong, 2004), numerous techniques to knowledge transfer have been identified, including: Succession planning; Communities of practice; Coaching; Creating knowledge repositories through documentation; Story telling; Orientation – general and job specific; Mentorship – formal and informal; Job rotation; and Phased retirement. Gatiti (2021) reveals that knowledge transfer practices embrace succession planning, communities of practice, knowledge repositories, mentoring, coaching, phased retirement, job orientation, storytelling, and orientation. Along with the KR strategy framework adopted from DeLong (2004), knowledge transfer practices include: job rotation programmes, training programmes, mentoring, and coaching, standard operations procedure, informal networking, and internships.

- *Succession planning*

Dewah (2012) divulges that knowledge management within organisations is at the heart of succession planning. He highlights that knowledge transfer through succession planning is a priority toward the enablement of new employees and, as a result, the avoidance of knowledge loss by the organisation. Talent identification is critical to the succession planning process (Barton, 2019). Barton (2019) noted methods such as training programmes for identifying and developing talent for the purposes of effective succession planning programmes.

- *Community of practice*

According to Dewah (2012), organisations are relying on communities of practice to find, capture, and transfer information to retain knowledge. Dewah (2012) maintains that communities of practice exchange experiences and insights, although the members are not a formal team. Working on company projects and initiatives, communities of practice exchange both tacit and explicit expertise by refining information and materials to the point where they can become corporate perspectives on themes. Among the benefits of employing communities of practice in organisations and colleges are the capacity to link professionals, fosters large-scale

information sharing, allowing knowledge to survive within the organisation and speeding up learning for new members (DeLong, 2004:114-115).

- *Mentoring and apprenticeship*

Mentoring and apprenticeship can be employed to transfer tacit knowledge from an experienced employee (subject matter expert) to a less experienced employee (APQC, 2011). Mentorship comprises matching an experienced employee with a new employee to aid the new employee in acquiring new information and skills to function (Stephen, 2016). Mentoring and tutoring techniques allow senior employees to quickly transfer their knowledge, wisdom, specific insights, and skills to their juniors, ensuring that when experienced employees leave or die, the organisation's substantive practice, knowledge, history, stories, and culture are preserved (APQC, 2011). This strategy provides unique opportunity for research units' personnel to share their experiences, cognitive processes, and decision-making procedures with junior staff.

- *Coaching*

Coaching is the process of providing specialised (task-related) direction to an individual learner and using feedback to develop and consolidate a new skill (Bentley, 1995). Coaching assists people in putting what they have learned into practice; it involves observed practice, in which an expert observes and analyses a novice's performance (Hon, Fung, & Senbeto, 2021). Coaching is a more equal partnership, and in this case, research officials can partnership with each other to transfer a certain level of research knowledge with each other. This will mainly involve superior personnel and junior personnel. The coach continues to design how knowledge is shared, but the beginner participates in the learning activity almost equally (Hon, Fung, & Senbeto, 2021). According to Gatiti (2021), the benefits of coaching to employees and organisations include improved employee performance, which leads to improved organisational performance.

- *Knowledge repositories through documentation*

Documenting corporate knowledge has been mentioned as a method for facilitating knowledge transfer in the face of changing employee demographics and knowledge attrition (DeLong 2004). With most organisations experiencing knowledge loss due to attrition and recognising that finding knowledgeable new recruits as replacements is

challenging (DeLong 2004), organisations must create methods for documenting organisational knowledge (Stephen, 2016). Thus, documentation serves as a mechanism for the transfer of explicit knowledge, where vital work practices for "local knowledge needed to perform a task" are captured (DeLong, 2004:8). It is most suitable when an important employee is about to leave, although DeLong (2004:89) stresses that it should be an on-going exercise "not a way of catching knowledge just before it walks out of the door".

- *Storytelling*

APQC (2011) conducted a study which discovered that valuable tales about people, work, the organisation, social connections, signal the past and the future and how they relate to organisational operations that are told in organisations. Moreover, Phaladi (2021) points out that storytelling is a knowledge management strategy that allows organisations to uncover tacit information as part of a natural learning process. In a university, storytelling can be used to explicitly capture triumphs, lessons gained, and another knowledge. Stories can help with knowledge sharing and teamwork (APQC, 2011).

- *Job rotation*

This method involves moving an employee through a series of responsibilities aimed at familiarising them with the organisation (APQC, 2011). It entails employees moving from one role to another on purpose. Job rotation exposes employees to a variety of difficulties and work activities. It is feasible for the organisation to establish a pool and offer the manager with the knowledge and expertise that will allow them to step into an existing vacancy within the organisation through this approach. The purpose here is to give learning experiences by encouraging knowledge transfer and utilisation, as well as changes in thinking and viewpoint (Phaladi, 2021). This is applicable to research units in that research assistants can step into real problem-solving situations, which will allow them to learn new levels of knowledge in research.

- *Phased retirement*

The strategy is mostly employed when an organisation has experienced or anticipates losing organisational expertise due to employee retirement (Stephen, 2016). Phaladi (2021) cautions that long established organisations, like universities,

are the first to experience knowledge loss threats that lead to most of them adopting phased retirement practices. Phaladi (2021) mentions that organisations undertake phased retirement programmes for the following reasons: prevent skill shortage, particularly at middle to senior management levels; retain knowledge; provide a system for effective succession management; assist with the creation of a flexible responsive workforce; maximise the return on investment in human capital; increase productivity and efficiency; respond to ageing clients and their needs; and encourage self-funded retirees.

2.2.1.3 Information technology applications for KR

The third initiative entails the use of Information technology (IT) applications to gather, store, and transfer knowledge. IT applications are enablers, and executives must "ensure that IT applications are part of a complete effort that also alters practices, processes, and behaviours". Applications such as those for planning human knowledge, accelerating learning, capturing knowledge, and expert locator systems are mostly for explicit knowledge (Gatiti, 2021). It is impossible to discuss IT applications without mentioning ICT tools. More literature on ICTs is discussed in Section 2.4. ICTs are electronic means of capturing, processing, storing, and communicating information and these ICTs include digital information, computer hardware, software and networks and analogue based information such as radio, television, and telephone (Baguma, 2016). Different authors argue that without an integrated strategic approach, it will be difficult both to receive the full benefits of ICT driving the socio-economic development cycle and to avoid the pitfalls. In turn, ICT tools refer to the extent to which IT applications can be used to facilitate the process of KR (Makhubela & Ngoepe, 2018).

IT has made it easier to share, capture, and integrate knowledge (Stephen, 2016; Baguma, 2016). IT resources can be a crucial part of any KR plan, but executives must be careful not to see technology as a panacea for their KR issues (DeLong, 2004). IT apps are only facilitators. They cannot achieve knowledge transfer objectives on their own. He also believes that to retain organisational knowledge, line executives must ensure that IT applications are part of a larger effort that involves changes to policies, procedures, and behaviours.

IT comprises three components: hardware, software, and personal computers, all of which contribute to knowledge management in general and KR in particular (Dewah, 2012). These IT applications help to codify and share knowledge, map internal knowledge, and build knowledge networks (Ramona & Alexandra, 2019). The state of IT applications in this study refers to the extent to which IT applications can be employed to support the process of KR (Doan et al., 2011).

KR procedures in research units require the usage of IT systems, which can be utilised to map knowledge throughout the research units. A study conducted by Dewah (2014) discovered that knowledge is an asset vital for organisational success, and IT applications play a crucial part in the success of any enterprise in a competitive environment. The implementation of appropriate and user-friendly information technology enhances management and retention in most knowledge management systems. Moreover, Dalkir (2011) contends that technology is a critical component in knowledge management operations in today's information-intensive business world. Graaf (2021) adds that technology in knowledge projects mostly refers to specially created software and hardware for recording, storing, and distributing knowledge. As a result, proper strategies and approaches should be established to capture and retain employees' skills before they depart an organisation. It is also critical that organisations like research units in universities employ relevant and contemporary user-friendly technologies to record knowledge that is interoperable with other software and technologies, as well as to "facilitate employee collaboration" (Makhubela & Ngoepe, 2018).

2.2.1.4 Knowledge recovery initiatives

According to DeLong (2004), every organisation will ultimately lose some critical knowledge in this last initiative. However, organisational managers can plan for losses by developing programmes that use retirees as contractors or consultants (Sanz & Hovell, 2021). They can also outsource lost capabilities in situations where it is impossible to retain adequate knowledge to sustain satisfactory performance levels. Furthermore, they can regenerate lost knowledge in situations where critical knowledge is lost, and rehire or recover lost knowledge (Stephen, 2016). Knowledge recovery programmes assist organisations in restoring lost knowledge as rapidly as possible. This is important for research units in universities and colleges to consider because they lose expertise due to resignations, retirements, and natural attrition,

among other factors. With a focus on research units, it is for these organisations to lose employees on several reasons. Every organisation will inevitably lose some critical knowledge (DeLong, 2004). DeLong (2004) and Phaladi (2021) maintain that managers can prepare for and respond to this predicament in three ways: Programmes for effectively utilising retirees, outsourcing lost talents, and regenerating lost knowledge. In a study conducted by Jostad and Nowocin (2012), the following knowledge recovery approaches were proposed: Effective use of retirees; outsourcing; and knowledge regeneration for a successful knowledge management support.

2.2.1.4.1 Programmes for effectively utilising retirees

When expertise departs, the simplest knowledge recovery strategy is to rehire retirees as contractors or consultants. Retirees have the necessary abilities and are familiar with the organisation's culture and history. They also have substantial social networks that they need to get their jobs done (DeLong, 2004). According to Chaturvedi, Vishwakarma and Singh (2021), one of the most constant findings in his research was the extent to which organisations in several sectors, such as chemicals and federal government, had already become reliant on bringing recent retirees back to work part-time. Using retirees as contractors, on the other hand, is a two-edged sword. The same authors contend that this initiative aids in retaining access to irreplaceable skills, but it can also give the impression that the organisation still controls some specific knowledge to (Chaturvedi, Vishwakarma & Singh, 2021). Research units should choose reliable retirees and utilise them for this programme, as this allows them to continuously retain knowledge from these experts.

- *Outsourcing lost capabilities*

Outsourcing is the act of contracting out some of an organisation's regular internal performance and decision rights to outside vendors (Graaf, 2021). In some situations, retaining knowledge adequate to sustain acceptable performance levels is going to prove unrealistic (DeLong, 2004). In those cases, looking at new business models may be the only choice executives have. According to DeLong (2011), outsourcing non-core capabilities has been a trend in sections of both private and public sectors for years. Furthermore, some organisations comparable to UL's DRAD can face another round of outsourcing decisions when it becomes apparent that the

loss of substantial expertise in specialised areas is too difficult and costly to replace or sustain.

❖ *Regenerating lost knowledge*

Regenerating critical knowledge that organisations no longer have access to can be a costly and difficult endeavour, but it must be done in some situations (De Graaf, 2021). Knowledge is frequently irretrievably lost due to inadequate documentation and storage methods, or the retirement of highly skilled individuals who fail to pass on their knowledge. According to DeLong (2004) and Stephen (2016), the management will recognise that it has just lost a vital capacity that it may not be able to regain by rehiring former personnel or outsourcing. Both authors emphasise that no matter where an organisation begins, it must be mindful of the pitfalls of fighting KR with too narrow solutions. According to Phaladi (2021), the most common mistakes that many organisations make include relying solely on technology applications to handle problems. Moreover, HR practices are needed and not just technology applications.

2.2.2 ORGANISATIONAL KNOWLEDGE CONVERSION THEORY

Nonaka and Takeuchi (1995) developed the Organisational Knowledge Conversion Theory. This theory identifies socialisation, externalisation, and combination, internalisation (SECI) as the four modes of interaction that facilitate knowledge management in an organisation. Conversion of knowledge from one form to another, results in retention of knowledge in the organisational system. Senior workers and experts share their knowledge with juniors and new entrants. According to Kommey (2020), knowledge held by departing employees can be preserved by efficient knowledge sharing and subsequently transferred to new or continuing staff. When tacit knowledge is converted to explicit (externalisation), it means that knowledge has been captured in the organisational system and the knowledge is retained in the documents and databases (Dewah, 2012; Phaladi, 2021).

Nonaka and Takeuchi's theory focuses on how to develop organisational knowledge, share it, convert knowledge from one type to another, and manage organisational knowledge. All systems and behaviours that conserve knowledge and allow it to remain in the system once introduced are referred to as KR. It encompasses all

operations that ensure knowledge's survivability within the system (Newman, Guta & Black, 2021This is illustrated in Figure below:

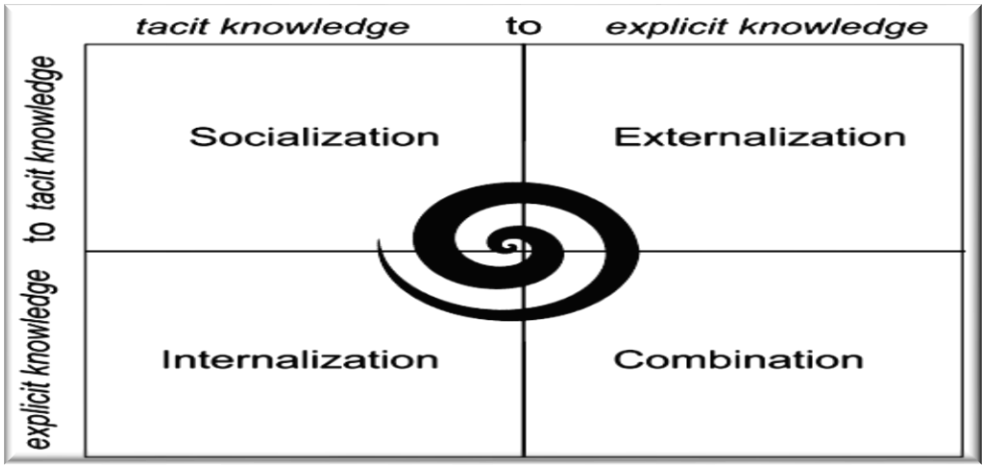

Figure 2.2.2: SECI Model (Nonka & Takeuchi, 1995:62)

Nonaka and Takeuchi's (1995:62) four major knowledge conversions, referred to above, are as follows:

- tacit to tacit socialisation
- tacit to explicit- externalisation
- explicit to explicit combination
- Explicit to tacit internalisation.

A brief overview of each interaction is provided below.

2.2.2.1 Socialisation

The first mode is *Socialisation*, which is defined as an environment where groups of individuals in an organisation share experiences, and tacit knowledge through direct interaction (Nonaka & Takeuchi, 1995; Lu & Lee, 2019). During this process, a research official would socialise formally and informally to share their knowledge of interest. Individuals share experiences, and thus create tacit knowledge such as mental models and technical skills (Lu &Lee, 2019). Organisational parties share their experiences, mental models, attitudes, and opinions. New staff, for example, who may have more expertise of ICTs, have something to give. Individuals can learn without employing words by observing, imitating, and practicing, according to this model. "Apprentices work with their masters and learn craftsmanship not through

words but through observation, imitation, and practice," assert Nonaka and Takeuchi (1995:63).

2.2.2.2 Externalisation

This is the second mode. Nonaka and von Krogh (2009) define externalisation as the process of expressing tacit knowledge into explicit thoughts. After socialisation mode, the research officials' tactic information becomes evident through externalisation, taking the form of metaphors, analogies, concepts, theories, or models (Nonaka & Takeuchi, 1995). In organisations such as university research units, employees share their experiences, mental models, beliefs, and perspectives. Examples of externalising knowledge may be through speaking to an individual, writing, drawing a diagram, giving a presentation, or even conducting a lecture and workshops. It is important that the UL's DRAD encourages socialisation for research officials at the unit to externalise their tacit knowledge to other employees.

2.2.2.3 Combination

The *Combination* mode is the third mode. Nonaka and Takeuchi (1995:67) define it as a process of systematising concepts into a knowledge system. According to Nonaka and Takeuchi (1995), when people interact in numerous ways, they exchange and combine knowledge through documents, meetings, phone conversations, and computerised communication networks. As such, during the meeting that employees at a research unit have, they are able to combine their expertise to produce new expertise or knowledge. This is motivated by explicit-to-explicit pattern. Lu and Lee (2019) indicate that various explicit knowledge bodies are merged. Individuals exchange and combine knowledge through documents, meetings, phone conversations, and computerised communication networks when they communicate in numerous ways. Combination accounts for a considerable portion of the knowledge created in schools through education and training.

2.2.2.4 Internalisation

Internalisation is the fourth mode. Lu and Lee (2019) describe this mode as the process that transforms explicit knowledge into tacit knowledge. This mode is about internalising what has been learnt throughout the process of learning. Groups or

individuals create new knowledge by combining previously learned knowledge with tacit knowledge and knowledge from both internal and external sources (Nonaka & Takeuchi, 1995). This might be defined as being strongly associated to learning by doing. Research officials will now act on what they have learnt. The explicated knowledge is now being internalised by the individual. Nonaka and Takeuchi (1995) contend that socialisation, externalisation, and combination experiences become significant assets when they are integrated into individuals' tacit knowledge bases in the form of common mental models or technical know-how. Documentation assists individuals in internalising their experiences; hence, expanding their tacit knowledge. Manuals assist the transfer of explicit knowledge to others, allowing them to implicitly experience the experiences of the others (Stephen, 2016).

2.2.2.5 The interaction between SECI model modes to support KR

The SECI model's four modalities show how knowledge can be transferred from one person to another, from employee heads to documents/databases through knowledge conversion, and thus retained in the organisation. Communication, translation, conversion, filtering, and rendering are examples of actions related with the flow of knowledge from one party to another (Newman, Guta & Black, 2021). Knowledge within an organisation can be created through the process of interaction between explicit and tacit knowledge. After the knowledge has been created, it is shared among people (knowledge sharing) and then converted (knowledge conversion) through a process in which SECI modes are applied, voluntarily or involuntarily. Knowledge conversion is divided into four stages, where tacit and explicit knowledge not only expand the knowledge base, but also enhance the quality and quantity of knowledge (Nonaka, 1994).

The four modes of knowledge conversion are (1) Socialisation (tacit to tacit knowledge); (2) Externalisation (tacit to explicit knowledge); (3) Combination (explicit to explicit knowledge); and (4) Internalisation (explicit to tacit knowledge). These interactions occur in what is called "Ba" and "Systemising Ba", which means the context in which knowledge is shared or in other words, the workplace (Mosha, 2017). Individual and face-to-face interaction is what Mosha (2017) refers to as "originating Ba." Furthermore, Mosha (2017) defines 'systemising Ba' as a collective and virtual interaction where explicit knowledge is promoted to individuals through

written forms. Furthermore, these interactions are moderated and energised from either existing or new knowledge assets (Mosha, 2017). Through the organisation's existing knowledge assets, individuals enter the four modes of SECI process in a contextual framework, referred to earlier as Ba. In addition, as individuals move around these elements, new knowledge will be created and further added to the organisation's knowledge base. This is in turn leads to a new knowledge asset and thus generates a new spiral of knowledge creation and then retention of existing organisational knowledge.

2.2.3 MODEL OF IMPROVING THE HIGHER EDUCATION RESEARCH OUTPUT

The model of improving the higher education output consists of the following components to increase institutional research productivity: Organisational objectives, policies, and administrators' perceptions of new knowledge contribution(s), faculty and students' involvement in research and publications, supporting facilities /strategies for boosting research and publications, commitment and hardwork of all stakeholders, and strategy to increase research productivity (Aithal, 2016).

It is a model derived from the ABC model (Aithal & Suresh-Kumar, 2015) of institutional performance measurement, and it includes suggestions for involving students and faculty members in enhancing organisational research output. Gurmessa (2019) asserts that by developing and implementing a curriculum model focused on research, students are required to work on research projects in each semester in addition to studying core and elective subjects, and by developing a strategy for the active participation of faculty members in intensive research (Aithal, 2016). Given that the DRAD is the unit at the UL that facilitates the research processes, the Model for Improving Higher Education Research Output was used to study research performance and publishing as well as research productivity in the UL.

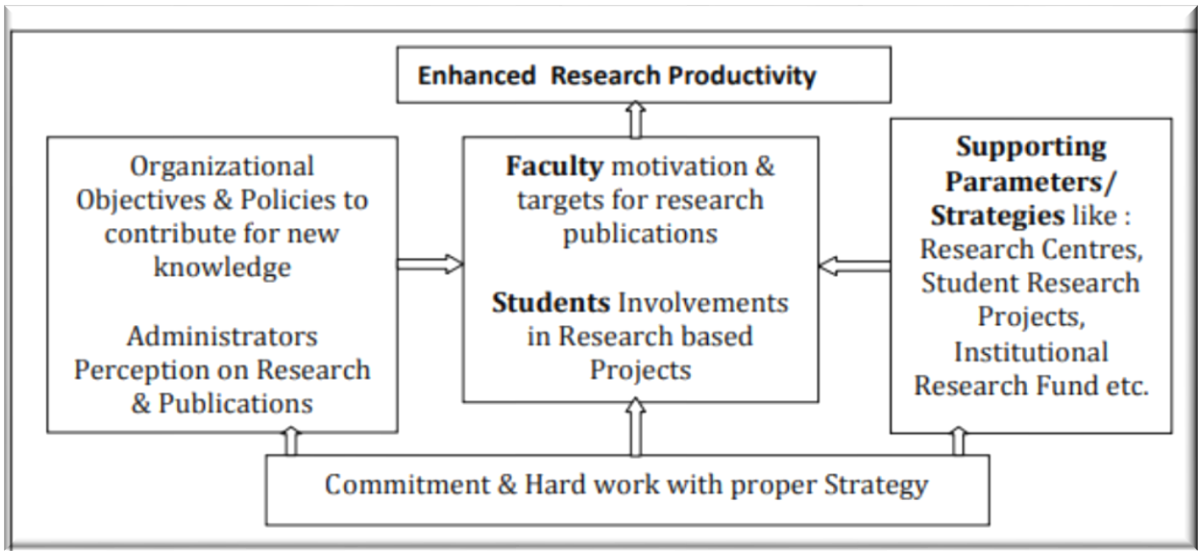

Figure 2.2.3: Model of improving the higher education research output (Aithal, 2016)

The researcher used this theory to investigate organisational objectives, policies, and employees' perceptions of research, the involvement and commitment of staff to the research unit evinced through research projects and publications, how well research is supported, the commitment of all stakeholders towards research, and the strategy to increase research productivity at UL, as explained in the following paragraphs.

2.3.1 Organisational objectives, policies, and administrators' perception towards contributing to new knowledge

According to Aithal (2016), the primary goal of higher education institutions is to create new knowledge and skills and to teach them to students. With this duty, institutions are adopting policies to include research as a major component of the higher education curriculum. Organisations encourage valuable study in selected areas by offering scholarships and bursaries to research students (Aithal & Suresh-Kumar, 2015). As for administrators, higher education institutions foster a research environment in the classroom and encourage faculty members to participate in relevant research. The institution should insist on developing a clear policy towards nonperformers and make them accountable for their failure to maintain required number of publications (Aithal, 2016).

