Knowledge Management Practices in the UAE Higher Education Sector

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Abstract

Knowledge Management (KM), a systematic approach to managing organizational knowledge is critical for the HE sector as HEIs are regarded as 'knowledge-intensive' organisations. Despite its significance, the research on KM in the HE sector is relatively at its nascent stage. This formed the motivation for this thesis which aimed to first develop an empirical assessment KM framework for HE sector through review of both generic and HE-specific literature and then apply the framework in the UAE HE sector to examine the current state of KM practices, factors (enablers) influencing the adoption of those practices and the performance outcomes realised through the implementation of KM practices. The study employed a sequential explanatory mixed method design comprising of a country-wide survey (N=428) and semi-structured interviews (N=20) of academic and administrative staff employed in the UAE HE sector. The study results revealed that all four enablers (culture, leadership, organization structure and strategy, and Information Technology) had a positive and significant impact but to varying extents. Information Technology emerged as the enabler exerting the highest influence on KM practice adoption. All nine KM practices proposed in the study were found to be relevant though their extent of implementation differed with Knowledge Acquisition showing the highest level of implementation while the practice of Knowledge Application was found to be the least implemented practice. KM implementation was found to have a positive and significant impact on the HEI's operational and innovation performance. The results also found that KM implementation varies across public and private HEIs. The proposed

validated framework and the findings contribute to the KM literature pertinent to the HE sector and future researchers could adapt the framework in their respective settings. The study also offers recommendations for practitioners and policymakers to facilitate KM adoption at an institutional and sectorial level.

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Author's declaration: This thesis results entirely from my own work and has not been submitted in substantially the same form for the award of a higher degree elsewhere.

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Signature .....Shalini....

Chapter One: Introduction

1.1 Background of the Study

Knowledge is the most important factor enabling intelligent behavior at individual, organizational, and societal levels (Wiig, 1995). It encompasses the sum total of one's experiences, know-how, insights, and understanding (Dalkir, 2013). Although knowledge is personalized and originates with individuals, it becomes embodied in groups such as teams, departments, and organizations (Kidwell et al., 2000). Knowledge is considered the most vital resource of an organization (Wiig, 1993, p. 8). It can be stated that "Knowledge is the foundation of all functions and aspects of the enterprise. Without its knowledge, an enterprise could not continue to operate and exist" (Wiig, 1995). From an organizational perspective, knowledge is viewed as a driver of change and a strategic asset that can be utilized to gain a competitive advantage (Omerzel et al., 2011; Sunalai, 2015).

The recognition of knowledge's relevance to organizational and economic success has led to the belief that knowledge needs to be systematically managed to realize its maximum value (Spender and Scherer, 2007). This necessity, coupled with advances in information technology, paved the way for the emergence and development of knowledge management (KM) as a field that has garnered significant interest among academics, practitioners, and policymakers. Knowledge Management (KM) is defined as a systematic approach to "ensure the full utilization of the organization's knowledge base, coupled with the potential of individual skills, competencies, thoughts, innovations, and ideas to create a more efficient and effective organization" (Dalkir, 2013, p.2). It includes a systematic set of practices to identify, create, enhance, manage, share, and capitalize on knowledge (Steyn, 2004; Leung et al., 2012). These practices have established KM as a core management function (Williams, 2006).

The tangible and intangible benefits of managing organizational knowledge include, but are not limited to, improved decision-making, an empowered workforce, accelerated innovation, increased productivity, and competitive advantage (Becerra-Fernandez and Sabherwal, 2014). KM is also regarded as a catalyst for organizational transformation, business improvement, and a driver of organizational change (Gore and Gore, 1999; Massingham and Al Holaibi, 2017). While KM is relevant across sectors, it is particularly significant in the Higher Education (HE) sector because knowledge is considered a strategic asset of Higher Education Institutions (HEIs). The central functions of HEIs are the acquisition, generation, or production of knowledge through research, and its dissemination through teaching (Peters, 2007). The success and sustainability of knowledge-intensive organizations (Alvesson, 2011) such as HEIs rely heavily on their ability to manage knowledge effectively and efficiently.

Scholars like Steyn (2004) argue that there is a strategic need for enabling KM practices in HEIs to increase efficiency and foster innovation. Furthermore, KM enables HEIs to become aware of their knowledge, both individually and collectively, and to optimize its use to improve performance (Bennet and Bennet, 2004). Effective KM systems in HEIs can enhance overall efficiency and improve the quality of learning, teaching, and innovation functions by facilitating better access to and sharing of knowledge (Quarchioni et al., 2020; Ngoc-Tan and Gregar, 2018; Masa'deh et al., 2017; Cranfield and Taylor, 2008). KM has been shown to foster efficient curriculum development, improve program quality, and enhance administrative processes in HEIs (Kaba and Ramaiah, 2017; Rehman and Iqbal, 2020). The demonstrated linkage between KM and innovation, quality, and operational efficiency provides compelling reasons for HEIs to implement KM practices, especially in a competitive HE landscape. In summary, KM could play a significant role in the overall success of HEIs.

1.2 Statement of the Problem

Despite the significance of Knowledge Management (KM) in the education sector, particularly in higher education, research on KM has been limited. Most studies have focused on other industries and discipline areas such as computer science, business and management (Gaviria-Marin et al., 2019). Although there has been some research on KM in the higher education sector, understanding of the KM practices (which is the central tenet of KM) adopted in Higher Education Institutions (HEIs) has been limited to practices such as knowledge sharing (Fullwood and Rowley, 2017; Chedid et al., 2022), knowledge creation (Siadat et al., 2012; Thani and Mirkamali, 2018), and knowledge protection (Alghail et al., 2023). A comprehensive understanding of the full cycle of KM practices in HEIs, from knowledge acquisition to knowledge application and protection, appears to be missing. These KM practices are critical for the structured coordination needed to manage knowledge effectively (Lee and Choi, 2003).

The efficient and effective implementation of KM practices depends on factors that facilitate or enable such practices (referred to as KM enablers). These enablers are the organizational mechanisms that enhance or trigger KM practices (Iqbal et al., 2019). Efforts to understand the relationship between KM enablers and KM practices appear limited in the HE context. For example, Iqbal (2021) investigated the effect of enabling factors such as culture and rewards on the KM practice of knowledge sharing and found a positive association between the two. Similarly, Adeinat and Abdulfatah (2019) assessed the impact of university culture (an enabler) on KM practices of knowledge creation, dissemination, and application, and found a significant positive relationship. However, such studies focused on the relationship between one or a few KM enablers and one or a few KM practices. These gaps could well be the reason for the lack of consistency and proactiveness in the adoption of KM practices in the HE sector (Fullwood et al., 2013). Therefore, there is a need to first identify the critical enablers of KM and then examine their impact on different KM practices in HEIs.

Finally, any concerted effort to implement KM practices is justified only if it leads to positive performance outcomes. In the HEI context, performance outcomes of KM refer to improvements such as faster curriculum revision, the ability to introduce new programs, enhanced teaching and learning, and improved administrative services, all contributing to the success of HEIs (Ramachandran et al., 2009; Iqbal et al., 2019). Extant literature suggests that there has not been much investigation into the performance benefits of implementing KM practices in HEIs, particularly in countries with nascent HE sectors (Sahibzada et al.,2023).

Overall, the KM literature in the HEI context appears limited and scattered across KM enablers, practices, and performance outcomes. Understanding the dynamic interplay between KM enablers, practices, and performance outcomes is critical for the efficient and effective adoption of KM in the HE sector. Another important consideration for KM research in HEIs is acknowledging that they are complex entities with unique characteristics and value systems (Cronin, 2001). For instance, the nature and relevance of KM in a research-oriented university could differ from those in a teaching-oriented university. Similarly, KM's nature and relevance in a public university may differ from those of a private university. Masa'deh et al. (2017) contended that KM implementation in HEIs varies based on size, capital structure, and the educational market in which they operate. It is therefore important to consider these aspects when researching the topic.

Another concern in the KM literature in the HE sector is that research has mostly been limited to countries with mature HE sectors such as the UK (Kazemian and Grant, 2022; Fullwood and Rowley, 2017; Howell and Annansingh, 2013; Cranfield and Taylor, 2008) and India (Bhusry et al., 2011; Agarwal and Marouf, 2014). There has been very limited inquiry into KM in HE sectors still in the nascent stage (Sahibzada et al.,2023), such as those in the Gulf Cooperation Council (GCC) countries, including the United Arab Emirates, with a few exceptions (e.g., Alshahrani, 2018; Adeinat and Abdulfatah, 2019). There is a need to examine KM adoption in these HE sectors, especially given that these

countries are making concerted efforts to transition to knowledge-based economies from oil-based economies.

While KM research on the HE sector would be relevant for any Gulf country, among the GCC countries, the UAE has been at the forefront of efforts to transition from a resource-based to a knowledge-based economy (Siddique, 2012). This has also stimulated the rapid growth of the HE sector in the UAE, with the establishment of various types of HEIs, including local HEIs, government HEIs, and branch campuses of foreign HEIs. These features of the UAE HE sector offer a different proposition compared to other HE sectors where HEIs have been around for hundreds of years. In fact, there have been no studies covering the KM practices, enablers, and outcomes in the UAE HE sector. The aforementioned gaps in the literature formed the motivation for this study, which aims to examine the adoption of KM in the HE context, with the UAE as the case country for investigation.

1.3 United Arab Emirates (UAE) Higher Education Sector

The Higher Education (HE) sector in the UAE is relatively young and diverse, consisting of federal/public not-for-profit universities, local home-grown for-profit private universities, and branch campuses of international universities supported by their parent institutions (Wilkins, 2020). The development of the UAE's HE sector began after the nation's formation in 1971. The first university, the United Arab Emirates University (UAEU), was established in 1977, followed by the Higher Colleges of Technology in 1988 (Mahani and Molki, 2011). To transition from a resource-based to a knowledge-based economy, the UAE government has continued to invest in higher education, recognizing its role in developing human capital, fostering innovation, and driving economic diversification (Ashour, 2020).

The HE sector expanded significantly from the 1990s onwards with the establishment of local private universities, government-owned universities (by individual Emirates and

Federal government), and branch campuses of international universities (Wilkins, 2020). A key development was the establishment of the Commission for Academic Accreditation (CAA) under the Ministry of Education (formerly the Ministry of Higher Education and Scientific Research) in 2000, tasked with licensing HE institutions in the country (Commission for Academic Accreditation, 2022). Additionally, regulatory bodies such as the Knowledge and Human Development Authority (KHDA) in Dubai and the Abu Dhabi Department of Education and Knowledge (ADEK) in Abu Dhabi were established to oversee the entire education sector at the Emirate level.

Currently, there are 67 universities licensed by the CAA and 41 branch campuses that operate under Emirate-level licenses rather than Ministry of Education licensure (Commission for Academic Accreditation, 2022). Over two-thirds of the private institutions were established post-2005 (Wilkins, 2020), leading to a rapid increase in the number of HE institutions. As the marketplace became crowded, many institutions faced low enrollment issues and were forced to lower their prices to remain financially viable (Badry, 2019). This situation was worsened by the fact that most of these institutions are for-profit with limited or no government funding. Several international branch campuses, including those of George Mason University, Michigan State University, and the University of Pune, closed in the last decade due to their inability to establish a competitive advantage (Mahani and Molki, 2011). Despite some closures, new local and foreign institutions continue to set up operations in the UAE. The sector remains highly competitive, making it imperative for HEIs to continuously innovate and achieve operational efficiency to sustain themselves.

1.4 Relevance of KM to UAE and its HE Sector

As the diverse UAE HE sector continues to develop with the emergence of new players, competition intensifies necessitating HEIs to continuously improve their performance to survive. As mentioned, some branch campuses of reputed foreign universities and some locally established institutions have failed to sustain operations, leading to revoked

licenses by the accrediting body in the UAE (CAA, 2024). This highlights the need for HEIs to be effective, quality-oriented, and efficient for long-term sustainability. The knowledge-based view of an organization supports the idea that long-term sustainability relies on creating, managing, and effectively applying inimitable knowledge resources (Grant, 1996). Therefore, KM is crucial for HEIs to improve their reputation, innovation, quality, processes, efficiency, and effectiveness to remain relevant in the competitive UAE HE landscape (Adeinat and Abdulfatah, 2019).

The relevance of KM to the UAE HE sector is also linked to the country's ambition to transition from an oil-based economy to a knowledge-based economy (KBE), as documented in the UAE Vision 2021 (UAE Vision 2021, 2010). Temple (2012) defines a knowledge economy as one where the most significant activities are knowledge-based rather than being reliant on physical resources. In a KBE, managing knowledge increases its inherent value (Olssen and Peters, 2005). The foundation of a KBE is the creation, sharing, and use of knowledge, leading to knowledge-based products and services and the creation of wealth (Harris, 2001). The growth of a KBE depends on knowledge-driven innovation and the creation and diffusion of new knowledge and technology (Marginson, 2010; Khalique, 2011).

HE is regarded as one of the pillars of knowledge-based economy in that it helps to equip people with the knowledge and skills which enable them to contribute and participate fully in the socio-cultural context of KBEs (Salem, 2014). HEIs generate new knowledge through research and innovation and provide intellectual capital by developing skilled graduates who contribute to the workforce and overall productivity (Robertson, 2014; Ilnytskyy, 2015). Both developed and emerging economies have expanded their HE sectors or accelerated HE reforms to meet the needs of a knowledge economy (Brown et al., 2008; Ilnytskyy, 2015). In a KBE, the HE sector is expected to collaborate with government and industry to enhance knowledge generation, science and technology transfer, and innovation, contributing to economic development.

The transition to a knowledge economy necessitates re-conceptualizing higher education in terms of knowledge creation, acquisition, sharing, and storage (Olssen and Peters, 2005). Literature also provides evidence for the dependence of knowledge economy on KM for managing knowledge (Hadad, 2017). HEIs must be capable of tapping into existing knowledge, contextualizing it to meet societal and industrial needs, and generating new knowledge. Effective KM is shown to enhance research productivity of HEIs, which fuels innovation (Rehman and Iqbal, 2020; Quarchioni et al., 2020). Thus, HEIs using KM can significantly contribute to the competitiveness of a KBE through fueling innovation, useful research outcomes and socio-economic development.

The UAE workforce's reliance on expatriates further emphasizes the need for KM. Over 80% of the UAE population consists of expatriates, with nationals comprising about 50% of the public sector and less than 2% of the private sector workforce (Ryan and Daly, 2019). The HE sector faces similar issues, with a significant proportion of faculty members being non-nationals who are employed on short-term contracts (Karabchuk et al., 2022). This transient nature of the workforce leads to "knowledge drain" (Bhusry et al., 2011) as much of the organizational knowledge is tacit. HEIs need to institutionalize their knowledge to prevent loss of knowledge when employees leave. Thus, adopting KM is a strategic imperative for HEIs in the UAE to manage their knowledge assets and remain competitive.

In summary, KM is vital for the UAE's HE sector to enhance organizational effectiveness, support the transition to a knowledge-based economy, and manage the challenges posed by a transient workforce.

1.5 Research Aims and Objectives

The study aims to examine the "what," "where," and "how" of KM practices adoption and application, as well as its associated enablers and performance outcomes in the HE sector. Given the limited and scattered nature of KM literature pertaining to the HE sector,

there is no established KM framework for this sector, particularly in the UAE, that comprehensively covers all the key facets of KM (enablers, practices, and outcomes). The specific objectives of this study are therefore as follows:

1. Develop an empirical assessment KM framework comprising of enablers, practices and performance outcomes for the HE sector.

2. Apply the framework in the UAE higher education to assess the current state of KM.

3. Provide guidance and future research recommendations for scholars to advance KM research in HE context.

4. Provide practitioner and policy recommendations for enhancing KM for the UAE higher education sector and in general.

1.6 Research Questions

In realizing the above objectives, the study will answer the following research questions.

1. What are the key knowledge management practices relevant for the higher education sector? How and to what extent are they adopted in the UAE higher education sector?

2. What are the key enablers driving the knowledge management practices in the higher education sector? How and to what extent do they influence the KM practices adoption in the UAE higher education sector?

3. What are the key performance outcomes (benefits) of implementing knowledge management practices in the higher education sector? How and to what extent are they realized through the adoption of KM practices in the UAE higher education sector?

4. How and to what extent, findings related to RQ1, RQ2, and RQ3 differ across public and private Universities in the UAE?

This study makes significant contributions to understanding knowledge management (KM) in the higher education (HE) sector. It introduces a practical assessment framework and tests its applicability through a multi-method approach, using the UAE HE sector as a research context. While the research setting is the UAE's HE sector, the issues explored are common across HE sectors globally, making the findings widely relevant.

The HE sector is inherently knowledge-driven, with its success heavily dependent on effectively managing knowledge (Sahibzada et al., 2023). Globally, higher education institutions (HEIs) are undergoing rapid transformation due to internationalization, growing competition, technological advancements, student mobility, and evolving demands from society and employers (Elezi,2021; Veer-Ramjeawon and Rowley, 2020). The HE sector requires its knowledge to be managed systematically in order to be responsive to these evolving needs, be innovative and remain sustainable. As a way of responding to these challenges, HEIs are actively pursuing the development of new programs, newer forms of program delivery and exploring various revenue generation options. Collaborations such as joint programs and international branch campuses have become critical strategies for HEIs to maintain their competitiveness (Elezi, 2021). For these partnerships to succeed, effective KM practices are essential. This study offers a collection of KM practices tailored to help HEIs manage their knowledge resources more effectively.

Despite the acknowledged importance of KM in the HE sector, limited research has explored the factors that enable KM implementation or its impact on institutional performance, particularly in emerging HE markets. The study identifies key enablers of KM, namely leadership, organizational culture, structure and strategy, and information technology which are relevant to HEIs globally. The HE sector also has to contend with growing financial pressures, reduced funding, increased competition, and the heightened

emphasis on university rankings (Elezi, 2021). These challenges underscore the need for HEIs to focus on performance outcomes, a core component of the proposed framework. Overall, this study provides valuable insights for university leaders, practitioners, and policymakers, offering tools to assess the state of KM in HEIs and strategies for improvement. Its findings are expected to benefit HE sectors in the UAE and beyond, contributing to their efforts to navigate challenges and enhance institutional performance.

Technological innovations such as Artificial Intelligence and Big Data has resulted in an abundance of knowledge as organizations can easily acquire large volumes of data. Organizations including HEIs need to manage this knowledge in an integrated manner and optimise its use as a strategic resource for this knowledge to contribute to organizational competitiveness (Chakraborty et al., 2024). KM has a significant role to play in ensuring the effective use and management of knowledge (Di Vaio et al., 2021).

The abundance of knowledge due to technological advancement may lead to knowledge overload of knowledge and possible misuse and misinterpretation of knowledge necessitating the need for an integrative approach towards management of knowledge (Durst and Zieba, 2019). In response to the recent pandemic, organisations have been forced to increase their pace of digitalization to adopt remote work and other flexible working arrangements. Although the threat of the pandemic has receded, organizations continue to pursue flexible working arrangements which also requires better management of organizational knowledge. The framework proposed by this study is adaptable and, as it examines the multifaceted interplay of enablers, practices, and performance, the outcomes of this study are expected to advance KM literature and provide a strong conceptual base for future studies in other organizational sectors to build on.

1.7 Thesis Structure

This thesis comprises of seven chapters and includes the following:

Chapter one (Introduction) –This chapter introduces the background of the study including a brief introduction of the key concepts relevant to the study such as knowledge, KM and knowledge economy. The chapter states the research problem that is studied in this thesis, the motivation for the study along with a brief description of the research setting. The chapter also clearly sets out the research aims, objectives and research questions.

Chapter Two (Literature Review) –This chapter provides a generic overview of knowledge and its typologies within the context of knowledge management. The next part of the chapter analyses the state of KM literature pertinent to the HE sector. The chapter discusses the theories relevant to the thesis and the KM frameworks (generic and HE-specific) in use which culminates with proposing a framework for the thesis. The chapter describes the components of the proposed framework and the relationship between the components of the framework. The chapter ends with a discussion of the characteristics of the private and public universities in the UAE.

Chapter Three (Methodology) – This chapter begins with a discussion of the philosophical stance of this thesis and the overall research process used in this study. The chapter provides justification for the decision to adopt a multi-methods study and the Sequential explanatory research design. The chapter then discusses the quantitative and qualitative phases of the study in detail including development of the data collection instruments, the processes undertaken to establish the validity and reliability of the instruments and the data collected. The chapter also discussed the data analysis tools and techniques used to analyse the quantitative (Survey) and qualitative (semi-structured interview) data.

Chapter Four (Findings and Discussion (1)) – This chapter presents the findings from both the quantitative (survey) and qualitative (semi-structured interview) phases of the study in order to answer research question 1. The results from both phases are discussed in the context of relevant literature to understand the extent of adoption of KM practices in the UAE HE sector.

Chapter Five (Findings and Discussion (2)) – This chapter presents the findings and discussion related to RQ2 and RQ3. This chapter integrates the outcomes of the qualitative and quantitative studies undertaken and draws on pertinent literature in order to examine the perceived extent of influence of the four enablers namely Knowledge-friendly culture, Knowledge-oriented leadership, knowledge-oriented organizational structure and KM-supportive IT infrastructure on the implementation of KM practices in the UAE HE sector. The latter part of this chapter uses the results of quantitative and qualitative studies in order to discuss the perceived performance benefits of implementing KM practices in the UAE HE sector.

Chapter Six (Findings and Discussion (3)) – This chapter presents the findings and discussion related to RQ4 using the results from the quantitative survey and the qualitative semi-structured interviews. The chapter examines the similarities and differences across private and public universities in the UAE in the extent of implementation of KM practices, influence of enablers on KM implementation and the perceived benefits of implementing KM practices.

Chapter Seven (Conclusion) – The concluding chapter of the thesis begins with a summary of the research objectives and research outcomes. The chapter describes the contributions of the study while also recognizing the limitations of the undertaken study and the potential topics for further research. This chapter briefly dwells into the potential KM implementation challenges relevant to HEIs. The chapter ends with a brief personal reflection of the researcher.

Chapter 2: Literature Review

The aim of this chapter is to develop a conceptual foundation for Knowledge Management (KM) in Higher Education (HE), followed by the development of a KM assessment framework. To achieve this, the study first conducted a review of seminal studies in KM, followed by a focused review of studies specific to the HE sector. This approach provides an understanding of the current state of KM literature as it pertains to HE. The chapter begins with a critical analysis of existing literature, starting with the definition of knowledge and its various types. It then proceeds to define and conceptualize KM. Additionally, this chapter examines the critical gaps in KM literature related to the HE sector in detail. The chapter concludes by presenting a comprehensive framework that captures the relationships between KM enablers, practices, and performance outcomes.

2.1 What is Knowledge?

As Knowledge Management (KM) relies on the concept of knowledge, it is crucial to understand knowledge from the perspective of KM literature, focusing on its definitions and importance specifically for KM purposes. Davenport and Prusak (1998, p. 5) define knowledge as "…a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms." This definition highlights essential features of knowledge, such as its dynamic nature, its connection to individual experience and thought, and its various forms of existence.

An organization cannot create knowledge without individuals, and organizations provide the facilitating conditions for knowledge creation (Nonaka, 1994).

Drawing on Nonaka (1994) and Nonaka et al. (2000), the key characteristics of knowledge are:

- Knowledge is a complex multi-faceted concept
- Knowledge is dynamic and is created through social interactions among individuals and organizations
- Knowledge is context-specific and depends on situation, time and space

2.2 Types of Knowledge

There is a lack of consensus in KM literature on a definitive working definition of knowledge applicable to KM (Rechberg, 2018; Edwards and Lönnqvist, 2023). Since knowledge is the central component of KM (Edgar and Albright, 2022), the following section examines the typologies of knowledge before discussing the concept of KM. Although there is some overlap among the knowledge typologies relevant to KM discussed in this section, these typologies provide a conceptual base for understanding the characteristics of knowledge relevant to KM. Exploring knowledge typologies helps to develop a better understanding of how knowledge can be categorized and utilized within organizations. This understanding is crucial for developing effective KM practices that enhance knowledge creation, sharing, and application in higher education institutions.

2.2.1 Individual (Personal) knowledge and Organizational knowledge

The classification of knowledge based on ownership was proposed by Bibi et al. (2021). This approach categorizes knowledge based on where it resides within an organization. Individual knowledge is personal, residing with the individual, and it moves with them (Bibi et al., 2021). Tsoukas and Vladimirou (2001) define individual/personal knowledge as "the individual ability to draw distinctions within a collective domain of action, based on an appreciation of context or theory, or both."

On the other hand, organizational knowledge is a collective form, embedded in an organization's routines, policies, procedures, artifacts, norms, and practices (Alavi et al.,

2024). It can be viewed as an extension of personal knowledge, as it is generated by individuals within an organizational context and subsequently becomes part of the organization's knowledge base (Al-Husseini et al., 2021). Organizational knowledge encompasses both social and structural knowledge. Social knowledge emerges from individual interactions and is informally held within organizational groups. In contrast, structural knowledge is explicit, organized, and manifested in organizational processes (Bibi et al., 2021). Effective KM strategies must bridge individual and organizational knowledge, facilitating the transformation of personal knowledge into an organizational asset. From an HEI perspective, this knowledge typology implies that attracting and retaining talented staff is critical. Additionally, building or managing an organizational knowledge base requires both systems and methods for fostering social interactions.

2.2.2 Tacit and Explicit knowledge

One of the most common knowledge typologies used in the context of KM is the duality of tacit and explicit knowledge. Tacit knowledge is subjective, derived from experience and is based on education, feelings, intuitions, beliefs, values, and know-how (Natek and Lesjak, 2021). It possesses characteristics such as being personalized, non-verbalized, non-codified, abstract, implicit, and context-specific (Alves and Pinheiro, 2022; Thomas and Gupta, 2022). Due to its complexity, tacit knowledge is challenging to articulate, making it difficult to imitate, share, or access easily (Natek and Lesjak, 2021; Thomas and Gupta, 2022). Within organizations, tacit knowledge is typically context-dependent or firm-specific and can be deemed an "intangible asset" (Evans et al., 2015; McIver et al., 2013). Examples of tacit knowledge in an organizational setting include employee experiences, skills, competencies, beliefs, and ideas (Kucharska and Erickson, 2023). However, a challenge arises because when employees, who are carriers of this knowledge, leave the organization, the knowledge can be lost. The loss of tacit knowledge due to employee turnover is significant, especially in the context of this study, as UAE HEIs are generally regarded as having high turnover rates (Ababneh, 2016). Therefore,

it becomes crucial for organizations such as HEIs to capture and retain tacit knowledge for future utility, where possible.

In contrast, explicit knowledge exists in formal, tangible and articulated forms such as policies and procedures (Alavi et al., 2024). Simply put, explicit knowledge is accessible in formats that can be viewed or utilized by anyone who has been granted access making it easier to disseminate (Kucharska and Erickson, 2023). This study aligns with the perspective of Fullwood et al. (2013), which posits that tacit and explicit knowledge are intertwined. Rather than being distinct entities, one often serves as the foundation for generating the other. From a KM standpoint, HEIs must address the challenges of capturing tacit knowledge and effectively integrating it with explicit knowledge to enhance the organizational knowledge base.

2.2.3 Subjective and Objective knowledge

An alternate view of knowledge was proposed by Becerra-Fernandez and Sabherwal (2014), who used the dichotomy of 'subjective' and 'objective' stances to explain the concept of knowledge. While the subjective stance views knowledge as dynamic, not confined to a location, and influenced by social practices and human experiences, the objective view describes knowledge as something that can be structured and located as an object that may be improved by humans. Both stances are common in their perspective of knowledge as a set of beliefs.

The subjective view of knowledge considers knowledge from two perspectives: 'knowledge as a state of mind' and 'knowledge as a practice.' The former perspective views knowledge as being held and influenced by individuals, while the latter views knowledge as being held by a group rather than an individual and reflected in organizational practices and activities influenced by collective beliefs and experiences (Al-Husseini et al., 2021). The perspective of knowledge as a state of mind views

organizational knowledge as residing in the minds of individuals and differing based on personal experiences, social and cultural contexts and beliefs (Pellegrini et al., 2020).

The objective view of knowledge comprises three perspectives: knowledge as objects, which views knowledge as a set of beliefs that can be stored and manipulated; knowledge as access to information; and knowledge as capability, which views knowledge as a strategic capability that can be utilized to gain a competitive advantage (Gold et al., 2001). The majority of KM research has focused on the objective view of knowledge, in which knowledge is conceptualized as an object, and only limited researchers have used the subjective stance, viewing knowledge as a practice (Rechberg, 2018). KM practices should recognize the importance of both subjective and objective views of knowledge in creating, sharing, and utilizing knowledge to achieve competitive advantage and organizational effectiveness.

2.2.4 A knowledge Typology for HEIs - Corporate, Social and Encoded Knowledge

This section aims to synthesize the various knowledge typologies discussed above using the knowledge classification for HEIs proposed by Saad and Haron (2013). Saad and Haron (2013) classified knowledge specific to HEIs into three categories: corporate knowledge, social knowledge, and encoded knowledge. This classification effectively captures the multifaceted nature of knowledge within HEIs, reflecting how different knowledge typologies contribute to HEIs.

Corporate knowledge constitutes knowledge that pertains to the core functions and management of the HEIs. It is further categorized into disciplinary knowledge and operational knowledge. Disciplinary knowledge is related to and generated through the core functions of HEIs, such as teaching, research, and consultancy. It originates from individual expertise and academic disciplines but becomes part of the organization's structural and operational framework, aligning closely with the typology of individual and organizational knowledge. This knowledge typology also aligns with the objective view of

knowledge, as it can be structured, documented, and improved upon. Disciplinary knowledge is critical for the academic reputation and intellectual capital of HEIs, enhancing the institution's research output, teaching quality, and consultancy services, thereby contributing directly to its core mission and competitive advantage. Operational knowledge relates to institutional policies, procedures, and practices that guide the functioning of the HEI. Drawing on the typologies discussed above, this categorization of knowledge is related to the structural view of knowledge (Bibi et al., 2021) and the objective view of knowledge (Becerra-Fernandez and Sabherwal, 2014). Operational knowledge is critical for the efficient and effective management of HEIs, supporting their administrative and educational functions. It is vital for compliance, governance, and the smooth operation of daily activities, directly impacting the institution's sustainability and operational excellence.

The second category of knowledge is social knowledge, which includes shared beliefs, norms, values, and ethics that help organizational members achieve a shared understanding of the organization (Saad and Haron, 2013). Social knowledge embodies the tacit and subjective aspects of knowledge, highlighting its dynamic and constructed nature through social processes and interaction.

The third type of knowledge is encoded knowledge, which is shared in written or electronic form and may include knowledge categorized as corporate or social knowledge (Saad and Haron, 2013). Encoded knowledge includes documented information such as research publications, course materials, administrative records, and digital databases. This form of knowledge aligns with the objective view, treating knowledge as objects that can be stored, manipulated, and accessed. Encoded knowledge provides a tangible repository of the institution's intellectual and operational assets, facilitating knowledge sharing and preservation.

Overall, these typologies are instrumental in the development of effective KM practices. Effective KM programs in HEIs must accommodate the nuances of these typologies,

recognizing the value of personal experiences, the necessity of capturing tacit knowledge, the importance of managing knowledge both as a static resource and a fluid construct, and the importance of subjective and objective knowledge for organizations. Moreover, these typologies highlight that one type of knowledge contributes to or can be transformed into another. For instance, individual knowledge feeds into organizational knowledge; tacit knowledge can be transformed into explicit knowledge; subjective experiences contribute to objective knowledge structures. In sum, by acknowledging the dynamic, interdependent, and contextually influenced characteristics of knowledge, organizations can develop KM practices that are more effective in managing knowledge.

2.3 What is Knowledge Management

Knowledge Management (KM) is multidisciplinary in nature and draws from several disciplines, including organizational science, cognitive science, information science, strategic management, library science, sociology, and education (Dalkir, 2013; Nakash and Bouhnik, 2024). KM encompasses a compendium of practices, tools, and techniques for identifying, creating, sharing, storing, utilizing, leveraging, and improving the knowledge assets critical to an organization's survival and success (McIver et al., 2013). Thus, KM involves managing knowledge that is vital to achieving organizational goals (Nakash and Bouhnik, 2024).

KM focuses not only on managing explicit knowledge but also on leveraging the tacit knowledge that resides in the minds of employees (Hasballah, 2021). The term KM began to be used in the early 1980s, with interest among practitioners and academic researchers growing in the mid-1990s (Hislop et al., 2018). Factors such as globalization, the development of knowledge-based economies (KBEs), and advances in communication and information technologies have enabled the development of KM (Liu et al., 2021). Wiig (1993), in his seminal work on KM, stresses that to reap benefits, KM requires the coordination of activities, resources (both technological and human), and organizational assets.

Dalkir (2013) summarizes the objectives of KM as follows:

- Enable business continuity when employees leave the organization and new incumbents take their position;

- Develop a set of practices and use tools that can be used by the organization for identifying and retaining knowledge that are critical for organization's success and minimize the loss of intellectual capital.

2.3.1 Definitions of knowledge Management

KM Knowledge Management (KM) has several definitions, with Dalkir (2013) identifying over 100 published definitions. The multidisciplinary nature of KM and its evolution over time have resulted in various perspectives on what KM entails. Additionally, the implementation of KM practices varies widely across organizations, contributing to the diversity in definitions.

KM has evolved through several generations (Dalkir, 2013):

- First-generation KM focused on capturing and inventorying all organizational knowledge.
- Second-generation KM emphasized the importance of people and their interactions.
- Third-generation KM centers on content and context management.

A selection of definitions of KM is given in Table 2.1.

Table 2.1: Knowledge Management Definitions

Definition Source	Definition
Wiig (1995)	KM is a conceptual framework that encompasses all activities and perspectives required to gaining an overview of, creating, dealing with, and benefiting from the corporation's knowledge assets and their particular role in support of the corporation's business and operations.
Alavi and Leidner (2001)	KM is a dynamic and continuous set of processes involving individuals, groups and physical structures in an organization.
Abokhodiar (2013)	A continuous dynamic process that includes a range of activities and practices designed to determine, create, and develop knowledge, while distributing it and making it accessible. This will result in improving organizational performance, as well as the capacity of the organization to adapt with the rapid changes in the surrounding environment
Dalkir (2013)	KM is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This coordination is achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning.

The review of KM definitions indicates how the concept has evolved over the last two decades. Newer definitions of KM (e.g., Abokhodiar, 2013; Dalkir, 2013) incorporate more functions than earlier definitions, specifying KM's role in improving organizational performance, driving change, and fostering continuous learning. In other words, post-2001 definitions recognize knowledge as a strategic asset essential for organizational success. These evolving definitions lead to the conclusion that KM involves the deliberate, systematic, and effective management of knowledge within an organization.

Over the years, KM has shifted from a narrow focus on managerial control of knowledge to a more integrated and strategic approach. This approach encompasses the dynamic interplay of people, technology, and organizational processes aimed at fostering innovation and enhancing efficiency. Recent definitions and studies emphasize that a deliberate and systematic approach to KM is crucial for improving organizational performance and maintaining a competitive advantage (Hasballah, 2021).

2.3.2 Significance of KM for HEIs

The generation and dissemination of knowledge are central functions of Higher Education Institutions (HEIs), often referred to as "knowledge factories" (Masa'deh et al., 2017). HEIs create, disseminate, and preserve knowledge. As knowledge-intensive organizations, HEIs rely heavily on their employees, who are the primary holders of knowledge, even though some knowledge is institutionalized in explicit, documented forms. HEIs exhibit all the characteristics of "pure" knowledge-intensive organizations as proposed by Alvesson (2011). These characteristics are heavy reliance on creativity of practitioner and organizational environment, a highly educated workforce, high dependence on minds of employees, networks, and customer relationships for organizational success and high dependence on employee loyalty and problems arising due to employee turnover.

From the perspective of the HE sector, Knowledge Management (KM) is viewed as a set of practices that help HEIs better manage their most strategic asset - knowledge. Kanwal et al. (2019) argue that higher education has traditionally held a reductionist view of KM, often relegating it to the domain of librarians, as HEI libraries house vast repositories of knowledge. This narrow view fails to grasp the importance of managing the tacit expertise of staff and addressing the strategic and operational concerns of HEIs.

Research in the field, the growth of KM as a management discipline, and its implementation in some HEIs have prompted decision-makers in the HE sector to

recognize KM's importance in contributing to organizational performance and success. KM enables HEIs to better manage knowledge within the organization and derive valuable insights from academic and administrative staff, as well as from organizations with similar areas of expertise (Ramachandran et al., 2009). In a KBE, HEIs face pressure to transform and contribute to the innovation and new knowledge generation needed for economic growth (Veer-Ramjeawon and Rowley, 2020). Moreover, the competitive and market-driven nature of the HE sector necessitates HEIs to become more entrepreneurial and adopt managerial practices that enhance efficiency, effectiveness, and innovation.

Implementing KM in the HE sector enhances educational and research quality, streamlines costs, bolsters academic and administrative services, and expedites decision-making and curriculum development (Ravikumar et al., 2022; Sahibzada et al.,2023). Such implementation not only boosts an HEI's economic growth by improving efficiency and innovation (Iqbal, 2021) but also facilitates the sharing and institutionalization of tacit knowledge. The recent shift to online learning during the pandemic underscores KM's importance, as it aids in effective change management (Iqbal et al., 2019). Additionally, KM in HEIs enhances external knowledge dissemination, promoting socio-economic growth (Quarchioni et al., 2020; Sahibzada et al.,2023).

2.4 Underpinning Theories on KM

The two underpinning theories of KM used in this thesis are Knowledge-based View (KBV) and Practice-based View (PBV) which provides a useful lens for examining KM.

2.4.1 Knowledge Based View (KBV)

The KBV adopts the perspective that views knowledge as a commodity (Nwankpa et al, 2022). The fundamental assumption in the knowledge-based view of the firm is that knowledge is the primary source of value and competitive advantage (Grant, 1996; Nwankpa et al, 2022). According to KBV, a firm's knowledge must be inimitable, and the

firm should create, apply, and transfer knowledge for superior performance (Iqbal et al., 2019; Singh et al., 2021). Firm-specific knowledge is the source of strategic competitive advantage because it is difficult to replicate and adds unique value to the organization. A firm's know-how, or knowledge embedded in its culture, policies, procedures, employee knowledge, and practices, determines how products/services are produced.

As knowledge is complex and difficult to imitate, KBV postulates that integrating various types of knowledge within a firm increases organizational capability, produces sustainable competitive advantage, and is a valuable economic asset (Alavi and Leidner, 2001; Evans et al., 2015). Long-term success is achieved not just from the knowledge-base but from the way it is applied, how new knowledge is created to stay competitive, and how it is protected from competitors. The KBV stresses the need for managing organizational knowledge assets through the implementation of KM practices such as knowledge generation, storage and application (Alavi et al., 2024). HEIs, as producers of knowledge and knowledge-intensive organizations, can strategically manage their knowledge assets by adopting a KBV approach (Sahibzada et al., 2023). This fosters an environment where knowledge drives competitive advantage and institutional success, contributing meaningfully to societal progress. For instance, it enables HEIs to develop mechanisms to identify, document, and protect unique knowledge assets.

2.4.2 Practice Based View (PBV)

Another important theory for explaining KM is the practice-based view, which refers to an activity or set of activities that several organizations may execute (Bromiley and Rau, 2014). The principal notion of PBV is that it emphasizes activities that firms can emulate and are transferable across organizations (Malacina et al., 2022). Bromiley and Rau (2014) argue that even though firms adopt similar practices, there will be differences in implementation, leading to variations in firm performance. For example, Bloom and Reenen's (2007) study of firms in the US and Europe provides empirical support for PBV,

showing that management practices are strongly associated with firm performance and that differences in implementing similar practices lead to differing levels of performance.

PBV deals with activities that influence organizational performance, and literature is abundant with evidence that KM implementation positively affects performance. The practice-based view examines the impact of the practice itself on firm performance and allows for the examination of mediating or moderating variables on performance or their influence on the practice itself (Khan and Yu, 2021). The utility of PBV in studying KM lies in its focus on practices. The theory views organizational performance as dependent on practices that are imitable and transferable (Malacina et al., 2022). PBV suggests that firm performance depends on four factors: the use of specific practices, the details of how those practices are used, the interaction of those practices with other practices in the firm, and the behavior of competitors (Bromiley and Rau, 2014). PBV advocates using both qualitative and quantitative analysis to study practices (Tiwari et al., 2020). It suggests using surveys or similar quantitative methodologies to assess the use and effectiveness of practices by firms.

PBV complements theories such as the KBV. Its focus on practices complements KBV's strategic management of knowledge assets and is useful for studying KM, which comprises a set of practices for systematic and dynamic management of knowledge, influenced by a set of enablers and resulting in innovation and efficiency. The interconnection between PBV and KBV offers a dual lens through which HEIs can view and manage their knowledge assets. This integrated approach enhances the effectiveness of KM practices and supports the institution's strategic objectives in the competitive HE sector.

2.5 Review of Select KM Frameworks

A framework describes, standardizes, and provides a common denomination for the principal elements, relationships between the elements, and concepts of a domain

(Heisig, 2009). It seeks to explain a phenomenon in terms of key constructs or variables and their relationships (Holsapple and Joshi, 2002). To deepen the understanding of Knowledge Management (KM), both generic and HE-specific frameworks, encompassing theoretical and empirical assessment models, were examined.

In this study, both theoretical frameworks and empirical models were analyzed to develop the proposed conceptual framework. This comprehensive approach ensures that the framework not only captures the essential aspects of KM but also addresses the specific needs and challenges faced by Higher Education Institutions (HEIs). By integrating insights from existing literature and empirical evidence, the proposed framework aims to provide a robust structure for effectively managing knowledge within HEIs, fostering innovation, and enhancing organizational performance.

2.5.1 Seminal KM Frameworks

One of the earliest frameworks for Knowledge Management (KM) was proposed by Wiig (1993). Wiig's KM framework was built on three pillars: i) identifying and organizing knowledge ii) appraising its value iii) Managing, disseminating, and monitoring it for effective use. This was followed by Parikh's (2001) framework, which conceptualized KM as a continuous process cycle rather than merely a tool. Parikh's framework encompassed four phases: knowledge acquisition, organization, dissemination, and application, all facilitated by IT infrastructure. The significance of this framework lies in its inclusion of both KM practices and an enabler (IT infrastructure). In the same year, Alavi and Leidner (2001) presented KM in the context of organizations as "knowledge systems." Their framework mirrored Parikh's by incorporating KM practices and enablers. It comprised KM processes of knowledge creation, storage/retrieval, transfer, and application, emphasizing the enabling role of IT. Lee and Choi (2003) shifted the focus to empiricism, examining the influence of enablers on KM processes, which in turn affect outcomes. Their framework primarily emphasized knowledge creation and introduced the

dual enablers—social (culture, structure, people) and technical (IT). They highlighted organizational creativity as a conduit to enhanced performance.

The evolution of KM is evident from its seminal frameworks. Initially, many KM frameworks were theoretical, addressing only specific KM practices. Lee and Choi's 2003 framework was pioneering in integrating KM practices, enablers, and outcomes, although it focused mainly on the KM practice of knowledge creation. Some frameworks delve into core KM practices, while others examine enablers and KM practices. Very few frameworks have incorporated the performance outcome aspect of KM. In summary, the development of KM frameworks has evolved from theoretical models addressing specific practices to more comprehensive models integrating practices, enablers, and outcomes. This evolution reflects the growing recognition of the complexity and strategic importance of KM in enhancing organizational performance and fostering innovation.

2.5.2 Review of KM Studies in HE including Gaps in Literature

A review of the Scopus database and Google Scholar was conducted to find articles on KM specific to the HE sector. A total of 38 articles were reviewed, with the key findings summarized in Appendix 1. Despite the growing importance of KM in the HE sector, research in this area has been limited, fragmented, and inconsistent. Several researchers (e.g., Nunes et al., 2017; Quarchioni et al., 2020; Sahibzada et al., 2023) have noted this, and the literature review for this study supports this view. The key gaps identified from the review of HE-specific literature on KM are detailed below.

First, there has been limited theoretical and empirical investigation into KM in HEIs. Most studies conducted during 2007-2016 focused on librarians, with very few examining KM from an institutional perspective (Nunes et al., 2017). Most studies have focused on individual KM practices or enablers in isolation, with a few notable exceptions exploring their interrelationships, such as Iqbal (2021), Iqbal et al. (2019), and Jamil and Lodhi (2015). For example, Iqbal (2021) examined the relationship between one KM practice, three enablers and two performance outcomes. Similarly, Iqbal et al. (2019) examined

the impact of KM enablers (leadership, culture, and incentives) on KM practices (knowledge acquisition, sharing, utilization) and the impact of these practices on organizational performance.

The literature review revealed that studies often focus on a particular group of employees or a specific type of university. Most research has focused on academic staff (e.g., Omerzel et al., 2011; Ramayah et al., 2013) due to their role in knowledge creation and dissemination. There are also studies covering librarians, given libraries' relevance as primary repositories of knowledge in HE. However, there are very few studies covering administrative staff, despite their central role in the creation, use, protection, and dissemination of administrative knowledge within HEIs.

Moreover, many studies have focused on one specific type of university (e.g., Ramayah et al., 2013 – public universities; Chen et al., 2019 – corporate universities; Tian et al., 2009 – research universities), with little attempt to compare KM-related aspects across different university types. Limited evidence suggests differences exist, as shown by studies like Al-Husseini and Elbeltagi (2018) and Ramachandran et al. (2009), which found that public HEIs in Malaysia had higher levels of KM implementation than private HEIs. Understanding KM differences among various university types can help contextualize KM adoption. Thus, it is crucial to include different types of universities within the study. Furthermore, many studies have focused on one or two universities as case studies (e.g., Siadat et al., 2012; Adeinat and Abdulfatah, 2019) or on universities in a particular province (e.g., Asiedu et al., 2020; Iqbal, 2021). While these studies provide depth in their findings, it is difficult to generalize from them. There is a lack of large-scale, survey-based empirical studies covering both academic and administrative staff in HEIs.

A significant proportion of studies on KM in HE are in the Western context (Cranfield and Taylor, 2008; Omerzel et al., 2011 – Slovenia; Fullwood and Rowley, 2017 – United Kingdom) or Asian countries (e.g., Ramachandran et al., 2008; Tan, 2016 – Malaysia; Iqbal, 2021 – Pakistan). Many of these studies have focused on specific KM practices,

enablers, or outcomes, with very few investigating the relationships between all three. Studies covering GCC countries are sparse, with the exception of Saudi Arabia (e.g., Abokhodiar, 2013; Adeinat and Abdulfatah, 2019). There is a notable lack of studies covering KM in UAE HE institutions, except for Kaba and Ramaiah (2017), who studied the influence of demographic differences on the use of knowledge acquisition tools among academic staff. Examining KM adoption from the perspective of UAE HEIs is important, as KM practices can vary based on the sector, ownership (public or private), and socio-demographic context (Ibarra-Cisneros et al., 2023). Results from studies in other sectors or countries may not apply to the UAE HE sector. This contextual difference, leading to variations in KM implementation, is exemplified in Ramjeawon and Rowley (2020), who compared KM implementation in Mauritian and South African HEIs and found differences attributed to the varying development stages of the HE sectors in the two countries. This further justifies the need to study the UAE HE sector.

Despite these gaps, the synthesis of studies in Appendix 1 helped identify key enablers, practices, and performance aspects and their relationships, which informed the proposed framework for this study. The synthesis revealed that most articles focused on investigating factors enabling or hindering the implementation of one or more KM practices. Most studies on KM in HEIs have focused on one to three KM practices (e.g., Iqbal et al., 2019; Veer-Ramjeawon and Rowley, 2020), except for Masa'deh et al. (2017), which examined the relationship between seven KM practices and KM performance. A significant proportion of the articles examined factors affecting knowledge sharing in HEIs (e.g., Annansingh et al., 2018; Al-Kurdi et al., 2020), while a few studies examined the impact of enablers on KM practices, including knowledge creation, application, and storage (e.g., Sunalai and Beyerlein, 2015; Mahdi et al., 2019;). Most studies found that enablers (leadership, culture, and IT infrastructure) positively impact KM practice implementation.

A few studies investigated the relationship between KM practices and performance outcomes. Jamil and Lodhi (2015) presented a conceptual framework for enhancing university performance through KM infrastructure (comprising culture and human resources) and practices (knowledge acquisition, storage, and application). They gauged university performance by research productivity, employee commitment, and industry linkage. However, this framework lacked breadth, omitting key KM practices like knowledge generation and not probing the interplay between enablers and practices. Masa'deh et al. (2017) charted a KM framework, studying its influence on job performance in the Jordanian university context. Their practices spanned knowledge identification to application, with KM performance represented by knowledge quality, satisfaction, and creativity. The study confirmed that KM practices positively impacted job performance, but it did not assess enablers' impact on practices. Finally, a few studies investigated the relationship between enablers, selected practices, and specific performance outcomes such as innovation (Rehman and Iqbal, 2020) and worker productivity (e.g., Sahibzada et al., 2021).

2.6 Proposed KM Framework for this Study

The review of KM frameworks [generic and HE-specific] coupled with a review of KM literature in HE, provided the required conceptual base for the proposed framework. This included addressing pitfalls in the existing frameworks as well as contextualizing these frameworks for the HE sector.

The proposed framework consists of three key components namely enablers, practices and performance outcomes. Enablers are organizational mechanisms that can trigger or stimulate KM practices and increase their efficiency (Lee and Choi, 2003; Iqbal et al., 2019). Based on a detailed examination of the literature on enablers and their impact on KMP, this study found that four enablers (leadership, organizational culture, organization structure and strategy, IT) are vital for KM implementation in the HE sector. KM practices are a set of recurring, dynamic, and inter-related practices that interact with and influence

each other and are used for managing knowledge effectively (Lee and Choi, 2003;Abokhodiar, 2013; Chen et al., 2019). An exhaustive list of nine KM practices is considered in this study. The final component of the proposed framework is performance outcomes which refers to the collection of performance aspects related to the efficiency and innovation of an organization that will contribute to ongoing organizational success (Ramachandran et al., 2009). The next section discusses the key components of the framework.
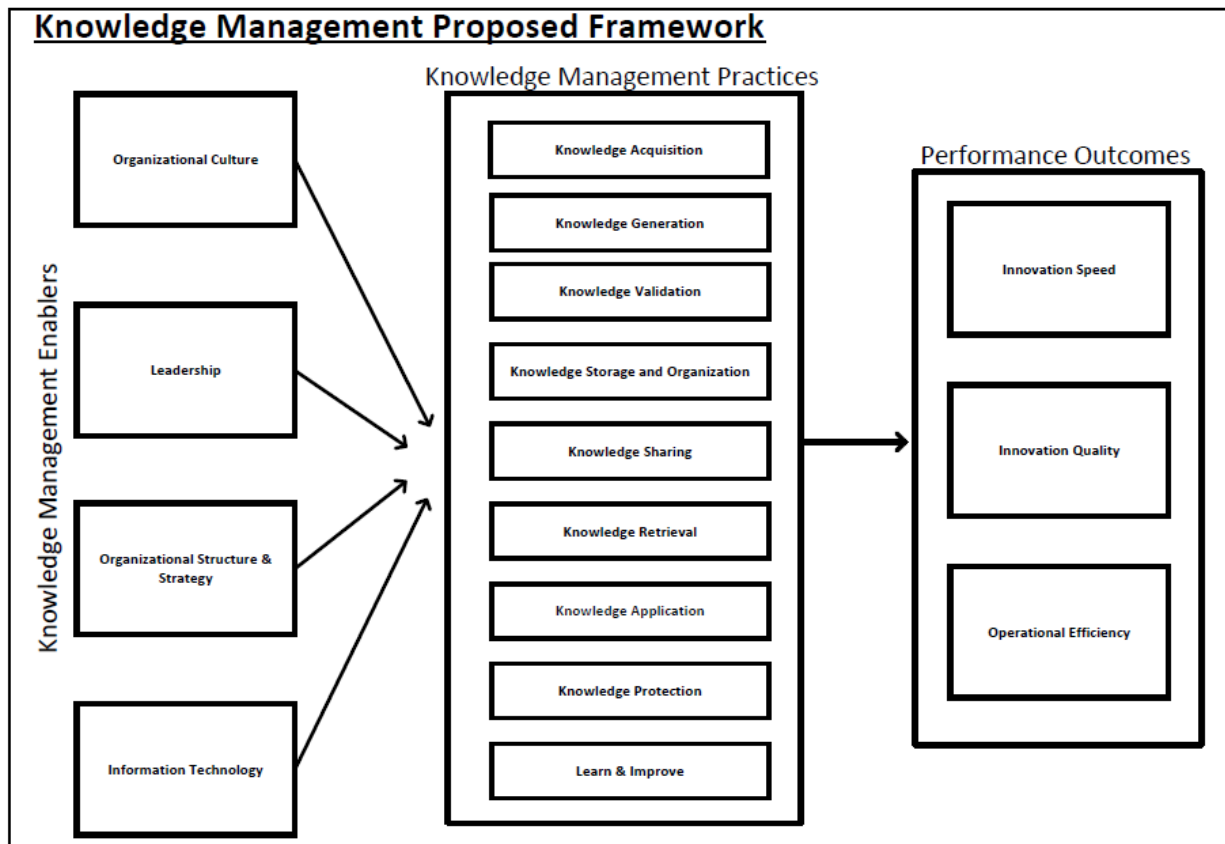
Figure 2.1: KM Framework

2.6.1 KM Practices (KMP)

The central component of the study's framework is KM practices (KMP) which is discussed in the following section.

2.6.1.1 Knowledge Acquisition (Capturing)

Knowledge acquisition can be defined as the process of gathering existing knowledge from within or outside the organization (Matar and Raudeliūnienė, 2021). Knowledge acquisition increases the stock of existing organizational knowledge and is the result of interaction among employees, systems and resources (Rehman and Iqbal, 2020). Knowledge acquisition can take two forms – organizational knowledge acquisition and individual knowledge acquisition (Jamil and Lodhi, 2015). While organizational knowledge acquisition is the gathering, interpretation and molding of knowledge for organizational use, individual knowledge acquisition involves increasing individual knowledge through gathering knowledge from inter- or intra-organizational personnel, repositories or learning from experience. An important step in knowledge acquisition is to identify the knowledge that is relevant to meet organizational needs (Matar and Raudeliūnienė, 2021) and then find ways to access or extract the knowledge from its sources.

HEIs acquire relevant knowledge from their internal and external environment and relevant external and internal stakeholders such as industry, alumni, students, faculty and staff members (Chen and Burstein, 2006). HEIs use several ways for knowledge acquisition such as organizing meetings and seminars, seeking feedback from stakeholders through surveys, focus groups, forums etc. Other knowledge acquisition mechanisms in HEIs are expanding collection of books, journals etc., academic staff collecting knowledge related to their areas of teaching and research, administrative staff capturing knowledge that enables them to perform their duties and render services to institutional stakeholders (Kaba and Ramaiah, 2017). The method appropriate for acquiring knowledge varies with the type of knowledge. For example, technology resources may be better adapted for acquiring explicit knowledge whereas meetings (formal/informal), seminars, forums etc. may be appropriate for acquiring tacit knowledge (Tian et al., 2009). Acquisition of knowledge enables creation of new knowledge (Matar and Raudeliūnienė, 2021) or application of acquired knowledge for organizational use.

2.6.1.2 Knowledge Generation (Creation)

Knowledge Generation refers to an organization's ability to develop innovative ideas and solutions (Marakas, 1999). Knowledge generation involves a conscious or intentional effort to discover new content or reconfigure the foreground and background of existing knowledge which increases the stock of organizational knowledge (Zaim et al., 2007; Adeinat and Abdulfatah, 2019).

HEIs are primarily knowledge creation centres with their central functions such as teaching, learning, and research resulting in the creation of new knowledge (Thani and Mirkamali, 2018). Knowledge generation in HEIs are mostly collaborative, a collective process that requires engagement among university constituents (Thani and Mirkamali, 2018). For instance, academics draw heavily on bodies of scholarly knowledge, collaborate within and across departments as well as outside of their organizational boundaries to produce research, improve program curricula and develop new inter-disciplinary programs. HEI's use several approaches to create knowledge, including both soft and hard approaches. Hard approaches include research centers, databases, IT communication platforms, providing budget and infrastructure for research (Thani and Mirkamali, 2018). The soft approaches used include social networks, communities of practice and organizing meetings that promote dialogue, debate, sharing of ideas and creation of knowledge (Thani and Mirkamali, 2018).

2.6.1.3 Knowledge Validation

Knowledge validation is the practice of analyzing knowledge to assure their authenticity, effectiveness, usefulness and value for an organization (Sunalai and Beyerlein, 2015). It helps to determine what knowledge can be used, stored or shared within an organization. Knowledge validation improves the quality of organizational knowledge (Durcikova and Gray, 2009). Knowledge validation helps in refining the knowledge for long-term

organizational use and helps in determining whether the knowledge is appropriate to meet the current needs and is available for the right person at the right time (Sunalai and Beyerlein, 2015). The practice of knowledge validation requires ongoing interactions between technologies, people and processes to test the validity of acquired and stored knowledge (Bhatt, 2001). In the case of research, the practice of peer-reviewing before a study is published is an example of knowledge validation.

2.6.1.4 Knowledge Storage and Organization

Knowledge storage is the practice of organizing knowledge, categorizing them and saving the knowledge in a structured way so that it is available for future retrieval, manipulation and use (Mahdi et al., 2019; Agrawal, 2021). Storing knowledge in a structured and centralized manner reduces knowledge loss, increases the ease of access, validity and the ability to disseminate knowledge (Bhusry et al., 2011; Matar and Raudeliūnienė, 2021). Knowledge is generally stored in a number of formats such as written documentation, in electronic databases and files, in expert systems as well as organizational procedures and policies (Alavi and Leidner, 2001). HEIs being knowledge creators generally have a vast repository of knowledge including teaching and learning materials, copies of books and other resources in library, research publications, information of students, staff and other stakeholders. HEIs generally use IT-based systems such as document management systems for the storage and maintenance of this vast repository of knowledge. In the case of scholarly knowledge needed by HEIs which are external to the HEI and mostly available in the public domain, HEIs typically provide signposts to these key resources (e.g., glossary of online databases/secondary sources) for ease of access.

2.6.1.5 Knowledge Sharing (Dissemination)

Knowledge sharing is a social process that makes knowledge, experience, expertise or ideas available for others so that it can be effectively re-used (Chedid et al., 2022; Zamiri and Esmaeili, 2024). Knowledge sharing is influenced by individual motivation, the type of knowledge, the work environment, and opportunities to share (Paulin and Suneson, 2015). It can be grouped into two approaches: the 'hard' technology-driven method for explicit knowledge and the 'soft' interpersonal method for tacit knowledge (Tian et al., 2009). In HEIs, knowledge dissemination mechanisms include seminars, publications, workshops, reports, teaching activities, and conferences (Zamiri and Esmaeili, 2024). The 'soft' approach is characterized by informal meetings, networking, and community gatherings, while the 'hard' approach utilizes databases, learning management systems, and formal publications. Effective knowledge sharing in HEIs enhances problem-solving, decision-making, innovation, curriculum and research development, and overall institutional performance (Ramayah et al., 2013; Fullwood and Rowley, 2017; Singh et al., 2021). Without robust sharing mechanisms, HEIs might fail to fully utilize and institutionalize the expertise of their staff, impacting performance and growth (Annansingh et al., 2018).

2.6.1.6 Knowledge Retrieval

Knowledge retrieval is the practice of making knowledge easily available for organizational use through the provision of knowledge search mechanisms and access to knowledge sources (Kassou, 2019). Retrieval consists of two processes – searching and decoding (Gammelgaard and Ritter, 2005). The organizational knowledge searching process involves identifying and selecting specific information and this process is often enabled by IT systems or interactions with colleagues. The next step is the decoding of the retrieved knowledge which is done by individuals and influenced by their experiences,

judgement and context. Organizational knowledge should be appropriately organized and stored to facilitate easy retrieval (Alavi et al.,2024).

2.6.1.7 Knowledge Application (Utilization/Use)

Knowledge application is seen as a critical KMP as the resources and effort spent on KM will not be of any use if the knowledge is not put into use (Ouakouak and Ouedraogo, 2019) to solve work-related problems (Agrawal, 2021) and generate benefits (Evans et al., 2015). Knowledge utilization is defined as the extent to which organizational members use/apply shared or existing knowledge to a new situation and learn from it (Parikh, 2001). It is the activity of "learning by doing" (Evans, 2015) in which knowledge is applied to organizational functions, processes and procedures in order to improve products and services, solve problems, make decisions, improve efficiency, effectiveness or generate new knowledge, innovations and consequently improve organizational performance (Iqbal et al., 2019; Kassou, 2019; Zain et al., 2019; Liebowitz and Beckman, 2020). HEIs are vast repositories of knowledge, and their competitive advantage is reliant on the ability of organizational members to apply this knowledge to improve teaching, learning and research outcomes.

2.6.1.8 Knowledge Protection

Knowledge protection is the practice of "..preserving knowledge capital against depletion, obsolescence, unauthorized disclosure, unauthorized alteration and erroneous acquisition" (Alghail et al., 2023, pg.396). Knowledge protection in the HE context aims to prevent knowledge loss either through external or internal forces and serves two main purposes: safeguarding tacit knowledge when an individual leaves and securing explicit knowledge from unauthorized access (Alghail et al., 2023).

Protection mechanisms in HEIs fall into two categories: technology-oriented and organizational practices (Bongiovanni et al., 2020). Technological strategies employ IT

infrastructure and security to prevent knowledge leaks and misuse. Organizational strategies include research offices in HEIs that leverage intellectual property rights tools, such as non-disclosure agreements and patents, to guard research outputs (Veer-Ramjeawon and Rowley, 2020). With much university knowledge held by external entities like publishers and funders, there's a need to shield this information from unauthorized use. Knowledge protection policies and practices within HEIs play a vital role in protecting HEI's knowledge which is confidential and/or relating to organizational competitiveness. Individual attitudes, trust, and ethics also influence how employees handle and protect accessible knowledge (Alghail et al., 2023). The interlinked nature of KM practices is evident while implementing effective knowledge protection mechanisms as practices such as knowledge storage, validation, retrieval and application impacts knowledge protection.

2.6.1.9 Learn (Refine) and Improve

Knowledge is fluid in nature which is continuously being updated or refined during practices resulting in changes to practices as well as concepts underlying those practices (Styhre, 2003). The KM practice of learning and improvement reflects this practice based view of knowledge. It is the practice of feeding the lessons learnt and best practices back into the organizational knowledge repository and promote continuous learning and improvement (Dalkir, 2013).

The learning and improvement practice updates some of the existing organizational knowledge through refining the knowledge and renders some of the organizational knowledge as obsolete and no longer needed by the organization. Some of the activities that contribute to the learn and improve process are benchmarking, collecting and utilizing best practices and lessons learned, knowledge gap analyses, transferring knowledge from experienced to less experienced employees through job rotation etc. (Evans et al., 2015; Hussinki et al., 2017). In the HE sector, continuous updation of systems, policies,

procedures and documents are required to adapt to the changing environment and meet the needs of society. The learning and improvement practices in HEIs will help in improving the teaching and learning materials and methods, curricula, policies and procedures, and the quality of research produced.

2.6.2 KM Enablers

Scholarship shows that enablers play a crucial role in the implementation of KM (Thani and Mirkamali, 2018; Rehman and Iqbal, 2020; Sahibzada et al., 2023). KM enablers are defined as factors which support or facilitate the implementation of KM practices (Ibarra-Cisneros et al., 2023).

2.6.2.1 Knowledge-friendly Organizational Culture

Organizational culture, an amalgamation of shared values, beliefs, norms and assumptions has a powerful role in influencing organizational behavior, purpose, commitment, choices, actions and mindsets of individuals within an organization (Schein, 1986; Nonaka et al., 2006; Hofstede, 2009). Culture profoundly influences HEIs, shaping behaviors, commitment, communication, and performance (Masland, 1985; Tierney, 1988). Given its impact on managerial practices, it's reasonable to argue that HEI culture directly influences KM implementation.

In the realm of KM, organizational culture dictates which knowledge is valued and preserved for organizational success (Lee and Choi, 2003). Extensive academic research attests to the positive impact of organizational culture on KM, both in HEIs and elsewhere (Gold et al., 2001; Ramachandran et al., 2013; Boamah et al., 2022). Despite HEIs' typically collegial, knowledge-sharing nature, they can house multiple, often conflicting, cultures due to variations in disciplines and the distinct managerial and academic cultures present (Cronin, 2001). Nonetheless, a supportive knowledge-friendly culture within an

HEI can facilitate the adoption of KM practices like knowledge acquisition, sharing, creation, and application (Thani and Mirkamali, 2018; Iqbal et al., 2019).

Literature highlights the pivotal role of trust, collaboration, and open communication in enhancing KM implementation (Ramachandran et al., 2013; Intezari et al., 2017; Sahibzada et al., 2023). Trust is a significant cultural factor that promotes knowledge flow in organizations and encourages knowledge exchange (Sahibzada et al., 2023;). Collaboration, emphasizing mutual support and group efforts, bolsters KM by fostering innovation and openness (Lee and Choi, 2003; Santos et al., 2024). Lastly, open communication empowers employees to freely share and discuss knowledge, thereby facilitating KMP (Intezari et al., 2017). In sum, shaping a knowledge-friendly culture in HEIs enhances implementation of KM practices in HEIs.

2.6.2.2 Knowledge-Oriented Leadership

Leadership plays a crucial role in steering employees towards organizational goals (Alzghoul et al., 2023). Effective leadership not only motivates employees to engage in KMP but also provides continuous support and commitment, as KMP implementation represents a significant organizational shift demanding time, effort, and resources (Ramachandran et al., 2013; Donate and de Pablo, 2015; Shehzad et al.,2024). In the context of KM, leaders exemplify commitment by sharing knowledge, welcoming new ideas, ensuring access to knowledge resources, shaping and conveying a KM-focused vision, aligning organizational strategy with KM initiatives, and fostering a culture that champions KM (; Holsapple and Joshi, 2000; Nonaka et al., 2006; Ramachandran et al., 2013; Chaithanapat et al., 2022).

In HEIs, leadership emerges as a potent KM enabler. A knowledge-oriented leader discourages negative employee behavioral traits such as knowledge hoarding and motivates desirable behavior among employees such as knowledge creation and sharing (Alzghoul et al., 2023; Hamid et al., 2024). Research in the HE sector indicates that

leadership positively impacts KMP, such as knowledge sharing, utilization, and acquisition (Fullwood and Rowley, 2015; Rehman and Iqbal, 2020). For knowledge-centric organizations like HEIs, a knowledge-oriented leadership approach proves particularly effective (Ribière and Sitar, 2003; Donate and de Pablo, 2015). Such a leadership style, characterized by commitment to KM, recognizing KM efforts, and communicating KM's significance, fosters an environment where employees are naturally inclined towards KM practices (Naqshbandi and Jasimuddin, 2018; Rehman and Iqbal, 2020; Hamid et al., 2024).

2.6.2.3 Knowledge-Oriented Organization Structure and Strategy

Organizational structure can be defined as the ".. formal relationships and allocation of activities and resource among people" (Allameh and Zare, 2011, pg.1216). An organization's structure can either simulate or hinder its KM activities (Thani and Mirkamali, 2018). Notably, structural dimensions like formalization and centralization significantly influence KM (Lee and Choi, 2003).