2.3.2.2 Faculty & Students Involvement in Research and Publications

The faculty's commitment and dedication along with competitiveness in research and innovation is essential in higher education (Aithal, 2015). Higher education institutions can create value through students' involvement in research-based projects guided by faculty members and industry collaborators. Aithal and Suresh-Kumar (2015); Aithal (2016), concluded that there should be a well-developed policy towards including research papers along with industry internship projects to involve students in research activities. Students are compelled to develop at least one case study paper/review paper and one empirical research paper during their post-graduation course period along with their faculty guide (Aithal, 2016). The researcher investigated how UL's DRAD plays a role in ensuring that students and their respective supervisors from all four faculties perform well in their research for research publicity and quality improvements.

2.3.2.3 Supporting Facilities /Strategies for Boosting Research and Publications

In accordance with Aithal (2016), this component was used to find out how the UL's DRAD generates new knowledge through research publication. UL's DRAD can build the following facilities to improve institutional research performance:

- Research centres in identified advanced areas as per faculty members' specialisation.
- Creating infrastructure for research units, IT facilities, online information, and database subscription through library (institutional or national) networks.
- Designing institutional research endowment to support any activity related to research and publication.
- Honouring academics and students who make significant contributions to the creation of new knowledge through research publications.

2.3.2.4 Commitment and Hard Work of all Stakeholders

The theory emphasises the commitment of all stakeholders in higher education institutions to increasing research contribution. According to Aithal (2016), faculty members at higher education institutions have a lot of spare time from teaching to focus on research. Ranjan (2014:28) states that this could occur during the test season for students, semester end vacations; study breaks, and so on. Ranjan

(2014) claims that the effective teaching time for faculty members is only 120 days per year on average. As a result, the researcher sought to validate or invalidate the notion that if research administrators and developers at a research unit established a research target for faculty members to participate in research, such faculty members might outperform to achieve the organisation's goals (Aithal, 2016).

2.3.2.5 Strategy for Increasing Research Production

Faculty and student research publications can be increased to boost institutional research productivity. Aithal (2016) proffers those institutions such as the UL's DRAD can apply the following measures to boost research productivity:

- Appointing faculty members who have research experience or passion and inclination towards research and publications.
- Setting up the research publication target to each faculty member and by providing facilities to reach the target.
- By holding national/international conferences in each department of the organisation on a yearly basis and encouraging institutional faculty members to submit and present papers on the conferences' designated themes.
- The institution should encourage its graduate and postgraduate students to be involved in developing business case studies as their project work.
- The institution should support its faculty members to publish their papers in international open access journals to increase the citations of the published papers.

The UL's institutional research productivity can be increased by implementing the aforementioned strategies at the DRAD. The UL can become a more competitive and valuable contributor to African and modern world research publications for the generation of new knowledge. As a result, this model was suitable for use in this study.

2.2.4 THE INTEGRATION OF THE THEORIES IN THE STUDY

As stated in section 2.2, no single theory could serve as the basis for this study. Therefore, the study integrated theories. At the DRAD of the UL, strategies and procedures that are currently in existence and directly affect KR were identified using the KR Framework. The framework assisted in achieving the objectives, which included establishing the role of ICTs as instruments and enhancers of KR and identifying strategies used at the UL's DRAD to retain knowledge. This enabled the

researcher to suggest strategies for improving KR at the UL's DRAD. The framework helped in instigating the UL HR processes, policies, and practices and how they affected KR at UL's DRAD. Lastly, the framework helped in stablishing the role of ICTs as tools and enablers of KR. However, this framework could not cover all the objectives of the research, such as the impact of knowledge loss at UL's DRAD. Hence, the theory of Organisational Knowledge Conversion was employed to help in achieving the objective. The transfer, exchange, storage, and retention of knowledge by the UL's DRAD were examined with the use of the Organisational Conversion Theory. This theory was employed to assess the effects of knowledge loss at UL's DRAD. As a result of concurrently using the KR Framework and idea of Organisational Knowledge Conversion, the study was able to identify the KR barriers within UL's DRAD.

It is common that the purpose of research units is to facilitate research activities at their given institution (Athal, 2016). As a result, it was important that the study should investigate KR at UL research unit (the DRAD) in line with improving the research operation at UL. The research employed the Model for Improving Higher Education Research Output simultaneously with KR Framework and theory of Organisational Knowledge Conversion to achieve all the primary and secondary objectives of the study. The study investigated how KR processes administered by the DRAD itself and staff retention administered by UL HR department all had an impact on research administration, development, quality, and quantity within the University. The Model for Improving Higher Education Research Output was employed as a tool for raising research performance and publishing, as well as enhancing research productivity in the UL research unit.

2.3 KNOWLEDGE RETENTION STRATEGIES IN ORGANISATIONS

Levallet and Chan (2019) define KR strategies as several methods for transferring knowledge from the knower to the organisation so that it can subsequently be recovered for use by the knowledge seeker. According to Motshegwa (2017), KR entails focusing on the critical knowledge that the organisation is in danger of losing. Motshegwa (2017) further argues that once this process is completed, actionable plans should be established on how that knowledge will be retained. KR strategies should be implemented or incorporated into the organisation from the beginning, that is, from the time that the employee is recruited into the organisation (Motshegwa,

2017). The implementation of strategies should ensure that knowledge circulates within the organisation and therefore is not lost in case of any employee departing. Those that have been identified in this study include subject matter experts (SMEs), mentorship and apprenticeship programmes, and leveraging retirees. The identified KR techniques are further discussed in the next paragraphs.

2.3.1 Subject matter experts (SMEs)

Write in full first (SMEs) simply refer to the individual who possesses a profound understanding of a particular subject (Stephen, 2016). SMEs establish knowledge of specific topics or jobs and play an important role in knowledge management in organisations due to their ability to answer inquiries, provide historical context, and propose solutions, among other things (APQC, 2011). Expert succession planning is also desired to facilitate knowledge and expertise retention (Phaladi, 2021). In some organisations, SMEs are assigned mentorship and apprenticeship roles, such as defining key information for their communities, answering inquiries, and delivering internal courses (APQC, 2011). Dewah (2012) investigated this strategy using three Southern Africa Development Community (SADC) public broadcasting organisations of the South African Broadcasting Corporation in South African (SABC), the Department of Broadcasting Services (DBS) in Botswana and the Zimbabwe Broadcasting Corporation (ZBC) in Zimbabwe. The strategy was found to be effective in helping these organisations to preserve their knowledge.

2.3.2 Mentoring and apprenticeship

Mentoring and apprenticeship programmes are methods of retaining knowledge by transmitting tacit knowledge from an experienced employee to a more junior employee (Dewah, 2012). Mentoring and apprenticeship programmes can also be employed to impart tacit and explicit knowledge from a more senior employee to a less senior employee (APQC, 2011). Through the use of strategies like apprenticeship and mentoring, experienced research authorities like research developers and managers can impart vital expertise to lower-level personnel like research assistants. Mentoring and tutoring techniques allow senior employees to quickly transfer their knowledge, wisdom, specific insights, and skills to their juniors, ensuring that when skilled staff leave or die, the institution’s substantiate practice, knowledge, history, stories, and culture are preserved (Dewah, 2012).

Mentors carefully convey delicate and private talents and experiences to others as role models, bringing mentees to their network in an informal setting. Subject matter experts (SMEs) are paired with those who have an expertise and thus require additional skills development in a subject matter area (APQC, 2011). The apprentices accompany the more experienced employee on their job, extracting information and writing down information about their experiences for posterity and reuse (APQC, 2011). According to the same source, this strategy offers unique possibilities for veteran personnel to share their experiences, cognitive processes, and decision-making procedures with junior members of the staff (APQC, 2011). A study by Mamabolo (2021) found this strategy to be effective for nurses at the Philadelphia Hospital in Limpopo in retaining healthcare knowledge. Healthcare organisations anticipated these decisions by recognising that even professional nurses and other healthcare professionals require guidance on critical patient care processes (Mamabolo, 2021).

2.3.3 Leveraging retirees.

Leveraging retirees entails the use of retirees to provide critical skills and experience on specific projects, to mentor junior employees (Poole & Sheehan, 2006). Organisations use their retirees to provide critical skills and experience on specific projects, to mentor junior employees, participate in storytelling and training activities thus allowing them to share their knowledge and experiences (APQC, 2011). Retirees can be engaged with as needed, on a part-time basis to progressively transmit knowledge and ideas to younger colleagues. Research officials who are retired must be hired as specialists for only consultations with the present employees. Retirees should be allowed to return to work as consultants that are immediately productive as they know the organisation (Mamabolo, 2021). Various authors seem to agree that much as there might be many strategies to retain knowledge in organisations, there is no one way to create good KR since each organisation places importance on different aspects of knowledge (APQC, 2011; Dewah, 2012: Mamabolo, 2021).

2.4 INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) AS ENABLERS OF KR

Technology plays a vital role in KR. It assists in the storage and retrieval of knowledge contained in various knowledge management systems such as

databases, document management systems, institutional repositories and others (De Graaf, 2021). This knowledge can be either explicit (recorded) or tacit (embedded in people's minds). ICT is a comprehensive subject concerned with technology and other features of handling and processing information. It deals with the use of computer software to adapt, store, process, protect, communicate, and retrieve information (Makhubela & Ngoepe, 2018). Internet, intranet, database, and knowledge repositories are some of the technologies that can be used to capture, share, and transfer knowledge to facilitate KR in universities. The current analysis focused on research units at higher education institutions (HEIs). Stephen (2016) argues that ICT plays a key role in HEIs KR processes such as knowledge generation, distribution, and retention. When new knowledge is generated, captured, processed, and stored, it is later made available to others by means of IT systems (Janus, 2016).

Vyas, Bhalla and Nazneen (2021) assessed the level to which employees in every organisation should be exposed to various ICT tools for knowledge sharing and KR. The authors also discussed which technologies are appropriate for various KR procedures. Vyas, Bhalla and Nazneen (2021) indicate that numerous higher educational institutions in Africa are not highly computerised and employees do not have adequate access to the internet at work. These institutions are using telephones for knowledge sharing process. Organisations should provide basic tools such as computers, internet access, and intranet access to aid in knowledge capturing and storing process (Dewah, 2014). Research units that use ICT tools to support KR are successful in managing their knowledge. Organisations that have reached maturity in ICT measurement have also reached maturity in KR and KM evaluation as a whole (Delak, 2016).

Literature reveals that there are very few empirical studies based on KR and ICT in higher education research units (Wamundila & Ngulube, 2011). Organisations such as the UL's DRAD should build appropriate measures to collect and retain individuals' expertise before they leave. It is vital that the organisation collects information and knowledge (both implicit and explicit) using relevant and current user-friendly technologies that are compatible with other software and technologies. Njuiri (2021) explains that in the modern era, ICT facilitates the KM processes in academic institutions. As a result, it makes KR much easier for research units in

academic institutions of higher learning. In the following paragraphs, an in-depth discussion of ICT tools as KR enablers is provided.

2.4.2 Intranet and intranet

This intranet technology is a prevalent component in many organisations, and allows employees to access data, information, and expertise from within the organisation while restricting access from outside (Mamabolo, 2021). According to Averweg (2008), intranets are essential to an organisation because they improve knowledge exchange activities, enable distribution, connectivity, and information dissemination. This technology can be used to record and store knowledge retiring staff obtained from the exit-interviews through database storage. Database technology is beneficial in capturing the wisdom of retiring staff (Atwood, 2009; Stephen, 2016). Database technologies enable organisations to quickly collect, archive, and distribute knowledge (Stephen, 2016).

The application of internet technologies to a workplace, university, college, hospital, or any other entity results in an intranet (Terplan, 2022). It is a technology strategy used by a corporation to increase productivity by supporting its apps with web applications (Terplan, 2022). Through the applications and the use of the intranet technology, many research units are able to provide research officials with computerised tools to access data, information, and knowledge from other relevant sectors to deal sufficiently with issues pertaining administration and development of research. In a related study, Mamabolo (2021) looked into KR strategies for professional nurses at Philadelphia Hospital and found that healthcare institutions are able to give nurses computerised tools to access data, information, and knowledge from other medical fields to deal adequately with issues relevant to patient care. This is made possible by the applications and the utilisation of the intranet technology (Mamabolo, 2021). The intranet and internet continue to be among the most crucial resources for retaining research knowledge. Only the implementation of a knowledge portal that is accessible via the internet and intranet can ensure that research knowledge is retained in research units. For the formation of knowledge repositories to retain important knowledge on research administration and development, research units mostly rely on the internet and intranet.

2.4.3 Electronic mail (E-mail)

Electronic mail (e-mail) is a technology that allows users to compose, send, receive, and manage electronic messages and images through computer networks (Dewah, 2012). An individual can disseminate knowledge with one or more people through this technological channel by routing and/ or forwarding a message using a distribution list. This technology needs access to internet or intranet for it to work. Besides distributing messages, an e-mail has capabilities of attaching text documents or multimedia files to messages (Gatiti, 2021). A study on technologies and methods for nursing KR in healthcare organisations was conducted by Mamabolo in 2021. The findings showed that at Philadelphia Hospital in Limpopo, South Africa, the majority of professional nurses communicate by email when providing patient care (Mamabolo, 2021). Research officials at their respective units share information with each other at any given time and location. An e-mail allows a community of practice to communicate information over the web and can be distributed globally. These messages can be referred to when one needs certain information to perform a given task.

2.4.4 Databases

A database, generally known as an electronic database, is a collection of data or information that has been properly structured for rapid search and retrieval by a computer (De Graaf, 2021). Databases are designed to allow the storing, retrieval, modification, and deletion of data in connection with other data-processing procedures. This is a common collection of logically related data meant to meet an institution's diverse information and knowledge needs. A narrative database is an oral history or commentary made by one person interviewing another, discussing what they know, and capturing presentations given by organisational management (Dewah, 2012). A narrative database can store performance histories and participant comments, as well as expertise and tacit knowledge of an institution like a university's research unit. This technology can be very useful in capturing the wisdom of retiring employees (Dewah, 2012; Baguma, 2016). Such sources will be revisited when a need arises. Database technologies make it possible for organisations to swiftly collect, archive and distribute knowledge (Baguma, 2016).

2.4.5 Blogs

A weblog, also known as a blog, is a type of electronic communication that is extensively used for personal, business, and even professional purposes to collect information, post stories, news, express ideas, commentaries, and build diaries, as well as provide links to other sites of interest (Dewah, 2012). Dewah went on to say that certain organisations of practice like research units at universities may utilise blogs to hold meetings by posting questions, minutes, information, comments, and suggestions. Stephen (2016) adds that blogs "provide news on specific themes and allow readers to leave interactive comments, these features make them excellent for storing information from individuals that may be shared by a community of practice." Blogging facilitates information exchange, and knowledge captured in a blog is easy to retrieve, making KR much easier. Blogs can collect a wide range of information, including images, audio or video presentations, calendars and schedules, surveys, and links to an organisation's current news. However, blogs can be difficult to monitor and manage, extreme caution must be exercised to prevent unprofessional and inappropriate concerns from being communicated (Baguma, 2016).

Ramirez (2006) investigated KR and related impediments using a sociotechnical approach to knowledge management, particularly KR strategies, and revealed that blogging is presented as a way to codify knowledge sharing strategies to establish an organisational culture that supports KR. Blogging allows readers to post comments and recommendations in an interactive manner. The comments made on the blogs are saved, and therefore knowledge is retained for future use by an organisation such as research unit. Blogging promotes itself as an open medium for sharing knowledge.

2.4.6 Videoconferencing & Teleconference

This is a facility where teleconferencing allows the additional capability of viewing participants via video screens (Stephen, 2016). Applications such as Google Teams, Zoom, Skype, GoToMeeting, Uber-conference, Webex, and Lifesize are commonly used for video conferencing. A videoconference allows a community of practice to share knowledge and have visual contact with each other, which is how many individuals across the world can participate in sharing knowledge through Videoconferencing (Stephen, 2016; Baguma, 2016). Teleconferencing is a fundamental method of conferring by telephone or email groupware at the same

time. Through the introduction of disruptive technologies, the Fourth and Fifth Industrial Revolutions have improved the methods in which research units can function. Modern research administrators rely on teleconferencing and video conferencing as two of the most prevalent methods for knowledge transfer and retention in the research units. Teleconferencing and video conferencing continue to be effective techniques for retaining knowledge for the purposes of this study in this regard.

2.4.7 Virtual teams

Researchers agree that Web conferencing and collaboration tools enable individuals to view and alter documents and slides, write, or draw on an electronic whiteboard, or communicate their thoughts and opinions via chat or voice conferencing (De Graaf, 2021, Dewah, 2012). Email, teleconferencing, videoconferencing, electronic brainstorming, group display screens, discussion threads, net meetings, and other types of electronic communication are examples of virtual communication channels (Gatiti, 2021). Given the existence of physical boundaries that must be overcome, virtual knowledge teams were formed. Geographical, temporal, or even organisational isolation can pose such obstacles, and virtual teams rely on IT to share knowledge and maintain communication. Virtual knowledge teams must meet on a regular basis to maintain group cohesion, but team members rely on meetings to discuss difficulties.

2.5 THE IMPACT OF KNOWLEDGE LOSS IN AN ORGANISATION

Numerous studies have highlighted the results of either knowledge loss or when organisation does not capture, store and transfer knowledge. Jennex (2007) concurs that knowledge loss is directly due to employee loss, a breakdown in capturing the knowledge, unsuccessful knowledge storage, and not considering the importance of the knowledge. Knowledge loss always affects organisations negatively, in that; it may include performance gaps, reduced production and service quality, customer trust loss, and low productivity (Massingham, 2018). If the foregoing problems prevail at a research unit, there will be a low quality of research output and reduced service quality in research and innovation support. Dewah (2012), who conducted a mixed-method study, emphasises that knowledge appears to be the most strategically important resource for companies. Therefore, losing it would affect organisational performance. According to Levallet and Chan (2019), an inappropriate use of

knowledge management technologies can waste time and money while also preventing operational efficiency. In the end, issues like this might harm a company's reputation. The concept of minimising or eliminating knowledge loss when employees depart has been a research topic in many sectors and is a component of KM. The literature reviewed indicates that many companies are concerned with corporate knowledge loss, but rarely follow through with doing something about it.

Gathering, applying, and holding onto significant knowledge, particularly tacit knowledge, are some of the key organisational goals, according to Dikotla's (2019) knowledge-based view of the organisation. An organisation uses its tacit knowledge to improve its ability to convert its inputs effectively and efficiently into valuable and difficult-to-copy outputs. Thus, the vital knowledge, skills, and capacities ingrained in the organisation's people resources actively contribute to its success (Nonaka, 1994). Employees departing an organisation cause knowledge attrition, which results in the loss of tacit knowledge from that organisation. This could eventually lead to decreased effectiveness, poorer output, and increased employee stress and frustration (Phaladi, 2021). Efforts to retain knowledge strive to ensure that knowledge is not lost when employees leave the organisation (DeLong, 2004).

Massingham (2018) carried out a long-term study titled "Measuring the Impact of Knowledge Loss." According to the findings, knowledge loss has the greatest negative impact on organisational problems such as low productivity (morale), strategic workforce misalignment (capability gaps), resource cuts (stakeholders dissatisfied with performance), decreased work quantity and quality (inexperienced employees), work outputs not being used (customers mistrust), longer time to competence (learning cost), and slow task completion (increased search cycle time). The second most significant consequence was an increased awareness of danger connected with duties and a decline in risk management capacity.

According to Massingham (2018), some organisations, on the other hand, know the importance of their organisations remaining relevant and efficiently providing results in changing contexts. As a result of this impact, such organisations strive to be learning organisations, where opportunities for employees to learn new things and enhance their performance, and thus the performance of the organisation, are provided. The third major impact was a reduced organisational knowledge base:

Knowledge loss produces a knowledge deficit that is unlikely to be filled over time, as seen by surviving employees' knowledge accounts, which remained stable overall. Organisational knowledge loss has emerged as one of today's most significant organisational dangers (Massingham, 2010).

When an individual with valuable information leaves an organisation, knowledge loss arises. The impact is felt at the organisational level in the form of skill and talent shortages. Prior research has found that knowledge loss has caused lost organisational memory (Massingham, 2018); inefficiency and ineffectiveness (Mcfall, 2020); declining capability (Massingham, 2010) and decreased psychological contract (Massingham & Tam, 2015). There have also been claims that knowledge loss decreases organisational output (Massingham, 2018), and productivity; and that, it may undermine organisational strategy and, therefore, increase risk (DeLong, 2004; Massingham, 2018). Massingham (2018) has summarised knowledge loss into three themes.

First, there is impact on the employees who remain, called survivors. This may be classified into psychological impact, such as anxiety, stress, job insecurity or anger; or work disruption causing increased workload or lost social networks. This impact suggests that knowledge loss affects the survivors' emotional relationship with their employer, called the psychological contract (Massingham, 2018). The outcome may be decreased morale and productivity. Second, there is impact in terms of subject matter expertise. Employees who exit take with them their tacit knowledge or the knowledge in their heads (Mcfall, 2020). Third, there is impact in terms of organisational capability. This may be defined in terms of the ways knowledge creates value, e.g., through innovation, problem solving or creativity. This impact suggests that knowledge loss involves a resource. The outcome may be decreased performance and profitability (Nkuna, 2021).

Some theories from the well-being field can be used to understand the influence of knowledge loss on survivors' emotional relationships with their employers (Massingham, 2018). According to Massingham and Tam (2015), psychological contract variables such as affective attachment, locus of control, and personal outcome expectancy can help explain the effect of diminished psychological contract on human capital. Massingham (2018) observed that lost human capital can lead to

lower organisational output and productivity; lost social capital can lead to lower organisational memory; lost structural capital can lead to lower organisational learning; and lost relational capital can lead to disrupted external knowledge flows. DeLong (2004) outlined five ways in which knowledge loss can jeopardise organisational change and consequently raise risk:

- Reduced capacity to innovate.
- Threatened ability to pursue growth.
- Decreased capacity for low-cost strategies caused by reduced efficiency.
- giving competitors an advantage, and
- increased vulnerability (DeLong, 2004:31).

These implications include the loss of expertise, unique expertise, and competitive position, as well as an increase in errors and the likelihood of catastrophic occurrences (Massingham, 2018). As a result, organisations such as research units would face the same fate, hurting research support, publication quality, and quantity.

2.4 BARRIERS OF KR IN AN ORGANISATION

The inability to determine the cost of lost knowledge is the first blockade to KR. DeLong (2004) discovered that some managers identify the risk of knowledge loss when employees leave but find it difficult to quantify the cost. As a result, the management hesitates to devote adequate resources to solve the problem. Another hurdle is that some employees may prefer to be information keepers rather than sharers (Chiu et al., 2021). People tend to consider others as knowledge providers when they are experts in their fields, and consequently rely on their advice and information. Another impediment to KR is when some individuals within an organisation are unhappy for one reason or another and opt either not to engage in knowledge sharing or to disrupt KR efforts by providing fake information (Liebowitz, 2009). According to Oliveira and Pinheiro (2021), human traits such as temperament, attitude, or interpersonal skills might make it difficult to transmit and retain tacit knowledge. Another obstacle to information retention is that the KR approach may be at odds with the organisation's strategic objective (Riege, 2005; Oliveira & Pinheiro, 2021). When a KR strategy fails, it creates hurdles to KR in an organisation.