Centralization, which concentrates decision-making authority, can impede open communication. Conversely, a decentralized structure potentially promotes free knowledge flow, favoring KMP implementation (Lee and Choi, 2003; Sun, 2010; Allameh, and Zare, 2011). However, a fully decentralized structure may lead to independent silos while some extent of centralization serves to ensure that similar processes and procedures are followed across the organization. Formalization, the degree to which an organization relies on rules, also impacts KM. Organizations with lower degree of formalization tend to facilitate open communication and thus enable KM practices (Lee and Choi, 2003). In HEIs, an appropriate organizational structure has been identified as an enabler for KM (Sunalai and Beyerlein, 2015; Santos et al., 2024). Studies highlight that rigid structures can stifle knowledge creation in HEIs, whereas reduced formalization

and decentralization promote effective communication and knowledge practices (Rodríguez-Gómez and Gairín, 2015; Alshahrani, 2018).

Strategy, meanwhile, guides KM efforts, shaping the understanding of valuable knowledge and required KMP (Payal et al., 2019). Previous research underscores that tailored strategies can either facilitate or restrict KM in organizations (Alshahrani, 2018; Boamah et al., 2022). For instance, HEIs emphasizing employee training foster external knowledge acquisition and internal knowledge creation. To be effective, KM strategies should be reinforced by appropriate policies, procedures, and clearly delineated roles (Trivella and Dimitrios, 2015; Alshahrani, 2018).

2.6.2.4 KM-supportive Information Technology (IT) Infrastructure

IT infrastructure facilitates the management and integration of knowledge within an organization (Gold et al., 2001; Nonaka et al., 2006). Several researchers have stressed the importance of IT as a key enabler of KM influencing various KM practices (Lee and Choi, 2003; Jamil and Lodhi, 2015; AlMulhim, 2023). For instance, IT infrastructure has a role to play in facilitating KMP such as knowledge generation (e.g., using data mining tools), knowledge acquisition (e.g., through IT systems for searching and finding knowledge within or outside the organizational boundaries), knowledge utilization (e.g., knowledge application technologies), knowledge sharing (e.g., communication technologies), knowledge storage (e.g., databases) and knowledge protection (via information security systems). IT supports and reinforces KMP in an organization by increasing the breadth, depth, quality and timeliness of organizational knowledge (Alavi and Leidner, 2001). IT removes communication barriers and enhances collaboration and communication within an organization (Santos et al., 2024) which inturn can positively influence KMP.

While IT infrastructure enhances the implementation of KM, the extent of IT usage is dependent on personal IT skills, extent of technical support provided by the organization,

ease of system access and the extent of leadership support in investing on IT resources (Tian et al., 2009; Sun,2010). Studies in the HE sector such as Santos et al. (2024), Quarchioni (2020) and Ramjeawon and Rowley (2017) that appropriate IT infrastructure is a key enabler of KMP in HEIs.

2.6.3 KM Performance Outcomes

Knowledge-based view of an organization postulates that efficient integration of knowledge in an organization can lead to better organizational performance (Liu et al., 2021; Sahibzada et al., 2023). The third component of the framework proposed in this study is KM performance outcomes and is based on the notion that effective implementation of KMP will lead to superior organizational performance or outcomes (Mohammadi et al.,2023). Organizational performance refers to the development and progress of an organization and is about evaluating the quality, product and process improvement, innovativeness, efficiency, and stakeholder satisfaction (Rehman and Iqbal, 2020). Literature provides a plethora of evidence that implementation of KM can positively influence organizational performance outcomes such as quality, productivity, innovation, efficiency and effectiveness (Mehrabani and Shajari, 2012; Ngoc-Tan and Gregar, 2018; Iqbal, 2021). Therefore, this study will use innovation speed, innovation quality and operational efficiency aspects relevant for the HE sector for assessing the impact of KM on HE performance.

2.6.3.1 Innovation Speed and Quality

Knowledge is viewed as a precursor of innovation and studies have shown that innovation is a source of competitive advantage and organizational performance (Ngoc-Tan and Gregar, 2018; Sofiyabadi and Valmohammadi, 2020). Further, innovation along with research plays a primary role in the transitioning of a country to a KBE (Ashour, 2024). Past research has confirmed the linkage between KM and innovation, as effective acquisition, sharing, application and management of knowledge is needed to foster

innovation of new products, services, processes and new capabilities at a faster rate in organizations (Rehman et al., 2021; Iqbal, 2021; Ibarra-Cisneros et al., 2023;). Therefore, innovation can be considered as a useful means for assessing KM impact on organizational performance. The importance of innovation to the HE sector lies in the fact that the sector has to constantly evolve itself and the programs it offers in order to address the needs of society and incorporate discipline-specific and technological advancements. Innovation in HEIs is defined as the ability of HEIs to produce enhanced products, processes and organizational functions which has a significant effect on its stakeholders and is demonstrated through its primary functions of teaching and research (Elrehail et al., 2018). Innovation allows HEIs to be responsive to challenges and changes in the external environment (Ibarra-Cisneros et al., 2023). Innovation in the HE sector is demonstrated through changes or progress in aspects of curriculum, learning and teaching, theory and practice, institutional administration etc. (Ngoc-Tan and Gregar, 2018).

Innovation can be measured using innovation speed and quality which are important dimensions of innovation from an HE perspective (Iqbal, 2021). While innovation speed refers to an organization's ability to launch new products and services in a fast manner (Iqbal, 2021), innovation quality is the ability to improve products and services thereby improving customer satisfaction (Chaithanapat et al., 2022). From an HEI perspective, innovation speed will be demonstrated through reduced time in introducing new programs that respond to market needs, increase in the number of programs on offer, increase in research productivity whereas innovation quality will result in innovative educational programs, processes, teaching and learning methods and materials that are superior to its competitors (Iqbal, 2021). From an HE perspective, improved quality of programs, teaching and learning will enhance student and stakeholder satisfaction.

2.6.3.2 Operational Efficiency

Operational efficiency is referred to as the systemic management of organizational resources with the aim of reducing cost, cycle time and improving quality, productivity and overall organizational performance (Lee et al., 2012; Kehinde et al., 2020). From an HE perspective, operational efficiency would entail undertaking teaching, learning, research and other activities in a cost-effective manner without adversely affecting the quality of the services provided (Kehinde et al., 2020). KM implementation would lead to better management and availability of organizational knowledge which inturn will lead to reduced cost, process time and enhanced operational efficiency. As enhancement in operational efficiency improves organizational performance (Kehinde et al., 2020), the former can be considered as a proxy for assessing the latter.

2.6.4 Relationship between KM Enablers, Practices, and Performance

The proposed framework consists of KM enablers, practices and performance outcomes. The following section examines the relationships between each of the four enablers – leadership, organization structure and strategy, organizational culture, and information technology and KMP. The relationship between KMP and organizational performance is also investigated to ascertain whether KMP impacts HEI performance.

2.6.4.1 Knowledge-Friendly Organizational Culture and KMP

Culture has a pervasive influence on the way in which individuals behave and interact within an organization and their commitment to organizational tasks (Masland, 1985). From a KM context, a knowledge-friendly culture that promotes trust, collaboration, willingness to share knowledge was found to facilitate KM implementation (Pham et al., 2023; Liu et al., 2021). Past studies (both generic and HE-specific) have investigated the impact of organizational culture on specific KM practices. Non-HE studies such as Liu et al. (2021), Payal et al. (2019), Allameh and Zare (2011) found a significant relation

between culture and KMP. From the HE context, the study by Adeinat and Abdulfatah (2019) found a positive relationship between organizational culture and knowledge creation, sharing and application while Rodríguez-Gómez and Gairín (2015) found a positive relationship between culture and knowledge creation. The review of generic and HE-specific literature leads to the assumption that organizational culture positively influences KMP and hence the following hypothesis is posited. Organizational culture in this context refers to a knowledge-friendly culture that supports KM implementation.

H1: Knowledge-friendly culture will have a positive impact on knowledge management practices

2.6.4.2 Knowledge-oriented Organizational Leadership and KMP

Leadership emerges in the generic and HE-specific literature as an antecedent of KM practices. Leadership commitment is crucial in the success of KM implementation as leaders are influential in shaping employee attitudes towards initiatives such as KM. An organizational leadership that recognizes the importance of knowledge to organizational success will spur KM practices by being facilitators, role models and motivators of the KM functions (Naqshbandi and Jasimuddin, 2018).

Review of literature provides substantial evidence to the significant association between leadership and KM implementation. For example, non-HE studies such as Chaithanapat et al. (2022), Hamid et al.(2024) and Shehzad et al. (2024) found that knowledge-oriented leadership had a positive effect on KM practices. From the HE perspective, the studies by Sahibzada et al. (2021) Rehman and Iqbal (2020) found that knowledge-oriented leadership had a strong positive impact on KM practices. Based on a review of available literature, it can be argued that knowledge-oriented leadership will have a positive effect on KM practices. This leads to the second hypothesis of this study:

H2: Knowledge-oriented leadership will have a positive impact on knowledge management practices

2.6.4.3 Knowledge-oriented Organizational Structure and KMP

An organization structure lends structure to the way in which organizational activities are divided and coordinated (Claver-Cortés et al., 2007). Organization structure influences KM implementation through their impact on decision-making, knowledge organization and flow of knowledge as well as communication patterns which in-turn will affect the autonomy and flexibility of interaction among organizational members (Mahmoudsalehi et al., 2012). An organizational structure that is decentralized, less formalized, flatter and less hierarchical is expected to be knowledge-oriented and more conducive to KMP implementation (Alshahrani, 2018; Mahmoudsalehi et al., 2012; Claver-Cortés et al., 2007). KM literature supports the view that organizational structure has direct influence on the effective implementation of KM practices in HEIs. Chen et al. (2010) found that a less formalized and more decentralized organization structure positively enhanced KM implementation. The study by Santos et al. (2024) and Kınık and ÇETİN (2022) in the HE sector found that organization structure directly influences implementation of KM practices.

In order for KM to be considered as an integral part of the organization, the organization should treat KM as a priority and address it at the strategic level (Ribière and Calabrese, 2016). The sustainability of KM practices in an organization requires the development of a clear KM strategy, policies and procedures to guide KM implementation.

Based on the above, the third hypothesis is proposed:

H3: Knowledge-oriented Organizational structure and strategy will have a positive impact on knowledge management practices

2.6.4.4 KM-supportive Information Technology (IT) Infrastructure and KMP

IT is regarded as a key enabler of KM practices as it plays a role in facilitating each of the KM practices. Review of literature provides substantial evidence for the positive

relationship between IT and KM practices. The availability of KM-supportive IT infrastructure and tools are necessary for deployment of KMP. Studies in the HE sectorssuch as Thani and Mirkamali (2018) and Rodríguez-Gómez and Gairín (2015) found that knowledge creation in HEIs is fostered by IT while Tan and Noor (2013) found that IT positively influenced knowledge sharing in HEIs. Although there are no studies in the HE sector which investigated the relationship between IT and the entire gamut of KM practices considered in this study, there are studies which assessed the relationship between IT and specific KM practices. Based on the available literature, it can be hypothesized that:

H4: KM-supportive IT infrastructure will have a positive impact on knowledge management practices

2.6.4.5 KMP and Organizational Performance

The theoretical lens of PBV states that a set of organizational practices may have positive, negative, or neutral impacts on organizational performance and that these impacts may differ under different circumstances (Bromiley and Rau, 2016). The impact of KMP on organizational performance has been studied in HE and other sectors. Drawing from the generic literature, Singh et al. (2021), Payal et al. (2019) and Zaim et al. (2007) found that KMP positively and significantly influences organizational performance. In terms of HE-specific literature studies such as Sahibzada et al. (2023), Rehman and Iqbal (2020), Iqbal et al. (2019), and Masa'deh et al. (2017) found that KM practices had a positive influence on organizational performance indicators such as innovation, research productivity, student satisfaction, creativity, curriculum development and customer satisfaction. The PBV of an organization asserts that the effect of practice on performance depends on the organization's circumstances and the extent to which practices are implemented (Bromiley and Rau, 2016). Based on the discussion, it can be assumed that KM practices are a precursor for improving organizational performance. Hence the following hypothesis is proposed:

H5: Knowledge management practices will have a positive impact on organizational performance Outcomes.

2.6.5 Characteristics of UAE Public and Private Universities

As explained in Chapter 1, the HE sector of the UAE is comprised of public and private universities. These universities differ in their capital structure with public universities being fully funded by the government and the private universities being almost fully reliant on student fees for revenue. Private universities in the UAE are profit-oriented organizations making them highly competitive, market-oriented and prone to financial risks (Ashour and Fatima, 2016) while the public universities have no profit motives. In terms of institutional size also, public universities in the country are much larger than private universities. The public and private universities therefore have different funding mechanisms and size. Factors such as institutional size and capital structure are known to affect KM implementation (Masa'deh et al., 2017). The studies by Al-Husseini and Elbeltagi (2018) in Iraqi HEIs and Ramachandran et al. (2009) in the Malaysian HE sector found that there was difference between private and public universities in the extent of KM implementation. Based on the above, the study expects the public and private universities to differ in the extent of impact of enablers on KM practices. Therefore, the study proposes that there could be a difference in the hypothesized relationships (H1 to H5) among public and private universities.

2.7 Chapter Summary

The literature review chapter began with a discussion of the concept of knowledge, KM and the theories underpinning KM followed by a review of seminal KM frameworks. This was followed by a review of KM literature specific to the HE sector in order to understand the current state of KM literature, identify the gaps in current literature and identify practices, enablers and performance outcomes of KM relevant to the HE sector. The literature review culminated with a KM assessment framework for the HE sector. The proposed framework comprises of nine knowledge management practices, four enablers,

and three performance outcomes. A total of five hypotheses are proposed to examine the relationships between KM enablers, practices, and performance.

The development of the framework proposed in this study itself is a contribution to the literature. Given that no previous studies have developed an all-encompassing empirical assessment framework similar to the one proposed in this study makes this KM framework novel in nature, especially in the HE sector.

The next chapter discusses the methodology used in this study.

Chapter 3: Methodology

3.1 Introduction to the Chapter

This chapter provides an in-depth discussion of the comprehensive research process adopted to address the research questions of this study. First, the philosophical stance that underpins this research is discussed, establishing a solid foundation for the study. This is followed by an elaboration of the research design chosen for the primary investigation, highlighting its suitability and effectiveness. The specific methods employed in this study, along with their justification against potential alternatives, are then detailed. Finally, the various techniques used for data collection, validation, and analysis are outlined. The figure below summarizes the research approach used in this thesis.
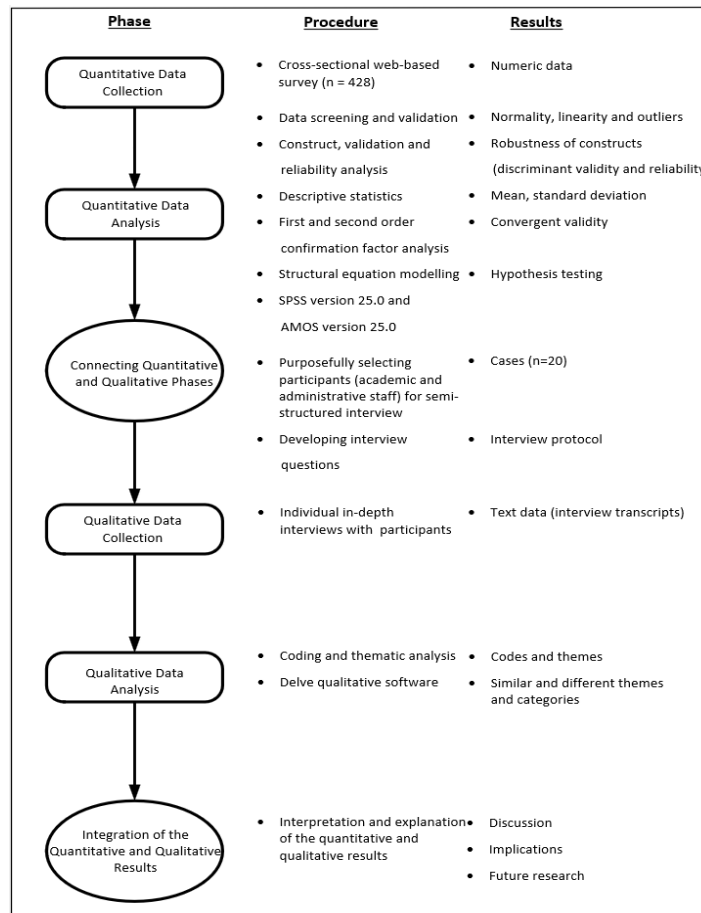
Figure 3.1: Summary of Research Methods

3.2 Philosophical stance of this study

Research philosophy is "a system of beliefs and assumptions about the development of knowledge" (Saunders et al., 2016, p. 124). It plays an essential role in meaningful research because the philosophical stance taken by the researcher significantly impacts how the research is carried out and how they understand what they are investigating (Johnson and Clark, 2006). The two main philosophical concepts often used are epistemology and ontology (Saunders et al., 2016; Bryman, 2016). While ontological assumptions concern the nature of social reality, epistemological assumptions concern what kinds of knowledge are possible (Blaikie, 2010) and what constitutes legitimate and valid knowledge (Saunders et al., 2016). Epistemology is concerned with understanding and explaining how we know what we know (Saunders et al., 2016). It informs the researcher's view regarding what constitutes acceptable, adequate, and legitimate knowledge in the discipline, how the knowledge is communicated to others, and how it is used to address particular social concerns (Bryman and Bell, 2015; Saunders et al., 2016). On the other hand, ontology constitutes assumptions made by the researcher about the nature of reality and whether reality/truth exists objectively or subjectively in the mind of the researcher (Žukauskas et al., 2018).

Since this study aims to extend the understanding of KM adoption in the HE sector by exploring the 'what,' 'where,' and 'how' of KM implementation, the researcher adopted an epistemological stance to guide the research paradigm chosen and methodological choices made, including what should be studied, how research should be conducted, and how results should be interpreted (Johnson et al., 2007; Bryman, 2016). From an epistemological standpoint, the three paradigms commonly adopted in social science are positivism, interpretivism, and pragmatism (Creswell, 2013; Bryman and Bell, 2015).

Positivism, or the positivist paradigm, postulates that the objects of the social sciences, namely people, are suitable for the implementation of scientific methods (Lincoln et al., 2011; Denscombe, 2017). A positivist researcher conducts social science research in the

same manner as natural sciences, where the research process will yield generalizable, immutable, law-like outcomes (Rehman and Alharthi, 2016; Bryman, 2016; Kivunja and Kuyini, 2017). Such research focuses on observable social reality and produces patterns, generalizations, and cause-and-effect relationships using methods and procedures akin to those used by natural scientists. A positivist researcher will attempt to dissociate themselves from the research data and, as far as possible, avoid allowing personal values to interfere with data analysis and interpretation of results. The epistemological assumption under the positivistic paradigm is that the phenomena under study are observable and measurable, leading to valid and meaningful data and an objective understanding of the phenomenon (Kivunja and Kuyini, 2017). The positivist paradigm emphasizes using quantitative research methods. Quantitative methods, such as structured surveys, are considered positivist in approach, characterized by a numerical orientation and an emphasis on measuring and analyzing causal relationships (Saunders et al., 2016).

In contrast, interpretivism emphasizes that the social world cannot be understood by applying research principles from the natural sciences (Gephart, 1999). This paradigm is founded on a subjectivist epistemological stance, assuming that knowledge is socially constructed by the researcher through interactive processes with their subjects (Kivunja and Kuyini, 2017). According to interpretivists, reality (whether given or socially constructed) is not considered external to the actors but part of the actors' subjective interpretation (Blumberg et al., 2014). That is, reality should be interpreted through social constructions such as language, consciousness, and shared meanings given by humans. According to Gephart (1999), the interpretivist approach prefers methods that produce facts and analyze and interpret the social world's meaning. Greater emphasis is placed on human behavior and its role in the research context. The interpretivist paradigm allows for the use of quantitative and qualitative methods although qualitative methods are predominantly used (Kivunja and Kuyini, 2017; Žukauskas et al., 2018)

Pragmatism evolved from the paradigm war between positivism and interpretivism (Tashakkori et al., 1998). Pragmatism, as a philosophy, provides a middle ground methodologically and is a result-oriented practical position that allows researchers to combine methods to produce superior research results (Johnson and Onwuegbuzie, 2004). Regarded as the 'third wave,' it takes a practical and logical approach by integrating the best aspects of positivism and interpretivism. Pragmatists argue that either approach is insufficient to fully understand the social phenomenon (Morgan, 2014). Pragmatists link the choice of approach directly to the research's purpose and nature (Creswell, 2013). They acknowledge the strengths and weaknesses of both approaches and call for combining them.

A pragmatic approach is selected in this study because the nature of the proposed research questions, including "what," "how," and "to what extent," warrants a multi-method research strategy that combines qualitative and quantitative methods (Creswell, 2013). One method alone is insufficient to understand the phenomenon and mandates integrating both positivist and interpretivist approaches. Furthermore, one of the research objectives is to understand practical, realistic solutions needed for the efficient and effective implementation of KM practices in the HE sector. Pragmatism focuses on problems, practices, and relevance, informing future practice as a contribution (Saunders et al., 2016). The next section discusses in detail the research design adopted in this thesis.

3.3 Research Design and Methods

The research design is the overall plan detailing how the researcher will answer the research questions (Saunders et al., 2016). It articulates the required data, the data sources, the methods for data collection and analysis, and how these components will address the research questions (van Wyk, 2012).

An important consideration in research design is deciding whether to follow a qualitative, quantitative, or mixed methods approach (Saunders et al., 2016). The research design should align with the research questions and fit the research philosophy (Saunders et al., 2016). This study adopted a mixed methods research design, combining quantitative and qualitative approaches in a single study (Johnson and Christensen, 2008). Bromiley and Rau (2014), in their seminal work on PBV, recommend using both quantitative and qualitative analyses to understand organizational practices better. Rechberg (2018) also recommends mixed methods to study KM practices, their extent, and impact in organizations, due to the flexibility provided by mixed methods, which better uncovers how knowledge is managed.

The nature of the research questions in this study, which include "what," "how," and "to what extent," also lends itself to a mixed methods approach. The "what" part of the questions can be answered through a survey questionnaire, suitable for questions seeking to understand the "extent of" (Saunders et al., 2016). The "how" and "to what extent" parts, which seek insights into participants' experiences, can be best answered using interviews, suited for explanatory research questions (Yin, 2003).

The next consideration in mixed methods research is whether to conduct the quantitative and qualitative phases concurrently or sequentially (Johnson and Onwuegbuzie, 2004). In concurrent mixed methods research, different methods are conducted in parallel, while in sequential research, one method influences and provides input to the other. This thesis employed a sequential explanatory multi-methodology research design to develop a fuller understanding of KM in the HE sector and answer the research questions. The sequential explanatory design chosen for the study involved two consecutive stages: collecting and analyzing quantitative data first, followed by a qualitative phase that builds on the quantitative findings (Ivankova et al., 2006). This approach potentially enriches and explains the quantitative findings through participants' lived experiences elicited through

interviews. While the quantitative phase provides an overall understanding of the phenomenon, the qualitative phase offers deeper insights.

Another consideration in the sequential explanatory research design is whether to give equal emphasis to each method or adopt a dominant paradigm approach (Johnson and Onwuegbuzie, 2004; Collins et al., 2012;). When more emphasis is placed on one method for drawing conclusions or inferences, it is called the dominant approach, whereas equal emphasis gives similar importance to both quantitative and qualitative methods (Bryman, 2006).

The study's goal and the nature of the proposed research questions mandated a dominant-status sequential explanatory design (QUANT → qual), with the quantitative method as the dominant and the qualitative method as supplementary. Given the intention to develop an overarching understanding of KM in the UAE's HE sector, a quantitative survey was deemed the most appropriate and economical way to gather data from academic and administrative staff in the sector. Thus, the quantitative study was prioritized and used to inform the qualitative phase, which involved interviews to illuminate and supplement the quantitative findings. Figure 3.2 shows the sequential explanatory research design adopted in this thesis.
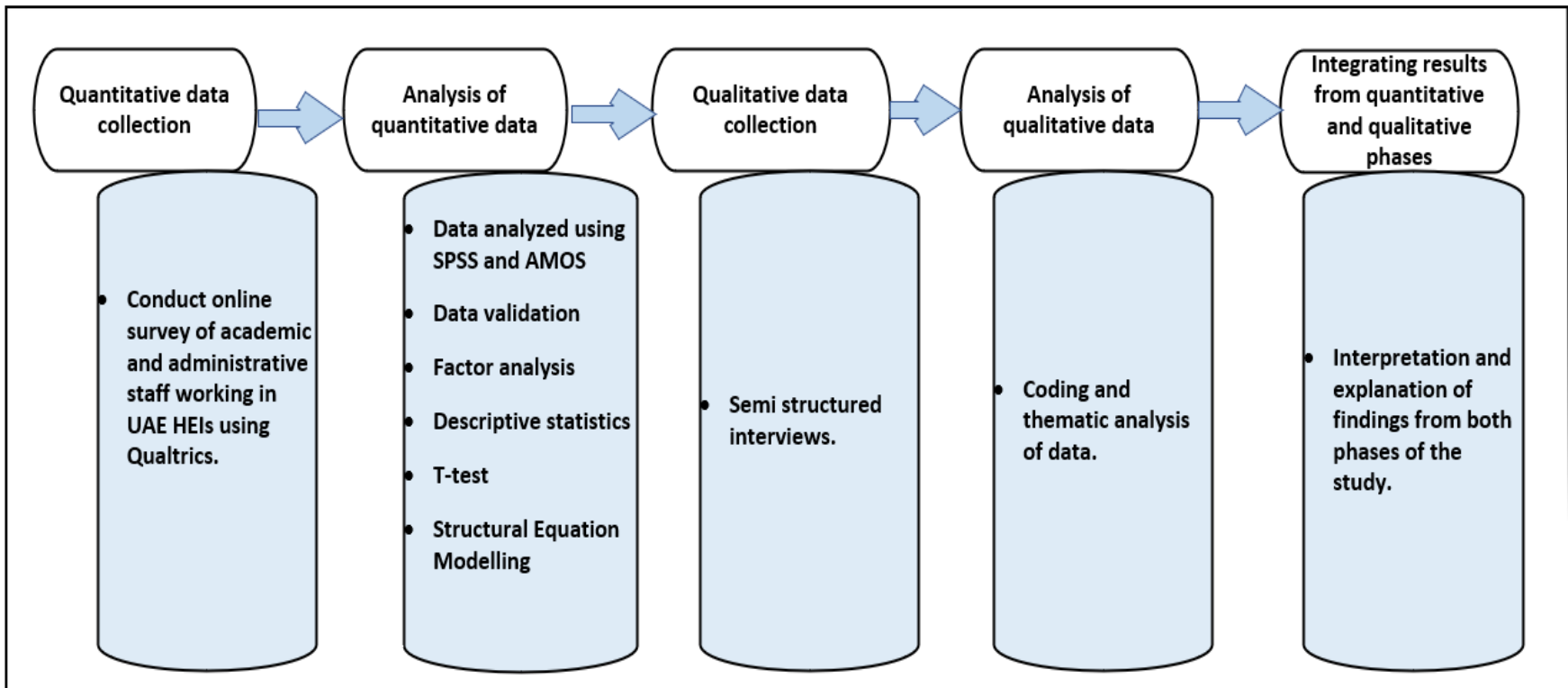
Figure 3.2: Sequential explanatory research design

3.4 Survey Research (Phase 1)

Survey research allows to systematically measure factors regarding the phenomenon under study that are drawn from pertinent research literature (Johnson and Onwuegbuzie, 2004). Surveys provide an efficient means to gather standardized quantitative data which can be analysed using descriptive and inferential statistics, enables ascertaining of relationship between variables and allows for supporting or rejecting of hypothesis concerning a large target population (Cohen et al., 2007; Saunders et al., 2016). The advantages of web-administered surveys identified by Bryman (2016) listed below influenced its use in this study.

Web-administered surveys:

- are less prone to social desirability bias than other forms of data collection methods due to its anonymous nature;

- are convenient for participants as they can fill the survey at their pace and at a time suitable for them;

- are cheaper to administer and can be sent to large number of participants without incurring additional costs;

- provide better data accuracy as researcher does not have to enter data thereby reducing errors in data entry.

In phase 1, a structured country-wide survey was conducted. It facilitated large-scale empirical, quantitative investigation from a large representative sample population so that results could be generalized to the entire population.

The following section and figure 3.3 below discuss the distinct stages of the survey research process.

Developed initial survey instrument
- Developed questionnaire using KM practices, enablers and outcomes found in the literature
- Decided on survey scale
- Reviewed the survey for language, flow etc

Survey pre-test
- Recruited participants for pre-test
- Validity tests (face and content)
- Revised questionnaire

Pilot survey
- Recruited participants for pilot testing
- Collected participant feedback
- Assessed completion time and response rate
- Revised questionnaire based on feedback

Survey administration
- Administered online survey on Qualtrics
- Employed strategies to improve response rate
- Removed incomplete responses
- Completed data set for analysis

Data and construct validation
- Ran data reliability and validity tests

Data analysis and result
- Descriptive statistics
- Inferential statistics

Figure 3.3: Stages of Survey Research

3.4.1 Survey Instrument Development

The final survey instrument used for data collection in this thesis is provided in Appendix 2. The first step in survey instrument development was identifying the KM constructs (enablers, practices, and outcomes) through a thorough review of pertinent literature. The questionnaire included sections on demographic details, each of the KM practices, KM enablers, and aspects related to overall institutional performance.

The majority of the questions in the survey instrument used a Likert scale to measure the extent to which respondents agreed or disagreed with statements relating to KM implementation in the UAE HE sector. A 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree," with a "Neither Agree nor Disagree" option, was employed as it allows survey participants to express both the direction and strength of their perception concerning a specific survey item (Saunders et al., 2016). A 5-point scale, instead of a forced-choice scale such as a 4-point scale, was used to increase instrument reliability (Chyung et al., 2017). The midpoint allows for the scale to be treated as an interval scale and the application of appropriate statistical parametric techniques (Saunders et al., 2016). Additionally, a "Not Applicable" option was added to mitigate the potential misuse of the "Neither Agree nor Disagree" option (Chyung et al., 2017). Since the survey instrument developed by the researcher from the literature had not been tested previously, standard testing and validating measures (pre-testing, pilot testing) were employed to ensure that the instrument measured what it intended to measure (Cohen et al., 2007). Appendix 3 provides the list of survey questions sourced/adapted from the literature.

3.4.2 Survey Instrument Pre-testing

Pre-testing the survey instrument is critical to establish face validity, content validity, reliability, and the overall adequacy of the questionnaire (Ruel et al., 2015; Saunders et al., 2016). Establishing face validity ensures that each item within the survey measures

the concept it is intended to measure (Saunders et al., 2016). Establishing content validity ensures that the survey instrument adequately covers the research questions (Saunders et al., 2016). Establishing reliability provides assurance that the instrument is dependable and consistent and that the questions are not misleading (Ruel et al., 2015). Pre-testing also contributes to establishing qualitative construct validity, with experts determining whether the survey measures the intended constructs, adequately covers them, and identifies any issues related to wording, terminology, and grammatical errors (Ruel et al., 2015).

An expert-driven pre-test was conducted, wherein the questionnaire was reviewed by individuals with strong knowledge in the survey topic to increase its validity and reliability and to identify any technical errors (Dillman et al., 2014). The survey questionnaire was given to three academic staff who had previously published in the domain of KM and had considerable experience in designing survey questionnaires, as well as to one administrative staff member with several years of experience working in the UAE HE sector. After the survey was pre-tested by the participants, an individual debriefing was conducted by the researcher to improve the validity and reliability of the survey instrument (Ruel et al., 2015).

The pre-test checked the following aspects of the survey instrument:

- **Face validity** – The four participants confirmed that the survey questions and the scales used were appropriate for the intended purpose.

- **Content validity** - The participants indicated that the questions in the instrument provided adequate coverage of the research questions thereby confirming the content validity of the questionnaire (Saunders et al., 2016). Participants provided some suggestions to enhance content validity based on which minor changes were incorporated into the survey questionnaire.

- **Suggestions on wording and grammar** – Pre-test participants gave useful feedback regarding question wording and grammar which were subsequently incorporated in the questionnaire.

3.4.3 Survey Pilot Testing

Conducting pilot tests of self-administered survey questionnaire is crucial to ensure that the overall survey operates well and uncover any issues and rectify them before administering the final questionnaire (Johnson and Christensen, 2008; Bryman, 2016). Piloting a survey serves to test the feasibility of the entire survey procedure (e.g., sampling and recruitment methods, survey administration, data collection etc.) from start to finish under actual survey settings (Ruel et al., 2015). The pilot survey was administered in the same way as it would be administered in the final study as a means of improving the internal validity of the survey instrument (Teijilingen and Hundley, 2010). Specifically, the objectives of the pilot survey were to:

- Assess the appropriateness of the instrument in terms of question wording, sequencing, and length

- Determine the average duration for survey completion (Johnson and Christensen, 2008).

- Arrive at assumptions about the likely survey response rate in order to determine the sample size for the final survey

- Identify if there are any practical problems with the chosen survey administration mode (online) and participant recruitment strategy (through LinkedIn) (Teijilingen and Hundley, 2010)

The recommended number of participants for a pilot test is 30 to 100 participants (Ruel et al., 2015), making sure that the survey included sufficient number of people to accommodate the major variations in the population that are likely to affect the survey

results (Johnson and Christensen, 2008). The survey participants were emailed a link to access the pilot survey created using the Qualtrics online survey platform. The pilot survey was sent to both academic and administrative staff working in the UAE HE sector as they represented the study's two main target groups. The survey was sent to a total of 175 LinkedIn contacts of the researcher representing 45 universities.