There are numerous challenges that organisations may face while attempting to adopt KR throughout the organisation. One significant impediment is that people may desire to be knowledge keepers rather than knowledge disseminators. Ramona and Alexandra (2019) who conducted a study titled “KR across Small and Medium-sized Enterprises,” asked that why would anyone want to give up a competitive advantage? They believe that the primary reason is “trust,” and that there are two ways to demonstrate trust: one based on experience, and another one based on good purpose (Ramona & Alexandra, 2019). People seek expertise in various fields, and some might be generous and altruistic in sharing their knowledge with colleagues for the sake of the organisation. Ramona and Alexandra (2019) claim that people want to be paid or recognised for actions that promote the process of information or knowledge exchange. As a result, this eliminates “competitiveness” and other issues that occasionally harm employees in this manner (Ramona & Alexandra, 2019).

Ramona and Alexandra (2019) discovered human judgment biases as another barrier to KR. This may have an impact on shared and learned knowledge in an organisation such as research unit. The paradox produced by knowledge is a phenomenon related to human judgment bias. This paradox implies that the more expertise a person possesses, the more knowledge they accumulate and the more difficult it is to recover knowledge from them. As a result, a third party will naturally take on an autonomous role in assisting in the extraction of knowledge from those persons. The third barrier mentioned by Ramona and Alexandra (2019) is that some people may be unsatisfied for a variety of reasons and seek to sabotage by providing false information. The fourth barrier mentioned by Ramona and Alexandra (2019) is the idea that it is difficult to capture many years of expertise in a few hours of exit interviewing. This is a legitimate argument, and it is for this reason that the knowledge preservation endeavour should be prioritised. The final major impediment discovered by Ramona and Alexandra (2019) is that the information/ knowledge storage technique may be divorced from the organisational plan. Managing knowledge can be a tough process when the knowledge management strategy is poorly conceived or does not align with the company strategic objective. The same is true for KR strategies as they should not be viewed as separate from regular business procedures.

Phaladi (2021) investigated challenges to successful knowledge management in a paper titled “Framework for integrating knowledge management and human resource management for the reduction of organisational knowledge loss in selected South African state-owned enterprises.” Phaladi (2021) summarised the barriers as follows:

- A lack of awareness of and education on knowledge management.
- Employment equity.
- The nature of tacit knowledge makes it difficult for transfer knowledge.
- A lack of recognition and rewards for mentors.
- A lack of knowledge management strategy.
- A lack of initiatives on skills and knowledge transfer.
- Information and knowledge hoarding.
- A lack of proper IT systems for knowledge management.

In their study, “Exploring the Challenges and Barriers of KR in Information Systems Development Teams: The Case of Pēke”, by Chiu, Mirkovski, Shankar and Cranefield (2021) explored three barriers to routine KR practices, namely: Complexity of coordination; Insufficient resources to KR; insufficient attention to KR. Routine KR refers to those activities that involved information sharing within and across the organisation (Chiu et al., 2021). These barriers are further explained in the following paragraphs.

❖ *Complexity of coordination*

Chiu et al. (2021) concluded that colleagues needed to know when and how to collaborate and share expertise. Organisational dispersion, in addition to geographical dispersion, provided another layer of complication. Chiu et al. (2021) cautioned that when installing new or updating IT functionalities, several functional teams, including development and operations teams, were required to identify strategies to collaborate for system integrations, which impeded regular knowledge procedures. A study by Chiu et al. 2021) revealed that, even within the same unit, developers at Peke preferred to work alone rather than together. As a result, geographic and organisational dispersion also inhibited routine KR.

❖ *Insufficient attention to KR*

Management’s lack of attention to KR has been a severe issue in most organisations, including research units in institutes of higher learning. Without the

push from management for KM practices, employees may not be motivated to transfer their accumulated knowledge to others. KR was not regarded part of the duty and obligation of Peke developers because there was little prioritisation of KR and encouragement to share knowledge from management (Chiu et al., 2021). Moreover, the management's claims that KM was vital for teams' information flows, developers felt that hardly any constructive actions had been carried to encourage KR within the teams (Chiu et al., 2021). As a result, lack of incentives and encouragement reinforce knowledge hoarding behaviours.

- *Insufficient resources to KR*

Organisations require appropriate resources for KR to be a successful process for their organisations. KR resources include, storytelling, mentorship and apprenticeships, company manuals, after-action reviews and Implementing reward structures to encourage sharing of key knowledge (Liebowitz, 2011). The study by Chiu et al. (2021) proved that workload pressure and a lack of time hampered project team KR at Peke. This shows that there is no KR resource to handle after-action review to handle their higher workload. Findings from (Chiu et al., 2021)' study proved that as a result of resource churn in the IT department, incumbent developers had an increased workload as they attempted to replace the tasks of developers who had left (Chiu et al., 2021). Furthermore, due to the volume of project work prioritised by management, developers did not have enough time to document or share knowledge with their employees.

2.5 STRATEGIES TO IMPROVE KR IN ORGANISATIONS

This research defines a KR strategy as a multifaceted and customised approach, including people and IT solutions, to retain knowledge. Dewah and Mutula (2016) highlight that those organisations adopting knowledge management approaches should, among other things, start with a strategy and determine what they want to achieve with knowledge management. Thereafter, they make available HR and financial resources as well as IT to support knowledge management (Dewah & Mutula, 2016). Knowledge management ought to connect with existing strategic plans so that the employees' capabilities transform for the better, and that, the KR of the organisation improves (De Graaf, 2021).

The presence of a complete KR strategy is the first condition and the starting point for adequate KR. While most businesses lack a structured KR strategy and instead rely on ad hoc and reactive techniques (De Graaf, 2021), a purposeful strategy, however, can aid in the prevention of knowledge loss. Furthermore, these solutions can be tailored to the essential knowledge domains that are under threat (Chiu et al., 2021)

2.5.1 KR improvement through Knowledge Audit (KA)

Before applying KM measures to increase KR, a knowledge audit is required. Therefore, an organisation needs to intensify its efforts in developing knowledge auditing strategies to have their KR process improved. An audit would make it easier to identify, analyse, evaluate, and report on an organisation's information and knowledge policies, as well as its knowledge structure and flow (Dewah & Mutula, 2015). Scholars in the past have defined KA differently based on their own professions. KA is applicable to all fields such as finance, data science, information science, engineering, library science, and so on because all disciplines are moving into the data and knowledge economy. The KA is one of the solutions found in this study for increasing KR in organisations such as university research units. Other academics have advocated that KR measures should be implemented a few months before a retiree is officially released from an organisation. Identifying and keeping important resources in the organisation, knowledge that must be retained, is a part of a complex process of improving KR, process included in knowledge management (Ayinde, Orekoya, Adepeju & Shomoye, 2021). This strategy's success depends on the way knowledge is shared and on organisational culture. Employees' regular activities and functions should connect with KR (DeLong, 2004).

Ayinde, Orekoya, Adepeju and Shomoye (2021) opine that, for an organisation to evaluate knowledge asset, the organisation needs to identify the source, usability, and creation of the knowledge asset in an organisation. That is why there is a need for periodic evaluations of units, departments, and organisations to see which processes or procedures are not documented, which skills need to be documented, to evaluate knowledge assets, knowledge asset risk, to see the availability, accessibility, and affordability of the knowledge asset, and also where there are gaps in knowledge assets, duplications within and among departments, and how they could harmonise duplications to improve efficiency (Ayinde et al., 2021). Knowledge

audit is an important strategy for knowledge asset extraction and processing and nurturing. The quality of research output can be improved by employing appropriate KR strategies such as KA to capture knowledge and information inside research units. Other appropriate actions for retaining knowledge can be carried out based on a carefully devised approach. In principle, all universities should have a KR plan to guide the other factors that can influence KR (DeLong, 2004).

2.5.2 KR improvement through IT applications

IT application condition is the extent to which IT applications can be used to help the process of KR (Doan, Rosental-Sabroux & Grundstein 2011). The definition is divided into two dimensions: the availability of IT applications (De Graaf, 2021) and the willingness to use them (Hislop, 2018). Three of Wong and Aspinwall's (2005) six elements, namely, applications of technical tools, intranet or internet use, and ease of use of this technology, can be used to assess the availability of IT applications. IT applications as stratagems to enhance KR can aid in the retention of knowledge. However, it is critical to understand the conditions under which employees are likely to utilise the applications, which can vary by department, and how to make them work in the organisation's favour (De Graaf, 2021). IT applications exist in a variety of shapes and sizes, ranging from a database to a collaboration environment. In general, they should be well-structured and easy to access, as this promotes knowledge sharing among research officials in their prospective research units.

IT resources are an important part of any KR strategy, but executives must be careful not to view technology as the solution to their KR problems. IT applications are only enablers and can be used to enhance KR activities (Hislop, 2018). They cannot meet knowledge transfer objectives alone. Kanaan, Hussein and Abumatar (2019) contend that, to retain organisational knowledge, line executives must make certain that IT applications are part of a comprehensive effort that includes changes practices, processes, and behaviours. Stephen (2016) adds that to maximise the value of knowledge, organisations must have appropriate IT applications to facilitate sharing, transforming, and capturing knowledge.

Hislop (2018) discovered that when organisations have a social culture, the IT application chosen can be tailored to the interests of employees by selecting an IT application that focuses on showcasing who has what knowledge, connecting

individuals, and working together. As a result, KR within research units or any organisation with similar characteristics will improve its KR processes. De Graaf (2021) concludes that it is possible that a guide would not function in this scenario, because individuals prefer to learn about the IT application through human contact. IT applications together with ICTs help in the creation of repositories to store users' experiences and knowledge (Hussein & Abumatar, 2019). The repository helps organisations manage what they know and locate the knowledge when required. The repository is the foundation upon which a firm creates its organisation of information and knowledge products (Hussein & Abumatar, 2019). Therefore, IT applications are one of the solutions that organisations can use to improve overall KM and, more specifically KR.

2.5.3 KR improvement through HR, processes, and practices

The status of HR, procedures, and practices is defined as the use of KR mechanisms in HR management (De Graaf, 2021). In the context of the UL research unit, this theoretical definition is translated into the operational definition of use of KR (staff) strategies in HR management at the UL. Five constructs are used to measure HR management (Doan et al., 2011): 1. Staffing, 2. Job design, 3. Performance appraisal systems, 4. Reward and compensation systems, and 5. Training and development. Because research officials have a wealth of knowledge about research and innovation, their engagement in delivering effective services to preserve and increase research publications at a university level is crucial. When it comes to contributing to KR activities, the amount of incentive and recognition at UL is minimal. As previously stated, organisational knowledge is kept through employees (Schmitt, Borzillo & Probst, 2012), implying that this section is based on a people-centric approach. The university's HR policies and practices must play a significant role in retaining research unit workers and supporting improvement in KR within the research unit. At the same time, this HR dimension is in charge of promoting a learning culture within the company (DeLong, 2004). As a result, the organisation's KR will be enhanced. Flexibility and the desire to create are fostered in such a learning environment (Agarwal & Marouf, 2014). The majority of employees leave due to low compensation, a lack of incentives, and a lack of management appraisals. Employees may become less dedicated and loyal to their organisation if HRM activities are not carried out properly, risking the loss of expertise that these

workers possess as a result of, for example, staff turnover (Hislop et al., 2018). An organisation that needs to enhance its KR must pay close attention to this.

2.6 Gaps in the reviewed Literature

The literature review was adequate for this investigation. Although this study revealed various inadequacies in knowledge management, it is a broad and complex subject. The key one is that there are few publications on KR in relation to research offices at South African institutions. Also, additional literature on how university-based units might use KM to improve publication or to improve in that regard. As a result, more literature is required to contribute to this area of knowledge management interest.

2.7 CHAPTER SUMMARY

This chapter discussed significant theories of knowledge management, specifically knowledge for the effective administration and development of higher education research institutes. It conducted a thorough review of significant studies on knowledge management, both globally and locally. As theories for guiding the study, the KR Framework, SECI Model, and Model of Improving Higher Education Research Output were considered. The review of literature in this chapter revealed what methodology is prominent in knowledge management. The next chapter discusses the research methodology used in this study.

3. CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter discussed a literature review of the study. This chapter presents the research methodology that was adopted to guide this study and collect data. “The research methodology is the general approach the researcher uses to takes to in carrying out the research project” (Rudolf, 2018; Leedy & Ormrod, 2015:26). A research methodology is a systematic approach used to address research problems in academic research (Creswell & Poth, 2018). This chapter covers the research paradigm, research approach, research design, population, sampling, data collecting, data analysis, quality criteria, and ethical considerations that were used in the research.

3.2 RESEARCH PARADIGM

Paradigms are significant because they convey the researcher’s perspective on how the study will be conducted to address the research problem. Thomas Kuhn introduced the paradigm concept, which identifies an established pattern as an object for further discussion and specification in new or more rigid settings (Brad-Wray, 2011; Anand, Larson & Mahoney, 2020). As such, Johnson, and Christensen (2019) defined a research paradigm as an approach to thinking about and doing research. It is a set of beliefs about fundamental regions of reality that result in a specific worldview, and it deals with major faith-based beliefs such as those about the nature of reality (epistemology) and methodology (Maree, 2016). Generally, there are four research paradigms, namely, positivism, interpretivism, post-positivism and pragmatism. The four research paradigms are briefly discussed as follows:

3.2.1 Positivist paradigm

Positivist paradigms are “based on the works of French philosopher Auguste Comte, was the dominant scientific paradigm until the mid-twentieth century, positing that science or knowledge generation should be limited to what can be observed and measured” (Park, Konge & Artino, 2020). The positivist worldview generates ‘out there’ objective knowledge and regards human behaviour as passive, regulated, and influenced by its surroundings (Park, Konge & Artino, 2020). This paradigm is most closely related to the quantitative method, which is addressed in section 3.3. However, due to the rigid nature of positivism, the current study did not use this method to fulfil its objectives.

3.2.3 Post-positivist paradigm

Dissatisfaction with the rigorous nature of positivism gave rise to post-positivism (or postmodernism). Reality, according to post-positivism, is “probabilistic, not certain, and that one can form logical inferences about a reality by combining scientific findings with philosophical reasoning” (Hammersley, 2019). Postmodernism, according to Tesar, Gibbons, Arndt and Hood (2021), attempts to understand the nature of modern society and culture, and on the other hand, it represents a way of thinking about and representing the nature of the social sciences and their claims to knowledge. Simply put, post-positivists are deeply untrusting of assumptions that infer a possible arrival at a definitive version of a given reality (Bryman, 2012). Post-positivism suggests that “it is not possible to be certain of truth although rejecting false beliefs can be possible” (Bhattacherjee, 2012:8). The postmodern worldview can still be mostly linked with the quantitative approach.

3.2.3 Pragmatist paradigm

The pragmatist stance purports that scientific knowledge is recognised as just one of the numerously available types of knowledge (Marsonet, 2017). Pragmatists claim that knowledge is distorted through language and individual perceptual frames, and that there is no universally accepted knowledge except knowledge leading to positive consequences (Randhawa, Al-Fares, Tong, Soltesz, Hernandez-Montfort, Taimeh, Weiss, Menon, Campbell, Cremer & Estep, 2021). One of the leading pragmatists in the philosophy of science is John Dewey who claimed that the function of knowledge is to create positive change in organisations (Randhawa et al., 2021). To generate knowledge that works for the organisation, efforts should be directed towards igniting experiences through trial and error in a learning and communicative process (Elkjaer & Brandi, 2018). The pragmatists focus on the usefulness of actions and people’s intentions. As revealed by De Monthoux (2017), it enables us to appreciate the human interpretation of knowledge management but lacks in showing whether there are key knowledge management dimensions for sustaining such usefulness, and how knowledge about them may be acquired. The pragmatic paradigm, which supports a third choice to the dichotomy between qualitative and quantitative approaches in social science research, was presented as a philosophical foundation for mixed methods research (Revez & Borges, 2018). Thus, this paradigm seeks to position itself as a workable resolution to the conflicts and tensions between

quantitative and qualitative possibilities that currently exist in the scientific community. The selection of methodologies is the outcome of the researcher's contemplation and is based on the community's opinion regarding the appropriate courses of action to take in each circumstance (Revez & Borges, 2018).

3.2.4 Interpretivist paradigm

The interpretivist paradigm is derived from idealism and to some extent, rationalism. Philosophers who subscribe to interpretivism include Socrates (Bhattacherjee, 2012) as the founding father (Gamlen & McIntyre, 2018). This stance is concerned with making sense of meaning and purpose that observers attribute to their subjective actions (Bhattacherjee, 2012). The interpretive paradigm, in concept, allows researchers to view things via a variety of perspectives and experiences to gain 'insightful' and 'in-depth' information or truth (Thanh & Thanh, 2015). According to Goldkuhl (2012), interpretivism is associated with qualitative research methods such as interviews, participant observation and content analysis. In concurrence, Dikotla (2016) says that qualitative research is conducted within the interpretivist paradigm.

This study employed the interpretivism paradigm to investigate KR at the UL's DRAD. This was supported through the use of a qualitative research approach. This paradigm enabled the researcher to comprehend the perspectives of the participants and produce concepts and patterns of meaning. According to Mathabela (2018), qualitative research involves the use and collection of several experiments, case studies, interviews, observations and interactions that explain routine and problematic moments and meanings of the individuals. In line with this paradigm, the study used interviews and content analysis to examine KR within the UL's DRAD.

3.3 RESEARCH APPROACH

Creswell and Creswell (2018) regard the research approach as a strategy used by researchers to get in-depth contextual understandings of research participants through non-numerical methods and direct observations. There are three research approaches, namely, qualitative, quantitative, and mixed methods that a researcher can follow in the study. Cresswell (2013) proffers that research approaches should be identified and employed by the researchers when planning a research project. Research approaches generally fall into three categories: qualitative, quantitative, and mixed methods.

3.3.1 Quantitative approach

Stangor (2011:11) states that “quantitative research is expressive in nature requires intense and formal measures of beliefs, attitudes, intentions, behaviour, questionnaires, and systematic observation of behaviour that is subjected to statistical analysis.” This approach is concerned with the measurement of a phenomenon in numbers or statistically. Maree (2016) points out that, the quantitative approach uses numerical data from a selected population to generalise findings to the entire population. The purpose of this approach is to expand and employ mathematical models, theories and hypotheses referring to phenomena. Although qualitative research fails to ascertain in-depth meanings and explanations, its advantage lies in the fact that a larger number of participants can be covered at one time and the results are likely to be generalised to the undivided population. This approach enabled the study to include all study participants (from the DRAD and HR managers) all at once. Ahmadin (2022) notes that the drawback of qualitative research methodologies is that they might produce very comprehensive data due to the inclusion of intuitive judgments and subjective opinions. This is because of its reliance on the researcher’s subjectivisms; it can also result in data that is oversimplified or even erroneous.

3.3.2 Mixed methods

The use of the mixed methods research design entails combining or blending qualitative and quantitative research and data into a single study (Creswell, 2014; Hfasa, 2019). Qualitative data are derived from open-ended sources with no pre-planned responses, whereas quantitative data are derived from closed-ended data sources such as tests, questionnaires, or psychological instruments (Creswell, 2014). This approach is known by several names, including “integrating, synthesis, quantitative and qualitative methods, multimethod, and mixed methodology,” although the terminology most used in contemporary publications is mixed methods (Hafsa, 2019). According to Timans, Wouters and Heilbron (2019), one of its benefits is that it improves attention by creating better and more focused instruments in accordance with the study environment. It also has the benefit of allowing one to construct a theory about an interesting phenomenon and then test it. In general, qualitative research is more effective at developing a theory than quantitative research is at testing hypotheses. The issue with mixed techniques, according to

Timans, Wouters and Heilbron (2019), is that it takes a lot more resources and time to design and carry out.

3.3.3 Qualitative research

According to Cresswell (2014), qualitative approach is an inquiry process into comprehension where a researcher develops a complex, holistic picture, analysis words and reports detailed views of the participants and conducts a study in natural settings. Stangor (2011) says the qualitative research approach is descriptive research that is focused on observing and describing events as they occur, with the goal of capturing all the richness of the behaviour. Dikotla (2016:130) adds that "qualitative research approach aims to explore sociological elements and describe reality as experienced by respondents". Qualitative research holds that knowledge is socially created by humans. Similarly, Johnson and Christensen (2019) assert that qualitative researchers frequently believe that human behaviour is malleable and continually changing throughout time and place, with little interest in transferring the findings beyond the unique individuals investigated. It deals with the exploration of meanings using procedures such as in-depth interviewing, participant observation, and focus groups (Mello, 2021). Library and information science (LIS) studies frequently employ the qualitative research methodology. Mamabolo (2019) investigated KR strategies for professional nurses at Philadelphia Hospital in Limpopo, South Africa, using this study methodology. The qualitative research approach was used for this study to assess the experiences and perceptions of UL's DRAD employees and HR managers at UL regarding KR at the UL's DRAD. The study intended to collect data qualitative data using qualitative tool called interview. The study's population size and the tool used to collect data all influenced the research approach.

3.4 RESEARCH DESIGN

Research design is the strategy to be followed by the researcher. The study design specifies the type of data required, the methods to be used to gather and analyse data, and how all of this will be used to answer the research question (Mello, 2021). Qualitative research designs include grounded theory, ethnographic, narrative, historical, case studies, and phenomenology (Maree, 2016). Grounded theory studies are those in which data are collected and analysed before developing a theory that is based on the data (Mello, 2021). Ethnographic studies entail

gathering and analysing data on cultural groups. Creswell and Creswell (2018) define ethnography as the way of coming into contact with alien worlds and constructing meaning of them. In ethnographic research, the researcher commonly chooses to live with the participants and becomes immersed in their culture. The identification, location, assessment, and synthesis of historical records are the goals of historical studies. Historical research aims to uncover previous events as well as link them to the present and the future (Maree, 2016). Phenomenological studies examine human experiences using the participants' descriptions. As a result, these are known as lived experiences (Creswell & Creswell, 2018).

A qualitative research method called narrative analysis analyses information acquired through case studies, questionnaires, observations, or other equivalent methods while focusing on a specific subject (Mello, 2021). Researchers document their findings in writing, which they then assess and examine (Mello, 2021). Case studies are in-depth assessments of people or groups of people (Maree, 2016). A case study may also be used to investigate a particular division inside an organisation. The sociological foundation of the case method has led to its extensive usage in the humanities, legal, and medical fields. Depending on the objectives of the study and the design selected by the researcher, a case study may be categorised as either quantitative or qualitative research (Creswell & Creswell, 2018). For a case study to be classified as a qualitative study, as is true of other kinds of qualitative studies, the researcher must be interested in the significance of experiences to the participants themselves (Maree, 2016). In case studies, data can be gathered in a variety of ways, including through surveys, interviews, observations, and written reports by the subjects (Maree, 2016).

The current study employed a qualitative research design called the case study design. A case study research design is mostly used in qualitative research, where the researcher focuses on a single entity or unit, which he or she then studies intensively, collecting as much relevant information as is possible, and making correct inferences (Creswell & Creswell, 2018). In this study, the case was UL's DRAD and the HR department. The case study method provides researchers with the analytical power to increase knowledge. The use of a qualitative case study design enabled the researcher to perform a full description and exploration of the case with the objective of producing knowledge that will increase the qualitative

exploration of the case, drawing a deep grasp of the situation (Maree, 2016:320). In a similar study that used a case study design methodology, Makhubela and Ngoepe (2017) explored “KR at a platinum mine in the Northwest Province of South Africa.” Very good

3.4.1 Population

A study population is who or what the exploratory study intends to treat (Majid, 2018: 3). It is a catch-all term for all things (items, organisations, people, and even events) that are the subject of an investigation (Walliman, 2018). The population of this study is UL’s DRAD employees and UL’s HR managers. The population for the study consisted of 13 employees from the UL’s DRAD employees and 5 HR managers of the University. The DRAD at UL was relevant to this study because it facilitates the University’s research operations whereas the HR department was relevant because it is responsible for the acquisition and development of knowledge specialists (staff). UL’s DRAD employees and UL’s HR managers were the target population because of the requisite knowledge they possess relating to research administration and development in the UL.

3.4.2 Sampling

Sampling refers to the selection of just few cases or settings instead of studying the entire population or group (Walliman, 2018). It is about selecting a subset of the population for investigation based on probability or non-probability approach (Bryman, 2012:187). According to Bhardwaj (2019), a sample is a collection of people, things, or things that are taken from a wider population for measurement. To enable the researcher to extrapolate the research sample’s findings to the entire population, the sample must be representative of the population. There are two types of sampling: probability sampling and non-probability sampling. Probability sampling, commonly referred to as random sampling, chooses a sample randomly rather than on purpose (Bhardwaj, 2019). This representative sample enables statistical analysis, allowing results to be generalised to the entire population (Berndt, 2020). Participants are chosen because they are accessible rather than chosen at random (Berndt, 2020). Since the population size was manageable, a non-probability selection approach known as total population sampling was employed. Total population sample is a non-probability sample that is used to study the entire population that has one or more shared characteristics (Rai, 2021). This method is

used when the population of the study is less than 100 (Leedy & Ormrod, 2015). The researcher used the total population sampling to choose all 13 staff members at the DRAD in the UL and 5 managers at the HR department.

3.4.3 Pilot study

As defined by Hassan, Schattner and Mazza (2006: 70), a pilot study is a small study to test research protocols, data collection instruments, sample recruitment strategies, and other research techniques in preparation for a larger study. Simply put, pilot study is a key stage when conducting a research project to allow the researcher to make use of actual qualitative interviews. Doody and Doody (2015:1076) reckon that a "pilot study is often performed to test the feasibility of techniques, methods, questionnaire and interviews". As such, a pilot study aided the researcher in reconstructing the questions and removing those that did not appear to be important, as well as clarifying questions with double meaning. It also ensured that questions were asked in a systematic manner. The interview guide was pre-tested with two HR personnel, and two officials from UL's DRAD between 22 and 30 July 2022 prior to the data collection. The purpose of pre-testing this instrument was that the researcher wanted to improve the design, clarity, and content of the questionnaire schedules to abet effective data collection from the respondents.

Based on the feedback received from the respondents who participated in the pilot study, the instrument was adjusted. Thus, given the nature of the changes made, the researcher pointed out that due to the busy schedules of the employees, it was unnecessary to go through the process again. Pretesting the data collection instrument ensured reliability and validity of the data collection instrument (Maree, 2016). A language editor was then consulted after a few questions required to be paraphrased and reconstructed.

3.5 DATA COLLECTION

Mkandawire (2019) defines data collection as the methodical collection of information pertinent to the research sub-problems using approaches like conducting surveys. According to Lobe, Morgan and Hoffman (2020), the disruption of COVID-19 has put qualitative researchers at a disadvantage because it prohibits face-to-face engagement and creates social distance. In addition, Lobe, Morgan and Hoffman (2020) point out that despite the difficulties, there are potential data

collection methods, such as the use of videoconferencing tools and online interviewing platforms. As such, interviews were conducted over the phone/Zoom/Google meet and/or through online questionnaires, contingent on the respondent's preference (see Appendices C and D). Data were gathered from the UL's DRAD and the UL's HR managers.

3.5.1 Data collection instruments

In research literature, data collection instruments are regarded as tools that a researcher uses to obtain data from respondents. The commonly used data collection instruments in Social Science research are questionnaire, interview, content analysis and observation. Frasso, Keddem and Golinkoff (2018) aver that a questionnaire is a sort of research instrument that consists of a series of questions or other prompts intended to gather data from a respondent. An interview is a two-way conversation involving the interviewer or researcher asking participants questions to gather information and understand their ideas, beliefs, perspectives, and behaviours (Maree, 2016). Creswell (2013:190) says the researcher typically conducts focus groups with six to eight respondents in each group, telephone interviews, or in-person interviews with participants while conducting qualitative research. Content analysis is a research technique used to identify the presence of specific words, themes, or notions in qualitative data (i.e., text). Researchers can use content analysis to quantify and analyse the presence, meanings, and relationships of specific words, themes, or concepts (Kyngäs, Kääriäinen & Elo, 2020).

Lastly, observation is another popular data collection instrument for qualitative data. According to Erickson-Davis and Korzybska (2021), observation is a data collection method in qualitative research. Observation is critical because other research methods will be implemented based on it. The qualitative research process is not as linear as the quantitative research process. As a qualitative data-gathering instrument, observation supports the researcher in seeking deeper insight into the observed phenomenon. Observation uses our senses (touch, feel, smell, hear, and taste). In qualitative research, there are four different types of observation. These were classified by Maree (2016) as complete observers, observers who also participate, participants who also observe, and complete participants. Both participant and non-participant observations are distinctive kinds of observations.

The following data collection instruments were used in the study:

3.5.1.1 Interview

An interview is a two-way conversation in which the interviewer or the researcher asks participants questions to collect and learn about their ideas, beliefs, views, and behaviours (Maree, 2016). Generally, there are four types of interviews in research, which are, structured, semi- structured, unstructured, and focus group. The research employed semi- structured interviews. A fixed design interview with a planned context is referred to as a structured or standardised interview, often known as a researcher-administered survey (Magaldi & Berler, 2020). It seeks to ask the identical questions to all respondents in the same order (Maree, 2016). This interview is also referred to as a directive interview because the interviewees often only have access to a small number of responses (Magaldi & Berler, 2020). In a structured interview, close-ended, pre-coded, or fixed-choice questions are employed (Maree, 2016).

Because of its nature, this method is used to collect both qualitative and quantitative data. The virtue of using this instrument is that there are numerous ways to conduct a structured interview, such as having more than one interviewer, access to more respondents, conducting the interview over the phone, and using any type of computer-assisted interviewing (Magaldi & Berler, 2020). This made it possible for the researcher, given the COVID-19 regulations that had to be followed, to conduct interviews through the phone, Zoom, Google Meet, or online questionnaires, depending on the respondent's convenience. Another benefit of using this instrument was that the interviewer had control over the environment and context in which the interview was conducted (Maree, 2016). The choice of the data collection instrument for this study was structured interviews to elicit data from the officials at UL's research office and HR managers. This was influenced by the fact that this study only had access to a small number of respondents, and the study's respondents consisted of 5 HR managers and 13 DRAD officials from UL. It was clear that the study's sample size was constrained. It is usual practice to employ structured interviews to get a few responses (Maree, 2016). The order of the questions was followed by the researcher accordingly, close-ended, pre-coded, or fixed-choice questions were utilised to gather data from the participants.

3.5.2 Data collection procedure

The researcher considered the following procedure to collect data for the current study: The researcher determined the study's population, designed data collection tools, applied, and obtained permission to conduct the study from the Turfloop Research Ethics Committee (TREC) and gatekeeper permission from the office of the University's Registrar. The researcher then pretested and distributed data collection tools. The invitation to participate in the study was sent to all UL's DRAD officials and HR managers through emails. In accordance with COVID-19 regulations, interviews were conducted over the phone/Zoom/Google meet and/or through online questionnaires, contingent on the respondent's preference. Data collection was done conveniently rather than sequentially since the questions were pre-determined. Data were collected from June to August 2022. Due to the respondents' busy schedules, the researcher needed about two and half months from June to August of 2022 to accomplish the data collection process.

The interview guide for HR managers entailed three sections, while the one for DRAD had seven. It was also assembled according to those sections. Section A of the interview guide for HR managers covered the study's participants' biographical information, section B covered knowledge loss and staff retention, and section C covered HR processes and practices at UL. The interview guide for DRAD officials was divided into seven sections. Section A provided biographical information about the study's participants. Section B provided information about UL's DRAD, while section C examined the KR strategies used by UL's DRAD to retain knowledge, section D, established the role of ICTs as tools and enablers of KR. Section E assessed the impact of knowledge loss at the UL's DRAD. Section F determined the KR barriers within the UL's DRAD. As a final point, section G, proposed strategies for improving KR at the UL's DRAD.

3.6 DATA ANALYSIS

Data analysis is a central aspect in drawing conclusions to a problem statement. It is a process that is concerned with the classification and interpretation of collected data (Miles, Huberman & Saldaña, 2018), and according to Bryman, "at the most basic level, it can be considered to refer to the application of statistical techniques to the collected data" (Bryman, 2012:13). In this study, thematic analysis was employed to analyse qualitative data. Thematic analysis is a method for detecting, analysing,

organising, summarising, and reporting themes identified in a data set (Bingham & Witkowsky, 2021). Despite the study's qualitative nature, the descriptive data analysis was employed to examine and quantify the study's demographics and other close-ended questions. The researcher followed five steps of thematic analysis as listed by Mattimoe, Hayden, Murphy & Ballantine (2021). In the first step, the researcher organised, sorted, and categorised raw data obtained. In the second step, the researcher interpreted the data. In the third step, the researcher coded data. In the fourth step, the researcher integrated, and summarised data through inductive reasoning and made an interpretation or understanding of the data in the final step.

3.7 QUALITY CRITERIA

Studies in qualitative setting adopt qualitative criteria to ensure that the research findings are trustworthy and confirmable. Creswell (2016:251-252) explains quality criteria as "internal quality standards used as procedures during data collection analysis, and external quality standards serving as strategies ensuring the quality of research". Such criteria involve the assessment of credibility, transferability, and conformability given the qualitative criteria (Korstjens & Moser, 2018).

3.7.1 Credibility

According to Creswell and Poth (2018:258), "credibility is an accurate interpretation of the participants' meanings. In this regard, data that addressed the study's aim and was well constructed in accordance with the study's objectives in order to provide credible discoveries". The researcher established the rigour of the investigation by employing credibility tactics such as peer review and numerous debriefing discussions between the supervisors and researcher. The researcher was also collaborating with the participants to establish a comprehensive understanding of the study (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014). To ascertain the authenticity of the study, as advised by Tracy (2020), the searcher conducted the study following scientific research methods to ensure that the research was genuine, reliable, or authoritative, and credible. Lastly, the researcher ensured that the data provided by the participants were presented accurately and adequately.

3.7.2 Transferability

Transferability refers to the degree to which the findings described in one study are applicable to other contexts, or people (De Vos, Strydom, Fouche & Delport, 2011). The researcher purposely sampled the selected research staff at the UL's DRAD and HR managers who could provide an overview of KR at the DRAD. Interviews persisted with participants until no more information could be gleaned. Due to the fact that the case study was characterised within the precise contents in which they appeared, other researchers may carry out comparable research in various situations. The findings of the study may be transferable to other universities with features comparable to the UL's DRAD in terms of the KR process for optimising research output and development. As a result, the researcher presented a research document report to transfer the research findings and contribute to the body of knowledge.

3.7.3 Conformability

The point at which the results can be validated or corroborated by other researchers is referred to as confirmability (Mey, 2022). The researcher sought the advice of specialists in the field of knowledge management. The data recorded by the researcher were verified and examined by an external assessor to see if they conformed to the coded categories used in the analysis to eliminate subjective biases.

3.7.4 Dependability

Dependability is the stability of findings over time (Mey, 2022). The goal is to see if the research findings are consistent, even though the study can be repeated with similar people in the same setting. In this sense, all of the instruments were piloted with a limited group of research staff and HR managers who were not going to participate in the study. The goal was to design, adjust, and evaluate the instruments' practicality. As advised by Creswell (2014), the researcher used an external assessor to analyse the entire project to verify the reliability, authenticity, dependability, and confirmability of qualitative findings. This was done to ensure that the findings were dependable and consistent.

3.9 ETHICAL CONSIDERATIONS

Ethical considerations are the most important aspects of the research project; therefore, every effort was made to ensure participant anonymity, data confidentiality, and voluntary participation in the study (Newman, Guta & Black, 2021).

3.9.1 Permission

A permission letter requests approval from relevant authorities to conduct a research project in a certain subject of interest. The letter allows the researcher to continue with his or her research project after viewing the benefits of research from a broad perspective (Newman, Guta & Black, 2021). It is critical for researchers to understand that acquiring the appropriate licenses to perform a study can take time. It is also critical to understand that organisations are not compelled to allow one access to their members or data (Newman, Guta & Black, 2021). Permission to conduct the study was sought and obtained from the University of Limpopo Turfloop Research Ethics Committee (see Appendix E), and Gatekeeper permission (see Appendix F) was sought and obtained from the office of the University's Registrar.

3.9.2 Informed consent and voluntary participation

According to Williams (2017), researchers must inform respondents about the purpose and context of intended information and data uses, the security and privacy measures used to protect their data, and any related privacy risks, as well as the limitations of the measures used and the privacy risks that may persist despite the protections put in place. Prior to participation, the researcher has informed participants about the purpose of the study and their rights to voluntarily participate, withdraw participation at any time during the study, or not participate in the study.

3.9.3 Anonymity and Confidentiality

Anonymity is typically used to hide the participants' identity to protect them from harm, especially in qualitative studies that present participant narratives or points of view (Williams, 2017). The term "confidentiality" refers to the practice of disclosing information only to those who have been authorised to do so (Williams, 2017). To guarantee participant anonymity, the researcher asked participants not to give their names. Simply said, data collection tools have no name option. In terms of

confidentiality, the researcher restricted raw data access to the researcher, supervisor, statistician and the assessor.

3.9.4 Integrity and Plagiarism

Research integrity is defined as the trustworthiness of research as a result of the soundness of its methodology as well as the honesty and accuracy with which it is presented (Lategan, 2011), whereas plagiarism is defined as copying a portion of someone else's published work and using it without indicating that it is borrowed from someone else (Lategan, 2011). The researcher did not create, rig, or distort data in any way. The researcher used the Turnitin system to determine if the similarity index was less than the University's requirement of 15%. Furthermore, the researcher has accurately acknowledged and referenced all sources used. The plagiarism report is attached (see Appendix H)

3.9.5 Respect and Dignity

People should be treated with dignity and respect at all times and should never be manipulated or taken for granted. A study must be done in a way that respects, protects, is fair, and upholds the human rights of study participants and the societies in which it is performed (Williams, 2017). The researcher treated the participants fairly and impartially and ensured that no participant was unduly disadvantaged, verbally abused, or injured.

3.10 CHAPTER SUMMARY

This chapter covered research methodology, commencing from the study's research paradigm, research approach, research design, and data collection methods and data analysis techniques. Research methodology was discussed as central to the research process, by specifying the types of research designs and research methods that may be employed to gain knowledge about a phenomenon. Before reviewing the study population and sample choices, an explanation for the research approach and design was provided. The study's findings, as well as their meaning(s), are analysed and discussed in the next chapter.

4. CHAPTER FOUR: PRESENTATION, ANALYSIS, INTERPRETATION, AND DISCUSSION OF THE FINDINGS

4.1. INTRODUCTION

The previous chapter discussed the research methodology used in this study. This chapter discusses the results obtained from the interviews conducted with the UL HR managers and DRAD officials. Data analysis is a procedure of transforming the information into “a reasonable, justifiable, smart, dependable and even original analysis” (Mihas, 2019). The interpretation of data is inevitably subjective in that it relies completely on the hypotheses, logical reasoning processes, and assumptions of the researcher (Leedy & Ormrod, 2015). Thus, it transforms the data into new discoveries, revelations, and enlightenments. The information in this chapter is categorised into two parts. Part A presents the data analysis of the data collected from UL’s DRAD officials and Part B presents the data analysis of the data collected from HR managers.

4.2 RESPONSE RATE

The response rate of the study, which is a potential difference between respondents and non-respondents including participants and non-participants, is estimated by dividing the total number of respondents and participants by the sample size of the study. Leedy and Ormrod (2015:187) explain that the response rate of 70% is quite high because more often, the return rate in a study is 50%. The response rate of the study from the semi-structured interviews was reasonably acceptable. This is achieved after several follow ups with the respondents.

The sample size of the study was 5 HR managers and 13 DRAD officials, which add to a grand total of 18. Due to the organisational restrictions imposed by COVID-19

regulations, these 5 HR managers and 13 DRAD officials were sent invitations to participate in the interview through e-mail. Out of 5 HR managers who were sent a link, only 3 responded and 2 did not. These 3 participants had a response rate of 60%, which appears to be enough, as it represents more than half of the sampled population. On the other hand, 8 of 13 DRAD officials consented to participate in the study and were successfully interviewed. This recorded response rate of 62%, which was also good. Maxfield and Babbie (2018:245) confirm that a return rate of 60% is good.

PART A: DATA ANALYSIS FOR THE UL'S DRAD OFFICIALS

Data from the UL's DRAD officials is represented in this section. Both qualitative and quantitative parts of the data are included and aligned with the interview guide.

4.3 DEMOGRAPHIC DETAILS OF THE RESPONDENTS

4.3.1 Gender (*N=8*)

Participants were asked to indicate their gender. Out of 8 officials from the DRAD who were interviewed, 3 (37.5%) were males, whereas 5 (62.5%) were females. Figure 4.1 below presents the findings.

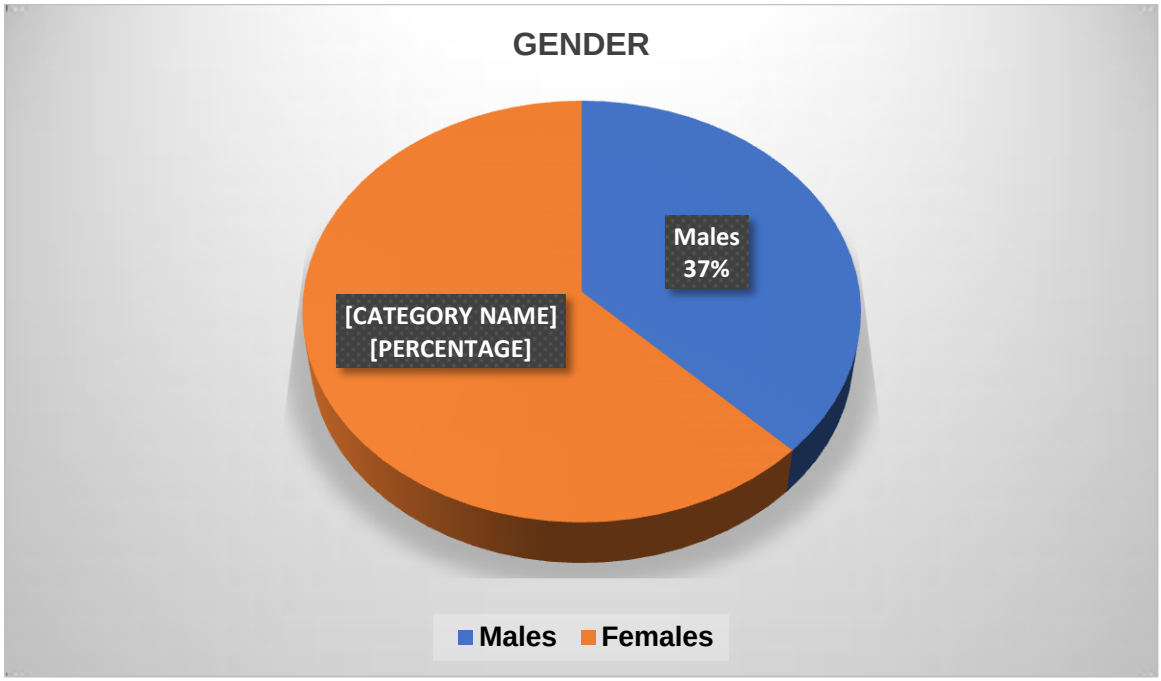

Figure 4.1: Gender

The findings of the study reveal that the DRAD has 3 (37.5%) male research officials, as opposed to 5 (62.5%) females. This indicates that more females are

working at DRAD than males. Dikotla (2016) agrees that men-women relationships in the workplace impact the ways in which knowledge sharing is understood. Dikotla (2016) noted that knowledge sharing may fail when a team is primarily comprising only men or only women as employees as there may be less probabilities to share knowledge freely. When knowledge sharing fails, it also affects the KR procedures at any organisation. Even though the results show that the female respondents were more than male respondents, there is a satisfactory balance of gender distribution in the UL's DRAD; as such, there is a good chance of knowledge sharing (Dikotla, 2016).

4.3.2 Age (*N=8*)

The participants were expected to state their age range. A majority of 3 (37.5%) participants were between the age of 25-34, 2 (25%) between 45-54 years, 1 (12.5%) between 18-24 years, and 1 (12.5%) over 55 years. Figure 4.2 below represents the findings:

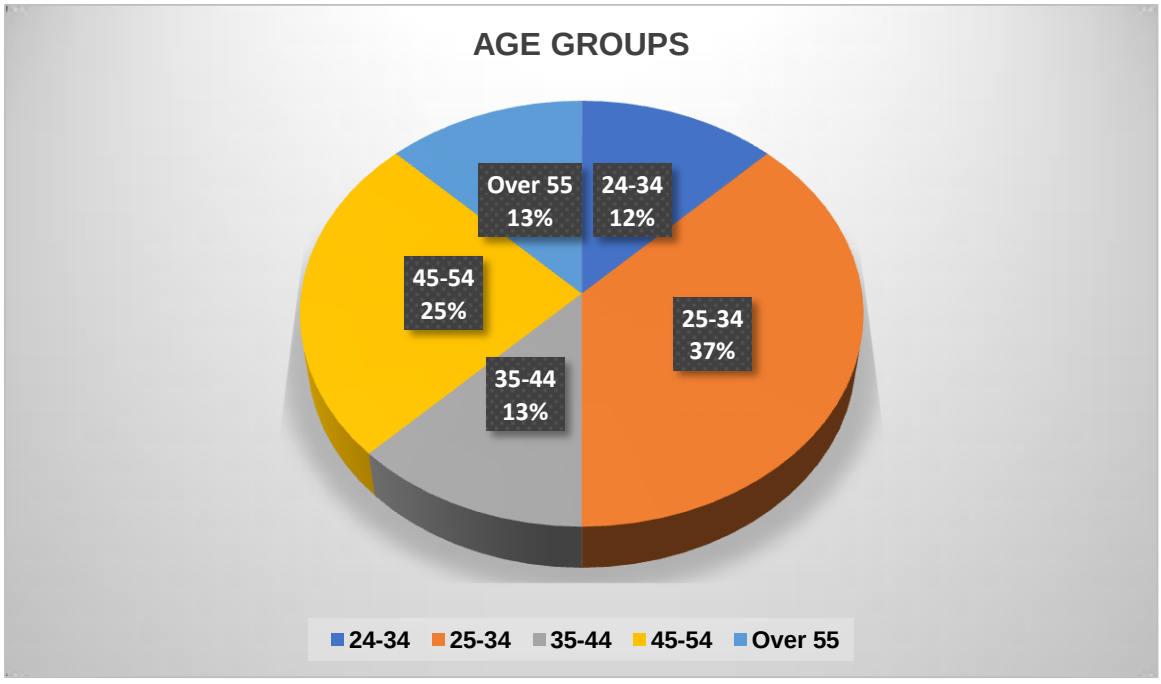

Figure 4.2: Age groups

Figure 4.2 above shows that the majority of research officials in the UL's DRAD, are youths aged between 25-34 years, 3 (37%). The National Youth Commission Act (1996) defines young people as those falling within the age group of 14 to 35 years, therefore, it can be concluded that a majority of employees at the UL's DRAD are youths. Vaportzis, Giatsi Clausen and Gow (2017) state that older adults may lack

knowledge, confidence and feel inadequate compared to the younger generation in as far as KR is concerned. In light of the above findings, it can be argued that the young staff involved in the DRAD at UL are knowledgeable and conversant with the research process that is managed at this unit. Given that younger individuals are more open to trying out new technologies (Kropf, 2018:73), young people also use their enthusiasm and youthful vitality to support the administration and growth of research at the institution by taking advantage of the ICT resources that have been made available to the unit. In this way, they improve KR at research units, which require such staff for their advanced ICT skills to empower less skilled staff on ICTs utilisation.