The survey link was sent out in August 2020 and was available for 1.5 months. The survey included an open-ended question to allow participants to comment on the questionnaire. The survey received a total of 57 responses resulting in an overall response rate of 32.5%. Of the received 57 responses, 12 responses were incomplete and were discarded from further analysis. The survey responses were analyzed in line with the objectives of the pilot study.

- **Assess the appropriateness of the instrument** – The comments from the participants were overall positive indicating the appropriateness of the survey instrument. There were no questions that were left unanswered or answered with "not applicable" option by large number of respondents thereby indicating that the questions were clear.

- **Average time for survey completion** - The average time taken by the 45 respondents to complete the survey was 26 minutes. As the time taken by a few of the respondents appeared inconsistent with the remaining data set, box plot, an exploratory data analysis tool was used to assess potential outlier data values (Williamson et al., 1989). After removing the outliers (243, 174, 69 and 47 minutes) obtained using box plot, the average survey completion time was re-computed. The average time obtained was 14 minutes which appeared to be reasonable and within the time range (12-15 minutes) specified in the questionnaire.

- **Survey response rate** – The percentage of usable survey responses after removing the incomplete surveys was 25.7% giving an indication of how many survey invitations should be sent to get the intended number of responses for the final study.

- **Survey Completion rate** – Survey completion rate indicates the percentage of participants who completed the surveys in comparison to the total number of participants who attempted the survey. The survey completion rate for the pilot survey was found to be 79%, which is deemed acceptable.

- **Survey Attrition period** - The survey responses of dropped out participants were examined to find out if there was a pattern in the drop out. 11 of the 12 participants dropped out after the first survey question and most of them spent only a minute or two filling out the survey. This early dropout rate indicated that the respondents may not have had actual intention of participation and were not dissuaded by the survey content.

Based on the recommendations from the pilot survey, it was decided to add the text "not aware" along with the "not applicable" option. The survey pilot testing did not reveal any need to re-sequence or eliminate any question from the final survey.   The survey administration mode (online) and the survey dissemination channel (via LinkedIn) appeared to be adequate from the survey response and completion rates. Therefore, it was decided to continue with the proposed participant recruitment strategy. The next stage in the research was the administration of the actual survey.

3.4.4 Main Survey Administration

This study employed purposive sampling (judgment sampling) – a non-random sampling technique where individuals meeting specific criteria are recruited to participate in the study (Gideon, 2012).   The purposive sample for this study were academic and administrative staff working in the UAE HE sector. To recruit participants for the study,

the researcher used the LinkedIn platform and sent out survey invitations to approximately 3000 HE professionals representing over 70 HEIs in the UAE. This ensured the representativeness and heterogeneity of the sample chosen in terms of the broad spectrum of institutions covered. The survey was administered over a period of 5 months during 2021 and the Qualtrics survey link along with a personalized invitation letter was sent out on LinkedIn.

To increase the survey response rate, this study employed recommended strategies in the literature (Baruch and Holtom, 2008; Manzo and Burke, 2012) such as personalized salutations, cover letter, embedded survey link in the invitation, and survey link conveying educational institution's identity as a means of enhancing legitimization. Two reminder messages were sent 4 weeks and 8 weeks after the initial survey invitation as a way of increasing participation.

The survey received a total of 484 responses of which 56 responses were removed from the final analysis as they were largely incomplete. Therefore, the survey had a total of 428 usable responses with a usable response rate of 14.2%. An important issue to consider was whether the number of received responses was adequate and whether it was representative of the target population (Bryman, 2016). As per the 2019-2020 CAA Factbook (Commission for Academic Accreditation, 2020), there are 18545 faculty members of various disciplines across licensed HEIs in the UAE. Assuming that there are an equal number of administrative staff working in the UAE higher education sector, the total population size is approximately 37,000. The adequacy of the sample size was determined using the formula used for calculating the sample size of a finite sample (Cochran, 2007) provided below.

$$n = \frac{N \times Z_{\alpha/2}^2 \times \sigma^2}{\varepsilon^2 \times (N-1) + Z_{\alpha/2}^2 \times \sigma^2}$$

where N is the population size, σ is the standard deviation, α = significant level, and ε is accuracy

$$n = \frac{37000 * (1.96)^2 * 0.5 * 0.5}{(0.05)^2 * 36999 + (1.96)^2 * 0.5 * 0.5}$$

Calculating the above gives n = 380.2. Therefore, the sample size of 428 usable responses appeared adequate for this study. The survey received a reasonable number of responses from the two main categories (academic and administrative staff) of respondents although the academic staff clearly outnumbered administrative staff respondents. Based on university ownership, a reasonable number of responses were obtained from private, public and branch campuses. In terms of experience of respondents, over 53% of the respondents had over 10 years while 23% of the respondents had 6 to 10 years of working experience in the HE sector. It can be assumed that the quality of responses should be high given the length of respondent experience within the HE sector.

Table 3.1 Classification of Survey Respondents

	Responses	Percentage
Primary Job Role		
Academic	267	62.4%
Administrative	161	37.6%
Total	**428**	**100%**
Academic Staff		
Assistant Professor	88	33.0%

Associate Professor	43	16.1%
Professor	19	7.1%
Lecturer	41	15.4%
Senior Lecturer	19	7.1%
Instructor	19	7.1%
Other	38	14.2%
Total	**267**	**100%**
Administrative Staff		
Entry Level	12	7.5%
Mid-Level	60	37.3%
Senior/Managerial	64	39.8%
Director/Executive	20	12.4%
Other	5	3.1%
Total	**161**	**100%**
Institution Type		
Locally owned private university	143	33.4%
Branch campus of foreign university	102	23.8%
Public university	183	42.8%
Total	**428**	**100%**

Years of experience (HE sector)

< 1 year	9	2.1%
1-5	93	21.8%
6-10	98	23.0%
11-15	85	19.7%
16-20	66	15.5%
21-25	44	10.3%
> 25 years	33	7.7%
Total	**428**	**100.0%**

3.4.5 Data Validation

Prior to proceeding with the main data analysis, the validity and reliability of the data and constructs used in the study were established using various tests. The following section contains the rationale and results obtained for the data and construct validation tests such as normality, linearity, multicollinearity, common method bias, first-order and second-order construct validation and construct reliability. The statistical data analysis was conducted using SPSS version 25.0 and AMOS version 25.0.

3.4.5.1 Test for Missing Data

Missing data can affect the results of data analysis. Missing data are categorized into Missing completely at random (MCAR), Missing at random (MAR) and Not Missing at Random (NMAR) (Meyers et al., 2013). If data is MAR or MCAR, then researcher has the freedom to ignore such cases as it will not affect the data analysis (Meyers et al., 2013). NMAR data poses problems in terms of data analysis as the missing data is directly

related to the nature of the data that is being requested of the participants. In this study, if the majority of data relating to an entire construct was missing then it was treated as belonging to the NMAR category. This study adopted the Listwise deletion (Complete Case Analysis) method suggested by Allison (2003) for dealing with NMAR data in which records are deleted from the sample if they have missing data on a specific construct. The full data set consisted of 484 responses of which 56 responses were deleted as these responses missed entire or the majority of data pertaining to a specific construct(s).

3.4.5.2 Test for Assessing Normality

Most of the multivariate analysis such as Confirmatory Factor Analysis (CFA) and Structured Equation Modeling (SEM) used in this study are done on the assumption of normality which means that the data follows a normal distribution (Tabachnick et al., 2007). Skewness and kurtosis are measures used to test assumptions of normality (Weston and Gore Jr., 2006). If the absolute values of skewness and kurtosis are less than 2, the data is considered to be normal (Fein et al., 2022). In the data set, the item level absolute values of skewness and kurtosis were in the range .016 and 1.36 and in the range .019 and 1.499 respectively as seen in Appendix 4. As seen in Appendix 5, at the construct level, absolute skewness and kurtosis values were in the ranges 0.241 and 1.039, and 0.065 and 1.23 respectively thereby satisfying the assumptions of normality. As the data met normality conditions, there was no requirement for data transformation and the original data was used for remaining statistical analysis.

3.4.5.3 Linearity

One of the underlying assumptions for using multivariate techniques such as factor analysis is that the variables used in the analysis are related to each other in a linear manner (Meyers et al., 2013). Linearity between pair of variables can be roughly assessed by an inspection of bivariate scatterplots (Tabachnick et al., 2007). An oval-shaped or elliptical scatterplot indicates that the pair of variables is normal and linearly

related (Tabachnick et al., 2007). As there are several variables in this study, it was not practical to examine scatterplots of all the variable pairs. Scatterplots of three pair of variables were randomly checked and were found to meet assumptions of linearity (see Appendix 6).

3.4.5.4 Multicollinearity

Multicollinearity refers to a high degree of correlation between two or more predictor variables in that they become redundant (Weston and Gore Jr., 2006; Tabachnick et al., 2007). The issue with multicollinearity is that it distorts the interpretation of regression coefficients of highly correlated variables (Meyers et al., 2013). The statistic of Variance Inflation Factor (VIF) is used as a measure of multicollinearity and Meyers et al. (2013) suggests that a value of above 10.0 indicates multicollinearity issues. In this study, all VIF scores were within the value of 10.0 (Appendix 7) indicating that multicollinearity problems would not interfere with the regression models.

3.4.5.5 Common Method Bias

Self-administered surveys are prone to problems of common method bias which affects the validity and reliability of the study results (Kock et al., 2021). Common method bias arises when the same survey instrument is used for measuring dependent and independent variables and the same respondents are answering all these questions within a self-administered survey (Podsakoff et al., 2003; Kock et al., 2021). Kock et al. (2021) suggests several procedural and statistical controls that can be used prior to and post the administration of the survey to control the negative effects of common method bias. This study adopted the procedural remedies of conducting survey pre-test and pilot testing to ensure that the survey was concise and unambiguous (Kock et al., 2021). Post-data collection, the statistical control of Harman's single factor test suggested by Podsakoff et al. (2003) was used to test for common method bias. Common method bias issue is said to be present if Exploratory Factor Analysis (EFA) with all the study variables

loaded results in one factor accounting for more than 50% of the variance (Kock et al., 2021). In this study, the unconstrained one-factor EFA accounted for only 47.2% of the variance demonstrating that common method bias is not concern.

3.4.6 Construct Validity

Construct validity examines relationships among constructs (latent variables) that are not operationally defined or directly measured (Harrington, 2009) and can only be measured indirectly through its indicators (Kline, 2015). Construct validity is an assessment of the measurement validity of a construct that has been deduced theoretically (Bryman, 2016). The three main aspects of construct validity are content validity, convergent validity and discriminant validity (Ghauri et al., 2020).

3.4.6.1 Content Validity

Content validity refers the extent to which scale items are representative of the construct it is purported to measure (Ghauri et al., 2020). Content validity cannot be established by statistical analysis (Kline, 2015) and is established through a subjective assessment (Hair et al., 2019). Two ways of enhancing content validity are expert opinion and using survey items from previously published work with validated survey instruments. In this study, extensive literature review was conducted while developing the survey instrument and some of the measurement items used in the survey have already been used in other studies. In addition, the survey instrument was thoroughly evaluated by experts prior to administration as detailed in sections 3.3.2 and 3.3.3 of this chapter.

3.4.6.2 Convergent Validity of Constructs

Convergent validity measures the extent to which indicators measuring the same construct correlate with each other (Saunders et al., 2016) and the condition for convergent validity is that these correlations should be of appreciable magnitude (Kline, 2015). The convergent validity of each of the constructs was assessed by conducting

separate (first-order) Confirmatory Factor Analysis (CFA) for enablers, KM practices, and performance outcomes employing the maximum likelihood approach using AMOS 25.0 software. CFA is a statistical technique to test the convergent validity (unidimensionality) of a latent construct by measuring the extent to which the observed variables combine to identify underlying hypothesized latent construct structure proposed (Weston and Gore Jr., 2006). Unidimensionality implies that indicators are significantly associated with the latent construct and that each indicator is only associated with one latent construct (distinctiveness) (O'Leary-Kelly and Vokurka, 1998).

The standardized factor loadings obtained (correlation between the individual items and their corresponding construct) was used to assess the convergent validity. Convergent validity is achieved when all measured items have acceptable factor loadings for the respective latent construct which is at least > 0.5 and a corresponding critical ratio above 1.96 (p<0.05) (Anderson and Gerbing, 1988; Kline, 2015). Any item with a factor loading of less than 0.5 should be deleted to improve the convergent validity of the latent construct (Kline, 2015). However, it is evident from the Tables in Appendix 8, 9 and 10 that all items had a factor loading above 0.5 at p<0.05 thereby establishing convergent validity of the first order constructs.

3.4.6.3 Operationalization of Second-order Constructs

In this study, KM practices (KMP) and KM performance outcomes have been theoretically conceptualized as second-order constructs. KM is a complex phenomenon comprising of different practices and cannot be sufficiently studied using a single construct. The same applies to KM performance outcomes which is comprised of several dimensions. There is enough theoretical and empirical evidence justifying the operationalization of KMP and performance outcomes as second-order constructs. The earlier KM literature covering the HE sector examined individual KMP in isolation (e.g. Omerzel et al., 2011; Siadat et al., 2012; Fullwood et al., 2013) rather than in an integrated manner. However, recent studies have started to conceptualize KMP as a second-order construct (e.g., Rehman and Iqbal

(2020) operationalized KMP as a second-order construct comprising of 3 dimensions namely knowledge acquisition, knowledge sharing and knowledge utilization; Mahdi et al. (2019) operationalized KMP as a second order construct comprising of six first-order constructs). While the studies mentioned above considered only a smaller sub-set of KM dimensions, this study based on a thorough literature review has conceptualized KMP as a second-order construct comprising of 9 dimensions. The study by Zack et al. (2009) conceptualized organizational performance outcomes as a second-order construct comprising of innovation, quality, customer satisfaction and operational excellence.

The statistical validity of these theoretically conceptualized higher second-order constructs was assessed using second-order CFA. To establish the convergent validity of second order constructs, the second-order factor loadings also should be greater than 0.5, with a corresponding critical ratio above 1.96 (Anderson and Gerbing, 1988; Kline, 2015). The results of the second-order CFA run separately for KMP and organizational performance show that all the second-order factor loadings were well above 0.7, with a critical ratio above 1.96 (See Appendices 8 and 9). The results confirmed the existence of a (higher) second-order model of KMP comprising of nine first-order constructs. This shows that all nine constructs together underpin an HEI's systematic KM efforts. In other words, each construct is necessary, but not sufficient by itself for efficient and effective KM. Similarly, for performance outcomes, the results of the CFA confirmed the existence of a second-order performance model comprising of three first-order constructs. This confirms that KMP and performance outcomes can be operationalized as second-order latent constructs.

3.4.6.4 Discriminant Validity of Constructs

Discriminant validity measures the extent to which scales used to measure theoretically distinct latent constructs diverge or do not overlap (correlate) with each other so that one latent construct can be discriminated from another latent construct (O'Leary-Kelly and Vokurka, 1998; Saunders et al., 2016; Taherdoost, 2016). To test the discriminant

validity, the study examined the correlation coefficients between pairs of constructs. As seen in Appendix 11, all pair-wise correlation coefficients for distinct constructs were less than one thereby indicating the uniqueness of constructs (Anderson and Gerbing, 1988). The results also met the suggested threshold value of less than 0.85 suggested by Kline (2015) with the majority of the correlations being considerably lower than the threshold value and thereby satisfying assumptions of discriminant validity.

3.4.6.5 Reliability of Constructs

Reliability refers to internal consistency of scale items that measure a construct (Saunders et al., 2016). This study used the Cronbach's alpha for assessing reliability of constructs as it is considered as the most appropriate measure of reliability while using Likert scales of measurement. The value of Cronbach's alpha ranges from 0 to 1 and a higher value indicates higher correlation among the scale items that measure a construct (O'Leary-Kelly and Vokurka, 1998; Saunders et al., 2016). A Cronbach value of >=0.7 indicates that factors combined within each construct are reliable and measuring the same thing (Saunders et al., 2016). In this study, all the constructs yielded a Cronbach's α of above 0.8 thereby indicating that the measures used are highly reliable.

Table 3.2: Cronbach α of Constructs

Constructs	Number of Items	Cronbach's α
PRACTICES		
Knowledge Acquisition	6	0.853
Knowledge Generation	6	0.834
Knowledge Validation	4	0.907
Knowledge Storage and Organization	7	0.898
Knowledge Sharing	9	0.913
Knowledge Retrieval	4	0.913
Knowledge Application	5	0.904
Knowledge Protection	6	0.927
Learning and Improvement	5	0.931
ENABLERS		
Culture	10	0.961
Leadership	4	0.920
Structure	6	0.909
Information Technology	6	0.946

Constructs	Number of Items	Cronbach's α
PERFORMANCE OUTCOMES		
Innovation Speed	4	0.824
Innovation Quality	5	0.920
Operational Efficiency	3	0.898

3.4.7 Descriptive Statistics

Descriptive statistics provide a useful means for summarizing data and interpreting the characteristics of a data sample. Descriptive statistics were used to answer part of the research questions covering the extent of implementation of KM practices, extent of prevalence of enablers and the extent of improvement in performance. Descriptive statistics were computed at both the construct level and at the individual item level for all KM practices, enablers, and performance outcomes. The descriptive statistics used in this study are Arithmetic Mean ($\overline{X}$) and Standard Deviation (SD). Mean scores, a commonly used measure of central tendency was used to understand the extent of adoption of KM practices, perceived strength of the enablers, and perceived performance outcomes on a scale of 1-5. Also, standard deviation (a measure of dispersion) was used to examine the average amount of data variation around the mean (Bryman, 2016). Standard deviation (usually less than 1) demonstrates reasonable consistency among responses.

3.4.8 Structural Equation Modeling

As this study aimed to test the hypothesized relationship between enablers, KMP and performance outcomes, the statistical technique of Structural Equation Modeling (SEM) was used. SEM was used to answer part of the research questions covering the extent of influence of enablers on KMPs and the impact of practices on performance. SEM is a widely used method for modelling and testing complex phenomena regarding how constructs are theoretically related and the direction of such relationships in a quantitative manner (Schreiber et al., 2006; Schumacker and Lomax, 2016).

SEM is a confirmatory technique encompassing two components – a measurement model and structural model and it allows for testing the extent of interrelationships and covariances between several latent variables as well as show the interrelations among latent constructs and observable variables in the hypothesized model (Hoyle, 1995; Schreiber et al., 2006; Kline, 2015). SEM allows to assess the extent to which variations in one variable will result in variations to one or more variables based on correlation co-efficient (Hoe, 2008).

SEM enables estimating the strength of relationships between variables by means of the standardized path coefficients (β). The standardized path coefficient (β) values range between -1 and +1 and a path co-efficient of less than 0.30 represents low strength of relationships, a coefficient value between 0.3 and 0.7 represents moderate strength and a value of >0.7 represents strong relationship (Hoe, 2008; Kline, 2015). Although there are different opinions on the adequate sample size for SEM, a minimum sample size of 200 with no problems associated with data such as non-normal distribution is considered adequate and understood to provide sufficient statistical power for data analysis (Weston and Gore Jr., 2006;). Hence, the available sample size of 428 can be considered adequate for conducting SEM.

While using SEM, multiple fit indices are required to ascertain whether the associations between latent and observed variables in the estimated model are reflected in the associations formed by the data (Weston and Gore Jr., 2006). Literature suggests that a single fit index is not adequate to describe the strength of the model's prediction (Meyers et al., 2013). Therefore, this study employed absolute fit measure indices of Chi-square ($\chi2$) statistic, Goodness of fit index (GFI) and The Root Mean Square Error of Approximation (RMSEA), relative fit measure of Comparative fit index (CFI) and Parsimonious fit measure Adjusted Goodness of fit index (AGFI) to assess the overall fit of the structural model. While absolute fit measures suggest how well correlation of the hypothesized model fits the correlation of the actual data, relative fit measures provide an

indication of the relative fit between the data and the model on a continuum between worst to perfect fit (Meyers et al., 2013). Parsimonious (adjusted) fit measures determine the impact of adding additional parameters to the hypothesized model (Meyers et al., 2013). The descriptions and acceptance criteria applicable for the model fit indices used in this study is provided in Appendix 12.

Table 3.3: Model Fit Indices for the Structural Model

Fit Index	Value	Acceptance
$\chi 2$ /DF	2490.09/1011 = 2.463	<3 (good)
CFI	0.927	>0.90 (good)
GFI	0.922	>0.90 (good)
AGFI	0.883	~0.90 (acceptable)
RMSEA	0.059	<0.08 (good)

As seen in table 3.3 above, all the fit indices demonstrate a good model fit for the structural model.

3.5 Interviews (Phase 2)

The purpose of the qualitative phase of this study was to complement and enrich the outcomes obtained from the quantitative phase. While the surveys enabled to find out the extent of implementation of KMP, influence of enablers and organizational performance, and their relationships, the interview was intended to gauge out those aspects, mainly, the 'how' and 'to what extent' parts of the research questions. A semi-structured interview was preferred for the qualitative phase of the study as it is regarded as a suitable method for exploring people's perceptions on a topic (Kallio et al., 2016). Semi-structured interviews which are guided by a list of questions covering the specific topics related to the research study provides focus to the discussion while also providing the interviewee with the flexibility on how to reply (Bryman, 2016). Further, literature (e.g., Bryman, 2016; Saunders et al., 2016) provides evidence to the ability of interviews in enhancing the understanding of the relationship between dependent and independent variables, which

also provides justification to the methodological choice made. Another reason was that the flexibility offered by semi-structured interview may enable exploration of new aspects within the main ones allowing researcher to probe the interviewee (Barriball and While, 1994) based on the themes that arise during the interview (Fullwood et al., 2019). This feature may help in uncovering unique aspects relating to KM implementation in the HE sector not captured in the surveys or in extant literature.

3.5.1 Development of the Interview Schedule

The interview guide was prepared based on the steps suggested by Moser and Korstjens (2018) and Kallio et al. (2016). The first step involved a critical review of literature of KM in the HE sector (specifically qualitative studies). As this interview was explanatory in nature, the findings from the survey phase of the study were analysed to find out the factors that needed deeper understanding to better answer the research questions. In the next step, a preliminary interview schedule was developed operationalizing the knowledge from literature review and survey findings. The interview schedule design was influenced by the following factors drawn from literature:

A. Use a broad and open-ended question as the initial question in order to convey the nature and topic of the research (DiCicco-Bloom and Crabtree, 2006)

B. Frame the questions in such a way that it is easy to understand, encourage a dialogue, are open-ended and that there are no leading questions (Bryman, 2016)

C. Formulate the questions with starting words such as "what", "when", "Why" or "how" to elicit descriptive responses (Kallio et al., 2016)

The interview schedule began with pre-interview questions that sought to gather information on the interviewee background. The next two interview questions were meant to steer the focus of the interviewee towards KM in HEIs and this was followed up with

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focused questions covering KM in HEIs. A pilot test of the interview schedule was conducted to confirm that the questions were relevant (Kallio et al., 2016), adequately covered the topics to be investigated and conveyed the intended meaning. The pilot testing employed the field-testing strategy whereby the interview schedule was tested with potential study participants (Kallio et al., 2016). The advantage of field-testing is that it allows gaining assurance that the questions are relevant and capable of extracting the perceptions of the participants on the topic. It also helps to ascertain if the sequencing of the questions is correct and assess whether additional follow-up questions are needed (Naz et al., 2022). In this study, field-testing was conducted with two participants and resulted in replacing the questions on individual KM practices with an overall question seeking to understand how KM is practiced in the participant's HEI. Based on the participant feedback, the question sequence in the interview schedule was also subject to some changes. The interview protocol used is provided in Appendix 13.

Developing Interview Schedule
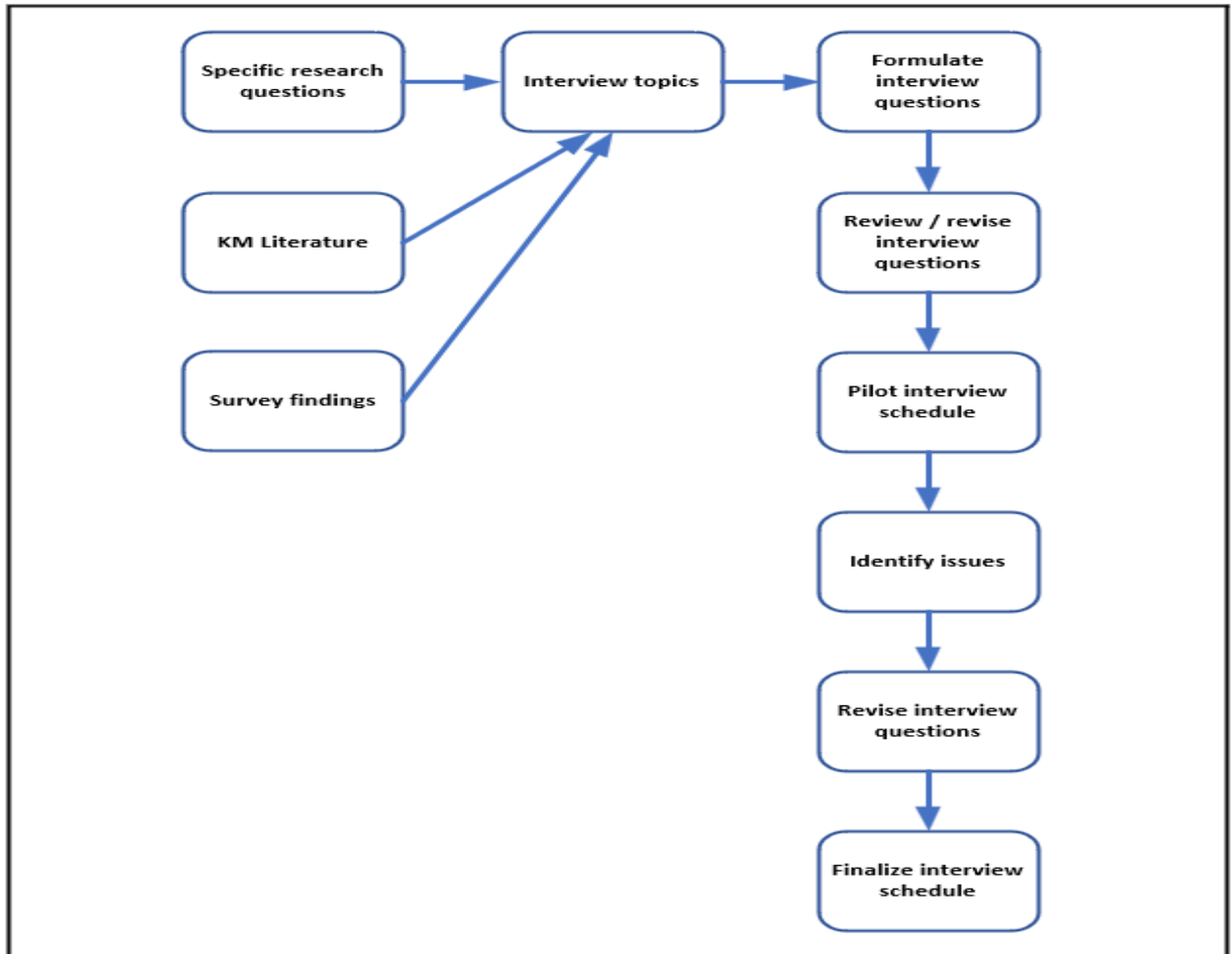
Figure 3.4: Steps in Interview Schedule Development

3.5.2 Sampling Approach

The participants for the qualitative interview were selected through purposive sampling, a non-probability sampling method (Saunders et al., 2016), from among the pool of participants from the quantitative survey. The interview participants were selected based on the pre-specified stratification factors type of university (public, private (local or transnational) that the interviewee is employed at, and interviewee primary role (academic or administrative) that are relevant to the research study (Francis et al., 2010).

Literature (e.g., Bryman, 2016; Braun et al., 2019) suggests data saturation as the pointer for determining adequacy of sample sizes in qualitative studies. Saturation refers to the point in data collection until it generates no new data or information (Guest et al., 2006; Braun et al., 2019). Based on an evidence-based study, Guest et al. (2006) recommended that twelve interviews were adequate to reach data saturation for studies which employed semi-structured interviews. Braun et al (2019) is critical of using the concept of saturation as the determinant factor of sample sizes especially for qualitative studies which employ methods such as Thematic Analysis for data analyses. Braun et al. (2019) as a pragmatic solution suggests that at least five to six interviews are adequate for a small project if the data collected is rich, the sample is relatively homogenous and the research questions are focused. A total of twenty interviews were conducted covering academic and administrative staff at public, local and transnational HEIs.

3.5.3 Interview Administration

The interviews were conducted in an online mode using the Teams platform. Similar to face–to-face interview, it allows interviewers and interviewee to see each other during the interview process, allows interviewer to change interview question sequence or use follow-up probing questions as new themes emerge. Literature suggests that online interviewing offers the same benefits as face-to-face interview such as the ability to see and take notes during the interview, take cues from facial expressions, non-verbal reactions and body language of interviewees as well as develop rapport with the interviewee (Adeoye-Olatunde and Olenik, 2021; de Villiers et al., 2022). Further, the participants of the study were very familiar and comfortable with using online communication channels due to the shift to fully online mode of work and studies during the pandemic. The online interviews provided flexibility in terms of interviewing time in that it was possible to schedule the interview after work hours according to the interviewee's convenience. The use of the Teams platform allowed the meetings to be recorded and enabled live transcription. On average, an interview took about 30 to 45

minutes. The researcher took all reasonable steps to make the interview process transparent and convenient for the participants such as scheduling the interview based on the interviewee's convenience, providing the interview protocol and participant information sheet prior to the interview, and providing assurances of confidentiality. At the start of the interview, the researcher provided a background and aims of the research study and appreciated their willingness to participate in the interview as a means of establishing a rapport with the interviewee (Priyadarshini, 2020). In addition, the researcher made attempts to maintain the rapport throughout the interview process by being attentive, friendly, encouraging them to express their opinions freely, and repeating questions if they were not clear (Brown and Danaher, 2019).

Some of the interviewees held senior academic or administrative positions in their respective HEIs or had previous research experience in KM and could be classified as 'elites' due to their senior management positions within the organization or due to their expertise in the topic (Harvey, 2011). While interviewing elites, the interview process mentioned above were followed. Two of the interviews were re-scheduled as interviewees had some unanticipated meetings to attend. The researcher did not experience any power imbalance affecting the interview process as the interviewer was well prepared for the interview which helped the interviewer's confidence and smooth conduct of the interview. The structured nature of the interview helped in obtaining focused response from the interviewees and maintaining focus and not veer the conversation in a different direction (Harvey, 2011). Table 3.4 provides interviewee details.

Table 3.4: List of Interviewees

Participant	Job Role	Designation	HEI Type	Years of experience (HE Sector)
Participant 1	Mid-level	Senior Institutional Research and Planning Officer	Private University	6
Participant 2	Senior Lecturer	Senior Lecturer	Private University (branch campus)	11
Participant 3	Senior/Managerial	Manager of Administration (Research Institute)	Private University (branch campus)	22

Participant	Job Role	Designation	HEI Type	Years of experience (HE Sector)
Participant 4	Associate Professor	Associate Professor	Public University	6
Participant 5	Senior Lecturer	Senior Lecturer	Private University (branch campus)	18
Participant 6	Professor	Dean	Private University (branch campus)	17
Participant 7	Senior/Managerial	Manager, Alumni and Industry Engagement	Private University (branch campus)	19
Participant 8	Mid-level	Research Ethics and Governance Administrator	Private University (branch campus)	10
Participant 9	Director/Executive	Director, Institutional Effectiveness	Private University	20
Participant 10	Senior/Managerial	Manager, Accreditation	Public University	18
Participant 11	Professor	Dean	Public University	21
Participant 12	Associate Professor	Program Director	Private University (branch campus)	16
Participant 13	Mid-level	Faculty Coordinator	Private University (branch campus)	6
Participant 14	Senior/Managerial	Associate Director, Institutional Research	Private University	12
Participant 15	Mid-level	Administration Officer	Public University	5
Participant 16	Assistant Professor	Head of Program	Private University	15
Participant 17	Assistant Professor	Head, Doctoral Training Centre	Private University	10
Participant 18	Lecturer	Lecturer	Public University	7
Participant 19	Senior/Managerial	Head of Planning and Projects	Private University	5
Participant 20	Assistant Professor	Assistant Professor of KM	Private University	7

3.5.4 Researcher's Position

At the time of conducting the study, the researcher worked at an HEI in the UAE. Drawing on Dwyer and Buckle (2009), the researcher's position can be considered as that of an insider as the researcher is a member of the HE community in the UAE. Conducting insider research offers several advantages such as pre-existing knowledge of the research context, better understanding of the terminology used in the field, establish

credibility and rapport with research participants, and easy access to research participants (Greene, 2014; Mercer, 2007). In this research study, the researcher's experience working in the UAE HE sector helped in sourcing the interviewees for the study and gaining acceptance from the interview participants (Dwyer and Buckle, 2009). The researcher's experience working in different types of universities (public, transnational and local) in the UAE helped in having a better contextual knowledge of the UAE HE landscape. Also, having worked in an administrative role in the UAE HE sector, the researcher was better able to resonate with the lived experiences of interviewees who worked in administrative roles.