4.3.3 Highest qualification obtained (*N=8*)

Participants were requested to specify their highest educational qualification. Figure 4.3 below shows that 4 (50%) respondents have a Master's degree, 1 (12.5%) has an Honour's degree, 1 (12.5%) has a Bachelor's degree, 1 (12.5%) has a Ph.D., and 1 (12.5%) only has Matric.

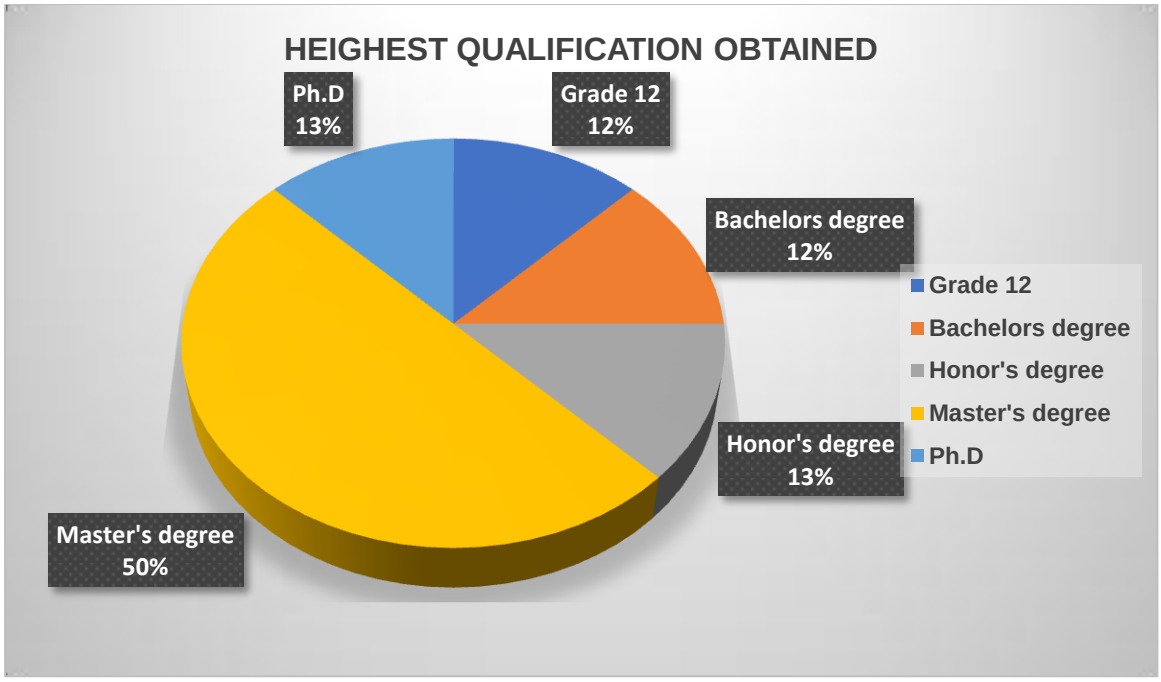

Figure 4.3. Highest qualification obtained.

Findings in Figure 4.3 show that the majority of the officials, 4 (50%) who are employed at the UL's DRAD have a Master's degree as their highest qualification. Fewer officials, 1 (12.5%), have a first degree, 1 (12.5%) has matric exemption whereas 1 (12.5%) has an honours degree, followed by one respondent with a Ph.D.

These research officials with a Master's degree are likely to have more required knowledge on administration, processes, and development of research within the institution. Employees with a high degree of education are more likely to be competent in their roles (Srbecky, Ochsendorf, Winterhagen, Wallenborn & Hemmje, 2022). Dikotla (2016:174) noticed that employees with greater levels of education are more inclined to share their knowledge, which also enables KR, and have favourable views toward doing so. All participants were, in a sense, qualified to offer the researcher relevant data for the study.

4.3.4 Job designation (*N=8*)

The researcher asked the participants to specify their job position. Out of 8 participants, 3 (37%) were Research Assistants, 1 (13%) was a Research Coordinator, 1 (12%) was a Research Manager, 1 (13%) was an Administrator, and 1 (13%) was a Principal Admin Officer. Figure 4.4 illustrates the findings:

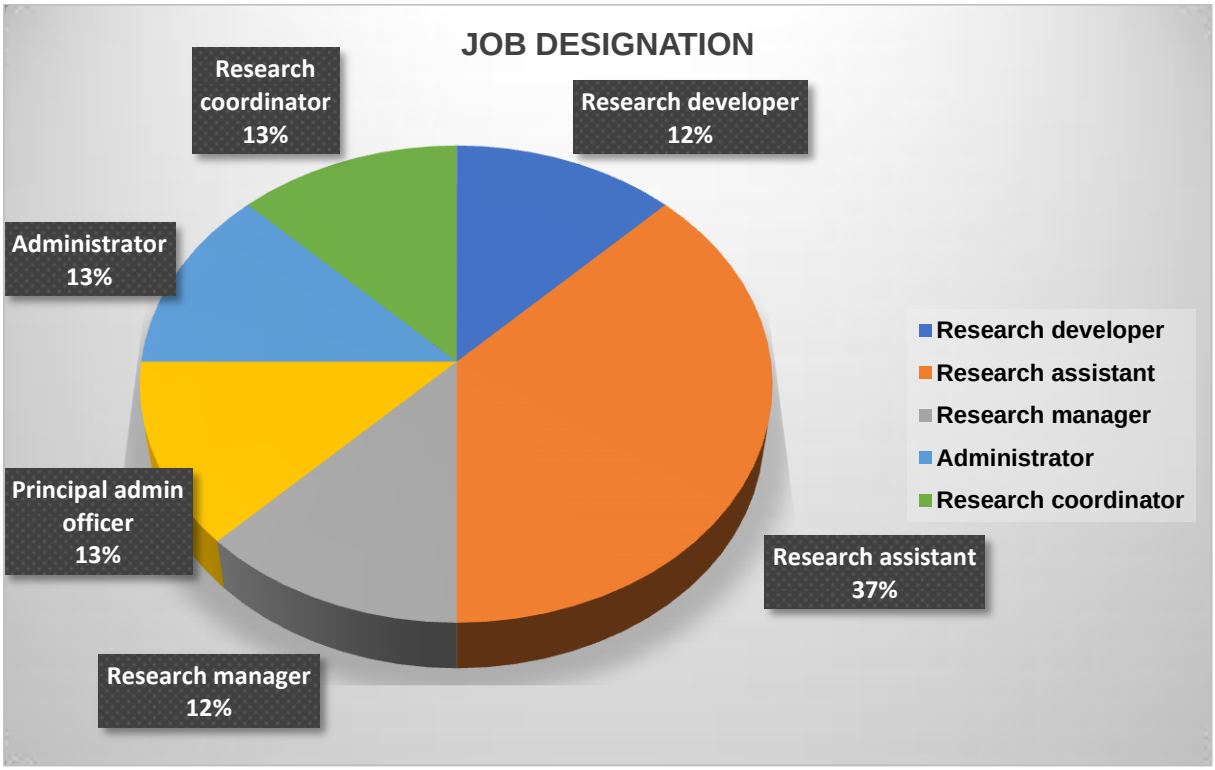

Figure 4.4: Job designation

The findings represented in the figure 4.4 above show that the UL's DRAD is populated with research assistants more than the other job designations. In an organisation, Research Assistants (RAs) are responsible for final editing, paper evaluation, giving administrative support and conducting electronic searches

(Hutchinson & Moran, 2005). Given that KR is influenced by a person's job title are transitory and junior positions, it is clear that the organisation is at risk of losing the expertise; therefore, their knowledge must be retained.

4.3.5 Years of experience (*N=8*)

The participants were subsequently asked regarding how long they had worked at the department, and the results are shown in figure 4.5:

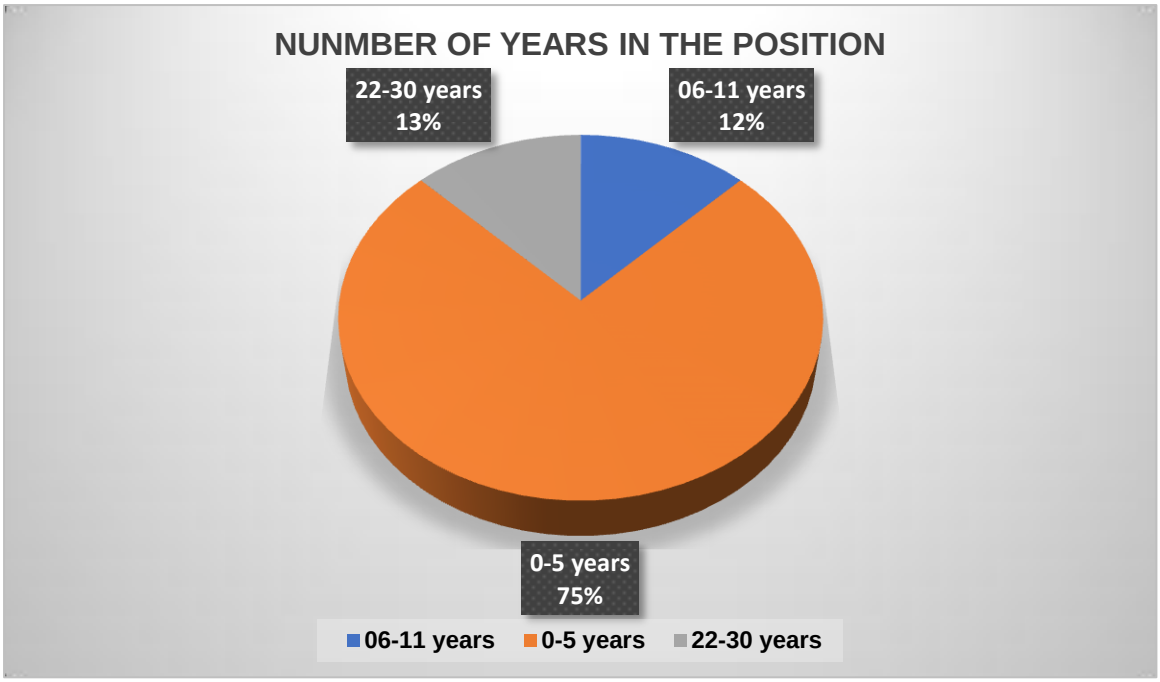

Figure 4.5 Years of experience

The findings depicted in figure 4.5 above show that 6 (75%) participants had less than 5 years, 1 (12.5%) had between 6 to 11 years, whereas 1 (12, 5%) had between 22 and 30 years in the research services. Thus, a majority of 29 (45%) participants had as long as 21 years of service in the police sector. It is clear that the majority of these UL's DRAD officials, 1 (33.3%), had served between 0 and 5 years. Given that the majority of these UL's DRAD officials have an experience of 0-5 years, staff retention at this department is not well practiced. It might be a given that employees with fewer years would have less experience; however, employees who had worked for a company for a longer period of time have more experience and organisational knowledge that is valuable and worth preserving. De Sousa-Sabbagha, Ledimo and Martins (2018) revealed that the length of time an employee spends working for an organisation predicts that employee's job satisfaction, motivation, and retention. In this study, more employees were found to have held

positions for less than five years. Employees with less experience might not grasp the importance of KR simply because they have not been in the corporate world long enough to do so (Phaladi, 2021)

4.4 DATA ANALYSIS AND INTERPRETATION

This section represents the analysis of the qualitative data obtained from officials at the UL's DRAD. The data are arranged according to the objectives of the study and the themes that emerged from the thematic analysis. The figure 4.4 below represents the summary of the themes.

4.4.1 Information about the UL's DRAD

4.4.1.1 Does your unit have the following programmes to guide research at UL?

The model of improving higher education research output in an institution needs to have an aim and objectives that direct research to improve research (Aithal, 2016). In light of this, the researcher asked the participants to use yes/ no to indicate whether there are the aim and objectives guiding the DRAD of UL; Policy guiding the research process; Programmes to encourage staff to research and publish; and Programmes to encourage students to research and publish to support its goal and vision. The results are depicted in the figure 4.6:

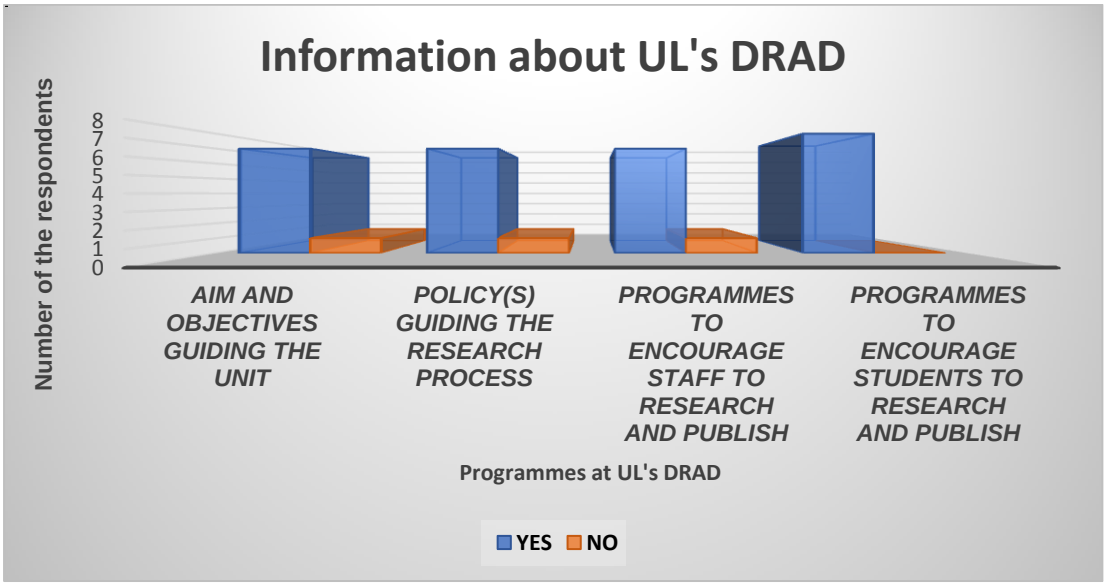

Figure 4.6 UL's DRAD information

The findings in figure 4.1 above show that 7 (87.5%) participants confirmed that he UL's DRAD has an aim and objectives guiding the unit, whilst 1 (12.5%) participant stated that they do not have such in place. 7 (87.5%) participants also confirmed that

the DRAD has Policy(s) guiding the research process, whereas 1 (12.5%) participant disagreed. Moreover, the other 7 (87.5%) confirmed that the DRAD of UL has programmes to encourage staff to research and publish, and 1 (12.5%) participant disagreed. Lastly, 8 (100%) participants confirmed that the DRAD has programmes to encourage students to research and publish. The research administration and development processes would function properly if these programmes were established and used. According to Aithal's Model of Improving Higher Education Research Output (2016), higher education institutions can boost their institutional research output and become more competitive as well as better contributors to society by implementing the aforementioned approaches. The UL's DRAD is on the right track because it has aims and objectives that direct the institution's research process. Aithal's model of boosting higher education research output (2016) includes supporting facilities/strategies for boosting research and publications, and organisational objectives, policies, and administrators' perception to contribute to new knowledge as elements, which demonstrate that the UL's DRAD is functioning in accordance with its research protocols.

These results demonstrate that the UL's DRAD has appropriate guidelines and programmes in place to assist the institution's research operations. This aligns with Aithal's (2016) model for enhancing the output of research in higher education. This model states that steps should be taken to involve academics and students in research activities. Gurmessa (2019) claims that by designing and putting into practice a curriculum model that prioritises research, students are required to complete research projects in addition to studying core and elective subjects each semester, and by developing a strategy for faculty members to actively participate in intensive research (Aithal, 2016).

4.4.1.2 What is your perception of UL's research output and quality?

- *An improvement of research quality and output*

The participants were asked to share their perception of UL's research output and quality thereof. The findings obtained from the participants are shown in the following verbatim quotes.

"It varies from year to year. Overall, it gets better every year. The output is higher today than it was years ago, and the quality is also improving." [Participant 1]

"*The quality and quantity of the research output are improving over time because of the office's publication workshops and research retreats*." [Participant 2]

"*I think it is good enough*" [Participant 3]

"*Research output is mostly guided and applied by the DHET policy on Research Outputs. Despite the above, I have optimism about the quality of the research. Because we publish in accredited journals, the quality is not guaranteed*."

[Participant 4]

"*The research output is average, which is acceptable*." [Participant 5]

"*This differs from year to year. Overall, it improves every year. When looking at now, the output is bigger than of years ago and so is the quality*." [Participant 6]

"*The research output and quality are satisfactory, but there is always room for improvement*:" [Participant 7]

"*The output is low compared to of other top universities, and the quality is ok.*"

[Participant 8]

The participants' perception of UL's research output and quality is that the department has improved the quality and quantity of research publications at the University by encouraging students and faculty research engagement to produce more research. The UL's DRAD has publication workshops and research retreats in place for researchers, students, and their respective supervisors. This demonstrates the validity of the theory put forth by Aithal (2016) that higher education institutions like the UL can raise their institutional research productivity by implementing measures for enhancing research output. The Administrators' perceptions that, to positively contribute to the advancement of their institution's research and publications, administrators must have a positive perception towards research and publication. According to UL's DRAD research administrators, the research output is improving.

4.4.2 KR STRATEGIES USED AT UL RESEARCH UNIT (THE DRAD) TO RETAIN KNOWLEDGE

4.4.2.1 Which strategies is the DRAD, or the University using to retain knowledge of staff members?

- *KR strategies used at UL's DRAD*

The participants were asked to name the KR strategies which are being used by the UL's DRAD to retain knowledge from the staff members. The flowing answers were provided:

"*Virtual teams (meetings), E-mail, Website.*" [Participant 1]

"*Normally we use E-mails to share knowledge and our website to access uploaded information.*" [Participant 2]

"*Website to access preserved information from other staff members, online meetings.*" [Participant 3]

"*Online organisational communities (Wikis, blogs, social networking sites), Internet, an extranet.*" [Participant 4]

"*By sharing information or our expertise during workshops.*" [Participant 5]

"*We share information through emails and online interactions such as e-meetings using platforms such as Zoom and Google meetings.*" [Participant 6]

"*Internet and intranet to store knowledge from the staff members.*" [Participant 7]

"*Virtual meetings, institutional repository.*" [Participant 8]

Participants' comments on the strategies used by their organisation to preserve knowledge were diverse. This organisation uses a range of techniques to preserve staff members' knowledge. The findings show that the strategies used by the UL's DRAD to retain the knowledge of the staff are electronic. This suggests that UL is taking advantage of ICTs to enable KR. The use of diverse electronic methods to retain knowledge shows that this institution keeps all types of knowledge, whether they are written, oral, or online, using a strategy appropriate for that sort of knowledge. For example, written knowledge is retained through workshops, while online knowledge is preserved using e-mail. E-mail, the internet, the intranet, meetings, and seminars are among the most frequently used tactics at UL's DRAD

to make sure that employees remember the information they are exposed to. This demonstrates that the organisation views the KR process as a crucial tool for protecting employees' expertise. DeLong (2004) says that the many strategies used by organisations to preserve knowledge are advantageous because each method addresses a certain KR, knowledge type, and format of the retained knowledge. DeLong (2004) emphasises this further, saying that measures must be put in place to create effective strategies for KR in an organisation.

4.4.2.1 How does the research unit (the DRAD) capture the knowledge of employees who resign or retire from work?

❖ *The knowledge-capture*

The participants were asked to share how the research unit captured the knowledge of employees who resigned or retired from work. Strategies such as use of organisational repository, Emails, Internet, Workflow, Meetings, Storytelling, Mentorships and Workshops are used to capture knowledge/expertise from employees who resigned or retired from work. The following verbatim quotes give an overview of the participants said:

"*Through research assistants. Employees who leave the research unit are usually well- experienced and these qualified senior employees and are allocated research assistants for the purpose capturing their knowledge. The assistants absorb knowledge from these senior employees and use it to run different divisions within the unit.*" [Participant 1]

"Next person gets training and the one who leaves is reinforced to engage with the new employee for consultations until they are well settled. This process allows the unit to capture the knowledge from one leaving this organisation." [Participant 2]

"*All information is kept and stored on the UL databases.*" [Participant 3]

"*We rely on duty reports for that case.*" [Participant 4]

"*Filing of reports on a monthly basis enable the unit to capture such knowledge*." [Participant 5]

"*By taking their research into consideration, their competence and specialities are in their research.*" [Participant 6]

"*Not applicable*" [Participant 7]

"*Data Repository, for information capture.*" [Participant 8]

There are numerous methods of obtaining knowledge from retirees or other people who depart the UL's DRAD. The UL's identified methods for gathering departed knowledge include the utilisation of research assistants, data repositories, duty reports, research evaluations, and databases. When the experienced employee passes on his or her knowledge to the less inexperienced worker, this results in knowledge transfer which enables KR, because the knowledge is remaining at the organisation as it is now possessed by the new employee. Anand, Muskat, Creed, Zutshi and Csepregi (2021) emphasise that by involving new employees with retirees or other departing employees, knowledge in an organisation can be captured. Formal or informal engagement might be used for knowledge capture. Other organisations also use retirees, video conferencing, knowledge repositories to capture information and knowledge possessed by their valuable employees (De Graaf, 2021).

4.4.3 THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN KR

4.4.3.1 Which ICTs tools do you use in your section?

- *ICTs used at UL's DRAD.*

Iglesias-Pradas, Hernández-García, and Fernández-Cardador (2017) avers that the ICT revolution developed advanced methods through which knowledge is shared, captured, and made accessible through the utilisation of IT systems and applications. KR framework contends that information communication technology applications cannot be viewed as the "only enablers as they cannot meet knowledge transfer objectives alone" (DeLong, 2004). Therefore, the researcher asked the participants, "Which ICTs tools do you use in your section?" The findings are represented in the verbatim quotes below:

"*Website, intranet, email, ITS, virtual meeting, etc*." [Participant 1]

"*Copiers, scanners, laptops and computers, telephones, and intranet, data projectors, and software programs such as internet browsers*." [Participant 2]

"*Email, ITS, internet, and intranet*." [Participant 3]

"*Laptop, internet, intranet, VCF, e-mail, and ITS*." [Participant 4]

"*ITS, Acrobat, MS Office, Internet, and Google Mail*" [Participant 5]

"*PCs, Printers, Scanners, and 3G*." [Participant 6]

"*Laptop*" [Participant 7]

"*ITS, email, internet and social media*" [Participant 8]

The findings reveal that E-mail, internet, intranet, laptops/ computers and ITS enabler are the topmost used ICT tools at UL's DRAD. The internet, intranet, e-mail, computers/ laptops, ITS, and internet browsers are the ICTs that are most frequently utilised in the UL's DRAD. The Integrated Tertiary Software (ITS), which is utilised by the majority of South African universities to support all key administrative tasks within their various institutions, is the ITS Enabler (UL, 2022). The internet connects people, individuals, and organisations globally and is the most dependable form of public communication (Mamabolo, 2021). Lesley (2015) notes that the utilisation of the World Wide Web on the internet provides common mechanisms through which knowledge sharing initiatives are made easier for customers, employees, and organisations as a whole. According to Makhubela and Ngoepe (2018), organisations use client requests to obtain information from a particular Web server via the internet. Research officials can exchange useful knowledge and information about certain research techniques in this way.

Many organisations, including research units, are able to provide their employees with computerised tools for accessing data, information, and knowledge through applications and the use of intranet technology. According to Mamabolo (2021), the intranet provides advanced technological opportunities for capturing organisational knowledge. Makhubela and Ngoepe concur that the internet and intranet continue to be important tools for KR.

The UL's DRAD research officials access the ITS interface via the internet and intranet to perform required daily research administration duties assigned by their

unit. Such duties will eventually turn into expertise over time, and that expertise will be shared among research officials as knowledge to be secured for future use. A computer or a laptop, is an electronic device that stores and processes data, typically in a binary form, according to the instructions contained in a variable program (Terplan, 2022). Thus, research units can use these devices to store their research knowledge on the cloud via the internet and intranet.

4.4.3.2 Do you find the ICT tools mentioned in question sufficient to enable you to do your work?

The researcher asked the participants to indicate Yes/ No, if the ICTs they mentioned were sufficient in enabling them to do their work. Those who answered "Yes" were asked to mention the ICTs they still needed. Four participants confirmed that they still needed a few more. They answered as follows:

"*Finance processes, communication, transferring and receiving of information (information flow*)." [Participant 2]

"*Automated finance tools, and Virtual Assistant (VAs)*" [Participant 4]

"*Chatbots*" [Participant 5]

"*Online submission system"* [Participant 8]

According to these findings, the following ICTs are required: finance processes, communication, information sending and receiving (information flow), automated finance tools, virtual assistants (VAs), chatbots, and online submission systems/processes. The findings corroborate DeLong's (2004) Information Retention Framework, which recommended that organisations that want to successfully maintain their employees' knowledge should provide them with access to ICTs. That is exactly what the UL's DRAD is doing.

4.4.3.3 In your view, what is the key role of ICT in your section?

- *ICT for job simplification*

Since the study identified the ICTs used at UL's DRAD, it was also important to ask the participants to share their opinions on how important the mentioned ICTs were to their section. The researcher sought to discover the role of ICTs in KR at UL's DRAD. The study noted that ICTs in the studied research unit are used for various

reasons. ICTs are used for job simplification and for knowledge and information sharing, as evidenced by the answers from the participants:

"To enhance each employee's ability to perform optimally." [Participant 1]

"ICT makes our work easier, opposed to the traditional way of doing things." [Participant 2]

"*To attend to the problems, we face when on duty using ICT tools*" [Participant 8]

"Ensure the smooth running and functioning of out ICT tools." [Participant 5]

"*ICT makes our work easier, opposed to the traditional way of doing things*" [Participant 7]

The findings show that the UL's DRAD uses ICTs to enhance employees' duties. This indicates that they use ICTs to enhance their daily tasks. ICTs are used by many organisations to make employees' daily tasks easier (Baguma, 2016). Phaladi (2021) found that using ICT tools like email, social media, videoconferencing, intranet, and internet to communicate and exchange duties with co-workers makes it easier to retain knowledge. Dikotla (2016) calls for the centralisation and electronic distribution of documents through intranets. This makes them accessible to everybody in the organisation at any time and supports the use of ICTs for job optimisation.

- *ICT for knowledge and information sharing.*

"*We use ICT tool to make daily duties easy to do as well as information exchange*." [Participant 3]

"*To make communication between us co-workers be an easy thing not forgetting information flow*". [Participant 4]

"*To provide systems that will make information to flow easy*." [Participant 6]

The results reveal how the UL's DRAD uses ICTs to share knowledge and information. The ICTs like intranet can also facilitate organisational interaction and knowledge sharing. This undoubtedly makes it simpler for them to regularly share their skills among themselves as co-workers. Rahoo (2021) found that one-way ICT use in the workplace helps employees to share knowledge to further the goals and objectives of their organisations. To innovate in an organisation, Rumanti, Samadhi,

Wiratmadja and Sunaryo (2018) noted that knowledge exchange was essential. ICT is an enabler that is necessary for the knowledge sharing process.

The findings show that the research officials at UL's DRAD use ICT for socialising. Socialisation describes the method by which these research officials share information using ICTs. Socialisation is the process through which knowledge is transferred from tacit to explicit (Nonaka & Takeuchi, 1995). According to Nonaka and Takeuchi (1995), socialising is the "process of exchanging experiences and consequently producing tacit knowledge like shared mental models and technical abilities". The results are in line with the KR Framework (DeLong, 2004), which states that ICTs can be used as tools for both sharing and retaining knowledge. According to Nonaka and Takeuchi's (1995), the theory of Organisational Knowledge Conversion entails a process known as socialisation.

4.4.3.4 How would you rate your ICT skills?

The participants were asked to rate their ICT skills from poor to excellent. This was done to confirm whether or not the participants were capable of using the ICT tools they had been supplied with. The use of ICTs for KR at UL's DRAD was evaluated based on the participants' proficiency with or inability to use ICTs. The results are shown in figure 4.7.

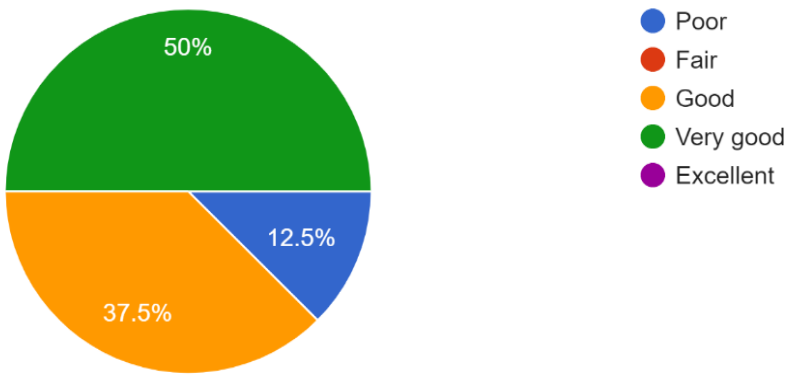

Figure 4.7: participants' *ICT skills ratings*

Figure 4.7 clearly shows that just 1 participant (12.5%) rated themselves as "bad," whereas 3 participants (37.5%) rated themselves as "good," and 4 participants (50%) described their ICT abilities as "very good." In general, the results show that the majority of research officials possess adequate ICT literacy. According to Mamabolo

(2021), organisations should make sure that their employees are able to use the ICT tools they provide them with in addition to giving those ICTs to the employees. Therefore, the findings regarding the use of ICT tools for knowledge transfer and retention are trustworthy.

4.4.4 THE IMPACT OF KNOWLEDGE LOSS AT THE UL RESEARCH UNIT

- *Depraved knowledge loss.*

According to Mamabolo (2021), KR involves an employee interacting with others and gaining a deeper understanding to learn and improvise to improve organisational performance. This is in addition to emphasising the transmission of tacit knowledge or explicit knowledge personified in the knowledge management system, as highlighted by Nonaka and Takeuchi's (1995) Organisational Knowledge Conversion Theory.

The impact of knowledge loss can be devastating to any organisation given that it may result in huge consequences. It was therefore important for the researcher to establish the situation on the impact of knowledge loss at the UL's DRAD. Knowledge loss is an unavoidable stage that any organisation might reach, as noted by the KR Framework (DeLong, 2004). As a result, it is critical to build up Knowledge Recovery Initiatives to deal with the consequences of knowledge loss and stop further occurrences. The respondents were asked to comment on the extent to which UL's DRAD loses knowledge. The verbatim quotes and identified themes were the following:

"*Staff retention is not adequate enough, especially on juniors and rehiring, but still loses knowledge with those left which we cannot recover, therefore the extend is bad."* Participant 1

"*Permanent staff does not go, and research assistants come and go from time to time*." [Participant 2]

"*The research output information remains with me when I leave the institution*" [Participant 3]

"*Staff retention is very poor; we fail to keep most for years*." [Participant 5]

"*In most cases, we lose research assistants and their knowledge*" [Participant 6].

"*Staff retention is not adequate enough, especially on juniors and rehire, but still loses knowledge with those left*." [Participant 7]

"*We are losing knowledge staff more than enough. Which I think they leave with most valuable information*" [Participant 8]

Knowledge loss is a tragedy that will affect any organisation, but how organisations respond will determine the impact (Makhubela & Ngoepe, 2018). The findings indicate that unrecovered expertise is one of the effects of knowledge loss at UL's DRAD. The difficulty to regain lost knowledge has been identified as one of the main difficulties associated with knowledge loss (Massingham, 2018). According to Makhubela and Ngoepe (2018), all of this may be avoided.

- *Disrupted workflow*

The participants were asked to comment on how knowledge loss affects UL research unit. The purpose of the question was to discover how the DRAD of UL deals with the loss of knowledge and how this loss affects research. According to earlier studies, employee turnover (caused by resignations, retirements, restructuring, and layoffs) is a significant factor in knowledge loss at organisations. Other factors include staff resistance to knowledge sharing and excessive workloads. Such issues may negatively affect an organisation's performance (Daghfous, Belkhodja & Angell, 2013). The comments below represent the findings from the participants:

"*Hiring a new employee frustrate workflow. Sometimes research-papers evaluation takes time because that new person would still be unaware of other things*." [Participant 1]

"*The unit is affected, since the work that each individual does become somehow intertwined*." [Participant 2]

"*It can potentially be disastrous*." [Participant 5]

"*Sometimes we are stuck on duties, because people are not sharing knowledge*." [Participant 7]

The point of the question was to determine the impact of knowledge loss at UL's DRAD. The findings indicate that knowledge loss at UL's DRAD negatively impacted the unit by interfering with the workflow. Levallet and Chan (2019) also found that

knowledge loss in the workplace slows down business operations. Additionally, this has an adverse effect on the organisation's operations and research units.

- *Re-investment*

"*The unit has to continually re-invest in new knowledge, only to lose that 'knowledge' after a short while. This is not only time consuming but also affects the quality of work*." [Participant 3]

"Losing a senior employee can cause problems because we might have relied more on them. When the new one comes, they can't do what that one did. That can really hurt the unit for a long time until they settle well, as a result this will force the unit to invest in new person." [Participant 4]

"*People leave the institution for various reasons, but the Office will still remain give a chance to other people to give their services and offer the support services to the researchers irrespective of whether I have resigned or promoted to another level*." [Participant 6]

"*The knowledge is really, but when we lose research assistant it becomes a problem, especially on investing in new ones*" [Participant 8]

The senior staff at UL's DRAD confirmed the foregoing results. The study further discovered re-investment as a result of knowledge loss. The situation of repeatedly investing in the same position and new ideas is another consequence of knowledge loss in this regard. Mariotti, Marzano and Piscitello (2022) also discovered that losing an organisation's competence in a particular project will drive the organisation to reinvest in new people and concepts, and operations. Additionally, the organisation's time and resources may be impacted.

4.4.5 KR BARRIERS AT UL RESEARCH UNIT

4.4.5.1 What are the key factors that make it difficult for UL's DRAD to capture, store and share staff's knowledge?

The participants were asked to indicate the factors which make it difficult for UL's DRAD to capture, store, and share knowledge of the stuff. The fifth objective of this study was to explore the KR barriers experienced by UL's DRAD in retaining knowledge of the research officials. Numerous research units across the world encounter challenges in retaining the knowledge of their employees and this affected

research processes (De Graaf, 2021). Organisations that want to stay competitive face difficulties due to knowledge erosion. These organisations must recognise the dangers that knowledge loss can cause and learn about the barriers to KR (DeLong, 2005; De Graaf, 2021). The researcher saw the necessity of asking the participants about the key factors that make it difficult for UL's DRAD to capture, store and share knowledge of staff. The lack of knowledge storage tools was discovered as the huge barrier to UL's DRAD to capture, store and share knowledge of staff. The verbatim quotes below show the results obtained from the participants.

- *Lack of Knowledge storage tools and Loss of staff*

"Lack of knowledge storage facilities (database)." [Participant 1]

"Lack of data storage system." [Participant 2]

"The situation is that we lack knowledge storage facilities." [Participant 3]

"*Lack of online systems (not email). Lack of contingency plans*." [Participant 5]

"*Lack of Exposure to other things*" [Participant 6]

"*The Research Office losses staff from time to time*." [Participant 7]

"*The turnover rate, if the knowledge of leaving is kept somewhere else, there wouldn't be many problems*." [Participant 8]

Several barriers were identified, which included turnover rate, and lack of knowledge storage facilities (database). It is evident that UL's DRAD is encountering difficulties in gathering, storing, and disseminating staff knowledge. The results also indicate that there is need for improvement with regard to appropriate KM and KR initiatives to address this type of hurdles. Anand et al. (2021) proffer that electronic database are required for storing internal and external communication, which is mostly in line with the repository choice made by an organisation to store knowledge. This facilitates retrieval for use at a later time. The use of knowledge management systems, storage tools, and technologies can be a path to efficient and effective knowledge management practices for HEIs (Khatun, George & Dar, 2021).

4.4.5.2 How do barriers mentioned above (in question 17) affect your work?

The participants were further asked to explain how the KR barriers they mentioned affected their daily duties.

- *Re-doing*

There will always be a chance that an organisation that does not use a documented business process to preserve its knowledge may lose access to important knowledge (APQC, 2011). Therefore, the purpose of this study was to find out how KR obstacles at UL's DRAD affect the employees' ability to do their duties. Knowledge loss would have different effects on different organisations (Anand et al., 2021). The participants said:

"*In most cases we re-do what has been done before."* [Participant 1]

"*All we do is starting all over every year*." [Participant 2]

"*It makes my own processes longer, which cause a backlog given to start again*". [Participant 3]

"*If there were knowledge storage tools, I'd be easy to refer to it if in need of clarity, because some people are reluctant to share, it's more like one needing assistance is nuisance, so I tend to do same thing for a long time to reach satisfaction*." [Participant 4]

"*My work is not affected*." [Participant 5]

"*I cannot rely on that person who left, for example if we used to share knowledge and now, they left on turnover, we ca no longer do that as usual.*" [Participant 6]

"*I remember there was a project that we did, the person who coordinated the project left, we had to start all over again*." [Participant 7]

"To work under pressure" [Participant 8]

According to the findings, the progression of duties of the research officials at UL's DRAD is affected by KR barriers. This issue forces the research officials to continue doing what has been done in the past because the knowledge of how it was done in the past has not been preserved for use in the future. This also affects the unit, given that some employees tend to work under pressure due to the KR barriers faced. This happens because certain research officials leave with their expertise, which may have not been retained. Since turnover is a sudden move, the remaining employees will have to re-do things that were being done by those who left the DRAD. Some scholars warned that any person that leaves a company leave with their own

particular expertise and experience. If knowledge leaves the organisation without being recorded, there will be a need to redo what the departed employee accomplished (Rezwan & Takahashi, 2021).

4.4.7 STRATEGIES TO IMPROVE KR AT UL RESEARCH UNIT

4.4.7.1 Suggest strategies which can be used to enhance KR in your section.

The participants were asked to propose the strategies that can be employed to enhance KR at UL's DRAD.

- *Proposed KR strategies*

The last objective of the study was to propose KR strategies which can be implemented at UL's DRAD to help in improving KR. The researcher used DeLong's Knowledge Framework to ask the participants to propose strategies that can be implemented to enhance KR process at the UL's DRAD. The participants' suggestions are presented as verbatim quotes below:

"*The Research Office is coming up with best practice of using online application systems called SARMS for all its activities e.g., application for ethical clearance, capturing of the research outputs, application of grants, etc. to ensure that the applicants could track the progress of their application status and quicker than the current system*." [Participant 1]

"*I suggest that regular meetings in the unit, storage facilities, employing research assistants as permanent positions and linking some ICT systems with the unit would improve the KR at their department*." [Participant 2]

"*Compensations are best ways of keeping the employees and their knowledge, staff KR for organisational knowledge, making permanent the research assistants post and social engagements like going out as co-workers can also work in retention of employees and their knowledge*." [Participant 3]

"*They should invest more on team building occasions*" [Participant 4]

"*Teamwork*." [Participant 5]

"*Research strategies must be improved*" [Participant 6]

"*I have no idea*" [Participant 7]

"*I recommend an application of administration grants, etc. to ensure that the applicants could track the progress of their application status and quicker than the current system*." [Participant 8]

The majority of the UL's DRAD officials made suggestions that helped to validate the findings of this segment. Every organisation, according to Chiu, Mirkovski, Shankar and Cranefiel (2021), should be able to identify KR strategies that fit their distinct organisational nature. A higher level of KR might result from the application of a KR approach. This approach should put people and technology first. For example, when introducing new technologies, the chosen technology should reflect the interests of the staff, like more socially focused technologies (De Graaf, 2021). Consequently, the study was able to identify the KR strategies that the DRAD at UL can use.

The participants said that it is necessary to make research assistant positions permanent because of the importance of their knowledge to the organisation. Similar to this, De Graaf (2021) found that HR practices and policies can be leveraged to keep individuals on board while retaining expertise. Furthermore, De Graaf (2021) believes that ICTs may play a big role in fostering KR. As a result, the study found that "linking ICT systems to personnel" could be beneficial for KR at UL's DRAD. Linking ICTs to employees basically implies providing users with user-friendly ICT tools. Electronic databases and staff compensation policies are other KR strategies needed for preserving internal knowledge and the staff as well (Anand et al., 2021), but they must largely be in accordance with the repository that an organisation chooses to store knowledge.

PART B: DATA ANALYSIS FROM HR MANAGERS

Data from the UL HR managers is represented in this section. Both qualitative and quantitative parts of the data are included and aligned with the interview guide.

4.5 DEMOGRAPHIC DETAILS OF THE RESPONDENTS

The study aimed to investigate KR at UL's DRAD by engaging with research officials. However, since staff retention necessitates the relationship between KR and HR processes and practices, HR managers were selected to participate in the study because they are responsible for all HR processes and policies at the institution, as opposed to the UL's DRAD, which is the subject of the KR examination. "HR processes and practices," as a component of DeLong's (2004) KR Framework, had

an impact on this. Therefore, it was essential to emphasise the respondents' profiles to demonstrate how these HR managers comprehended the HR policies and procedures of the University. Biographical data were helpful in depicting the demographics of the respondents under the following sub-topics: gender; age; highest education attained; job designation and number of years in service. Jurišević-Brčić and Mihelič (2015:855) advise that the "characteristics of employees themselves also contribute to the initiation and effectiveness of knowledge sharing. More specifically, employees of different ages, who belong to different generational cohorts vary in their desire to share knowledge with co-workers". Therefore, the well-known generational disparities and resulting disputes can compromise the sharing and retention of knowledge within teams and departments.

4.5.1 Gender (*N=3*)

4.5.1.1 Please indicate your gender.

The respondents were asked to indicate their gender. Out of the three (3) HR managers who were interviewed, 1 (33.3%) is male, whereas 2 (66.7%) are female. Figure 4.6 presents the findings:

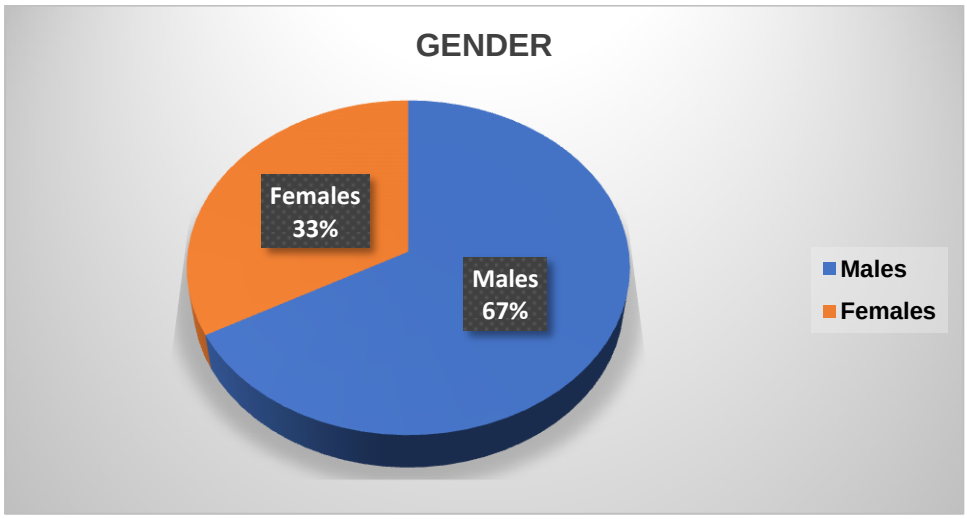

Figure 4.8: Gender of the respondents

The distribution of gender as depicted in figure 4.8 shows the percentage of the respondents based on gender. The findings proves that at UL, there are more males (67.7%) than females (33.3%) in the HR management positions. The gender distribution in the UL HR department is satisfactorily balanced; so, there is a good

chance that HRM facilitation processes will occur even though the results indicate that there were more female respondents than male respondents.

4.5.2 Age (*N=3*)

4.5.2.1 Please indicate your age.

The age groups of the respondents were also determined. The results show that there was no age group that predominated over the others, as seen in figure 4.2. One of the three HR managers was between the ages of 25 and 34, while the other two were each between the ages of 45 and 54 and over 55; 33.3 % were recorded for these age categories.