Although the researcher's role was not directly connected to the research study, the researcher took several steps to reduce bias during the interviews and the subsequent reporting of results. Although a semi-structured interview allows the researcher to ask additional questions or change the sequence of questions as the interview progresses, the use of a standardized interview schedule helped the interviewer from not digressing from the topic. Further, the pilot interviews were instrumental in refining the interview schedule and making the questions clearer. Although the topic of the research study cannot be considered sensitive, there was a possibility of research participants refraining from sharing specific details about their institution or institutional practices due to the researcher's identity as an insider. The researcher attempted to gain confidence of the research subject by giving repeated assurances of confidentiality. In order to minimize bias, clarifications were sought with interviewees during the interview process when a particular aspect mentioned was unclear. During the interview, the interviewer made conscious efforts to not reveal their thoughts about the topic studied in order not to distract participant's viewpoints.

The use of the CAQDAS tool helped in the systematic organization of data thereby reducing researcher bias. The use of the Teams platform allowed for automated live transcription of the interview data and this process also helped in interviewer's

assumptions about the topic not influencing the transcription process. Furthermore, the raw interview transcript was sent back to the interviewees to make sure that their thoughts had been accurately captured thereby improving the trustworthiness of the research process (Mercer, 2007).

Based on the researcher's positionality, the researcher had a pre-conception that the extent of adoption of KM practices in the UAE HE sector was marginal based on the experience of working at multiple institutions. However, the careful design of the research, the various measures used to minimize researcher bias, the use of tools for data transcription, organizing and coding served to ensure that the researcher's bias did not impact the reporting of the results which showed that there was considerable implementation of KMPs in the UAE HE sector.

3.5.5 Trustworthiness and Credibility of Interview Data

As an alternative to the use of validity and reliability measures used in quantitative study, Lincoln and Guba (1985) and Bryman (2016) proposed the use of trustworthiness measures to assess the quality of research. Trustworthiness is constituted of four criteria namely credibility, transferability, dependability and confirmability (Lincoln and Guba, 1985).

Credibility of the study entails confidence that the research findings are true and accurately represents the views of the research participants (Korstjens and Moser, 2018). Lincoln and Guba (1985) suggest strategies such as prolonged engagement, persistent observation, triangulation, peer debriefing, and member checking as strategies for enhancing credibility of findings. Korstjens and Moser (2018) suggests it may not be possible or practical to employ all these strategies and it is sufficient to use one or more strategies based on the nature of the study. For this study, the strategy of member check was used and the raw transcript of interviews were sent to research participants. Member check allows to check data quality and refers to the process of the researcher feeding

back data and interpretations to the research participants for corroboration of the account (Creswell and Miller, 2000).

Transferability refers to the extent to which the research results hold in other contexts (Connelly, 2016). As a measure to support transferability of framework and findings, a detailed description of the research context, participants and analysis process have been provided (Cohen et al., 2007). This will enable future researchers to adopt/modify the research framework in their respective research setting, determine whether their study is comparable with this study and if comparable they can relate findings of this study with their research findings. Dependability refers to the availability of enough detail of the research process for possible replication of the study (O'Kane et al., 2021). In this study, sufficient detail of the steps followed in the research process is provided thereby contributing to the dependability of the study.

Confirmability parallels objectivity in quantitative studies and refers to researcher's neutrality (Bryman, 2016). Connelly (2016) suggests several strategies for ensuring confirmability such as keeping detailed notes of researcher's decisions, member-checking and peer de-briefing. Kallio et al. (2016) notes that following a rigorous approach to interview schedule design such as developing the interview schedule through an in-depth literature review and conducting pilot testing can improve confirmability. This study enhanced confirmability through member-checking, literature review backed interview schedule development and a pilot testing of the interview.

3.5.6 Interview Data Analysis

The interview data was analysed using thematic analysis, a useful research tool, for organizing and analyzing qualitative data and identifying concepts and patterns (themes) embedded within the qualitative datasets (Braun and Clarke, 2006). Thematic analysis was chosen as the method to analyse data as it allows contextualizing processes or phenomena and uncovering factors that influence certain phenomena (Braun et al.,

2019). Thematic analysis as an analytical process allows for generation of themes that captures the diversity, complexity and nuances within the data even when the sample sizes are small. The analysis comprised of the following phases.

3.5.6.1 Phase 1 – Data Familiarization

The familiarization step involves the researcher immersing themselves with the depth and breadth of the collected data (Braun and Clarke, 2006). In this study, the interviews were recorded on MS Teams and the automatic transcription feature available in the software was used to generate a preliminary transcript of the interview. The recording was listened and re-listened to with the aim of correcting errors in the transcript. This step enabled in ensuring the accuracy of the transcript as well allowed the researcher to engage with the data, understand the data and draw initial meanings from the data.

3.5.6.2 Phase 2 – Initial Code Generation

This phase involves thorough and systematic engagement with the data in order to generate initial codes from the data using either an inductive or deductive approach (Braun and Clarke., 2006; Braun et al., 2019). Coding involves group of data that convey similar meaning (Braun et al., 2019).

The transcripts were uploaded to the online Computer Assisted Qualitative Data Analysis Software (CAQDAS) tool Delve which helped in organizing the data from across the transcripts. CAQDAS tools act as a single platform that supports multiple functionalities such as data exploration, organization and integration (Oswald, 2019). CAQDAS helps in data organization, retrieval of similarly coded text segments simultaneously, search for codes or key words and maintain an audit trail (O'Kane et al., 2021). CAQDAS helps to better understand data, explore multiple interview scripts, easily code and re-code, find out code frequencies and remove codes that are redundant, combine similar codes or remove irrelevant codes and thereby enhance and refine the code scheme iteratively

(Geisler, 2018) while being able to maintain a trail of each of the steps followed. The ability to retrieve similarly coded text segments across multiple interview scripts helps to assess the consistency of the coding process (O'Kane et al., 2021). CAQDAS enhances coding efficiency especially when dealing with many or lengthy interview transcripts. In sum, CAQDAS tool helps in enhancing the transparency and trustworthiness of the research process while allowing the researcher to focus on and enhance data analysis and interpretation.

Each transcript was read multiple times and codes were added within the relevant data extract. The coding was largely deductive with research questions and extant KM literature guiding the coding process. The initial coding process resulted in the generation of 362 codes. The figure 3.5 below provides an example of the initial coding:

So I think that process in some ways is an institutional mechanism to ensure that whatever you create is also disseminated to people or at least people have access to it, right? The other ways are more conscious mechanisms at an institutional level, which is of culture building, where because we are an academic institution having teaching and learning forums for example where people come and share what they're doing in terms of you know the best practices. Again I'm strong believer that people learn best when they share and when they get feedback and there is a peer-to-peer reflection that happens peer-to-peer observation that happens right if somebody is doing something great. Uh, so that's another thing that I feel personally. Again, this is my view that if somebody is doing something really well, multiply the positives and then the others will take and absorb the positives, right?

| Access protocols as means of knowledge protection | Knowledge sharing mechanism | Organizational culture enabling KM |
| Sharing of best practices | Teaching and learning forums for knowledge sharing |

Figure 3.5: Coding Sample

Once all the transcripts were coded, the software tool Delve eased the process of organizing similarly coded data extracts from across transcripts. The software also helped to extract the list of codes with the related data extracts. The codes were reviewed again with the purpose of removing redundant codes and merging codes that are similar. This process resulted in the refinement of the code list and the codes pertaining to specific

themes are provided in chapters 4, 5 and 6 in accordance with the research questions answered.

3.5.6.3 Phase 3 – Generating Themes

This phase begins after all the data has been coded and involves engaging with the coded data in a systematic manner and deriving meaning across the dataset (Braun et al., 2019). The focus shifts from individual data codes to collating codes that convey similar meaning under the umbrella of themes (Byrne, 2022). Themes generally represent something meaningful in relation to the research question (Braun et al., 2019).

During this phase of the study, the codes were analysed and grouped under themes. The development of themes were guided by the research questions and the KM framework proposed in the study. Thematic analysis allows for a deductive process of analysis where the themes are theory-driven and in the case of this study the KM framework provided a starting point for identifying the themes (Selvam and Collicutt, 2012). In deriving themes and sub-themes from the data, the following guidelines proposed by Braun et al. (2014) were considered:

- The relevance of the identified theme to the research question

- The appearance of the theme in multiple data sets (interviews) and whether there it conveys a core idea

- The distinctiveness across themes

Initially three themes KM Enablers, KM practices and KM outcomes were identified covering the main research questions. As data was collated under broader themes, the need for further breaking down the larger theme into sub-themes became apparent. As a result, several sub-themes were generated under each theme and the data codes were moved into the relevant sub-themes. It also became evident at this stage that some of the data codes did not fit into the themes derived on the basis of the KM framework developed

for the study. These codes were further analyzed to see whether they were coherent enough to be grouped under additional themes making the approach also data-driven (Braun et al., 2014). The codes that did not appear to fit in within any of the defined themes were collated under a theme "miscellaneous" following the process recommended by Braun and Clarke (2006).

3.5.6.4 Phase 4 – Reviewing Themes

This phase involves reviewing and refinement of themes generated during the previous phase of the study (Braun and Clarke, 2006). During this phase, Braun and Clarke (2006) recommends the use of "dual criteria" of internal homogeneity and external heterogeneity proposed by Patton (1990). While internal homogeneity refers to the process of ensuring coherence of data codes within a theme through reading and analyzing data extracts within a code, ensuring external heterogeneity seeks to ensure that the identified themes fit-in in relation to the entire dataset (Byrne, 2022).

During this phase of the study, the themes and sub-themes generated during phase 3 were carefully analyzed through a process of re-reading the codes and data extracts in light of the identified themes. Also, the data codes grouped under the "miscellaneous" category was also reviewed to see if they could be grouped to form additional themes or could be added within any of the existing themes. This process also resulted in the discarding of those codes which were not relevant to the study. This phase also led to further refinement of the sub-themes identified in phase 3 to form additional sub-themes encapsulating data codes that appeared more coherent within the new sub-theme identified. The result of this phase was a meaningful set of themes and sub-themes.

3.5.6.5 Phase 5 – Defining and Naming Themes

This phase involves further refinement of themes and sub-themes by analyzing the data extracts within them and arriving at a final decision on what themes and sub-themes to

retain or discard and determining whether there is a need for addition of more themes or sub-themes (Byrne, 2022). At this stage, each theme is analysed and a descriptive analysis is written up based on the data extracts to check if the theme is meaningful in the context of the research study. During this phase of the study, a short description was written defining each theme and sub-theme which formed the basis for producing the report in phase 6. For example, for the theme KM practices, the key KM practices (which were categorized as sub-themes) identified from the interviews were analysed and an illustrative write-up was developed for each KM practice identifying what the practice comprised, how extensively they were practiced in the UAE HE sector and any unique aspects relating to the practice found in specific type of HEIs.

3.5.6.6 Phase 6 – Producing the Report

This final phase involves analysis of the themes and sub-themes, their associated data extracts and the illustrative accounts from the previous phase to develop a detailed write-up. For this study, a full report was prepared including themes, sub-themes and interview extracts that helped to signify specific aspects of theme or sub-theme. This analytical report was then synthesized and integrated with relevant results from the quantitative study to develop the findings and discussion chapters of this study.

3.6 Chapter Summary

This chapter discussed the philosophical stance of this thesis and provided the rationale for the methodological decisions made in this study. It explained how mixed methods and the sequential explanatory research design were well-suited for answering the research questions. The chapter then covered the quantitative survey design, including the pre-tests used for validating the survey instrument and the administration of both the surveys. Following this, the chapter discussed the various validity and reliability tests conducted on the survey data before proceeding with data analysis. An overview was given of the statistical methods employed to analyze the survey data.

The chapter also briefly explained the purpose of the qualitative phase of the study and the rationale for using semi-structured interviews. It discussed the development of the interview schedule, the sampling method for selecting interview participants, and the administration of the pilot and final interviews. Measures undertaken to establish the credibility and trustworthiness of the interview data were then outlined. The last section of the chapter detailed the six steps of thematic analysis(Braun and Clarke, 2006) used in analysing the interview data. The findings and discussions of the study are presented in the subsequent chapters.

Chapter 4: Findings and Discussion (1)

4.1 Introduction to the Chapter

Chapters 4, 5 and 6 will present the findings and discussions of the study as per the research questions. Chapter 4 will present the findings related to RQ1, while Chapter 5 will cover research questions RQ2 and RQ3 and Chapter 6 will discuss RQ4. Each of these chapters will present and discuss the findings obtained from both quantitative (survey) and qualitative (interview) phases of the study. Insights gained from the analysis of both qualitative and quantitative data will be combined to answer the research questions. The thematic map provided in Figure 4.1 gives a summary of the themes and sub-themes developed as a result of the thematic analysis discussed in Chapter 3.
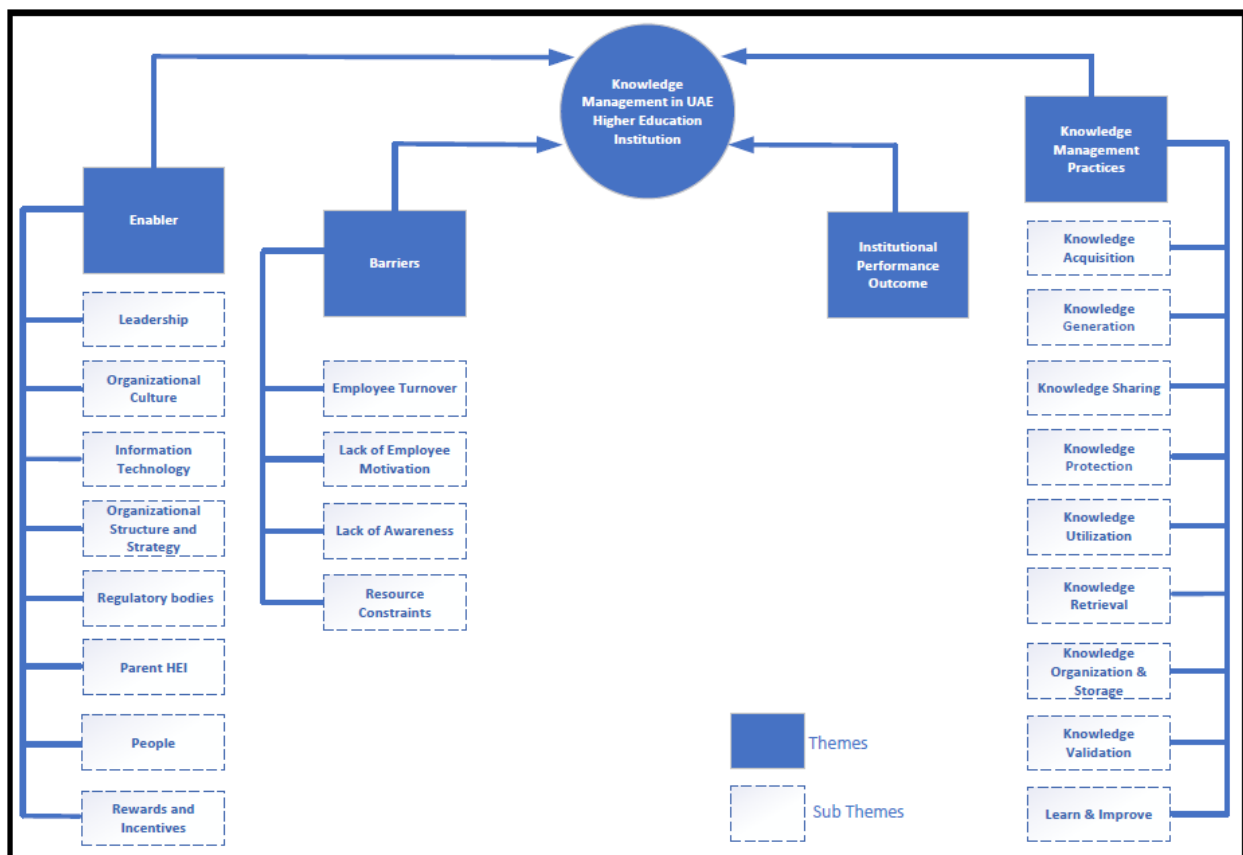
Figure 4.1: KM Themes and Sub-themes

The research question addressed in this chapter is provided below:

| RQ1 | *What are the key knowledge management practices relevant for the higher education sector? How and to what extent are they adopted in the UAE higher education sector?* |

4.2 Key KM Practices and their Extent of Adoption in UAE (KMP) (RQ1)

The first part of RQ1 regarding the key Knowledge Management practices (KMP) relevant for Higher Education Institutions (HEIs) was initially synthesized from the literature and discussed in detail (see Chapter 2). These nine KM practices form one of the principal components of the proposed KM framework. However, it is crucial to empirically establish that these practices identified from the literature are pertinent for HEIs. The survey and interview findings confirmed that the nine KMP proposed in this study are relevant and valid for HEIs. The mean scores obtained from the survey for KMP in UAE HEIs ranged from 3.53 to 3.98, indicating that these practices are adopted at a moderately high level. Additionally, interviews provided evidence for the adoption of these KM practices in UAE HEIs. Next, the study examined the second part of Research Question 1 (RQ1), which explores how and to what extent each of the KM practices are adopted in the UAE higher education sector.

The following section discusses the extent of adoption of each KMP in the UAE HE sector, using both survey results and interview findings. The construct-level descriptive statistics are presented in Table 4.1. The descriptive statistics for individual items within each of these constructs are detailed in the relevant sub-sections. As shown in the table below, the scores range from 1 to 5 on a Likert scale, with 1 being the lowest and 5 being the highest. This indicates that the range of the Likert scale is 4 points (5 minus 1). In practice, this means that a difference of 0.4 in the score between two items (e.g., a score of 3.9 and a score of 3.5) represents a 10% higher score for the item with a score of 3.9 compared to the item with a score of 3.5. Descriptive statistics illustrates the 'the extent

to which KM practices' are adopted in the UAE HE sector. The themes and sub-themes identified from the interview analysis for KM practices are summarized in Table 4.2. This illustrates 'how' KM practices are adopted in the UAE HE sector.

The abbreviations used for constructs and items are provided in Appendix 17.

Table 4.1 Descriptive Statistics of KM Practices (Construct level)

Constructs (N=428)	Mean	Std. Deviation
Knowledge Acquisition (KAQ)	3.98	0.78
Knowledge Generation (KG)	3.70	0.79
Knowledge Validation (KV)	3.93	0.80
Knowledge Storage and Organization (KSO)	3.78	0.78
Knowledge Sharing (KSH)	3.79	0.80
Knowledge Retrieval (KRET)	3.80	0.87
Knowledge Application (KAPL)	3.53	0.87
Learn and Improve (KLM)	3.55	0.96
Knowledge Protection (KPT)	3.70	0.85

The perceived mean scores of the KM practices (KMP) at the construct level ranged from $\overline{X}$ = 3.53 to $\overline{X}$ =3.98 (out of 5) with Knowledge Application (KAPL) having the lowest overall mean of 3.53 and Knowledge Acquisition (KAQ) receiving the highest mean of 3.98. The construct mean scores indicate that the implementation of the KMP in the HE sector is moderately high with none of the constructs having mean score below 3.50 or over 4.00. All the constructs had a Standard Deviation (SD) value of less than 1.0 indicating there is not a high degree of variability in the responses (Balasubramanian and Shukla, 2017) among the universities in the UAE HE sector and that there is consistency in the responses across the data sample. The standard deviation value at the construct level also indicates that implementation of KMP is relatively consistent in the UAE HE sector.

Table 4.2 KM Practices Themes and Sub-themes

KM Practices	Acquisition	Generation	Sharing	Protection
Relative extent of implementation	High	Moderate	High	Moderate
University Type	Sub-themes			
Both	• Professional development trainings • Internal stakeholder feedback solicitation • External stakeholder feedback solicitation • Library resource expansion • Inviting guest speakers • Hosting seminars & symposiums • Benchmarking • Conference participation • Holding formal and informal meetings • Collaborating with industry partners • Professional networking • Communities of practice • Brainstorming	• Developing new programs and courses • Launching executive education programs • Advancing research initiatives • Establishing specialized research centers • Fostering inter-disciplinary collaboration • Partnering with other HEIs, Industry, Community and government bodies • Leveraging and expanding upon existing knowledge bases **Challenges** • Employee turnover • Lack of collaboration (inter-disciplinary and inter-departmental)	• Dedicated portal • Institutional reports, newsletters • Conducting workshops • Creating manuals/guides • Hosting seminars/ symposiums • Employee orientation programs • Conference participation • Teaching and learning forums • Holding meetings • Communities of practice • Best practice sharing • Disseminating research • Providing mentoring programs **Challenges** • Insufficient IT systems in place • Lack of openness	• Enforcing IP policies • Securing proprietary data • Adhering to copyright policies • Establishing information security policies • Maintaining centralized knowledge repositories • Regulated data access • Standardizing handover processes • Data privacy standards • Conducting exit interviews • Institutionalizing tacit knowledge through mentoring **Challenges** • Employee turnover • Lack of efficient handover processes • Difficulty in retaining tacit knowledge
Private University	• Course materials from parent HEI • Leverage parent HEI library	• Research, teaching collaborations with parent HEI • Knowledge co-creation with parent HEI **Challenges** • Workload • Time constraints • Lack of research funding/support • Lack of training program • Competition in the HE sector	• Shared IT repository with parent campus • Small campus size • Hosting joint events with parent HEI **Challenges** • Culture of fear and job insecurity • Knowledge hiding	
Public University	• Faculty development program			• Adhering to government regulations on data protection • Penalties for data violation

Table 4.2 KM Practices Themes and Sub-themes (continued)

KM Practices	Organizing & Storage	Retrieval	Validation	Application	Learn and Improve
Relative extent of implementation	Moderate	Moderate	Moderate	Low	Low
University Type					
Both	• Knowledge storage policies • Systematic documentation of knowledge • Categorizing and structuring of knowledge • Centralized knowledge storage repository	• Availability of knowledge in a convenient format • Access to knowledge in centralized location • Categorizing knowledge • Retrieval dictated by approval process **Challenge** • Decentralized IT systems	• Periodic review of programs and subjects • Checks in place for reliability of knowledge • Knowledge validation by Individual employees/departments • Policies on periodic knowledge updation • Mechanisms for checking knowledge accuracy **Challenge** • Lack of built-in validation processes	• Applying past experience • Utilizing existing knowledge repositories **Challenges** • Under-utilization of knowledge • Inadequate analyses of existing knowledge • Inadequate use of lessons learnt	• Identifying gaps and addressing • Facilitating peer-learning • Learning from past mistakes **Challenges** • No sharing of lessons learnt • Employee reluctance to learn and improve
Private University	• Shared IT repository with parent campus for storage **Challenges** • No central repository for storage • Useful knowledge (mostly tacit) not captured	• Small university size facilitating knowledge retrieval			
Public University					

The second-order confirmatory factor analysis established the existence of an overarching KMP construct, with each of the nine KM practices (first-order constructs) contributing uniquely and strongly with factor loading ranging from 0.7 to 0.9 (Appendix 9). Literature also provides plenty of evidence in support of the view that KM is comprised of intertwined and interactive practices which complement each other (Ngoc-Tan and Gregar, 2018; Ramjeawon and Rowley, 2018; Zaim et al., 2019). Previous studies such as Mahdi et al. (2019) and Sahibzada et al. (2022) had stressed the importance of KMP to be looked at from a holistic manner and operationalized KMP as a second-order construct comprising of multiple KM practices. The interlinkage between different practices was also evident from the interview quotes.

"…I definitely feel the gap is because we don't see knowledge management as a whole, we usually think of it as separate activities without realizing that it's actually all linked somewhere….". (participant 5, Private University -branch campus)

The CFA and interview results of this study validate that KM is comprised of interlinked activities and that HEIs should attempt to develop and enhance KMP not in a standalone fashion but in a holistic manner. For instance, knowledge acquisition should be accompanied by knowledge validation, storage, sharing and application in order to reap the benefits of KM. Similarly, knowledge storage should be accompanied by effective protection, and knowledge retrieval mechanisms. As an example from HEI setting, most of the HEIs provide opportunities for academics to attend conferences as a mechanism to acquire knowledge, but they should also encourage academics to disseminate the gained knowledge formally or informally in their respective HEIs through research seminars, knowledge café etc. as well as use acquired knowledge to generate new knowledge or refine existing knowledge in the form of research publications.

In the case of the UAE, the overall survey results show that level of implementation of KMP (overall average of nine first-order KM constructs) is moderately high at 3.75 out of 5.00. As evident from the interviews, the moderately high level of implementation could

be attributed to the focus of the UAE government to transition to a KBE. In the words of one of the interviewee:

"Higher education is a key player in fulfilling UAE's strategic vision of becoming a knowledge economy and we really need to be focusing on how we're managing knowledge within our organization" (participant 17, private university).

Evidence from the literature also shows that the UAE Federal and local governments have long recognized the importance of KM and began KM initiatives to encourage KMP deployment in both public and private organizations (Siddique, 2012; Biygautane and Al-Yahya, 2011). An example of such an initiative was the establishment of the Mohammed Bin Rashid Al Maktoum Foundation with a $10 billion endowment fund to advance KM in the Arab region (Siddique, 2012). In recognition of the relevance accorded to knowledge and KM several of the government departments such as Ministry of Foreign Affairs, Department of Municipal Affairs, Dubai Police, Knowledge and Human Development Authority and Road Transport Authority started embedding KM in their strategy and created KM department/units to operationalize their KM strategy (Rahman et al., 2018).

Evidence from previous studies based in countries with an emerging HE sector similar to the UAE also suggest moderate implementation of KM in HEIs. For example, the study by Ramachandran et al. (2009) in the Malaysian HE sector found moderate level of implementation of knowledge creation, knowledge sharing, knowledge dissemination and knowledge application in both private and public HEIs. Other examples are studies by Songsangyos (2012) and Ramayah et al. (2013) which showed moderate implementation of knowledge sharing in Thailand and Malaysian HEIs respectively.

However, the survey results show that none of the individual practices have a mean score above 4.00 suggesting that there is still scope for enhancing KMP adoption among HEIs in the UAE by giving emphasis to improving those practices that obtained lower perceived mean scores. Moving forward, any effort to enhance KMP in the HE sector should prioritize those practices that have relatively low level of implementation and that

contributes highly (second-order factor loadings) to the overall KMP construct. For instance, knowledge application emerged as the least implemented practice among UAE HEIs, but it emerged as the one that explains the highest variance in the KM construct (second-order factor loading of 0.924). The high second-order factor loading value suggests that knowledge application is one of the factors that contributes most to the overall KMP construct while the mean value showed that it is the least implemented practice thereby pointing to the need for prioritizing the implementation of the practice.

The following section discusses the adoption of each of the individual KMP in the UAE HE sector.

4.2.1 Knowledge Acquisition (KAQ)

The table below provides the construct and item level descriptive statistics for KAQ.

Table 4.3 Descriptive Statistics - Knowledge Acquisition

Construct and items	Mean	Std. Deviation
KAQ (N=428)	**3.98**	**0.78**
KAQ1	4.08	1.06
KAQ2	4.05	0.97
KAQ3	3.89	1.06
KAQ4	3.82	1.11
KAQ5	4.19	0.95
KAQ6	3.84	1.00

Analyzing the survey results, Knowledge Acquisition which refers to "the process of gathering existing data, knowledge from within or outside the organization" (Abokhodiar, 2013) emerged as the most adopted KM practice in the UAE HE sector with a mean score of 3.98, SD=0.78. This is not surprising given the acquisition of new knowledge, trends, and best practices are critical to remaining competitive in the UAE HE landscape. Three out of the six items that formed the construct had a $\overline{X}$ above 4.00 indicating perceived high level of implementation of the specific items. At the item level, perceived mean scores ranged between 4.19 and 3.82 with the item on gathering student feedback and

suggestion (KAQ5) achieving the highest score (4.19) not only within the KAQ construct but also across all the 52 items in the KMP. In a highly competitive environment such as the UAE, guaranteeing student satisfaction with HEIs and designing programs that improve graduate employability becomes paramount (Nuseir and El Refae, 2022) which perhaps explains the high scores obtained by the item. In the survey, the item on gathering employee suggestion and feedback (KAQ4) received the lowest score.

The interview analysis also provided evidence that KAQ mechanisms are well-implemented in both public and private HEIs with HEIs acquiring knowledge from a range of internal and external sources. Common KAQ practices that emerged from the interviews as shown in Table 4.2 included seminars, guest lecturers, symposiums, learning resources, benchmarking, gathering suggestions of internal and external stakeholders, and communities of practice. These practices demonstrate mechanisms to capture and transform tacit knowledge into explicit forms that can enhance the organizational knowledge base, making it a strategic asset for the HEIs. HEIs were found to invite industry professionals and academic experts in their field to deliver guest lectures and seminars so that HEIs are up-to-date on the latest developments in respective fields and industry needs. Past literature (Alshahrani, 2018; Veer Ramjeawon and Rowley, 2020) also suggests that HE practice of collaboration with external partners, meetings and visits of external visitors and participation in conferences and seminars boost the practice of institutional KAQ.

A few interviewees also suggested that another important source of acquiring explicit knowledge in HEIs is via accessible, documented resources such as learning resources and other materials (online and printed) typically held by the institutional library as indicated by the participant quote below:

"One major source of acquiring knowledge obviously is getting access to learning resources so our library does provide it and we also have access to library resources of some of our partner universities also.."(participant 17, private university).

Also, KAQ is promoted in HEIs thorough professional development by facilitating faculty and staff participation in training programs and conferences. This is reflected in the words of one of the interviewees: *"We have the option of attending conferences. They are funded by the university, which gives us the opportunity to interact and learn from peers"(participant 17, private university)*. The study by Alshahrani (2018) in the HE sector also found that formal professional development and training programs allow faculty and staff to acquire knowledge, broaden their professional capabilities and build on the collective organizational knowledge.

The importance of benchmarking, the process of identifying industry best practices and assessing against organization's practice has been identified in literature as a significant source of corporate knowledge acquisition in HEIs (Jamil and Lodhi, 2015). Similarly, this study also found HEIs using benchmarking and competitor analysis as a means of knowledge acquisition as illustrated by the below quote:

"Externally we do a lot of benchmarking with other institutions the curriculum is benchmark. So that's one way of knowledge acquisition for us" (participant 10, public university).

It was evident that HEIs also create mechanisms to capture the tacit knowledge of employees such as communities of practice, which forms an effective knowledge acquisition tool contributing to the stock of organizational knowledge-base as summarized in the following quote:

"..Tacit knowledge is also becoming institutionalized in some way by creating forums for people to coach others to mentor others, by having systems and processes of capturing tacit knowledge in ways which is both legitimate and democratic." (participant 6, private university – branch campus).

Studies such as Perry (2014) have also confirmed the role organizational practices such as community of practice in enabling the acquisition of knowledge in HEIs. The interviewees also highlighted that the knowledge acquisition practices pave way to knowledge generation practices such as development of new academic programs, as well as curricular updation of existing programs. In summary, the success of the various

mechanisms of knowledge acquisition discussed above is largely reliant on employee participation.

4.2.2 Knowledge Generation (KG)

Among the nine KMP examined, KG which refers to an organization's ability to create new knowledge (Adeinat and Abdulfatah, 2019) ranked relatively low at sixth position with a perceived moderate level of implementation in the UAE HE sector with a mean of 3.70 and SD of 0.79. None of the six items which constituted the KG construct had a mean score above 4; however, all the items had a mean of over 3.5 indicating moderately high implementation of the practice (see Table 4.4 below).

Table 4.4 Descriptive Statistics - Knowledge Generation

Construct and items	Mean	Std. Deviation
KG (N=428)	**3.70**	**0.79**
KG1	3.54	1.13
KG2	3.69	1.05
KG3	3.91	1.03
KG4	3.58	1.05
KG5	3.61	1.15
KG6	3.86	0.98

HEIs are considered as knowledge-intensive organizations with KG regarded as the key function of HEIs (Rehman and Iqbal, 2020). The other critical observation from the findings is the relatively high standard deviation (SD >1) in KG practices. A standard deviation of over 1 (when scores range from 1 to 5) is considered high indicating considerable variation in the way the item is perceived by the respondent (Balasubramanian and Shukla, 2017). This shows there is variation in KG practices among HEIs. The main KG practices that emerged from the interviews are shown in Table 4.2. However, their adoption is not consistent across HEIs. Some participants labelled KG as one of the core functions of HEIs which is supported and encouraged through several mechanisms as indicated in the below quote:

"Knowledge creation obviously, it's at the heart of what we do. For each faculty member and researcher, there's a target of what refereed research they should have. so it's within our strategy within our detailed KPIs to produce knowledge" (participant 11, public university).

However, there were also participants who indicated several challenges to implementing KG. The interviews identified resource constraints and heavy workloads as deterrents to knowledge generation. The effect of workload on KG was echoed in the words of an interviewee:

"..The challenge is basically the workload or difficulty in the sense that typically I think we do not get much time to design or redesign courses, because it takes some time" (participant 12, Private University -branch campus).

In terms of individual practices within KG, the evidence from the survey and interview results, show knowledge generation through research as the most highly implemented KG practice within HEIs (3.91) followed by new program development (3.86). While social knowledge plays a significant role in KG through collaboration, encoded knowledge becomes the outcome of KG, as new insights and discoveries are documented and disseminated. The interviews showed that HEIs use mechanisms such as implementing research support policies, funding, providing opportunities for intra-institutional collaboration as well as external collaborations with other universities, government and industry in order to foster research activities as indicated by the interview quotes below.

"Our university supports research all the way through funding the research, providing the infrastructure, providing the atmosphere." (participant 3, Private University -branch campus)

Still, some interviewees expressed challenges to KG through research as given below:

"We have very little research support, although it is a major priority, the groups charged to support research are not given the support they need. We are not a finely tuned machine." (participant 9, private university).

The lack of dedicated research funds and research centers were evident from the results. In the words of one of the interview:

" We really want to do more but the challenge is that our funding is not that fluid" (participant 17, private university).