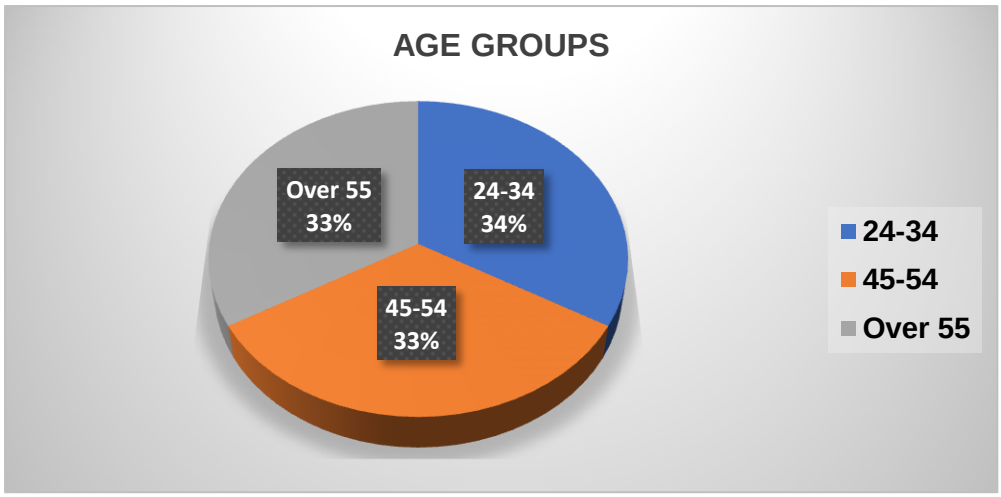

Figure 4.9: Age of the respondents

The findings show that no age group dominates the others. This implies that this department practices workplace and age equity. Vaportzis, Giatsi Clausen and Gow (2017) say that a well-balanced workplace is produced when older and younger personnel are combined. Older people may be reluctant to explore new technology while younger people are more receptive to them (Kropf, 2018:73). To advance in their occupations, both the young and the old simultaneously exchange their knowledge. As a result, this well-balanced aged group is more likely to share knowledge on HRM, especially on staff retention in the University and specifically at UL's DRAD.

4.5.3 Highest qualification obtained (*N=3*)

4.5.3.1 Highest qualification you have obtained.

The respondents were asked to determine their highest level of qualification and as depicted in figure 4.2, there was no one with Bachelor's degree, Master's degree and Ph.D. However, there was one respondent with a Diploma (33.3%) and two respondents (66.7%) with an Honours degree in HR.

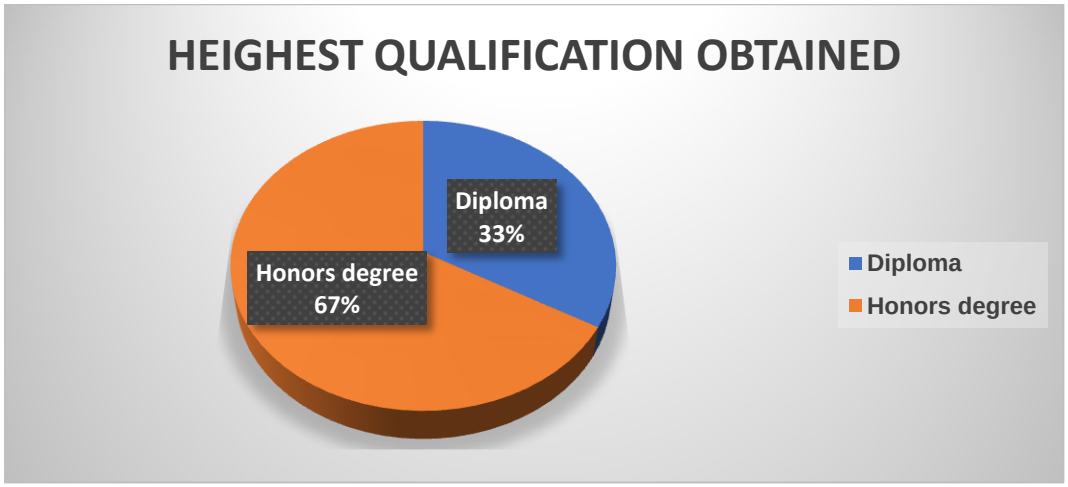

Figure 4.10: Highest qualification obtained

Findings in figure 4.2 show that the majority, 2 (66.7%), of HR mangers employed at UL have Honours degrees in HR as their highest qualification while the minority 1 (33.3%) hold Diplomas. The HR managers with Honours degrees in HR are likely to have more knowledge required for HRM activities and processes of the institution. Higher-educated HR managers are regarded as knowledgeable and enthusiastic about the HRM operations in their organisation (Dewah, 2012). The researcher affirms that the UL HR managers are qualified enough to affect employee and KR at UL's DRAD.

4.5.4 Job designation (*N=3*)

4.5.4.1 What is your job designation at UL?

The researcher asked the respondents to specify their job position. Out of 3 respondents who were interviewed, 1 (33.3%) was an Associate professor, 1 (33.3%) was the Chief Human Resource Officer, and 1 (33.3%) was the Deputy Director: Recruitment and Placement. Figure 4.9 illustrates the findings:

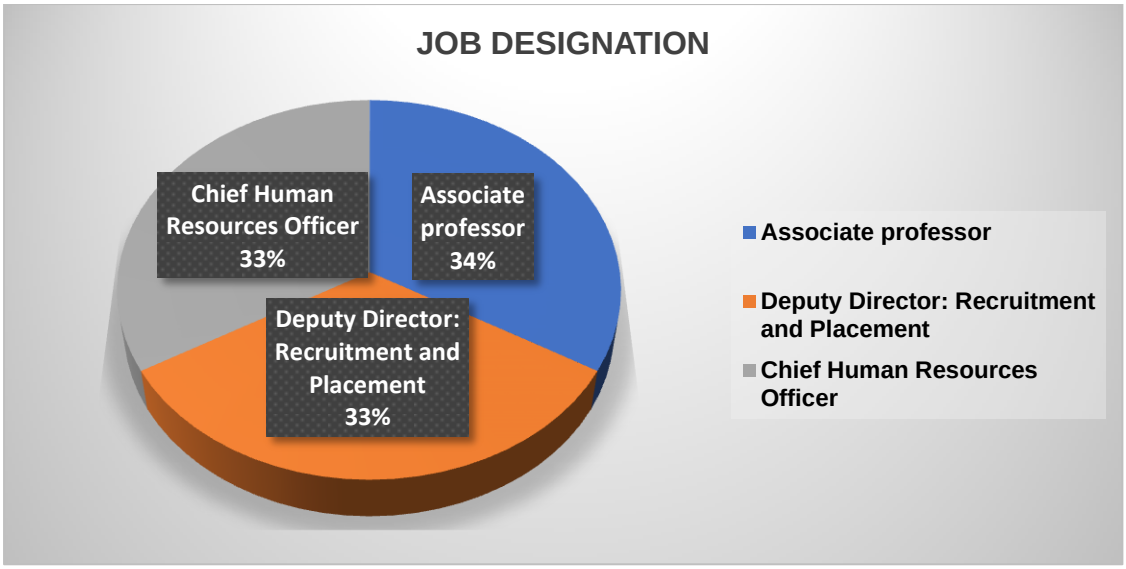

Figure 4.11: Job designation

This question examined the specific roles that HRM can play in shaping behaviours towards KM activities through staff retention. It is evident that HRM responsibilities are shared among the HR managers, since their roles are different (Associate Professor, Deputy Director for Recruitment and Placement and Chief HR officer). This suggests that organisational structure at UL has multiple layers of managerial HR positions. Phaladi (2021) asserts that multiple HR managers in the same organisation with various job descriptions are more capable of managing the HR process than one HR manager with various duties.

4.5.5 Years of experience (*N=3*)

4.5.5.1 For how many years have you been in this position?

The respondents were subsequently asked how long they had worked in the HR department, and the results are shown in figure 4.12. It is clear that 1 (33.3%) had served between 0 and 5 years, and 2 (66.7%) had served between 21 and 30 years. Most respondents had more years of experience in this position than the average.

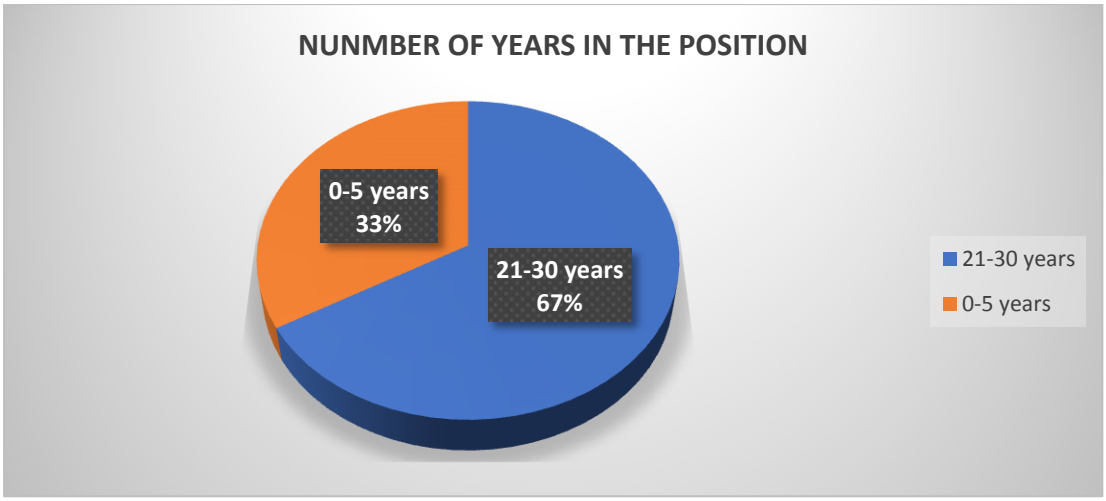

Figure 4.12: Number of years in the position

Since more knowledge may be gleaned from experience, it was crucial to establish how long the respondents had held their positions. People with the most years of experience in a given position are more likely to provide the person being interviewed with verified and correct information. This is because "they possess organisational properties or aggregate knowledge rather than individual attitudes and behaviours, respondents' greater experience is expected to serve as crucial information" (De Giovanni, 2009: 4). Employees who have worked for the same organisation for a long time are more likely to be familiar with the actions occurring in their territories. As a result, the researcher affirms that these HR managers with 21-30 years of experience in the same role are likely to influence KR through employee retention across the University and at the DRAD.

4.6. KNOWLEDGE LOSS AND STAFF RETENTION

4.6.1. On average, how many staff members resign annually at UL?

- *Staff loss*

The participants were asked to determine on average how many staff members resign annually at UL. The study sought to discover the extent to which the University loses staff annually, particularly at the DRAD of UL, since these HR mangers administrate HRM policies and processes of the whole University. The findings are represented in verbatim quotes below.

"Annually, we lose a lot of staff in the University, approximately around 20-50 employees leave this organisation for other ones." [Participant 1]

"*Close to 60* "[Participant 2]

"*Less than 10 %*" [Participant 3]

These departing employees come from every department of UL, including the DRAD. The institution loses more personnel each year than is reasonable. Sadly, this proves that UL's DRAD is also impacted by the vast figures that the HR department addressed. Baguma (2016) found that a high turnover rate, particularly one caused by resignation or termination, has a detrimental impact on the working conditions and morale of the remaining employees. This also supports that UL is losing, not only staff but knowledge mostly. In addition, "when employees retire or leave the organisation, the social network in terms of from whom they seek out for answers or collaborate with in executing their tasks is also lost" (Liebowitz, 2009:2).

4.6.2 Which department loses more staff than others?

The participants were asked to indicate which department loses more staff than others? This was a follow-up question from the one above. It was revealed that more staff leaving the University are from the academic support. These include lecturers, researchers, professors, and associate professors. Participant 2 said that the department that loses more staff is the Department of Communications, Media, and Information studies. Participant 3 stated that most staff who leave the institution are from academic support.

4.6.3 Does the HR department conduct any exit interview to find why employees decided to leave the organisation?

The participants were asked to indicate Yes/No, if the HR department conducted any exit interview to find why employees decided to leave the organisation. Figure 4.13 represents the findings:

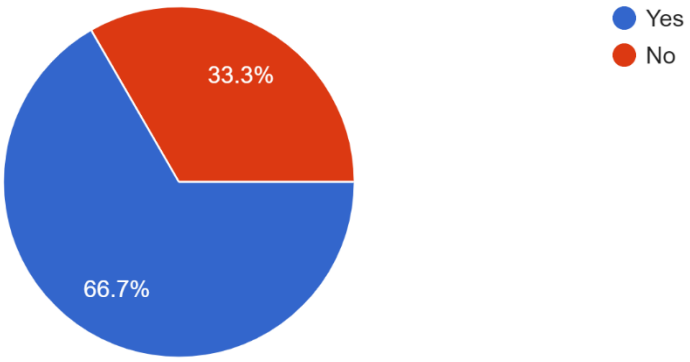

Figure 4.13: Exit interviews.

According to the findings, 2 (66.7%) participants answered "Yes" while only one (33.3%) answered "No". The findings confirm that the HR department of UL conduct exit interviews for the departing employees. According to Phaladi (2021), it is impossible to capture all of an individual's knowledge, but exit interviews are designed to minimise the loss of useful knowledge due to staff turnover and to ease the learning curve of new staff. This allows the UL and its various departments, such as the DRAD, to capture knowledge that would otherwise be lost. If done correctly, they can benefit both the organisation and the departing and incoming employees (Stephen, 2016).

4.6.4 Do you have a staff retention policy?

The participants were asked whether their department had a staff retention policy. The findings are as follows:

- *Lack of staff retention policy*

"*No, we do not*." [Participant 1]

"*No, we have no staff retention policy at UL*." [Participant 2]

"*Not applicable*." [Participant 3]

The findings indicate that UL has no staff retention policy. This signifies that this institution has no plan or a retention policy to retain personnel who are eager to depart. This problem is potentially hurting the DRAD of UL too. A similar study by De Graaf (2021) found that failing to implement staff retention strategies will regretfully

cause an institution to lose its important employees, putting them at the danger of losing the organisational expertise held by those departing employees.

4.6.5 Comment on the effectiveness of the UL staff retention policy?

The research asked the participants to comment on the effectiveness of the staff retention they have. Only two commented since they had confirmed that the UL HR department had a staff retention policy in place. The comments are as follows:

"*It is effective because the staff turnover in general, and let alone through resignation, is very low rate is very*" [Participant 2]

"*It is effective because we are able to retain expected number of employees in a given time*." [Participant 3]

According to the remarks of the participants, the staff retention policy at this institution is effective enough to keep employees. When employee retention is adequate, it contributes to the organisation's KR. Hence, the more staff is maintained, the more knowledge is retained (APQC, 2011).

4.7 HUMAN RESOURCE PROCESSES AND PRACTICES

4.7.1 Using a scale from poor to excellent, rate the HR processes and practices at UL. Please tick.

The participants were asked to use the scale (poor/ fair/ good/ excellent) to rate HR processes and practices at UL. The study sought to find out the situation regarding HR processes and practices at UL. Figure 4.14 shows that two participants rated staff training and development in relevant skills as Good (66.7%) and 1 participant rated it as Fair (33.3%). 2 (66.7%) rated Fairness and performance appraisal as Good and 1 (33.3%) rated it as Fair. 2 (66.7%) rated Succession Planning as Fair and 1 (33.3%) rated it as Good. 2 (66.6%). 2 (66.7%) rated Selective hiring as Good and 1 (33.3%) rated it as Fair. Compensation and benefits were rated as Fair, Good and Excellent (33.3%), respectively. 2 (66.7%) respondents rated Employee Relations as Good, and 1 (33.3%) rated it as Fair. 2 (66.7%) rated Making HR information easily accessible to those who need it as Good and 1 (33.3%) rated it as Poor. Lastly 2 (66.6%) rated HR planning as Good and 1 rated (33.3%) it as Fair. Regarding the HR processes and policies, they use, the UL is on the right track. This supports DeLong's (2004) paradigm for KR, which states that any organisation

seeking to preserve information through staff retention approaches must have HR procedures and policies that are in good functioning order (De Graaf, 2021).

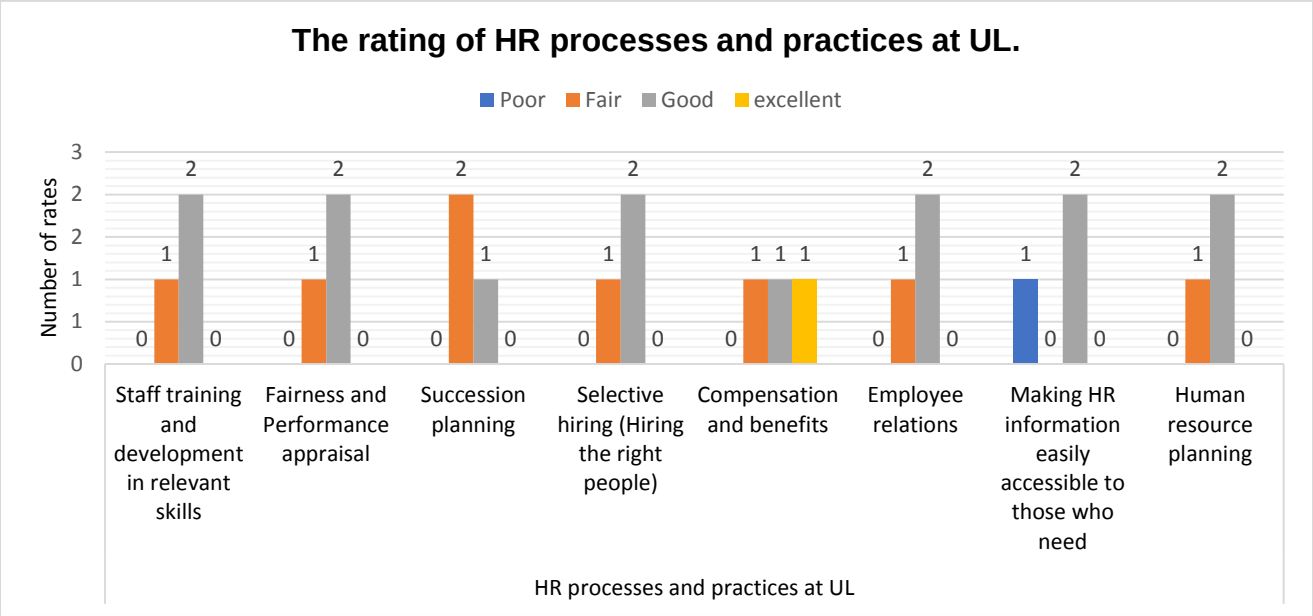

Figure 4.14: The rating of HR processes and practices at UL.

This section presents the findings on the UL HR management's use of HR processes and practices to support and complement hiring of staff and retention of staff. The researcher used this scale to determine which HR processes and practices were used by the UL HR department and their effectiveness. As depicted in figure 4.14, almost all of these HR practices and process were rated as fair and good. This implies that UL's HR practices and processes fairly support the retention of staff and its daily produced knowledge. HRM is a supporting component and resource-infrastructure provider to organisational KM and KR processes and activities and strategies (Dalkir, 2020; Khawaldeh, 2020).

4.7.2 Suggest strategies which can be used to prevent the loss of staff at UL?

- *Proposed HRM strategies.*

The participants were asked to suggest strategies which can be used to prevent the loss of staff at UL. The researcher sought to discover strategies which can be used to reduce staff loss at UL. This simultaneously helps in knowledge loss prevention.

"*UL Retention strategy & UL Reward strategy and I believes that these two strategies can help in prevention of staff loss. Good offers can make more of them change their minds if considering leaving*." [Participant 1]

"*I think More Performance Bonus strategy need to be fully exercised to best performers regardless of the position*." [Participant 2]

"*Performance appraisal system*" [Participant 3]

The results reveal that the study was successful in identifying staff retention strategies that UL can use. Fair compensation and performance appraisals are the key themes of the suggested strategies. These HR managers imply that UL employees will not leave in the same manner as they already do if they are fairly compensated. Additionally, they assume that rewarding employees for their work will make them feel more appreciated and stay. Rewards, work design, and organisational challenges are emerging as the three main factors that affect motivation (Phaladi, 2021). In general, awards are given with the goal of inspiring staff to exceed performance goals. Phaladi (2011) carried out a study in a public water utility of South Africa and found that the utility made use of a performance reward system and performance appraisals, which aim at rewarding individuals' performance. Phaladi (2021) and Shafagatova and Van Looy (2020) concur that employees are more inclined to stay in the same organisation if they are fairly compensated.

4.8 CHAPTER SUMMARY

The findings and interpretation of the data gathered from the UL HR managers and the DRAD officials were presented and discussed in this chapter. This was done to turn the unprocessed data into fresh ideas, revelations, and discoveries. The researcher utilised descriptive analysis and thematic analysis to analyse the data, despite the fact that the study produced both qualitative and quantitative data. A method for finding, analysing, organising, summarising, and reporting themes found in a data collection is called thematic analysis. To analyse and determine percentages and frequency of quantitative data, a descriptive analysis technique was used. Data from the UL DRAD were represented in Part A, and data from the UL HR managers were represented in Part B. A summary of the study's results, conclusions, and recommendations is provided in the next chapter.

5. CHAPTER FIVE: SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS.

5.1 INTRODUCTION

This chapter gives a summary of the study's findings, conclusions, and suggestions based on the interpretation and discussion of the findings provided in Chapter Four. In this chapter, the summary of findings and recommendations are presented separately in accordance with the research objectives. The conclusion provides an overall summary of the research aim, research objectives, literature review, and study findings to reduce repetition in the presentation of the findings. The chapter also displays the limitations of the study.

5.2 SUMMARY OF THE FINDINGS

The findings of this study are presented according to the objectives of the study, which were to:

a) Identify strategies used at the UL's DRAD to retain knowledge.
b) Establish the role of ICTs as tools and enablers of KR.
c) Assess the impact of knowledge loss at the UL's DRAD.
d) Determine the barriers of KR within the UL's DRAD.
e) Propose strategies that can improve KR at the UL's DRAD.

5.2.1 Strategies used at the UL's DRAD to retain knowledge.

The study sought to identify the strategies used by UL's DRAD to retain knowledge from its research officials. The study found that E-mail, Workshops, Seminars, Websites, Internet, and Intranets are the strategies employed by the UL's DRAD to retain knowledge. Phaladi (2021) discovered that these strategies are widely used by majority of public organisations including hospitals. Users show much trust in these strategies than the other ones.

5.2.2 Role of ICTs in KR

The study discovered that the role of ICTs in the UL's DRAD is for job simplification, facilitate communication, knowledge and information sharing, and information flow. The findings indicate how the UL's DRAD optimises employee tasks by using ICTs. This shows that they use ICTs to make their regular work easier. The results also

show how the UL's DRAD leverages ICTs to disseminate information and knowledge. What did the literature say about the role of ICTs in KR? What about the model that your study used? Give just 2 sentences.

5.2.3 Impact of knowledge loss at the UL's DRAD

Any organisation can experience knowledge loss, but how they respond will determine the impact. The study sought to understand how knowledge loss in the UL's DRAD affects the organisation as a whole. The findings indicate that unrecovered expertise is one of the effects of knowledge loss at UL's DRAD. Additionally, the study found that knowledge loss interferes with their workflow, given that duties that were performed by the departed employee will need to be shared among the ones remaining until a new employee comes and settles that position. The impact of knowledge loss also includes the situation of repeatedly investing in the same position and new ideas is another consequence of knowledge loss in this regard. Moreover, the repercussions of knowledge loss, the organisation's time and resources are impacted by the loss of knowledge. What did the literature say about the impact of knowledge loss? What about the model that your study used? Give just 2 sentences.