This echoes the findings in the literature that there are relatively low number of specialized research centers in UAE HEIs (Karabchuk et al., 2022). Most of the universities in the UAE are private HEIs which are teaching-oriented and primarily dependent on student fees for funding. Previous studies in the UAE HE sector such as Ashour (2020) concurs with this view that the student-fee based revenue model has affected HEIs ability to devote funds for research and innovation.

Evidence from the literature also point to the limited availability of research funding, small size of HE institutions with narrow specializations, lack of doctoral programs, teaching-oriented focus of the universities, and heavy teaching load as reasons for relatively low engagement in research among UAE HEIs (Karabchuk et al., 2022). Ababneh and Hackett (2019) study on UAE academic staff found that the motivation of academic staff to engage in research activities was negatively impacted by the perceived low-level autonomy and the short-term job contracts. Among the individual KG practices, collaboration with other universities in research projects and development of new programs emerged as the least implemented practice (3.54). The lack of collaboration as a barrier to KG was consistently echoed by interviewees from both public and private universities:

"It's not necessarily because of the lack of intention, but because there is lack of, I mean the ecosystem that we have around which sometimes does not support full-fledged collaboration" (participant 18, public university).

The competition among HEIs as well as the teaching-oriented focus of some of the universities in the UAE (Karabchuk et al., 2022) may be considered as deterrent to inter-university collaborations. This notion is supported by literature as a recent bibliometric

study which compared the research performance of the UAE with those of other GCC countries found that extent of research collaboration was lower in UAE in comparison to GCC countries (Ajayan et al., 2022). Also, engagement with industry for joint research projects and innovation was found to be relatively low vis-à-vis other practices ($\overline{X}$ =3.69). This lack of interdisciplinary collaboration is a concern given that they are critical for knowledge generation. The significance of interdisciplinary collaboration, co-operation and meaningful interaction among academic staff in enhancing knowledge generation has been well documented in KM literature (Kınık and ÇETİN, 2022). However, there were exceptions as some HEIs were found to make an effort to improve collaboration with external stakeholders for research. In the words of one of the interviewees:

"We have a Research Department which is very focused and actually quite supportive in terms of us getting involved with Government projects as well as projects across universities so that we interact and collaborate with other colleagues to create knowledge.." (participant 17, research-oriented private university)

The extent of graduate student research also was found to be relatively low ($\overline{X}$ =3.58). This is congruent with the findings of previous studies that found graduate students in the UAE have low motivation to engage in research activities (Karabchuk et al., 2022). Another reason for this result could be that teaching-oriented universities may not have a large body of postgraduate research students.

4.2.3 Knowledge Validation (KV)

Knowledge Validation refers to the process of analyzing knowledge to assure their authenticity, effectiveness, usefulness and value for an organization (Sunalai and Beyerlein, 2015). The survey results showed that KV as the second most implemented KM practice with a perceived mean score of 3.93, SD=0.80. The overall construct mean and the means of individual items showed moderately high implementation of the practice within the UAE HE Sector (see Table 4.5).

Table 4.5 Descriptive Statistics - Knowledge Validation

Construct and items	Mean	Std. Deviation
KV (N=428)	3.93	0.80
KV1	3.92	0.90
KV2	3.83	0.90
KV3	3.91	0.91
KV4	4.06	0.90

Among the four items within the construct, the item on checking existing knowledge to ensure their currency became the most implemented practice ($\overline{X}$ = 4.06) while the item on checking knowledge usability being the least implemented practice in the UAE higher education sector ($\overline{X}$ = 3.83). Of the 4 items, 3 items had a perceived mean score in the range 3.8 – 4.0 indicating moderately high implementation of the practice. The moderately high implementation of the practice could be attributed to the competition in the sector which forces HEIs to continuously review and update their academic offerings, processes and systems to remain competitive (Wilkins, 2010).

However, the analysis of the interview data on KV (see Table 4.2) indicated mixed results with some interviewees pointing to the lack of built-in validation processes, while other interviewees indicated that some structured validation practices existed within their HEIs. Interviewees confirmed about their HEIs implementing program and course reviews as a means of ensuring relevance and currency of the program content. Interviewees also mentioned that such validation practices were driven by institutional policies as well as regulatory requirements. In the words of one of the respondents:

"We have periodic reviews of programs which are documented, approved and then implemented. There is internal discussion of the review proposal which once approved is sent to the parent campus..". (participant 13 – private university, branch campus)

This shows HEIs in the UAE have mechanisms for the validation of explicit knowledge more than tacit knowledge as they are being more readily documented and accessible, such as peer review or quality assurance audits. Interviewees mentioned that they make

fair assessment of data accuracy and reliability based on their own knowledge and experience as indicated by the following interviewee quote :

"When I receive data from internal or external stakeholders, I make sure of its consistency, of the coherence of data.." (participant 9 – private university)

Some interviews suggested KV was mostly reliant on individuals and their experience (subjective assessment) to undertake knowledge validation and that their institutions lacked built-in validation practices for objective assessment:

"Knowledge validation is reliant on the person who is actually getting the information. More than being automatic, it is based on your knowledge and experience that comes in handy when validating information..". (participant 19 – private university)

There is not much literature available from the HE context covering KV. However, the available literature points to the need for having KV practices within the organization as it helps to assure the quality, authenticity, usefulness of knowledge (Sunalai and Beyerlein, 2015) and remove obsolete knowledge from use (Bhatt., 2001).

4.2.4 Knowledge Storage and Organization (KSO)

Among the nine practices covered by the constructs, the fifth most implemented practice as per the survey results was KSO with an overall $\overline{X}$ of 3.78 and SD of 0.78. KSO is the practice of organizing knowledge, categorizing it and saving the knowledge in a structured way so that it is available for future retrieval and use (Mahdi et al., 2019; Evans et al., 2015). Respondents rated the KSO items with the mean scores ranging from 4.16 to 3.42 (as indicated in Table 4.6 below).

Table 4.6 Descriptive Statistics- Knowledge Storage and Organization

Construct and items	Mean	Std. Deviation
KSO (N=428)	**3.78**	**0.78**
KSO1	3.82	0.98
KSO2	4.16	0.85
KSO3	3.94	1.02

Construct and items	Mean	Std. Deviation
KSO4	3.65	1.11
KSO5	3.97	0.90
KSO6	3.42	1.02
KSO7	3.47	1.07

Among the individual items within the construct, the items relating to availability of IT systems for knowledge storage and the use of reports, manuals etc. as a way of organizing and storing knowledge was rated considerably higher (above 3.9) than the items relating to storing of best practices and solutions to problems for future use (below 3.5). This shows a variation of over 10% in the perceived implementation levels between the different practices. The item KSO2 on knowledge storage in electronic repositories had the highest mean ($\overline{X}$ = 4.16) indicating widespread availability of IT repositories in the UAE HE Sector. The item KSO6 on HEIs having databases of problems and their solutions had the lowest perceived mean of 3.42 and had the least mean across all the 52 items within KM practices. The two statements relating to availability of IT systems for KSO obtained high scores of 4.16 and 3.94. It is interesting to note that these scores are much higher in comparison with the score of 3.03 obtained for a similar statement in the study by Masa'deh et al. (2017) within the Jordanian HE sector. In the same study, the availability of IT systems scored the least among the different statements with the knowledge storage construct.

Explicit knowledge, which includes documented information in the form of organizational policies, procedures, reports, manuals, databases, and digital repositories, is central to KSO practices and needs systematic storage and organization for future retrieval and use. The interviews also confirmed the availability of up-to-date IT infrastructure for knowledge storage and organization to store corporate knowledge systematically in centralized, well-organized, and easily accessible repositories.

" We use this platform to store all the coursework, teaching materials, the library system, you know the databases and student information that we might need. And this is all kind of centralized. So this system, I believe works really well..." (participant 18, public university)

While both the survey and interview results indicated that HEIs have IT-enabled knowledge repositories such as Learning Management Systems, shared drives etc. for organization and storage of knowledge, the interviews showed that these IT platforms varied in their ability to act as a common platform for organizational data storage. Some of the interviews suggested that knowledge is not always stored in an organized and centralized manner as mentioned in Table 4.2. It is scattered in various departments and held using different systems (de-centralized) that may or may not have a common interface or interact with each other. These decentralized systems may also make it difficult for employees to locate and retrieve knowledge as needed. This problem of decentralized data storage appeared to be more prevalent in smaller private HEIs. Interviewees with such scattered knowledge systems expressed the difficulties presented by those systems as is evident from the below quotes:

"..So we have some systems but they are decentralized and they're not actually ultimately talking to each other. We have a number of digital platforms. However, I tend to still think a lot of work is still done on e-mail which doesn't necessarily get stored properly or captured". (participant 9, private university)

It is important to organize and store knowledge in centralized repositories as it also plays a role in enhancing other KM practices such as knowledge retrieval, knowledge sharing, knowledge validation and knowledge application (Bhusry et al., 2011). Although the statement "knowledge is well categorized and organized within their organization" received a high score of 3.82, the interviews indicated that not all HEIs have a systematic approach to KSO. While some of the interviewees confirmed that knowledge is well organized within their HEI, there were others who expressed conflicting views. The below quotes clearly show the diverging approaches to KSO adopted by HEIs within the UAE:

"..I would say knowledge is quite well organized, stored and reported within my institution. We have a good internal resource of published reports, centrally accessible, which is my primary source of information...". (participant 10, public university)

"It is left to individuals or some departments to capture organizational knowledge in a generally haphazard function. No central repository for organizational knowledge exists as far as I am aware. If key staff left, a lot of knowledge would also leave. No clear definition or planned strategy as to what organizational knowledge should be captured, stored and managed..". (participant 1, private university)

The above quote clearly highlights the need for creative approaches for codification and storage of tacit knowledge, such as capturing insights and experiences in knowledge bases or through structured communities of practice. Another interesting finding pertaining to the KSO construct was that there were considerable differences across the construct in the adoption of individual practices. Also, the high standard deviation (SD > 1) received by these statements point to the variability across the HEIs in the adoption of these practices as reported by the participants. These findings point to the need for a structured approach to maintaining knowledge that is useful to the organization. Literature identifies lack of IT systems and processes as one of the main barriers to KSO (Pinho et al., 2012). While the results of this study clearly show the availability of IT systems in UAE HEIs to support the KM practice, it could be the lack of policies and procedures that hinder the systematic organization and storage of knowledge within HEIs. Al Shraah et al. (2021) also found that operating procedures had some impact on the implementation of KMP such as knowledge storage. Also, HEIs may need to consider the integration of scattered IT systems for better organization of knowledge. Better organization and storage of knowledge helps in reducing the loss of knowledge due to employee turnover (Mahdi et al., 2019) thereby increasing the need for implementation of the practice in a country such as the UAE with typically high employee turnover.

Among the individual items within the construct, the items relating to maintaining databases of best practices and solutions to problems received mean scores of less than 3.5. However, several of the interviewees highlighted the importance of sharing best practices for organizational improvement and spoke about having mechanisms for storing and disseminating best practices. The somewhat divergent results in the survey and the

interviews may be due to the lack of systems dedicated to organizing and storing best practices.

4.2.5 Knowledge Sharing (KSH)

KSH is the collaborative practice of making knowledge, experience or ideas available for others so that it can be re-used (Ramayah et al., 2013; Chedid et al., 2022). KSH emerged as the fourth most implemented practice in the survey with a perceived overall mean score of 3.79, SD=0.80 indicating a moderately high level of implementation of the practice in the UAE HE sector. Of the 9 items in the construct, 8 items had a mean of over 3.5 (Table 4.7) indicating moderately high level of implementation while one item had a mean of over 4.0 indicating high level of implementation.

Table 4.7 Descriptive Statistics - Knowledge Sharing

Construct and items	Mean	Std. Deviation
KSH (N=428)	**3.79**	**0.80**
KSH1	4.02	0.97
KSH2	3.71	1.07
KSH3	3.73	1.04
KSH4	3.63	1.10
KSH5	3.99	0.96
KSH6	3.80	1.07
KSH7	3.92	1.01
KSH8	3.62	1.09
KSH9	3.71	1.10

The interviewees also concurred that KSH was one of the most implemented practices in the UAE HEIs as interviewees from both private and public HEIs discussed this practice in-depth. The implicit knowledge sharing behaviour of HEIs were reflected in the results. As indicated in Table 4.2, interviewees confirmed that the main formal knowledge sharing mechanisms used in their HEIs included dedicated staff and student portals, emails, institutional reports, conferences, symposiums, committee and staff meetings. Informal discussions, communities of practice, networking, coaching and mentoring practices

helped in knowledge sharing especially social and tacit knowledge. A significant proportion of the interviewees opined that KSH within HEIs was driven by mutual trust and respect among employees as well as their willingness. On the other hand, a few of the interviewees perceived competition among faculty, technological inadequacies and job insecurity as hindrances to knowledge sharing.

The survey results suggested that formal means of explicit and coded knowledge sharing such as reports, newsletters, committee meetings etc. are implemented more than informal means with the item on formal exchange of ideas between staff receiving the highest mean of 4.02. This could be attributed to the regulatory requirements within the UAE which require HEIs to establish governance mechanisms such as committees and disseminate several data reports such as the Factbook. Further, universities in general are regarded as bureaucratic organizations which are guided by formal governance structures such as committees and formal rules and regulations (Schneijderberg, 2017). In addition, universities in their effort to be transparent and accountable and meet the requirements of regulators and accrediting bodies, develop and report on various performance measures. The result of the study showed that knowledge related to research, teaching and learning are most widely shared in UAE HEIs and is consistent with other studies such as Fullwood et al. (2013). The interviews also confirmed the existence of formal means of knowledge sharing such as portals, meetings and reports as is evident from the quote below:

"All formal mechanisms of knowledge sharing are laid out in the institutional policies and procedures. These guide the institutional community on what and how to do things. One example of a formal mechanism by which knowledge is shared is through our institutional publications. For example, the Fact Book provides data and trend analysis on enrollment, graduates etc. and can be accessed by stakeholders through the institution's website" (participant 10, public university).

The comparatively lower means and high standard deviations (SD >1) obtained by statements related to sharing research outcomes internally as well as sharing knowledge gained from attending research events externally suggest that there is variation across the sector in the implementation of the practice and could be due to the lower focus

accorded to research by some of the HEIs in the UAE as they are more teaching-oriented (Karabchuk et al., 2022). Further, KSH initiatives which are more reliant on individual employee behavior and their intent to share knowledge such as sharing lessons learned, sharing knowledge with less experienced employees and informal exchange of ideas received lower means with the item on sharing of best practices across the institution receiving the least mean score of 3.62. This could be due to the reluctance of employees to share knowledge which is considered as a source of power and differentiation within HEIs. Past studies have commented on the individualistic tendency of academics and their preference to work independently (Veer Ramjeawon and Rowley, 2020; Ramayah et al., 2013) which may affect their knowledge sharing behavior. The KSH in the UAE HEIs may be also impacted by the job insecurity stemming from relatively short-term contracts. Similar views were echoed by Al-Kurdi et al. (2018) in their study of knowledge sharing behavior among academics in HEIs. Both the interviews and the survey results indicated that there is inconsistent implementation of informal means of knowledge sharing within HEIs and this could be directly linked to the organizational culture of HEIs which is a critical determinant of KSH behavior among academic staff (Al-Kurdi et al., 2018). The below quotes show the difference in knowledge sharing behavior among employees in UAE HEIs.

"There are staff, very innovative, helpful, but hesitant or afraid to share information, there are others who are incompetent, do not share anything easily, but are protected by the management. The culture isn't very conducive to sharing information freely. You literally don't get what you want unless you knock many doors and patiently wait for approvals.." (participant 9 – private university)

"..There are more conscious mechanisms at an institutional level such as teaching and learning forums for example where people come and share what they're doing in terms of the their practices." (participant 6, private university – branch campus).

The results also point to the need for promoting a knowledge-friendly culture in which employees are encouraged to engage in KSH endeavors such as mentoring and coaching as a means of retaining tacit knowledge. Literature also echoes the need to

provide formal and informal platforms to allow employees to share their knowledge (Ngoc-Tan and Gregar, 2018).

4.2.6 Knowledge Retrieval (KRET)

KRET which is the practice of making knowledge easily available for organizational use through the provision of knowledge search mechanisms and access to knowledge sources (Kassou, 2019) emerged as the third most implemented KMP in the UAE HE sector with a construct level mean score of 3.80 and SD of 0.87. The survey questions focused on KRET determined by the availability of IT tools. The mean scores of individual items ranged from $\overline{X}$ = 3.88 to 3.74 (as provided in Table 4.8 below) indicating moderately high implementation of the practice with the item on knowledge access through different devices scoring the highest and the item on ability to access knowledge during anytime from any repository scoring the least.

Table 4.8 Descriptive Statistics - Knowledge Retrieval

Construct and items	Mean	Std. Deviation
KRET (N=428)	**3.80**	**0.87**
KRET1	3.82	1.00
KRET2	3.76	0.99
KRET3	3.74	1.01
KRET4	3.88	0.93

The interview results as summarized in Table 4.2 largely concurred with the survey results as the majority of the interviewees suggested that they did not find it difficult to retrieve organizational knowledge. Employees with required authorization were able to retrieve stored knowledge in a convenient format using different electronic devices within or outside of the HEI. However, some of the interviewees also mentioned that they found it difficult to locate and retrieve knowledge as knowledge was not well organized and stored on distinct decentralized systems.

The moderately high value obtained by the four statements within the construct largely confirm that universities across the UAE have the necessary IT infrastructure to be able to access knowledge anytime from anywhere using a variety of devices. For instance, digital libraries, Learning Management Systems, and other IT platforms can serve as effective tools for the retrieval of encoded and objective knowledge, ensuring that these resources are accessible to all at any time. This result is also in consonance with the literature which recognizes the role of IT in helping employees identify and retrieve knowledge (Gammelgaard and Ritter, 2005). The interviews broadly confirmed that it was easy to retrieve knowledge from the IT repositories as indicated by the quote below. These results are in alignment with the results obtained for questions pertaining to availability of IT infrastructure within the KSO construct.

"..When it comes to retrieving of knowledge, it is easy, we do have a common drive which is open for faculty members to access." (participant 4, public university)

The interviews also illuminated on the role of organizational practices such as communities of practice that facilitate retrieval of tacit knowledge from experienced staff members:

"I think our organization facilitates the process of making the tacit knowledge become more explicit through the sheer process of creating more communities of practice. If I worked with a colleague for a few years, in some ways, I start picking up, through just mere osmosis, and I absorb all that knowledge.." (participant 6, private university – branch campus).

Communities of practice is regarded as an effective mechanism for retrieving tacit knowledge where the trust and common understanding of a specific topic among the group members facilitate knowledge retrieval (Gammelgaard and Ritter, 2005). While some of the participants mentioned that both the organizational culture and technological aspects enabled knowledge retrieval, others expressed how these factors hindered easy retrieval of knowledge as mentioned in the contrasting quotes below:

"..I think we all know in the university who the key staff members are, who we can request this access from. So that's a very know known thing and you never struggle like who am I going to

ask for that or how can I get permission for this." (participant 2, private university – branch campus).

"We have some systems but they are decentralized and they're not actually ultimately talking to each other. So if you are searching for knowledge, you have to go through a number of systems, talk to a number of people, act as an investigator in order to find what you want" (participant 11, public university)

In summary, the results of the survey and interviews suggest that knowledge retrieval is reasonably well implemented in the UAE HE sector although there are some variations due to the presence or absence supporting IT infrastructure.

4.2.7 Knowledge Application (KAPL)

KAPL which refers to the extent to which organizational knowledge is used (Ouakouak and Ouedraogo, 2019) emerged as the least implemented KM practice in the UAE HE sector with an overall $\bar{X}$ of 3.53 and SD of 0.87 as mentioned in Table 4.9 below. Of the 5 items forming the construct, 3 items had a mean in the range of 3.4 indicating moderate level of implementation. Among the five items, the statement on trying out new knowledge (KAPL4) had the highest $\bar{X}$ of 3.65 while the item on applying knowledge learned from mistakes (KAPL5) had the lowest $\bar{X}$ of 3.44.

Table 4.9 Descriptive Statistics - Knowledge Application

Construct and items	Mean	Std. Deviation
KAPL (N=428)	**3.53**	**0.87**
KAPL1	3.61	1.01
KAPL2	3.48	0.97
KAPL3	3.45	1.09
KAPL4	3.65	1.01
KAPL5	3.44	1.03

Interpretation of the interview results suggested that knowledge application is among the least practiced and most difficult KM practice to implement in HEIs. Several interviewees believed a significant proportion of the knowledge generated by HEIs remain under or un-utilized and that institutions are not benefiting from such knowledge. Most of the

interviewees felt that full-scale application or analysis of existing knowledge to improve decision-making or produce new knowledge was still lacking in their institutions. The interviews indicated that lessons learned from past experiences are not used well enough to inform future decision-making. This shows that tacit knowledge, despite its potential to significantly impact organizational practices, remains largely untapped.

The interviewees also acknowledged the difficulty with capturing and utilizing the tacit knowledge of employees for the benefit of the organization. There appeared to be a lack of institutional mechanisms to ensure application of knowledge or to measure the extent of knowledge utilization. The interviews suggested that application of knowledge largely remained an individual endeavor, i.e., individual knowledge as opposed to organizational knowledge application. In other words, knowledge application embedded in routines, processes, and practices appeared to be missing.

The scores of individual items within the construct showed that while employees in the HEIs are innovative and open to applying new knowledge, the extent of utilization of existing knowledge remains low. The results of the survey clearly pointed to the limited utilization of the stored knowledge of the HEI (KAPL2 $\overline{X}$ = 3.48) or having processes for analyzing existing knowledge or learning from past mistakes (KAPL5 $\overline{X}$ = 3.44). The interview results also validated the findings of the survey with the interview participants echoing their concern about the limited utilization of available knowledge:

"We don't utilize stored knowledge, most of the qualitative knowledge is ignored or discarded. Then when it comes to making informed decisions, I can see plenty of the knowledge that we have in the organization or have generated, are not utilized. The lessons learned from past experience is not put to good use.." (participant 16, private university).

The other observation from the interviews is that the utilization of qualitative knowledge is relatively low as evidenced from the below quote:

"Now let's ask ourselves do we really also restore this knowledge again or extract any informative decisions or conclusions from these, not always. Because most of the time when we make

informed decisions we don't go back to the qualitative knowledge that we have stored earlier whether explicit or tacit" (participant 10, public university)

These results regarding the underutilization of knowledge are also consistent with past literature. For example, Biygautane and Al-Yahya (2011) in their study found there is significant underutilization of knowledge for achieving organizational goals in the UAE specifically in the public sector. The results are consistent with the study conducted by Ramachandran et al. (2009) which found that KAPL was the least implemented KM practice within Malaysian public HEIs. Similarly, the study by Rasheed and Guo (2020) found application of knowledge was lacking in Pakistani universities.

The importance of KAPL practice is high for the HE sector as it would enable HEIs to improve existing programs or courses or develop new offerings (Ngoc-Tan and Gregar, 2018). Utilization of existing knowledge also leads to generation of new knowledge (Omerzel et al., 2011). Therefore, it is important for HEIs to develop conscious mechanisms for utilization of knowledge.

4.2.8 Knowledge Protection (KPT)

KPT along with KG ranked sixth in terms of extent of implementation in the UAE HE sector. KPT which refers to the practice of preserving organizational knowledge from unauthorized use, alteration or disclosure (Alghail et al., 2023) had an overall $\overline{X}$ of 3.70 and SD of 0.85. All the six items constituting the construct had a mean in the range 3.5 – 3.8 (see Table 4.10 below) suggesting a moderately high implementation of KPT practice in the UAE HE sector.

Table 4.10 Descriptive Statistics - Knowledge Protection

Construct and items	Mean	Std. Deviation
KPT (N=428)	**3.70**	**0.85**
KPT1	3.57	1.07
KPT2	3.71	1.02
KPT3	3.74	0.98
KPT4	3.71	0.94

Construct and items	Mean	Std. Deviation
KPT5	3.82	0.95
KPT6	3.69	0.99

According to the interviewees, KPT practices are closely linked with the protection of encoded knowledge, such as documents and databases, and corporate knowledge, encompassing operational procedures, policies, and strategic information. The main mechanism for implementing knowledge protection in HEIs is through deploying a suite of policies (e.g., intellectual property policy, data privacy policy, academic integrity policy, research ethics policy). The interview results as summarized in Table 4.2 showed that there was considerable uniformity across public and private universities in the strategies used for knowledge protection. IT systems and surveillance were also widely used as a means for safeguarding corporate knowledge. The interview quote provides an overview of the measures taken by HEIs for knowledge protection:

"The policies do not explicitly state 'knowledge protection' but policies around Intellectual property, patents, research documentation, access controls and implementing password protection strategies are all part of protecting the knowledge we generate." (participant 10, public university).

Most of the interviewees highlighted that institutions use data access protocols ensuring that only authorized personnel have access to specific information as a mechanism for protecting knowledge. For example, access to certain knowledge is contingent upon gaining specific approvals or access to data repositories is immediately disconnected upon employee's resignation as indicated by the quote below:

"..It is a matter of putting in request and it being deemed that it's a reasonable request to make, like if it is possible for the knowledge to be shared, if it's going to be used for proper purposes, then the employee will be given access.." (participant 2, private university – branch campus).

Among the individual factors covered within this construct, the item on having policies and procedures for safeguarding organizational knowledge (KPT5) received the highest score of 3.82. The reason could be related to the regulatory framework of the UAE which requires HEIs to develop policies concerning intellectual property, copyrights, data

release and data security (Standards for Institutional Licensure and Program Accreditation Commission for Academic Accreditation, 2019). The item on having KPT mechanisms such as patents and copyrights to protect research outcomes received the least score of 3.57. This could perhaps be attributed to the teaching-focus of several of the UAE HEIs and the relatively low research productivity. Further, a good proportion of the programs in the UAE are in disciplines where patents are not common. More than 50% of the HE programs offered in the UAE are in the fields of Business, Language, Education and Social Sciences (CAA, 2022). Past research suggests that KPT has not been given as much attention in HEIs as it is perceived as a hindrance to knowledge dissemination (Alghail et al., 2023). The views of interviewees reflected that KPT was mostly an IT endeavor by incorporating data security within institutional electronic knowledge repositories as well as by monitoring and controlling access to systems. The below quote from interviewee reinforce this view:

"I would say controlling access is how our institution protects its data. IT surveillance is there to monitor data transfer." (participant 8, private university – branch campus).

The role of IT in KPT gives rise to the need for HEIs to invest in IT infrastructure in order to implement KPT effectively. Literature also gives evidence to the fact that having a robust policy and procedure framework on KPT would help in embedding knowledge protection practices as part of the organizational culture (Alghail et al., 2023). From the survey results and the interview findings it can be implied that HEIs in the UAE also have developed a suite of policies intended for KPT and that employee access to knowledge is regulated, often requires authorization and is determined by factors such as contract type. The below quote substantiates this finding:

"Some of the factors that determine the ease of access to knowledge resources would depend on the employment contract you are in, your designation, any budgetary implication (e.g., limited number of licenses for software)." (participant 14, private university).

However, compared to explicit knowledge protection, specific efforts by HEIs for limiting tacit and individual knowledge loss specifically due to employee turnover appears to be

limited. Finally, a balance is required between knowledge sharing and knowledge protection. KPT practices need to ensure sharing does not compromise the security and proprietary rights of the knowledge. Balancing openness and protection are key, requiring clear guidelines on what can be shared, with whom, and under what conditions.

4.2.9 Learn and Improve (KLM)

The table below provides the construct and item level mean and standard deviations for the construct Learn and Improve.

Table 4.11 Descriptive Statistics - Learn and Improve

Construct and items	Mean	Std. Deviation
KLM (N=428)	**3.55**	**0.96**
KLM1	3.53	1.12
KLM2	3.53	1.08
KLM3	3.60	1.05
KLM4	3.60	1.07
KLM5	3.48	1.07

Among the nine practices considered in this study, KLM emerged as one of the two least implemented practices in the HE sector with an overall $\bar{X}$ of 3.55 and SD of 0.96. KLM refers to the practice of feeding the lessons learnt and best practices back into the organizational knowledge repository and promoting continuous learning and improvement. The mean scores for all the items within the construct indicated moderate level of adoption of this KM practice within the UAE HE sector.

The interviews indicated that HEIs do not systematically implement continuous improvement (learn and improve) practices. Analysis of interview data suggested that the highly competitive nature of the UAE HE sector hampers benchmarking (e.g., metrics such as faculty to student ratio, salaries) across HEIs within the country due to lack of willingness of HEIs to share data among themselves. Also, the amount of data publicly available is limited as there are no mandatory regulatory requirements. Improvement initiatives were mostly driven by subjective knowledge, acquired through social

interactions and feedback from stakeholders (students, employers, alumni, employee) and accreditation bodies. Respondents highlighted that institutional and program accreditation processes drive HEI efforts of identifying gaps and working towards addressing those gaps in corporate knowledge. The interviewees highlighted the importance and value of social learning from the experience of peers through means such as coaching and mentoring which helped in retention of tacit knowledge.

Among the individual factors within the construct, taking feedback (on what succeeded and what failed) from projects and benchmarking performance emerged as the two most implemented practices within the construct with a mean of 3.60. The interviews provided confirmation that HEIs within the UAE undertake benchmarking, as a means for continuous improvement in order to have up-to-date programs and meet regulatory requirements as indicated in the below interview quotes:

"Externally we do a lot of benchmarking with other institutions, the curriculum is benchmarked. So that's also one way of learning for us". (participant 10, public university)

"I would give credit to the accreditation process of our programs because these have really made us work and think and do come up with various improvements. It helped us identify the gaps and work towards addressing it..". (participant 14, private university)

Within the construct, the item on having processes for identifying best practice received the lowest score of 3.48. While some of the interviews indicated that HEIs have formal mechanisms such as teaching and learning forums/symposiums and information sessions retreat for identifying and sharing of best practices, there were others who raised concerns about institutional culture of knowledge protection which prevented these practices. However, branch campuses of foreign Universities were found to adapt best practices from the parent campuses and improve their corporate knowledge stock. In addition, some HEIs were found to formally identify and recognize best practices/initiative of faculty and staff through staff awards and recognition. The below quotes clearly indicate that these practices are not consistently implemented within the sector.

"..The other ways are more conscious mechanisms at an institutional level, where we have teaching and learning forums for example where people come and share what they're doing in terms of best practices". (participant 6, private university – branch campus)

"..The culture isn't very conducive to sharing information freely- perhaps it is in the culture. You literally don't get what you want unless you knock many doors and patiently wait for approvals". (participant 1, private university)

Overall, results highlight the need for HEIs to undertake mechanisms towards continuous learning and improvement, to stay relevant with the latest trends and best practices, especially considering the highly competitive and dynamic HE environment in the UAE. Previous studies have shown that HEIs with continuous learning and improvement are better equipped to adapt to the changes in the sector (Ponnuswamy and Manohar, 2016). The interviews also give the impression that there is a general lack of openness in terms of sharing best practices or benchmarking within the sector. This could also have contributed to the low score obtained by the construct. The following quotes from interviewees validate the view:

"We are not a very mature economy in terms of higher education institutions, so there is always this deficit mentality and a lack of collaboration and transparency between institutions. So in the UAE, I think even now if I want to find out about other institutions, data is not transparent. If I write to somebody, they are reluctant to give that data, which means benchmarking becomes extremely difficult". (participant 7, private university – branch campus)

The SD of all individual items within the construct were greater than 1 indicating that there is variability across the sector in the implementation of continuous improvement practices. This variation was also evident in the interviews as indicated in the interview quotes below:

"We did a lot of projects. Did we go back and analyze the dos and don'ts and what are the best methods of doing them in future? I'm not sure. I think there could be improvement there". (participant 11, public university)

"I think a lot of continuous improvement and new knowledge creation happens in our institution as there is pressure on academic staff to continuously update their content based on the developments in their domain and employer needs". (participant 12, private university – branch campus)

The reason for the relatively low KLM score could be the relatively high employee turnover rate in the UAE HEIs (Ababneh, 2016) which affects continuous employee learning, professional development, their commitment and professional contributions to the HEIs (Chapman et al., 2014).

4.3 Chapter Summary

This chapter discussed the findings from the quantitative survey and qualitative semi-structured interview to answer RQ1. It was found that the nine KM practices considered in the study are all relevant to the HE sector. The second-order confirmatory factor analysis showed that the construct KMP is formed of nine KM practices and that each practice is relevant to implementation of KM in HE sector. The perceived level of implementation of the nine KM practices in the UAE HE sector was moderately high with each of the nine KM practices construct obtaining a mean value of over 3.5. The interview results were also largely consistent with the survey results and suggested that all of the KM practices were implemented in the UAE HE sector albeit at varying levels. Knowledge acquisition emerged as the most implemented practice with a mean score of 3.98. The interview results also confirmed the prevalence of knowledge acquisition practices. The high implementation level of this practice could be attributed to the nature of HEIs where acquiring and generating new knowledge is fundamental to their survival. The two least implemented KM practices in the UAE HE sector were Learn and improve and knowledge application with scores of 3.55 and 3.53 respectively. The practices of knowledge application and learn and improve are interlinked and indicates the ability of an HEI to use existing knowledge and undertake improvement initiatives for the benefit of the HEI. The study results suggested that HEIs in the UAE do not have established mechanisms for utilizing stored knowledge and the dearth of learning from existing knowledge could be due to the fast pace of employee turnover and workloads. The findings from this chapter indicate that KM practices need to be adopted in tandem and that each of the nine KM practices identified in this study contribute to the systematic implementation of

KM. Although this study is based in the HE sector, the KM practices considered in this study could be implemented in other sectors with suitable adaptations.

The similarities and differences between the private and public sector in the implementation of KM practices is discussed in Chapter 6 of this thesis. The next chapter will analyse and discuss the results of the survey and the semi-structured interviews with the aim of answering RQ2 and RQ3.

Chapter 5: Findings and Discussion (2)

5.1 Introduction to the Chapter

The purpose of this chapter is to examine the key enablers of KM practices and their perceived extent of influence in the implementation of KMP in the UAE HE sector. This chapter also seeks to discuss the key performance outcomes of implementing KM practices as well as the perceived impact of KMP on performance outcomes in the UAE HE sector. The results are organized in line with the research questions as follows. This chapter uses the results of quantitative and qualitative studies in order to answer RQ2 and RQ3 provided below.

RQ2	*What are the key enablers driving the knowledge management practices in the higher education sector? How and to what extent do they influence the KM practices adoption in the UAE higher education sector?*
RQ3	*What are the key performance outcomes (benefits) of implementing knowledge management practices in the higher education sector? How and to what extent are they realized through the adoption of KM practices in the UAE higher education sector?*

The related hypotheses H1-H5 for RQ2 and RQ3 are as follows:

H1: Knowledge-friendly culture will have a positive impact on HEIs KM practices
H2: Knowledge-oriented leadership will have a positive impact on HEIs KM practices
H3: Knowledge-oriented Organizational structure will have a positive impact on KM practices
H4: KM-supportive IT infrastructure will have a positive impact on HEIs KM practices
H5: KM practices will have a positive impact on HEI performance.

5.2 Enablers of Knowledge Management and its Impact on KMP (RQ2)

The first part of RQ2 regarding the key enablers of KM in HEIs was initially synthesized from the literature and discussed in detail (see Chapter 2). These four KM enablers act as antecedent to KM practices in the proposed KM framework. However, it is crucial to empirically establish that these enablers identified from the literature are indeed pertinent for HEIs. The survey and interview findings confirmed that the four KM enablers proposed in this study are relevant and valid for HEIs. The mean scores obtained from the survey for KM enablers in UAE HEIs ranged from 3.22 to 3.90 (see Table 5.1), indicating that these enablers are relevant at a moderate to moderately high level.

Next, the study examined the second part of RQ2 which explores how and to what extent enablers influence the adoption of KM practices in the UAE higher education sector. The 'how' part is summarized in Table 5.2 and explained in detail in the following sub-sections. The extent to which each of the enablers impact KM practices are understood by examining the hypothesized relationships H1-H4.

The construct level descriptive statistics for enablers are presented in Table 5.1 below. Descriptive statistics for individual items within each of these constructs are available in the relevant sections below. The themes and sub-themes identified from the interview analysis are summarized in Table 5.2 below. Table 5.2 provides the extent of perceived impact of enablers identified from the interviews, sub-themes common to both public and private universities, sub-theme unique to public or private universities (where available) and perceived barriers to the enabling conditions found in HEIs.

Table 5.1 Descriptive Statistics of KM Enabler Constructs

Constructs	N	Mean	Std. Deviation
Culture (KE_CUL)	428	3.57	0.97
Leadership (KE_LEAD)	428	3.52	1.03
Information Technology (KE_IT)	428	3.90	0.90
Organization Structure and Strategy (KE_OSS)	428	3.22	0.94

The mean scores of the KM enablers at the construct level ranged from $\overline{X}$ = 3.22 to $\overline{X}$ =3.90 (out of 5) with Information Technology (KE_IT) scoring the highest mean of 3.90 followed by culture, leadership and Organization structure. The enabler Organization Structure and Strategy (KE_OSS) received the least score which shows that among the four enablers examined in this study, KE_OSS is perceived to exert the least influence in the UAE HE sector. The overall mean scores indicate that the perceived strength of the enablers in the UAE HE sector is moderate to moderately high. Except for the leadership construct, the standard deviation values of the remaining constructs are lower than 1.0 while the leadership construct had a standard deviation of 1.03 indicating some degree of variation in terms of opinions pertaining to leadership across the universities in the UAE.

Table 5.2 Enablers Themes and Sub-Themes

Enablers	Knowledge-friendly Culture	Knowledge-Oriented Leadership
Perceived impact	High	High
University Type	Sub-themes	
Both (Public and Private)	- Fostering academic freedom - Empowering - Cultivating trust - Mutual respect - Advocating transparency - Implementing employee rewards and recognition programs - Facilitating learning and personal growth - Maintaining an informal culture - Open-door policy - Open communication - Encouraging collegiality and friendliness - Building communities of practice - Enhancing camaraderie	- Fostering empowerment - Motivational - Acknowledging and rewarding KM initiatives - Facilitating communication - Acting as a change agent - Acting as a facilitator - Providing freedom - Providing strategic direction to KM efforts - Creating KM conducive environment - Nurturing talent - Fostering innovation - Demonstrating commitment to KM - Setting KM vision and goals - Implementing KM policies - Role model **Challenge** - Short-term expatriate tenure

Enablers	Knowledge-friendly Culture	Knowledge-Oriented Leadership
Private University	- Leveraging social networks - Optimizing physical office layout - Celebrating employee achievements **Challenge** - Competitive culture - Lack of collaboration - People attitude (fear)	**Challenge** - Leadership turnover - Lack of succession planning - Frequent leadership change affecting employee morale
Public University	- Prioritizing employee development - Promoting collaboration **Challenge** - Highly bureaucratic	- Mobilizing essential resources

Table 5.2 Enablers Themes and Sub-Themes (Continued)

Enablers	Knowledge-oriented Organizational Structure and Strategy	KM-supportive IT Infrastructure
Perceived impact	Low	Moderate
University Type		
Both (Public and Private)	- Autonomy-rendering structure - Balancing centralization and de-centralization - Adaptive and flexible - KM-friendly flatter organizational hierarchy - Facilitation of rapid decision-making process - Structure supportive of cross-functional and interdisciplinary collaboration. - Decentralized structure favoring KM. **Challenges** - Lack of explicit and clear strategy or plan for KM - Lack of KM policies and procedures - Lack of structured institution-wide KM approach - Hierarchical structure hindering KM - Too centralized structure - Mechanistic structure - Not having dedicated KM department - Lack of focus on KM processes	- Enabling collaboration with tools and platforms - Enabling knowledge protection through secure systems. - Facilitating knowledge storage through IT solutions - Enabling knowledge acquisition via IT platforms - Promoting knowledge sharing through IT-enabled platforms - Minimizing time for knowledge search and retrieval - Securing employee buy-in needed for IT system utilization through training - Leveraging centralized IT systems for KM - Implementing staff portals for centralized knowledge access/distribution

Enablers	Knowledge-oriented Organizational Structure and Strategy	KM-supportive IT Infrastructure
Private University	• Policies and processes from parent HEI conducive of KM **Challenge** • Centralized structure hindering KM	
Public University	**Challenge** • Bureaucratic structures hindering KM	

Next, to answer the second part of RQ2 which is to examine the extent to which each of the enablers influence the KM practices adoption in the UAE HEIs, the hypothesized relationship between KM enablers and KMP was examined as shown in Figure 5.1. Also, how enablers are influencing KM practices including the perceived challenges are summarized in Table 5.2 and discussed in more detail in the following sub-sections.

The SEM results show that all KM enablers except for Organization Structure and Strategy have a moderate but significant impact on the implementation of KM practices, while Organization Structure and Strategy has a relatively low but significant impact on KMP implementation. Therefore, hypotheses H1-H4 are supported.
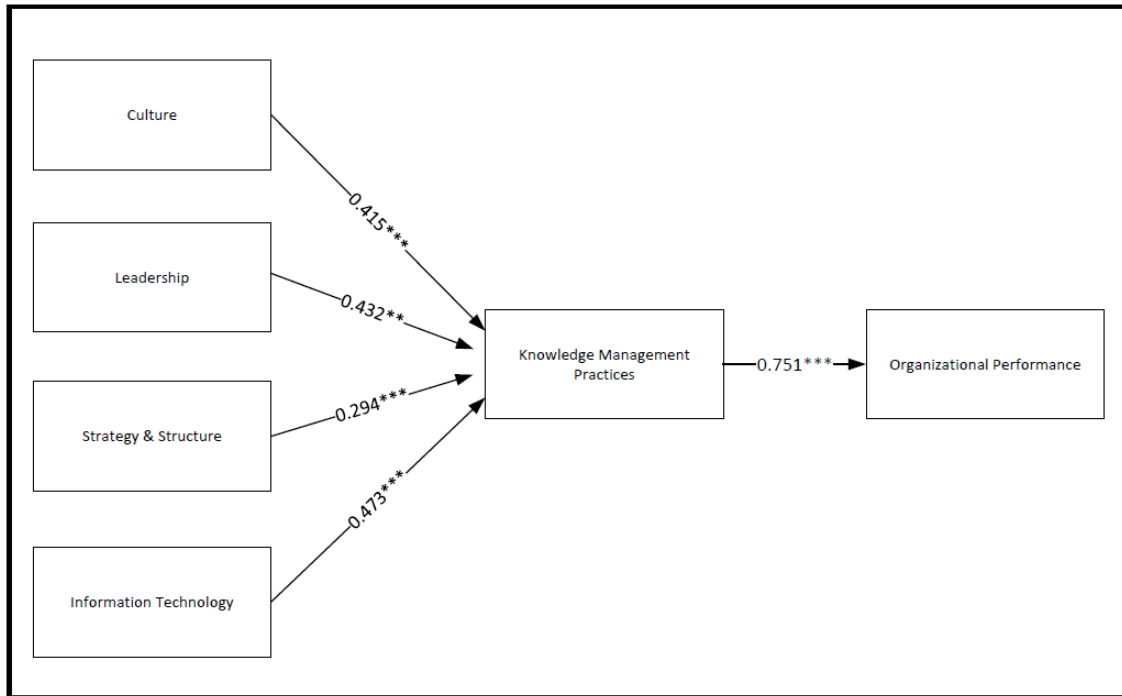
***p<0.001 **Figure 5.1. Hypotheses Test Results (Overall Model; N=428)**

In the following section, the extent to which each of the individual enablers are present/demonstrated in UAE HEIs and its impact on KMP are discussed.

5.2.1 Knowledge-friendly Culture

5.2.1.1 Knowledge-friendly Culture – Descriptive Statistics

The table below provides the construct and item level mean and standard deviations for the enabler Knowledge-friendly Culture.

Table 5.3 Descriptive Statistics – Knowledge-friendly Culture

Construct and items	Mean	Std. Deviation
Culture (KE_CUL) (N=428)	3.57	0.97
KE_CUL1	3.56	1.14
KE_CUL2	3.65	1.13
KE_CUL3	3.82	1.02
KE_CUL4	3.67	1.09
KE_CUL5	3.52	1.19
KE_CUL6	3.50	1.16
KE_CUL7	3.61	1.08

Construct and items	Mean	Std. Deviation
KE_CUL8	3.28	1.16
KE_CUL9	3.56	1.16
KE_CUL10	3.57	1.09

In the survey, the second highest mean score was obtained by the enabler Culture (KE_CUL) consisting of 10 items. The construct had an overall mean of 3.57, SD of 0.97 and the perceived mean scores of individual items ranged from $\overline{X}$ = 3.82 to $\overline{X}$ =3.28 indicating moderate to moderately high importance for the enabler in the UAE HE sector. The item on seeking assistance from others (KE_CUL3) obtained the highest $\overline{X}$ of 3.82 while the item covering the willingness to accept failure (KE_CUL8) obtained the lowest mean score of 3.28. The moderately high mean (3.57) of the construct point to the presence of a knowledge-friendly culture within the UAE HE sector, a culture that fosters employee learning, communication, openness to experimenting, trust, collaboration and innovation (Liu et al., 2021). The highest scoring items in the construct such as asking for assistance and discussing work with others could be linked to the collectivistic nature of the UAE society. Previous studies have identified collectivist culture as being supportive of KM implementation (Alshahrani, 2018) and Hofstede (2009) identifies the national culture of UAE as being collectivist who form 11% of the overall population (World FactBook, 2023). Further, around 70% of the UAE population is comprised of South-Asians (59%) and Egyptians (10%) whose national cultures also are largely collectivistic (Dissanayake et al., 2015; Obeidat et al., 2012; Hofstede, 2009).

5.2.1.2 Knowledge-friendly Culture and its Impact on KMP

In order to test whether this knowledge-friendly culture has an impact on the implementation of KMP, the relationship between the two was examined using SEM. The results (see Figure 5.1) showed that culture has a moderate but significant (β=0.415, p<0.001) impact on KMP, thereby supporting hypotheses H1 (Knowledge-friendly culture will have a positive impact on HEIs KM practices). The study by Ibarra-Cisneros et al. (2023) in Mexican HEIs also found the association between organizational culture and KM practices to be significant and moderate. Similarly, another study conducted in Saudi

HEI found that organizational culture is a key enabler of KM practices and a culture of trust and collaboration enhances KM implementation (Adeinat and Abdulfatah, 2019). The interview results also revealed the presence of knowledge-friendly culture in the UAE HEIs as well as the perceived positive role played by culture in influencing KM implementation in HEIs. In the words of interviewees:

"We have a very friendly approach to each other, and I think this really helps connect the pieces of knowledge. Because we are a small university, we're like a family to each other" (participant 19, private university).

"..The organizational culture really does make a big impact as it pushes you to, at an individual level to go ahead and be involved in knowledge creation or knowledge sharing practices". (participant 5, private university – branch campus).

The above quotes clearly show that organizational culture helps in capturing individual (tacit) knowledge and getting it transformed into organizational (explicit) knowledge thereby enhancing the stock of organizational knowledge. Further, a culture that values learning from others encourage the sharing of tacit knowledge. It is evident from the interviews that a knowledge-friendly culture which encourages employee interaction, asking for assistance, discussing work, and learning from failures helps to bring to fore social knowledge that would otherwise reside in the mind of individuals. Corporate knowledge also benefits from a culture that supports continuous learning and the application of best practices and lessons learned. This finding is consistent with the literature which stated that a knowledge-friendly culture allows organizations to better manage their knowledge as it enhances KM practices of knowledge acquisition, generation, sharing and application (Liu et al., 2021).

The interviews also pointed that a conscious effort is undertaken by HEIs to build a culture that recognizes the value of managing knowledge and engaging in KM practices. According to interview participants (as summarized in Table 5.2), a key feature of organizational culture that is supportive of KM implementation is one which has respect for knowledge and knowledge creator and where a continuous learner is celebrated not

only for their own knowledge, but for how they enabled others to learn and grow. An organizational culture that fostered academic freedom was perceived by interviewee participants as conducive to KM. The interviews stressed that organizational cultural characteristics such as open communication, an informal environment, maintaining an open-door policy and celebrating employee achievements supported KM implementation within HEIs.

"The management team quite literally have an open-door policy. Their doors are open. So you don't feel that the hierarchy exists and so it's always an option to just walk into the management offices, to chat with them and to kind of discuss things in relation to anything, including knowledge management with them..." (participant 2, private university – branch campus).

Several interview participants stressed that a collegial culture where employees felt a sense of belonging and camaraderie enhanced KM implementation and pointed to the existence of a culture of collegiality and scholarship in the UAE HEIs. The interviewees, especially those working at smaller universities echoed that there is generally a collegial environment within their organizations. Previous studies have also suggested collegiality as a defining characteristic of HEI culture (Cronin, 2000). The below interviewee quotes also support this view:

"What really supports all of these knowledge management practices at our university is I guess is the friendliness". (participant 20, private university).

"Although we do not have a very clear outline of knowledge management strategy and systems, I see it in informal discussions and in mentoring relationships, in coaching relationships and professional type relationships that are built on trust and respect" (participant 11, public university).

Further, interview results indicated that an organizational culture which encouraged people to discuss work with their co-workers and collaborate without hesitation promoted KM practices. Such a culture encourages employees to engage in KMP such as knowledge acquisition, generation, and sharing and encourages learning from each other. A culture that is supportive of collaboration within and across departments was found to be conducive to KM practices such as knowledge generation, knowledge acquisition and

knowledge sharing. The findings are in line with previous studies such as Kınık and ÇETİN (2022) and Lee and Choi (2003) who found that collaboration positively influences KMP.

Another cultural factor that was found to impact KM practices was the perceived level of trust among employees. Employee relationships that are built on trust, transparency and respect encouraged KM implementation within HEIs. The literature also confirms the positive impact of these cultural traits on KM implementation. For example, Tan and Noor (2003) confirmed the role of trust in creating a positive and open relationship among employees within an HEI facilitating knowledge exchange. The results also indicate that UAE HEIs encourage employees' innovative behavior and experimentation which are conducive for KM practices such as KM generation and application. Additionally, the interviewees also reflected that an organizational culture that motivates employees, celebrates their achievements and creates a sense of belonging supports KM deployment.

"..Celebrating what we do. So, if somebody hosts an event or someone has a new research paper out, these things are celebrated and because of that, there's a real sort of camaraderie" (participant 2, private university – branch campus).

Overall, both survey and interview results indicated that the UAE HEIs have an embedded knowledge-friendly culture that is built on collegiality, collaboration, trust, autonomy, openness of communication enabling KM implementation in HEIs. In a multi-cultural country like the UAE with over 88% of the population being expatriates (Anadol and Behery, 2020), a strong organizational culture can be a unifying force giving identity to the organization and driving employee behavior. However, there is still scope for enhancing knowledge-friendly culture within the UAE HEIs. The moderate scores (as opposed to high) could be attributed to the competition among the faculty, rather than cooperation or collaboration as echoed in the interviews. Some of the participants expressed that their organizational culture had detrimental traits such as employee insecurity, perception of power and competition that hindered KM implementation.

5.2.2 Knowledge-Oriented Leadership

5.2.2.1 Knowledge-Oriented Leadership – Descriptive Statistics

The table below provides the construct and item level descriptive statistics for the construct Knowledge-oriented Leadership.

Table 5.4 Descriptive Statistics – Knowledge-Oriented Leadership

Construct and items	Mean	Std. Deviation
Knowledge-Oriented Leadership (KE_LEAD) (N=428)	3.52	1.03
KE_LEAD1	3.62	1.13
KE_LEAD 2	3.58	1.14
KE_LEAD 3	3.37	1.13
KE_LEAD 4	3.50	1.17

A knowledge-oriented leadership, is defined as one that promotes a vision for the future, acts as a role model, motivates workforce, fosters collaboration, encourages employees to learn and innovate, rewards employees and supports initiatives to boost KM practices (Rehman and Iqbal, 2020; Donate and de Pablo, 2015).

The results of the survey and interviews point to the perceived existence of a knowledge-oriented leadership (albeit moderate) within the UAE HE sector. The leadership construct received a mean score of 3.52 in the survey. The statement on leaders' demonstrating a personal commitment to knowledge management (KE_LEAD1) was rated the highest by respondents (3.62) which suggests that leadership in the UAE HEIs are aware of the importance of KM to HEI success. The commitment of leadership towards KM could also be attributed to meeting governance and/or regulatory requirements. Of the individual items within the leadership construct, the one that emerged with the least score (3.37) was the provision of financial and other resources by the leadership in support of KM initiatives. The likely reason for the relatively low scores could be accorded to the financial constraints experienced by universities, especially considering the recent pandemic

situation. The issue with financial resources is resonated in the interviews with the interviewees stating the following:

"..Being a private institution, we do have the financial constraints" (participant 14, private university).

5.2.2.2 Knowledge-Oriented Leadership and its Impact on KMP

The study next examined the relationship between knowledge-oriented leadership and KMP using SEM. The SEM results (See Figure 5.1) confirmed the significant and positive impact (β = 0.432, p<0.001) that leadership has on enabling KM implementation in the UAE HE sector, thereby supporting hypotheses H2 which relates to the positive relationship between knowledge-oriented leadership and KM practices. Among the four enablers considered in this study, leadership was found to have the second highest impact in enabling KMP in UAE HEIs. These results are also in alignment with the study by Rehman and Iqbal (2020) in Pakistani HEIs which found strong positive impact of knowledge-oriented leadership on KM practices.

The interview results (Table 5.2) also reflected the positive impact of leadership in enabling KM practices in UAE HEIs. This is echoed by the interviewees as shown in the below quotes:

"..Leadership influences knowledge management at multiple levels. Leadership has to respect professional expertise and the role of leaders then would be to mobilize resources required to support that, not to change the opinion of professional expertise to meet the resources available. It's a challenging task because the leader must balance resources. So allow people freedom to choose the systems they want to work with, the frameworks, the way they want to do things as long as they're meeting the overall objectives..." (participant 11, public university).

"The leadership plays the role of a facilitator, facilitator for change management, facilitate with resources, motivate and empower the faculty members in practicing knowledge management..". (participant 14, private university).

The interviews also resonated the vital role played by leadership in KM implementation through setting up of vision, goals and organizational values that support KM as reflected in the below interviewee quote:

"..The vision or the guidance has to come from the leadership and this vision gives a directive, a context in which knowledge management initiatives are developed and then trickle it down further for organization-wide implementation" (participant 15, public university).

Respondents were of the view that leadership formally facilitates the implementation of KM practices by making KM part of the strategic and operational plans. The interviewees stressed that successful implementation of KM practices is also reliant on the ability of leaders to encourage and motivate employees by rewarding them for their contribution to KM. The following quote provides an example of such encouragement:

"..So a lot of times you actually see direct involvement right from the top management where top management would be attending the research seminars themselves. So that encourages other staff members to be there and present their work" (participant 5, private university – branch campus).

Further, respondents mentioned that leadership enhances KM implementation by providing employees with the freedom to participate in KM activities without fear of repercussion in case of failure to yield the optimal results. Similarly, several interviewees mentioned that leadership's role as 'change agents' paves way for reducing any resistance to changes resulting from implementation of KM practices. The role of leadership is cardinal for the success of any managerial initiative such as the KM as it involves organizational change and the role of leaders as change agents is well documented (Singh, 2008). Further, leadership was also found to actively monitor the success of implementation of KM through key performance indicators. These results are consistent with similar past studies in the HE sector such as Sahibzada et al. (2022), Iqbal et al. (2018) and Fullwood et al. (2013) which found that leaders in HEIs play a crucial role in supporting KM implementation.

However, it should be noted the strength of the relationship between leadership and KMP is only moderate ($\beta = 0.432$) based on the SEM results. The likely explanation for these moderate results could be the relatively high turnover of leadership which impact the continuity of KM initiatives. Previous studies such as Ramjeawon and Rowley (2017) in the Mauritian HE sector have found that frequent leadership changes have a detrimental

impact on the effective deployment of KMP in HEIs. The UAE HE sector is mostly constituted of expatriates who are generally employed on a three to four year renewable contract (Ababneh, 2016). The UAE HEIs have an annual turnover rate in the range of 7 to 16% (Ababneh, 2016).   The challenges in retaining leadership team echoed in the interviews as noted below:

"..It has to do a lot with the country and the transient nature of people coming in for a few years. And there's no real longevity and there's no long-term planning on the ground. Employee retention is an issue in this country, in the HE industry as well" (participant 1, private university).

Further, there is still scope for improvement in terms of leadership's approach towards KM given the moderate mean score and the relatively high variability (SD > 1) at the construct level and individual item level (1.13 to 1.17). The interviews also revealed that there is a difference among HEI leadership in the extent of commitment shown to KM initiatives thereby potentially explaining the moderate mean scores and high SD. While the majority of the interviewees echoed the support shown by leadership to KM initiatives, there were opposing views also as clearly reflected in the quote below:

"I think that the belief and the commitment of the leadership to such activities (knowledge management) is what is lacking. I think that people and systems are in place for it, but it is the leadership intent which is lacking.." (participant 1, private university).

Despite the aforementioned issues, overall, the results suggested that UAE HEIs have knowledge-oriented leadership which are supportive of KM implementation in their organizations. Developing leadership capacities that emphasize the strategic value of KM and equip leaders with the skills to manage and promote KM practices is essential. Training and development programs focused on KM leadership can enhance leaders' effectiveness in this area.

5.2.3 Knowledge-Oriented Organization Structure and Strategy

5.2.3.1 Knowledge-Oriented Organization Structure and Strategy – Descriptive Statistics

The table below provides the descriptive statistics for the enabler Organization Structure and Strategy both at the construct and item levels.

Table 5.5 Descriptive Statistics – Organization Structure and Strategy

Constructs and items	Mean	Std. Deviation
Organization Structure and Strategy(KE_OSS) (N=428)	3.22	0.94
KE_OSS1	3.07	1.17
KE_OSS2	3.04	1.11
KE_OSS3	3.24	1.17
KE_OSS4	3.29	1.16
KE_OSS5	3.29	1.08
KE_OSS6	3.38	1.10

According to the survey results, organization structure and strategy was perceived to have a moderate importance in the UAE HE sector with an overall mean score of 3.22 and an SD of 0.94. However, in comparison with the other three enablers considered in this study, the importance of this construct from a KM standpoint is perceived to be relatively low. In fact, all the 6 items constituting the construct received a moderately low score between 3.04 and 3.38.

The item KE_OSS6 on the recognition of KM as a vital part of institutional strategy received the highest rating of 3.38. This was followed by the items on supportive organizational structures that allow a flow and transfer of knowledge across various departments within HEIs (KE_OSS4) and existence of established policies and procedures that facilitate KM (KE_OSS5) with both receiving a mean score of 3.29. The two items that emerged to have the least scores are related to decentralization (KE_OSS1) and formalization (KE_OSS2). Still, they demonstrated moderate mean scores of 3.04 and 3.07 respectively implying moderate levels of de-centralization and moderately low levels of formalization in the organization structure among HEIs in the

UAE. Further, SD >1 of individual items show some degree of variability in perception across the HE sector. Interview results also revealed that organization structure and strategy play a moderate enabling role for KM implementation in HEIs.

A decentralized organization structure is perceived as one which would facilitate KM by allowing free flow of knowledge, enhancing inter-organizational open communication and fostering interdisciplinary cross-functional collaboration than a centralized structure (Alshahrani, 2018). The interviewees were largely unanimous in their opinion that a highly centralized, hierarchical and formal structure without flexibility affects autonomy and communication flow within HEIs and that in turn affects KM implementation. This view is validated by past literature which also found that highly centralized organizational structure impedes free flow of information and makes communication time-consuming thereby affecting KM practices (Lee and Choi, 2003; Kınık and ÇETİN, 2022). The following interview quotes offer insight into how high degree of centralization affects KM implementation and de-centralization promotes KM:

"The institution, being highly centralized, does not recognize the knowledge that could be gained from experts from within the institution." (participant 1, private university).

"In a bit more decentralized structure you have some autonomy which increases the chance of collaboration. You have different level of people you can go and talk to, and they at their level have some autonomy to make certain decisions. So that does encourage, you know knowledge creation, sharing..." (participant 5, private university – branch campus).

The interviewees also discussed how a strict hierarchical structure hinders KM as such structures may lack devolution of authority necessitating several approvals and employees may not feel free to collaborate or freely share knowledge. Past literature also confirms that high degree of formalization stifles openness and communication while low level of formalization improves interaction and knowledge flow within an organization (Lee and Choi, 2003). The Knowledge-based view of the organization also suggests that a less hierarchical structure as being more conducive to integration and application of

knowledge within the organization (Grant, 1996). These views also were echoed in the interview quotes:

"Too much of hierarchies essentially destroy organizations because it means that if I have a great idea or want to create something, then I have to go through the hoops and by the time I get the final approval, it has lost its meaning" (participant 6, private university – branch campus).

The interviewees also dwelled upon the impact of autonomy (from a structure perspective) on KM implementation. An organization structure which renders employees with some degree of autonomy to make decisions and collaborate would enable KM practices. Such an organizational structure would enhance the transformation of individual knowledge into organizational knowledge. According to interview participants a flatter and de-centralized organization structure may allow for greater autonomy, collaboration, agility in decision making and flexibility in implementing KM practices while a highly bureaucratic mechanistic structure is expected to hinder effective deployment of KM practices. The perceived positive influence of a less centralized and flatter structure on implementation of KM practices is evident from the below quotes:

"We have more or less a flat structure. So, you know, it helps because decisions are made quickly and that means, you know, there is a better chance of people getting less bogged down by bureaucratic decisions. So, the current structure definitely helps in being able to leverage that advantage of employees working across projects" (participant 7, private university – branch campus).

"Organization structure is flatter with less reporting. It follows a democratic decision-making approach. It greatly influences organizational knowledge management at our university…" (participant 9, private university).

Interview analysis also suggested that a balance of centralization and decentralization in structure would be appropriate in the UAE HEIs as the HE sector is still nascent and developing. Evidence from past literature suggests that in general, HEIs within an emerging HE sector have a rigid organizational structure (Iqbal et al., 2018). The need for balance of standardization and adaptation for KM to thrive can be summarized in the followed quote below interview quote:

"..Our structure is a balance of centralization and decentralization, but one which gives essentially the autonomy that allows people to make those adjustments and adoptions as required. A structure which helps knowledge management.." (participant 6, private university – branch campus)

The construct also explored aspects related to KM policies and strategies. In terms of policies, the majority of the participants confirmed that their HEIs had policies supporting specific KM aspects such as knowledge protection, storage and creation. However, there was a perceived lack of holistic approach to policy development on KM. Most interviewees highlighted the need for developing institutional-level KM policies and procedures to support systematic, structured institution-wide deployment of KM practices as indicated by the interviewee quotes below.

"There should be clear guidelines, policies, procedures for managing and disseminating knowledge" (participant 10, public university).

"So we have internal knowledge management processes happening without people knowing that they are knowledge management processes. But acknowledging that these are knowledge management processes and developing specific policies and procedures will actually make things better"(participant 19, private university).

The interviews also revealed that some of the institutions lacked a clear definition or planned strategy on KM and lacked direction on what organizational knowledge should be captured, stored, shared and managed as indicated by the quote: *"No clear definition or planned strategy as to the definition of organizational knowledge or what should be captured, stored, transferred and managed". (participant 9, private university).* These results are similar to the results of the study by Ramjeawon and Rowley (2017) conducted in Mauritius which has a similar HE landscape like the UAE which found that although HEIs implemented KM practices, they did not have KM strategy or policies. The study also concluded that lack of policies and strategies proved to be a barrier to effective KM implementation.

5.2.3.2 Knowledge-Oriented Organization Structure and Strategy and its Impact on KMP

In terms of relationship between OSS and KMP, it was found that among the four enablers, structure and strategy was perceived to exert the least influence on KM implementation. Although the extent of impact of structure construct on KM practices is perceived to be weak ($p<0.001$, $\beta = 0.260$) it is still positive and significant thereby supporting hypotheses H4, implying that organization structure and strategy has some direct influence on KM implementation. KM literature on HEIs also supports the view that organizational structure has direct influence on the effective implementation of KMPs in HEIs (Kınık and ÇETİN, 2022; Santos et al.,2024). In summary, it can be concluded that structure exerts some influence on KM implementation and that a less hierarchical, decentralized structure as being more conducive to KM implementation in HEIs. Further, the study also confirmed the need for having a structured approach to KM implementation through the establishment of KM strategy and policies.

5.2.4 KM-supportive Information Technology (IT) Infrastructure

5.2.4.1 KM-supportive IT Infrastructure – Descriptive Statistics

The Information Technology (KE_IT) construct consisting of 6 items received a construct level mean score of 3.90 and SD of 0.90 as mentioned in Table 5.6 below.

Table 5.6 Descriptive Statistics - IT

Construct and items	Mean	Std. Deviation
Information Technology (KE_IT) (N=428)	3.90	0.90
KE_IT1	3.84	1.07
KE_IT2	3.97	1.00
KE_IT3	3.93	0.98
KE_IT4	4.01	0.96
KE_IT5	3.80	1.06
KE_IT6	3.87	1.03

Of the four enablers, KE_IT was perceived as the most dominant enabler of KMP with an overall mean score of 3.90. Past KM studies in HEIs such as Morshedi et al. (2023), Ramjeawon and Rowley (2017) and Ramachandran et al. (2013) also found that appropriate IT infrastructure as a key enabler of KMP which serves to mobilize KM efforts in HEIs. All the items considered within the construct had high mean scores ranging from 3.80 – 4.01 implying that HEIs in the UAE HEIs have a robust, state of the art IT infrastructure such as advanced databases to facilitate KMP. The item KE_IT4 on availability of IT systems to improve work efficiency received the highest score of 4.01 while the item KE_IT5 relating to usage of advanced database system obtained the least score of 3.80. Although the overall construct SD score was less than 1, four of the six items had a SD of >=1 implying that there is some degree of variability across the sector in the availability of IT infrastructure.

5.2.4.2 KM-supportive IT Infrastructure and its impact on KMP

In order to ascertain whether IT systems have an impact on the effectiveness of KM practices, SEM test was used to test the relationship between IT and KMP. The SEM results (Figure 5.1) showed that the strength of the relationship between IT and KMP was moderate and significant (β=0.473, p<0.001), supporting hypotheses H4 which stated that IT will have a positive impact on KM practices' implementation in HEIs. Compared to the other enablers studied, the IT systems in the UAE HEIs were found to have the highest influence on KMP implementation. This shows that, albeit moderately, the provision of KM-supportive IT systems, tools and platforms enable the streamlined execution of KMP across the institution.

The significance of KM-supportive IT as an enabler was echoed in the interviews as well. All of the interview participants acknowledged IT as a key enabler that is integral to implementing and institutionalizing KM practices ranging from knowledge acquisition (e.g., library systems) to knowledge protection (e.g., network security). The interviewees shared several evidences substantiating the facilitating role of IT in implementing

individual KM practices. For example, the interview participants mentioned the role of IT tools (e.g., online survey platforms) in facilitating knowledge acquisition and creation, and the role of IT in the deployment of data management policies and data access protocols that prevent data violations thereby protecting institutional knowledge. Referring to knowledge protection, an interviewee, stated: *"I know that all the data that we share is fully protected and there are laws governing it. So it is very comforting for people like me. It's usually the technical teams, the IT that does those things"(participant 17, private university).* Another example was that of centralized digital knowledge repositories supporting knowledge documentation, organization and storage, protection, retrieval and sharing. The interviewees confirmed the availability of advanced IT systems in UAE HEIs. For instance, one of the interviewees stated:

"…So we have our IT platform to store all the coursework, the library system, the databases and student information that we might need. And this is all kind of centralized. It's kind of a one stop shop.." (participant 2, private university – branch campus).