5.2.4 The barriers of KR within the UL's DRAD

The results indicate that UL's DRAD encounters barriers in storing and sharing employees' knowledge. The impediments are a lack of knowledge storage systems and databases to store knowledge of the employees. These impediments have been found to negatively affect the performance of the UL's DRAD officials' duties. Since the knowledge of how it was done in the past has not been retained for use in the future, this concern drives the research officials to stay working what has been done in the past (re-doing). What did the literature say about the barriers of KR? What about the model that your study used? Give just 2 sentences.

5.2.5 Proposed strategies that can improve KR at the UL's DRAD

The study's objective is to suggest strategies that can be used to enhance KR at UL's DRAD. The researcher asked the respondents to suggest strategies that may be used that may be used to improve KR at UL's DRAD. The suggestions included making research assistant positions permanent. Furthermore, the UL's DRAD should provide their employees with ICT tools that are user-friendly. The online research

administrative tools are also needed in this regard. The DRAD need to provide their employees with ICT tools that are user-friendly. Furthermore, the respondents proposed other KR strategies required for maintaining internal knowledge should be the use of electronic databases and automated systems to facilitate research grants and processes simultaneously. Additionally, HRM activities can be employed and HRM initiatives can be leveraged to keep employees at the DRAD of the UL. The "UL employee retention policy"/Staff retention policy, compensation activities are the suggested strategies of action for this. HR managers imply that UL employees will not leave in the same manner they already do, if they are fairly compensated with good offers. This includes research officials at the DRAD of UL. Same here

5.2.6 CONCLUSION ON EACH FINDING

a) Strategies used at the UL's DRAD to retain knowledge.

The strategies used by UL's DRAD to retain knowledge are E-mail, Workshops, Meetings, Seminars, Websites/intranets, Intranet. According to Stephen (2016), Mamabolo (2021) and Phaladi (2021), these strategies are the methods of allowing organisations to maintain their employees' expertise. Phaladi (2021) concludes that these techniques necessitate sophisticated technical solutions such as the use of an online organisational knowledge repository, where all significant knowledge and expertise are maintained for access to staff in the organisation.

b) The role of ICTs as tools and enablers of KR

The study sought to establish the role of ICTs as tools for enabling KR. The researcher concludes that the employees' computer and digital literacy skills had an influence on determining the role of ICTs within the DRAD. ICTs, such as intranets, can improve organisational engagement for duty simplification, information and knowledge exchange in the workplace. In a similar study by Mamabolo (2021), it was found that professional nurses at Philadelphia Hospital uses ICTs for information and knowledge exchange, and for communication with their patience. E-mail, internet, intranet, laptops/ computers, and ITS enabler were found to be the most used ICT tools in this regard. The identified ICTs at UL's DRAD were discovered to have a bigger role in enabling KR since they facilitate knowledge and information exchange and duty simplification.

c) Impact of knowledge loss at the UL's DRAD

Unrecovered expertise, knowledge loss that interferes with workflow, repeatedly investing in the same position and new ideas are among the barriers to KR at UL's DRAD. All of these barriers waste the organisation's time resources and result in knowledge loss in this research unit. According to the KR Framework (DeLong, 2004), this problem can be resolved by implementing knowledge recovery programmes. These impacts are severe since they temper with the organisation's KR process and the resources which may be too costly.

d) The barriers of KR within the UL's DRAD.

Results confirmed that the UL's DRAD face challenges in gathering, storing, and sharing employees' knowledge. The identified obstacles are a lack of ICT or IT infrastructure such as knowledge storage systems and databases. This can also be interpreted as a lack of management support, given that employees cannot do this on their own. Hence, they require management assistance to prevent or minimise these identified barriers. Bessick and Naicker (2013) highlight technical barriers, such as a lack of integration and compatibility of IT systems and processes, and organisation, such as a lack of leadership and managerial direction, in the literature review.

e) Proposed strategies that can improve KR at the UL's DRAD.

One of the study's objectives was to suggest strategies that can be used to enhance KR at UL's DRAD. The DRAD staff at UL and the HR department, which incorporates all of the institution's HR procedures and policies, support the conclusions. The respondents propose that the DRAD at UL make research assistant positions permanent. The unit needs to provide their employees with ICT tools that are user-friendly. Thirdly, one of the KR strategies required for maintaining internal knowledge should make use of electronic databases. IT has made it easier to share, capture, and integrate knowledge (Stephen, 2016).

Additionally, HRM activities must be employed. Also, the HRM initiatives can be leveraged to keep employees at the DRAD of the UL. The "UL employee retention policy"/ reward policy is the suggested strategies of action for this. Stephen (2016) emphasises the importance of reward systems in predicting knowledge sharing. The reward can take several forms, including recognition, promotion, flexibility,

independence, a note of thanks, and so on. In knowledge-intensive organisations, independence is encouraged.

5.3 RECOMMENDATIONS

Recommendations below are presented grounded on the major findings of the study.

5.3.1 Recommendation on strategies used at the UL's DRAD to retain knowledge

UL's DRAD rely on these strategies: E-mail, Workshops, Seminars, Websites, Internet, and intranet, but neglect strategies such as mentoring, apprenticeship, workflow, blogs, wikis, and storytelling. These KR strategies have been shown to be sufficiently successful in enabling KR within any organisation (Dewah, 2021; Stephen, 2016; Phaladi, 2021; Mamabolo, 2021). Therefore, the researcher recommends that the UL's DRAD employ these strategies to maintain the knowledge that their people have acquired.

5.3.2 Recommendations for the ICTs as tools and enablers of KR

The findings demonstrate that the UL's DRAD use ICTs to improve staff tasks, as well as to facilitate their everyday job by using ordinary ICT tools such as e-mail, internet, and Ethernet. These ICTs are used to share information and expertise. Since these ICTs which are being used at UL's are less sophisticated, the researcher advises that it should invest more in modern and automated, but user-friendly ICT technologies for capturing, storing, and disseminating organisational knowledge and build a retention culture.

5.3.3 Recommendations based on the impact of knowledge loss at the UL's DRAD

The study sought to determine how knowledge loss in the UL's DRAD affects the organisation as a whole. The findings indicated that unrecovered expertise is one of the effects of knowledge loss at UL's DRAD. Additionally, knowledge loss interferes with DRAD's workflow, given that duties that were done by the departed employees will need to be shared among the ones remaining until a new employee occupies that position. In this instance, the researcher suggests that the department establish knowledge recovery initiatives to ensure that any intuitional operations would not be negatively impacted by knowledge loss. Knowledge loss is an unavoidable stage that any organisation might reach, as noted by the KR Framework (DeLong, 2004). As a

result, it is critical to build up knowledge recovery initiatives to deal with the consequences of knowledge loss and stop further occurrences.

5.3.4 The recommendation regarding the barriers of KR within the UL's DRAD

The findings demonstrate that barriers encountered in KR at DRAD emanate from the lack of KR strategies like knowledge storage systems and databases, (organisational repository), apprenticeships, mentorships, storytelling, and a lack of contemporary, automated and user-friendly ICT tools. These barriers may have a deleterious impact on how well the UL's DRAD officials execute their tasks. It is advised that the UL's DRAD implement a retention culture (Stephen, 2016) to prevent these barriers from repeating themselves and from causing additional destructions, as revealed by the findings. The UL's DRAD need to be aware of KR barrier occurring in their unit as they are causing problems for them on KR activities like information and knowledge sharing among the research officials, and knowledge capture processes. According to Bessick and Naicker (2013), KM barriers inherently result in organisational knowledge loss, which poses issues for organisations seeking to remain competitive. Organisations must be aware of the threats of knowledge loss caused by barriers and be a step ahead by also implementing effective KR enablers (Bessik & Naicker, 2013). Lastly, the study recommends that the UL's DRAD should use ICT tools that are more sophisticated and technologies than just the Ethernet, internet ITS enabler, and E-mail. This will help the department to remove barriers of KR since we are in the years of sophisticated technology usage.

5.3.5 Proposed strategies that can improve KR at the UL's DRAD

The researcher asked the respondents to suggest strategies that may be used to improve KR at UL's DRAD. The suggestions included: Making research assistant positions permanent, provide their employees with ICT tools that are user-friendly, and reward policies (UL employee/ staff retention policy). The study's findings are taken into consideration when suggesting strategies. Furthermore, the researcher suggests that the unit implement a performance appraisal (PA) system, a reward system, and create a retention culture. One of the primary goals of PA is to assist employees in enhancing organisational performance. PA can improve communication between employees and managers while also ensuring that objectives are met (Stephen, 2016; Phaladi, 2021). Performance evaluation should

be followed by rewards. These authors agree that incentive systems can be effective predictors of knowledge sharing. The reward can take several forms, including recognition, promotion, autonomy, empowerment, a note of thanks, and so on. Furthermore, a favourable culture is likely to be one that is receptive to new ideas, knowledge development, and the free movement of ideas. Indeed, one of the basic beliefs of HR management is that organisational culture is the key to organisational effectiveness (Dewah, 2012; Stephen, 2016).

The researcher recommends that the proposed KR strategies should be adhered to, but further investigations are needed that are in line with the intuition's nature, mission, and visions. One of the study's objectives is to provide methods for improving KR at UL's DRAD. The study's findings are considered when formulating suggestions and suggested approaches for this.

5.4 RECOMMENDATIONS FOR THE FUTURE STUDY

This investigation broke new ground in looking into KR in the UL's DRAD and generally in higher education institutions. This study had its limitations and delimitations, as is common in all research, which necessitates additional study. Potential study areas include the following:

I. The study found that the majority of the research staff at UL's DRAD are affected by knowledge loss in the performance of their jobs, and as a result, it suggests that there should be an injury in this particular area.
II. The analysis revealed that ICT tools are used to provide services in research units. Given that we are currently living in the fifth industrial revolution, more research regarding automated services should be done to streamline the administration and advancement of research in research units as a whole.

5.5 LIMITATIONS AND CHALLENGES OF THE STUDY

Most organisations limited in-person business services as a result of the COVID-19 outbreak. Additionally, most UL departments, including DRAD, forbade in-person consultation. This is a significant study limitation. In addition, many respondents were likely to be less inclined to participate in the study due to their busy schedules, although setting up a flexible data collection period increased the likelihood of

response. The researcher dealt with the unresponsiveness of some respondents by communicating more frequently and persistently with those who were readily allotted to the researcher. Considering interpersonal interviews with respondents were not allowed due to COVID-19 restrictions in the institutions, interviews were conducted over the phone/ Zoom/ Google meet and /or through online questionnaires, contingent on the respondent's preference.

5.6 FINAL CONCLUSION

The most important and crucial factor for maintaining knowledge among research units of higher education institutions is KR (De Graaf, 2021). By involving researchers in research-based projects led by knowledgeable supervisors, faculty members, and industry partners, higher education institutions can produce high-quality research output (Stephen, 2016; Aithal, 2016). To preserve their organisational knowledge, academic institutions, especially research units, should archive it by adopting KR and related methodologies. The study discovered that KR is being used at UL's DRAD, but not to its full capacity. This is corroborated by the prevalence of knowledge loss due to a lack of infrastructure for storing knowledge, ineffective staff retention policies, and underutilised KR initiatives like mentoring and apprenticeship. Competent ICTs for KR are a global trend, according to the KR framework (Chiu et al., 2021); however, this unit has not used a new ICT tool to improve KR. All of the aforementioned factors lead to KR barriers, which negatively affect the UL's DRAD's ability to preserve knowledge. Additionally, these are detrimental to the employees' performance on the job. Based on this study's findings, the researcher concluded that various KR strategies as well as the advantages should be considered. To capture, maintain, manage, and disseminate their knowledge, new, effective ICT solutions that are easy to use, are essential.

6. LIST OF REFERENCES

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APPENDIX A: A REQUEST LETTER TO THE REGISTRAR FOR PERMISSION TO CONDUCT RESEARCH AT UNIVERSITY OF LIMPOPO TURFLOOP CAMPUS.

UNIVERSITY OF LIMPOPO

University of Limpopo

Faculty of Humanities

School of Languages and Communication Studies

Department of Media, Communications, and Information Studies

To: University of Limpopo

The Registrar

Private Bag X1106

Sovenga

0727 15 February 2022

REF: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT UNIVERSITY OF LIMPOPO TURFLOOP CAMPUS.

Dear Sir/ Madam

My name is Lesiba Johannes Ngwepe, I am registered (201701394) at the University of Limpopo, for Master of Information studies Programme in the Department of My research topic is to explore **"Knowledge retention at the University of Limpopo's Department of research Administration and Development".** I, therefore, request and seek your consent and gatekeeper permission to conduct the study at the University of Limpopo. I would like to collect data for the research project from the UL's DRAD staff members and university's HR managers.

This research project is conducted under the supervision of Professor Dr MA Dikotla in the Programme of Information Studies in the Faculty of Humanities, Department of Media, Communications, and Information Science, University of Limpopo, South Africa.

I am looking forward for a positive response so that I can commence with the data collection of my research work.

Yours sincerely,

Ngwepe LJ [201701394]

APPENDIX B: STUDENT COVER LETTER

UNIVERSITY OF LIMPOPO

Faculty of Humanities

School of Languages and Communication Studies

Private Bag X1112, Sovenga, 0727, South Africa

Email: sammyn0805@gmail.com / 201701394@keyaka.ul.ac.za

Dear Participant

I am, doing Master's research in Information Studies at the University of Limpopo. The title of the study: "*Knowledge retention at the University of Limpopo's Department of Research Administration and Development in the Limpopo Province of South Africa.*" under the supervision of Dr Dikotla MA.

The aim is to gather information about your views on the subject. Please be assured of the following:

- Your identity will be kept confidential and anonymous throughout the study
- Your participation is voluntary. You can withdraw and discontinue participation without penalty.
- You may also refuse to answer any questions you don't want to answer and still remain in the study.
- I may also withdraw you from this research if circumstances arise that warrant doing so.

If you volunteer to participate in this study, I expect you to do the following things:

- Sign the consent form that is attached
- Participate in the interview

Thank you for your co-operation.

Yours Sincerely

……..

Ngwepe LJ

Appendix C: INFORMED CONSENT

INFORMED CONSENT

I hereby agree to participate in research regarding Knowledge retention at the University of Limpopo's Department of research Administration and Development. I understand that I am participating freely and without being forced in a way to do so. I also understand that I can stop this interview at any point should I not want to continue, and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to necessarily to benefit me personally.

I have received the contact details of the researcher should I need to speak about any issues which may arise in this interview.

I understand that this is consent from will not be linked to the questionnaire and that my answers will remain confidential.

I understand that, if possible, feedback will be given to my municipality on the results of the completed research.

…… ……

Signature of participant Date

APPENDIX C: INTERVIEW GUIDE FOR THE UL'S DRAD OFFICIALS.

Please click the following link in order to access this appendix online (interview guide).

https://docs.google.com/forms/d/e/1FAIpQLSdtHo6oQIaG5cXp1yz_DlebUGR_TgiNXP0HxbSQEssLnR-Jxg/viewform?usp=sf_link

Interview guide for UL's DRAD officials.

Demographic information

Please tick your answers in the boxes provided.

1. Gender: Male [ ] Female [ ]

2. Age: 30-40 [ ] 41 -50 [ ] 51-60 [ ] 61- [ ]

3. Highest Academic Qualification

Matric [ ] Diploma [ ] Bachelor's degree [ ] Honours [ ] Masters [ ] PhD [ ]

4. Your job designation at UL ……

5. How many years do you have in this position?

0-5 [ ] 06 -11 [ ] 12-21 [ ] 22- 30 [ ] 31+ [ ]

Information about UL's DRAD.

6. Does your Unit have the following? *Please tick*	**Yes**	**No**
1. Aim and objectives guiding the unit		
2. Policy guiding research		
3. Programmes to encourage staff to research and publish		
4. Programmes to encourage students to research and publish		

7. What is your perception about the UL's research output and quality thereof at UL?

……

……

SECTION A: Knowledge retention strategies used at UL's DRAD to retain knowledge.

Knowledge retention is capturing and preserving knowledge in the institution for reuse in the future.

8. Which strategies do you use to retain knowledge of staff members in your unit or university as a whole?

……
……

9. How does the unit (DRAD) capture the knowledge of employees who resign or retire from work?

……
……

SECTION B: Role of Information and Communication Technologies in knowledge retention

10. Which ICTs tools do you use in your section?
……
……

11. Do you find the ICT tools mentioned in question 10 sufficient to enable you to do your
work?.....

12. If no, which ICT tools do you still need?

……

13. In your view, what is the key role of ICT in your section?

……

……

14. How will you rate your ICT skills?

……

SECTION C: The impact of knowledge loss at the UL's DRAD.

15. To what extent do you think UL research centre is losing knowledge (through promotion, resignation, retirement and or, death, unwillingness to share knowledge)

……

……

16. Comment on how knowledge loss (through promotion, resignation, retirement and or, death, unwillingness to share knowledge) affect UL's research unit (the DRAD)

……

……

SECTION D: Knowledge retention barriers at UL's DRAD.

18. What are the key factors that make it difficult for the DRAD at UL to capture, store and share knowledge of staff?

……

……

19. To what extent do these barriers affect your work?

……

SECTION E: Strategies to improve KR at UL's DRAD.

20. Suggest strategies which can be used to enhance knowledge retention in your section

……

THANK YOU SO MUCH!!, YOUR TIME & EFFORT ARE APPRECIATED……!!

APPENDIX D: INTERVIEW GUIDE FOR THE UL HR MANAGERS.

Please click the following link in order to access this appendix online (interview guide). https://docs.google.com/forms/d/e/1FAIpQLScbJo-XozwC6qV2phmpkNhunV0jBhjvzijgPwVuxGYPlWqL7Q/viewform?usp=sf_link

Demographic information

Please tick your answers in the space provided.

1. Sex: Male [ ] Female [ ]

2. Age: 30-40 [ ] 41 -50 [ ] 51-60 [ ] 60- [ ]

3. Highest Academic Qualification

Matric [ ] Diploma [ ] Bachelor's degree [ ] Honours [ ] Masters [ ] PhD [ ]

4. Your job designation at UL
……

5. For how many years have you worked for the university?

0-5 [ ] 06 -11 [ ] 11-21 [ ] 22- 30 [ ] 30+ [ ]

KNOWLEDGE LOSS AND STAFF RETENTION

6. On average how many staff members resign annually at UL?
……

Which department lose more staff than others?

……

7. Does the HR department conduct any exit interview to find why employees decided to leave the organisation? Yes [ ] No [ ]

8. If yes what is the main reason why employees leave the employ of the university?

……...

9. Do you have HR policy on staff retention? Yes [ ] No [ ]

10. If yes, how often do you retain staff who want to leave the employ of the university

……

Human resource processes and practices

11. From poor to excellent, rate HR resource processes and practices at UL. Please tick

HR resources, processes, and practices	Poor	Fair	Good	Excellent
Innovative recruiting and Selective hiring				
Employee feedback channel & actionable insights				
Staff training and development				
Performance appraisal				
Benefits that attract talent				
Succession planning				

12. Suggest strategies which can be used to prevent the loss of staff at UL

……..

THANK YOU SO MUCH!!, YOUR TIME & EFFORT ARE APPRECIATED……!!

APPENDIX E: ETHICS CLEARENCE CERTIFICATE

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: 26 July 2022

PROJECT NUMBER: TREC/09/2022: PG-Amended

PROJECT:

Title:	Knowledge retention at the University of Limpopo's Department of research administration and Development in the Limpopo Province of South Africa.
Researcher:	LJ Ngwepe
Supervisor:	Prof MA Dikotla
Co-Supervisor/s:	Ms MJ Ntsala
School:	Language and Communication Studies
Degree:	Masters in Information Studies

PROF D MAPOSA
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

i) **This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.**

ii) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.**

iii) **PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.**

Finding solutions for Africa

APPENDIX F: GATEKEEPER PERMISSION TO CONDUCT RESEARCH

University of Limpopo
Office of the Registrar
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 2407, Fax: (015) 268 3048, Email: Kwena.Masha@ul.ac.za/Retha.Balie@ul.ac.za

01 August 2022

LJ Ngwepe

Email: 201701394@keyaka.ul.ac.za

Dear LJ Ngwepe,

GATEKEEPER PERMISSION TO CONDUCT RESEARCH

TITLE: **KNOWLEDGE RETENTION AT THE UNIVERSITY OF LIMPOPO'S DEPARTMENT OF RESEARCH ADMINISTRATION AND DEVELOPMENT IN THE LIMPOPO PROVINCE OF SOUTH AFRICA**

RESEARCHER:	**LJ Ngwepe**
SUPERVISOR:	**Prof. MA Dikotla**
CO-SUPERVISOR/S:	**Ms MJ Ntsala**
SCHOOL:	**Language and Communication Studies**
DEGREE:	**Master in Information Studies**

Kindly be informed that Gatekeeper permission is granted to you to conduct research at the University of Limpopo entitled: **"Knowledge retention at the University of Limpopo's Department of Research Administration and Development in the Limpopo Province of South Africa".**

Kind regards,

PROF. JK MASHA
UNIVERSITY REGISTRAR

Cc. Prof. RJ Singh: Deputy Vice-Chancellor; Research, Innovation and Partnerships
Prof. RN Madadzhe: Deputy Vice-Chancellor: Teaching and Learning
Dr. T Mabila, Director: Research Development and Administration
Prof. D Maposa – Chairperson: Research and Ethics Committee
Ms M Hutamo – Assistant: Ethics Secretarist
Ms A Ngobe – TREC Secretariat

Finding solutions for Africa

APPENDIX G: LANGUAGE EDITOR LETTER

UNIVERSITY OF LIMPOPO

Faculty: Humanities
School: Languages and Communication Studies
Department: Languages

Private Bag X1106
Sovenga
0727
Tel: +27 15 268 3564
Cell: 073 597 4602
E-Mail: moffat.sebola@ul.ac.za

29 November 2022

TO WHOM IT MAY CONCERN

This letter serves to certify that I have edited a research dissertation titled: **Knowledge retention at the University of Limpopo's Department of Research Administration and Development in the Limpopo Province of South Africa** by **Lesiba Johannes Ngwepe**. I am an Associate Member of the Professional Editors' Guild in South Africa.

I trust you will find the editing quality in order.

Best regards

Sebola, M

DR. MOFFAT SEBOLA

APPENDIX H: PLAGIARISM REPORT

Turnitin Originality Report

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Jan R. Maluleka, Mpho Ngoepe. "Turning mirrors into windows: Knowledge transfer among indigenous healers in Limpopo province of South Africa", SA Journal of Information Management, 2018

1. CHAPTER ONE: OREINTATION OF THE STUDY 1.1 INTRODUCTION Among research units of higher learning institutions across the globe, knowledge retention (KR) has evolved into the most essential and a critical component for sustaining knowledge (Ngulube, 2005). A research office is a properly formed unit within a university and is responsible for the advancement of scholarly work, primarily through research collaborations, research training, research dissemination, or creation of knowledge (Sabharwal & Hu, 2013). Research offices execute activities that extend far beyond the purview of particular fields, including interdisciplinary collaboration. In most research units, there is often a director or coordinator in charge of