The findings of this study corroborate with the previous study findings that stressed the role of IT in enabling KMP in HEIs. For instance, the study by Ramachandran et al. (2013) in Malaysian universities found positive relationship between IT and KM practices. Another study Sunalai (2015) based in the Thailand HE sector found that IT positively impacts knowledge generation and transfer.

The IT systems and applications were perceived to foster seamless communication and collaboration within the workplace, enabling employees to work productively regardless of their time and location thereby facilitating the KM practice of knowledge sharing. Referring to knowledge sharing one of the interviewees noted *"There are now more IT systems in our university that facilitate virtual exchange of knowledge" (participant 10, public university).* While the study by Ramjeawon and Rowley (2017) found that IT systems enabled knowledge sharing in HEIs, Fullwood et al. (2013) study in UK HEIs had a contrasting finding that IT had a neutral role in supporting knowledge sharing.

The interviewees from branch campuses confirmed that they were able to utilize common centralized IT platforms provided by the parent HEI. The interviewees believed that the recent covid pandemic also pushed HEIs to upgrade their overall IT systems. These results are not unexpected as the UAE has been at the forefront of ICT adoption with the country ranking 2nd in ICT adoption in the Global Competitiveness Report 2020 (Schwab and Zahidi, 2020). The other key takeaway from the interviews was the importance of human element in IT adoption. Both need to go hand-in-hand to foster effective KMP. While IT acts as a key enabler of KM implementation, an organization's ability to leverage its knowledge resources is heavily dependent on its employees who generate, apply and share that knowledge (Antunes and Pinheiro, 2020; Bougoulia and Glykas, 2023). Interviewees stressed that IT systems should be supported by dedicated IT teams to facilitate user adoption. This is echoed in the words of one of the interviewees:

"So definitely IT has its role, but IT does not exist alone. It has to be there with buy-in from the leadership, there has to be engagement of faculty members. I have seen many technologies with huge investment going obsolete just because they were not well accepted by the people who were going to use it.." (participant 14, private university).

Some participants even stressed that KM implementation is more people-driven than technology-driven. Interpreting the interviews indicated that while technology provides the tools for facilitating KM, its role is secondary to the enabling role of people and leadership and aspects such as technology acceptance, trust and attitude. In line with this notion, HEIs were found to promote the usage of IT facilities by equipping employees with the necessary skills to leverage these IT systems through training as indicated by the sample interviewee quote below.

"As we acquired new technologies to facilitate online learning, we identified that a lot of training is required both from faculty and student perspective; so we organized a number of training sessions.." (participant 16, private university).

In summary, the survey and interview results indicated that UAE HEIs in general have the availability of up-to-date IT infrastructure which plays a facilitating role in the implementation of KM practices. However, the impact of IT on KM extends beyond mere

infrastructure availability; it encompasses the integration of technology with organizational culture, processes, and the human element. For IT to effectively support KM, HEIs must ensure that technological solutions are adequately supported by training and adoption initiatives, and a culture that embraces technological acceptance.

5.2.5 KMP and its impact on HEI's Performance

The first part of RQ3 regarding the key performance outcomes (benefits) of implementing KM practices in the HE sector was initially synthesized from the literature and discussed in detail (see Chapter 2). These three performance benefits act as the outcome of KM practices implementation in the proposed KM framework. However, it was important to empirically establish that these performance benefits identified from the literature are indeed pertinent for HEIs. The survey and interview findings confirmed that the three performance benefits proposed in this study are relevant and valid for HEIs. The mean scores (Table 5.7) obtained from the survey for performance benefits for UAE HEIs ranged from 3.36 to 3.67, indicating that these performance benefits are realized at a moderate level. Additionally, interviews provided evidence of performance benefits realized from KM practices implementation in UAE HEIs.

Next, the study examined the second part of Research Question 3 (RQ3), which explores how and to what extent performance benefits are realized through the adoption of KM practices in the UAE higher education sector through testing hypothesis H5. The themes and sub-themes identified from the interview analysis for KM performance benefits are summarized in Table 5.8. This illustrates 'how' KM performance benefits are realized through the adoption of KMP in the UAE HE sector.

Table 5.7 below summarizes the descriptive statistics both at the construct level and the individual items within the construct.

Table 5.7 Descriptive Statistics of KM Performance Outcome

Constructs and items	Mean	Std. Deviation
Innovation Speed (INNSPEED) (N=428)	3.67	1.02
INNSPEED1	3.81	1.01
INNSPEED2	3.73	1.01
INNSPEED3	3.41	1.00
INNSPEED4	3.75	1.03
Innovation Quality (INNQUAL) (N=428)	3.54	1.08
INNQUAL1	3.75	1.04
INNQUAL2	3.46	1.13
INNQUAL3	3.82	1.05
INNQUAL4	3.68	0.98
INNQUAL5	3.21	1.17
Operational Efficiency (OPE) (N=428)	3.36	1.06
OPE1	3.43	1.07
OPE2	3.29	1.03
OPE3	3.37	1.08

As indicated in the Table 5.7, the perceived mean score for the three constructs were in the range $\overline{X}$ = 3.36 to $\overline{X}$ =3.67 with Operational Efficiency receiving the lowest score and innovation speed receiving the highest score. Among the three constructs, the standard deviations for all the three constructs were over 1.0 indicating that there is variability in the responses across the data sample. These results indicate that these performance outcomes are realized to varying degrees in the HE sector.

The Innovation speed (INNSPEED) construct comprised of 4 items with $\overline{X}$ ranging from 3.81 to 3.41 with SD of all the items over 1.0. The survey results showed that there has been an increase in the number of programs ($\overline{X}$ = 3.81) to satisfy the market's growing need for specialized, multidisciplinary programs (INNSPEED1). The item (INNSPEED3) on decrease in time taken to develop new programs received the lowest score of 3.41. The results also showed that HEIs have improved their ability to respond to crisis (INNSPPED4 $\overline{X}$ = 3.75). This is not surprising given the fact that this study was conducted during the COVID-19 pandemic, which forced HEIs to suddenly transition to online delivery of academic programs. Also, the results indicated that HEI research productivity used as an indicator of innovation speed has increased (INNSPEED 2).

The Innovation Quality (INNQUAL) construct consisted of 5 items with the means ranging from 3.82 to 3.21 and the construct receiving an overall perceived mean of 3.54. The SD of all individual items within the construct was over 1.0 indicating that HEIs experience these performance benefits to different extents. The item (INNQUAL3) on teaching and learning innovation received the highest score of 3.82 indicating that this performance benefit is realized in the HE sector to a moderately high extent. The results showed that student satisfaction has improved in recent years which could be likely due to the student-centric approach of HEIs as well as the existence of strong quality assurance practices. Also, the majority of the HEIs in the UAE are private, for-profit Universities, for which student satisfaction is of critical factor for long-term sustainability. The item (INNQUAL5) on employee satisfaction received the least score of 3.21 indicating that employee satisfaction is moderate.

Table 5.8 Themes and Sub-themes Performance Outcomes

Performance Outcomes	Innovation Speed	Innovation Quality	Operational Efficiency
Demonstrated Outcomes	Moderate	Moderate	Moderate
University Type	Sub-themes		
Both	• Accelerated research productivity • Quicker program development • Increased agility and resilience • Timely revision of programs in response to market needs **Challenge** • Lengthy regulatory approval process	• Enhanced employee satisfaction • Improved stakeholder satisfaction • Improvement in quality of programs • Fostering creativity in teaching and learning • Boosting university ranking/reputation • Streamlining educational and administrative processes	• Measures in place for business continuity • Time efficiency • Cost efficiency • Productivity improvement • Improved administrative performance • Improved teamwork • Faster decision-making • Overall improvement in HEI performance **Challenges** • Transient nature of staff
Private University		**Challenge** • Resource constraints • Time constraints • Teaching and administrative workload	• Competitive advantage • Increase in revenue • Increase in market share
Public University			• Maintain consistency across campuses

The Operational Efficiency (OPE) construct consisted of 3 items with the means ranging from 3.43 to 3.29. As with the other two constructs, SD of individual items was over 1.0 suggesting that HEIs vary in the extent to which operational efficiencies are realized. The item (OPE1) on increase in staff productivity received the highest score while the item (OPE2) on the time taken to complete projects received the lowest score.

Next, the impact of KM practices in realizing these performance aspects of HEIs was examined. As seen in Figure 5.1, the hypothesized relationship H5 is supported. The

result of H5 ($\beta=0.751$, $p<0.001$) show that the strength of relationship between KMP and HEIs performance is both strong and significant. This implies that the nine KM practices collectively represented as the KMP construct has a significant positive impact on the perceived performance of HEIs. A unit change in KMP implementation leads to 0.751 change in organization's performance outcomes such as improvement in programs, research outputs, innovation, and efficiency which are indicators of organizational performance. These results are congruent with past literature such as Ahmad et al. (2017) which found that KMP had a positive impact on organizational performance in Pakistani universities. Studies such as Rehman et al. (2021) and Rehman and Iqbal (2020) also found that KMP improve HEI's performance outcomes such as customer satisfaction, research productivity and curriculum development. The positive impact of KMP on HEI performance was also apparent from the interviews as indicated by the below interview quotes:

"Knowledge management processes support innovation, creativity, performance, effectiveness, efficiency. And finally, helps to achieve our goals, strategies and achieve competitive advantage" (Participant 20, private university)

"The recent improvements in knowledge management practices have enhanced the overall performance of the institution" (Participant 10, public university)

Also, the interviews provided evidence that implementation of specific KMP led to specific performance outcomes. For instance, access to knowledge contributes to innovation speed as less time is spent on searching for information. In the words of one of the interviewees:

"I would say it is the operational efficiency because when new staff comes in, he can be given the subject folder and he can start preparing immediately. I would say the onboarding part is very easy because you already have the pertinent materials available"(Participant 12, private university- branch campus)

The above quote shows that the transformation of individual knowledge into organizational assets is crucial for enhancing innovation and operational efficiency. KMP that facilitates this transformation directly contribute to organizational performance, as

individual expertise and insights become embedded within the institution's processes and strategies, driving innovation speed and quality. These results are consistent with the study by Al-Qarioti (2015) in Kuwaiti HEI which found that specific KM practices such as knowledge acquisition and knowledge organization have a positive influence on HEIs performance. Similarly, the linkage between KMP and innovation speed indicator of research productivity can be found in the below quote:

"KM has been vital in accelerating research and reducing duplication of efforts" (Participant 4, public university)

The above quote signifies that management and leveraging of tacit knowledge, alongside the structured use of explicit knowledge, underpin the quality and speed of innovation in HEIs. Effective KMP ensures that tacit knowledge is captured and integrated with explicit knowledge, fostering a rich knowledge base that supports high-quality innovation and efficient operations. These results are consistent with the study conducted by Rehman and Iqbal (2020) in Pakistani universities which found that implementation of KM practices lead to improved research productivity in universities. The interviews also provided evidence of KMP leading to employee satisfaction and productivity. According to respondents:

"When knowledge is freely available openly, transparently, publicly, it essentially makes me feel more invested in the place that I'm working in because I'm not in the dark" (Participant 6 , private university- branch campus)

"Knowledge management practices increased teamwork and productivity along with employee satisfaction!". (Participant 10, public university)

Further, akin to past literature (e.g, Annansingh et al., 2018; Alghail et al., 2023; Hasballah, 2021) this study also found support for the notion that effective management of knowledge in HEIs leads to competitive advantage. For example, one of the interviewees mentioned the below:

"My view is that the organizations who do recognize the importance of employees and knowledge management as a strategic resource will be able to create a more sustaining and enduring competitive advantage for themselves" (Participant 7, private university- branch campus).

Overall, the survey and interview results align with the findings in the literature (e.g., Rehman and Iqbal (2020)) that found similar relationship between KM practices and HEI performance. From a theoretical standpoint, the results also align with PBV which postulates that managerial practices as well as the interaction between practices impact organizational performance (Bromiley and Rau, 2014). The positive impact of KMP on the HEI's performance outcomes is also consistent with KBV which states that effective management of knowledge resources will lead to improved organizational performance (Grant, 1996). Overall, the strong correlation between effective KMP and the performance of HEIs in the UAE underscores the significance of managing various types of knowledge within an organizational context. This holistic approach to knowledge management not only aligns with the Knowledge-Based View (KBV) of the firm, emphasizing the strategic value of knowledge as a key resource, but also with the Practice-Based View (PBV), which focuses on the management of practices and their impact on organizational performance.

5.3 Chapter Summary

In this Chapter, the survey and interview findings related to RQ2 and RQ3 were discussed. The study found that the relationship between each of the four enablers and KMP was positive and significant thereby supporting the four hypotheses considered in this study. The table below summarizes the hypothesis results presented in this chapter.

Table 5.9: Hypotheses test results (Overall Model)

Hypothesized relationships	β	S.E	t-statistic	Hypotheses Result	Extent of Influence
H1: KE_CUL→KMP	0.415***	0.020	8.751	Supported	Moderate
H2: KE_LEAD→KMP	0.432***	0.017	9.313	Supported	Moderate
H3: KE_OSS→KMP	0.294***	0.020	6.877	Supported	Low
H4: KE_IT→KMP	0.473***	0.021	9.551	Supported	Moderate
H5: KMP→ORGPER	0.751***	0.118	9.062	Supported	Strong

*** *Significant at p< .001; β –standardized coefficients; S.E. –standard error*

The mean scores of the KM enablers at the construct level showed that the three enablers of leadership, culture, and IT had a perceived moderate level of impact on KM implementation in UAE HEIs while organization structure was perceived to have a low impact on KM implementation. Among the four enablers, IT was perceived to exert the highest influence on KM implementation while the enabler organization structure and strategy was perceived to exert the least influence on KM implementation in the UAE HE sector. After examining the influence of each of the enablers on KM performance using the results of the quantitative and qualitative phases, the study proceeded to examine the impact of KM practices on KM performance. Data analysis found that the perceived mean scores for the three performance outcome constructs (Innovation speed, Innovation quality and operational efficiency) were in the range 3.36 to 3.67 with Operational Efficiency receiving the lowest score and innovation speed receiving the highest score. Further, the results of the SEM showed that KM practices have a strong and positive impact on organizational performance of HEIs. The next chapter will discuss RQ4 of this study.

This chapter provides evidence that enabling conditions such as an appropriate organizational culture, leadership, availability of IT technologies and a less hierarchical and decentralized organizational structure improves KM practice implementation in HEIs. While this study examined enabling characteristics specific to HE sector, it also provides useful insights to other organizational sectors of the need for developing enabling conditions for successful implementation of KM. The findings also suggest that KM

practice implementation positively impact organizational performance. Findings from this chapter are in consonance with past studies in HE and non-HE sectors which found out that KMP positively impacts performance (e.g., Iqbal, 2021, Mohammadi et al.,2023). Although this study is specific to HE sector, this finding should provide impetus for other organizational sectors to implement KM as a tool that positively influences organizational performance.

Chapter 6: Findings and Discussion (3)

6.1 Introduction to the Chapter

While the previous chapters discussed KM practices, enablers, performance outcomes and their relationships for the overall HE sector in the UAE, this chapter will examine the similarities and differences of the above across public and private universities. Specifically, this chapter examines whether the extent of implementation of KM practices, the perceived influence of enablers on KMP implementation and extent of influence of KMP on perceived performance benefits vary across private and public universities in the UAE in line with Research Question 4. The results of the interviews and surveys were used to answer RQ4 and the pertinent hypotheses is provided below.

RQ4	*How and to what extent, findings related to RQ1, RQ2, and RQ3 differ across public and private Universities in the UAE?*

The related hypotheses for RQ4 are as follows:

H6.1: Knowledge-friendly culture will have a positive impact on the KM practices in private and public universities

H6.2: KM-oriented leadership will have a positive impact on the KM practices in private and public universities

H6.3: KM-oriented Organizational structure and strategy will have a positive impact on the KM practices in private and public universities

H6.4: KM-supportive IT infrastructure will have a positive impact on the KM practices in private and public universities

H6.5: Knowledge management practices will have a positive impact on the organizational performance outcomes in private and public universities

6.2 Similarities and Differences between Public and Private Universities in KM Practices, Enablers and Performance Outcomes (RQ4)

Mean scores of public and private Universities were computed and compared for both at the construct and individual item levels. T-test was then conducted to assess if there were any statistically significant differences between public and private universities in the implementation of KM practices, influence of enablers and perceived performance outcomes. Multi-group Analysis (MGA) was also conducted to assess whether university type influences the effect of enablers on KM practices and the relationship between KM practices and performance.

6.2.1 KM Practices in Public and Private Universities

Table 6.1 below presents the construct-level means and the significance values obtained from the analysis of the survey results. Appendix 14 provides means and significance values at item level. As seen in Table 6.1, the mean scores of the KM practices at the construct level for private universities ranged from $\overline{X}$ = 4.04 to $\overline{X}$ =3.60 (out of 5) with Knowledge Acquisition (KAQ) with a perceived overall mean of 4.04 emerging as the factor most widely implemented in the private universities while the practice Learn and Improve (KLM) with an overall mean of 3.60 emerged as the least adopted practice in the private HEIs in the UAE. In public universities, the mean scores of the KM practices at the construct level ranged from $\overline{X}$ = 3.91 to $\overline{X}$ =3.36. Similar to private universities, KAQ with an overall mean of 3.91 was perceived to be the most adopted KM practice in public universities. However, the least implemented KM practice in the public universities was Knowledge Application (KAPL) with an overall mean of 3.36 and standard deviation of 0.89. The construct level standard deviations for all the constructs for both public private universities were below 1 indicating that there is not a high degree of variability in the responses within each type of university.

Table 6.1: Descriptive Statistics of KMP for Private and Public Universities (Construct level)

Constructs	Private University (N=245)		Public University (N=183)		Mean Difference	Sig. (2-tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
Knowledge Acquisition (KAQ)	4.04	0.751	3.91	0.812	0.130	0.088
Knowledge Generation (KG)	3.69	0.834	3.72	0.727	-0.031	0.692
Knowledge Validation (KV)	4.02	0.751	3.81	0.848	0.206	0.008**
Knowledge Storage and Organization(KSO)	3.84	0.774	3.70	0.794	0.140	0.068
Knowledge Sharing (KSH)	3.84	0.821	3.73	0.777	0.114	0.148
Knowledge Retrieval (KRET)	3.87	0.851	3.71	0.898	0.154	0.071
Knowledge Application (KAPL)	3.65	0.839	3.36	0.888	0.288	0.001**
Learn and Improve (KLM)	3.60	0.958	3.48	0.953	0.118	0.207
Knowledge Protection (KPT)	3.71	0.866	3.69	0.833	0.017	0.841

*** Significant at p< .001; **Significant at p<0.01; *Significant at p<0.05;*

While examining the difference in implementation of KM practices at private and public universities it was found that at the construct level, private universities were perceived to have a slightly higher level of implementation of KMP in comparison to public universities. For 8 out of 9 practices, the level of implementation was higher in private sector except for knowledge generation which was found to be higher in public HEIs. However, statistically significant difference was found only in the implementation of two of the KM practices (at the construct level), namely knowledge validation ($\overline{X}_{private}$=4.02, $\overline{X}_{public}$ = 3.81, p= 0.008) and knowledge application ($\overline{X}_{private}$=3.65, $\overline{X}_{public}$ = 3.36, p=0.001) with private universities having higher levels of implementation. No significant differences were found between the public and private HEIs in the level of implementation of the remaining KM practices considered in this study. The interviews also revealed that (as mentioned in Table 4.2) that the implementation of KM practices were similar in both public and private HEIs with only minor changes. Overall, the interview summary in Table 4.2 suggests that the implementation of most of the KM practices are similar in both public and private HEIs.

This section examines the statistically significant differences in knowledge validation and knowledge application constructs at the item levels. Within the KV construct, the difference in implementation of three out of four practices were found to be statistically significant with private universities showing higher levels of implementation. For item KV1 on checking correctness of acquired knowledge, private universities had a mean of 4.02 while public universities scored a mean of 3.77. Similarly, for item KV2 on checking the usability of knowledge acquired, private universities had a higher mean of 3.93 while public universities had a rating of 3.69. The results showed that there was a significant difference (p= 0.03) in terms of implementing processes for checking the currency of knowledge (item KV4) with private universities having a mean of 4.14 and public universities having a mean of 3.95. These results suggest that private universities are more proactive in checking the accuracy of knowledge and maintaining relevant and up-to-date knowledge. Similarly, for Knowledge Application, as shown in Appendix 14, there was a significant difference between private and public universities in the adoption of all the 5 individual items within the construct. The mean scores indicated that private universities had a perceived higher level of implementation of knowledge application practices than public universities. These results suggest that private universities are better at utilizing their existing knowledge and using the experience and knowledge for tackling problems. Biygautane and Al-Yahya (2011) in their study of UAE public sector found that underutilization of knowledge prevails in the UAE public sector. The size of the universities could also be influencing the KM implementation in HEIs as indicated in the interviews. Interview participants from private universities which are much smaller than the public universities mentioned that it was easier for them to interact with their colleagues, have open communication and facilitate KM practices.

This section examines whether there were significant differences at the item level even if there was no difference at the construct level. It was found that some statistically significant item level differences were found within the KAQ and KSH constructs. Two items within KAQ construct namely gathering employee suggestion and feedback (KAQ4,

$\overline{X}_{private}$=3.94, $\overline{X}_{public}$ = 3.66, p= 0.010) and gathering student feedback and suggestion (KAQ5, $\overline{X}_{private}$=4.33, $\overline{X}_{public}$ = 4.01, p= 0.011) were found to be significantly different. Private universities received higher mean (3.94) than public universities ($\overline{X}_{public}$ = 3.66) indicating that private universities might be better at seeking employee suggestions and feedback. Similar result was also observed for item (KAQ5) on gathering student feedback and suggestion with a perceived mean of 4.33 and 4.01 for private and public universities respectively. This could be attributed to the highly competitive nature of the UAE HE sector where private HEIs have to be more responsive to the needs and feedback of students and other relevant stakeholders. Similarly, within the KSH construct, the difference in implementation was statistically significant for three of the individual items. This includes sharing knowledge gained from external conferences (KSH4, $\overline{X}_{private}$=3.72, $\overline{X}_{public}$ = 3.50, p= 0.045), sharing best practices and lessons learnt across the institution (KSH8, $\overline{X}_{private}$=3.73, $\overline{X}_{public}$ = 3.47, p= 0.016) and sharing knowledge with less experienced staff (KSH9, $\overline{X}_{private}$=3.83, $\overline{X}_{public}$ = 3.55) with private universities showing a perceived higher level of adoption of KSH practices. These results are consistent with the study by Chong et al. (2014) in the Malaysian HE sector which found that private universities are more willing and effective in knowledge sharing than public universities. The overall results discussed above are in contrast with the findings of Ramachandran et al. (2009) which found public universities to have a higher level of KM implementation than private universities in the Malaysian HE sector.

The ensuing sections discuss the possible reasons for the difference between public and private universities drawing on the interview analysis and the literature. The analysis of the interview data suggested that public universities in the country are larger, mostly multi-campus institutions which could possibly explain the slowness than private institutions in adopting new practices. Another explanation could be that public universities in the UAE are more bureaucratic than public universities (Ajayan and Balasubramanian, 2020) and may not be as agile in adopting managerial practices such as the KM.

The private universities in the UAE consist of both home-grown local institutions and branch campuses of foreign universities. 24% of the survey participants in this study were from branch campuses of foreign institutions. The relatively higher level of implementation of KMP in private universities found in this study could be partly due to the proportion of respondents from international branch campuses who may have mature policies, practices and better resources due to their affiliation with older mature institutions. Ramjeawon and Rowley (2018) in their comparative study on public and private HEIs in Mauritius have also noted that branch campuses of foreign universities have enhanced KM practices such as knowledge sharing and acquisition due to the availability of research repositories and knowledge resources from parent campus. The interviewees from branch campuses alluded to the benefits they enjoy due to their affiliation:

"Knowledge management itself is in some way enabled by the fact that there are those institutions which are much more mature, have their own policies, practices which are already established and embedded. And branch campus, therefore, at best adapt or adopt those same policies and practices in a contextually relevant manner". (Participant 6, private university- branch campus)

"We use SharePoint, which is managed and owned by xx (parent campus name). So SharePoint is collaboratively used by xx and yy (branch campus name)". (Participant 13, private university-branch campus)

In addition, it could be argued that the highly competitive private sector landscape would have prompted private HEIs to adopt KMP more than public HEIs as way of improving overall management of knowledge, being agile and responsive to market needs (Ramachandran et al., 2009). This could possibly explain the slightly higher level of adoption of KMPs in the private HEIs. In any case, the generic literature that compares KM implementation in public and private sector entities shows that KMP implementation to be higher in private sector than in public sector (Balasubramanian et al., 2020).

Though not statistically significant, knowledge generation was found to be marginally higher in public HEIs. This higher level of implementation of KG could be due to the better funding opportunities that are available for public HEIs and the general teaching focus of private HEIs. Ashour and Fatima (2016) in their study on the UAE HE sector found that

private universities in the UAE have limited opportunities for government research funding. Further, the study by Karabchuk et al. (2022) found that the topmost four universities in research metrics such as publication count, citation per paper and paper per faculty were either fully or partially funded by UAE government indicating higher level of KG in public HEIs. The interviews also provide some evidence of how workload and teaching responsibilities hinder knowledge generation in private HEIs as indicated in the quote below:

".. The challenge would be, I think is basically the teaching workload or difficulty in the sense that typically I think we do not get much time for research, because it takes some time..".

6.2.2 Enablers of KM and its Impact on KMP at Public and Private Universities

6.2.2.1 Comparison of Enabler Means – Private and Public Universities

First, the mean scores obtained for the four enablers were compared for public and private universities. As seen in Table 6.2 below, the overall mean scores for the four enabler constructs at private universities ranged from $\overline{X}$ = 3.89 to 3.33 (out of 5) with the enabling factor IT having the highest perceived mean of 3.89 while Organization Structure and Strategy (KE_OSS) emerging as the enabling factor with the least influence achieving a mean score of 3.33. In the case of public universities, the overall mean scores for enabling factors ranged from 3.92 to 3.07 with public universities showing similar trend as private universities with IT emerging as the most influencing enabling factor ($\overline{X}$ = 3.92) and organization structure as the least influencing enabling factor with a mean value of 3.07.

Table 6.2 Descriptive Statistics of KM Enablers for Private and Public Universities (Construct level)

Constructs	Private University (N=245)		Public University (N=183)		Mean Difference	Sig. (2-tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
Culture (KE_CUL)	3.69	0.939	3.42	0.986	0.263	0.005**
Leadership (KE_LEAD)	3.56	1.018	3.46	1.035	0.104	0.302
Information Technology (KE_IT)	3.89	0.903	3.92	0.902	-0.027	0.763

Constructs	Private University (N=245)		Public University (N=183)		Mean Difference	Sig. (2-tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
Organization Structure and Strategy(KE_OSS)	3.33	0.936	3.07	0.925	0.264	0.004**

*** Significant at p< .001; **Significant at p<0.01; *Significant at p<0.05;*

At the construct level, there was significant difference between private and public universities in the perceived influence of enabling factors Culture (p=.005) and Organization Structure (p= .004) while there was no significant difference between private and public universities in the level of influence of the enabling factors IT and Leadership as indicated in Table 6.2. The perceived influence of culture at private universities was found to be higher with an overall $\overline{X}$ of 3.69 while public universities had an overall mean of 3.42 for culture construct. At the item level, difference was found to be significant across nine out of ten items within the culture construct with the private HEIs perceived to show more characteristics of a knowledge-friendly culture than public universities. The item level mean values of enabler constructs are presented in Appendix 15. Interviewees from Private HEIs perceived their organizational culture to be friendly, informal, collaborative, celebrating employee achievements and respecting professional expertise as indicated in the quotes below. The other key aspect identified from private HEIs is the academic freedom and flexibility that employees have to engage in KM initiatives. The interview quote provides an example for the features of the private HEI culture.

"I have an environment where there is a lot of respect for knowledge and the knowledge creator and then somebody who is a continuous learner is celebrated not only for their own knowledge, but for how they enable others to learn and grow". (Participant 6, private university- branch campus)

However, some of the public university respondents had a contrasting opinion, a sample of which is also provided below.

"..There is lack of, I mean the ecosystem that we have around sometimes does not support the full execution of it (knowledge management). At the faculty level, sometimes at the institutional level, there is a lot of bureaucratic stuff, paperwork, permission and things like that. So that does

hamper the execution, I mean we are not able to realize the full potential of it(participant 18, public university).

Evidence from the literature also shows that knowledge-friendly cultural aspects such as freedom and flexibility to be more in private HEIs in the UAE in comparison to public HEIs (Ajayan and Balasubramanian, 2020). Similarly, the enabler Organization structure and strategy had a perceived higher means in private than in public universities with overall $\overline{X}$ values 3.33 and 3.07 respectively. Among the 6 items within the KE_OSS construct, four of the items KE_OSS1(p=.001), KE_OSS2(p=.000), KE_OSS3(p=.008) and KE_OSS4(p=.004) showed significant difference between private and public universities. The mean values of private universities were higher than those of public universities for the four items in the KE_OSS construct indicating that the items covering organizational structure characteristics such as low levels of formalization and decentralization are more pre-dominant in private universities. The results suggest that private HEIs are perceived to have a less formalized and more decentralized structure in comparison to public HEIs thereby allowing for free flow of knowledge. Past literature identifies less centralized and less formalized structure to promote meaningful interaction among employees thereby enhancing KM practices of knowledge sharing, acquisition, generation, and utilization (Mahmoudsalehi et al., 2012; Alshahrani, 2018). The interviews also provided some indication of the difference in the extent of centralization and formalization in private and public HEIs. For example,

"I think a more decentralized structure, more fluid structure would support the free flow of knowledge than a traditional structure which is in place because it has always been in place". (participant 10, public HEI respondent)

"You know we have a structure not too mechanistic, not too decentralized, something which is a balance of centralization and decentralization. We still need some level of centralization and standardization as we are an accredited institution. But we balance that standardization with academic freedom. We balance that paradox…"(Participant 6, private university- branch campus).

The comparatively lower level of decentralization and higher level of formalization found in public HEIs in the UAE are consistent with another study (Ajayan and

Balasubramanian, 2020) conducted in the UAE HE sector which found public HEIs in the UAE to be more bureaucratic than their private counterparts.

6.2.2.2 Impact of KM Enablers on KMP in Private and Public Universities

The hypothesized relationship between KM enablers and KMP which examines the impact of individual enablers on KM practices in private and public universities are shown in figures 6.1 and 6.2 respectively. These figures show that all KM enablers have a positive and significant impact with varying strengths on the implementation of KM practices in both private and public universities.
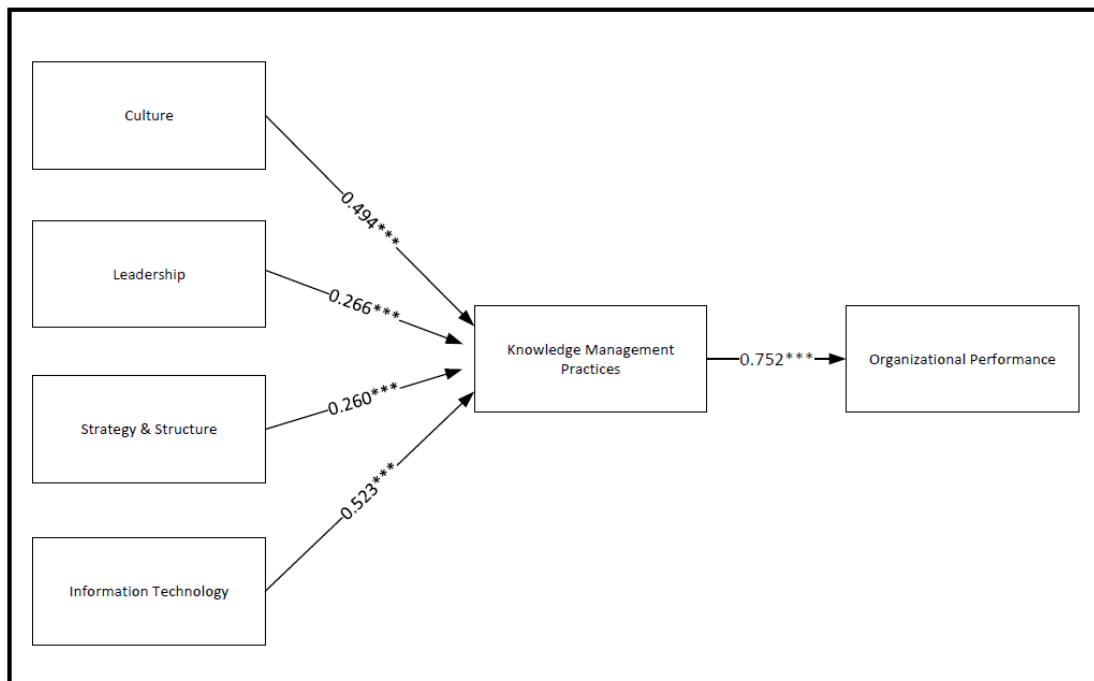
$***p<0.001$ **Figure 6.1. Hypotheses Test Model (Private Universities; N=245)**

As shown in figure 6.1 above, the path coefficients and significance show that the relationship between enablers and KMP in private universities are positive and significant thereby signifying that all the four enablers have a positive impact on KMP implementation in private universities with the extent of impact varying across enablers. While the constructs Culture ($\beta=0.494$, $p<0.001$) and IT ($\beta=0.523$, $p<0.001$) have a moderate but

significant effect on KMP implementation in private universities, the constructs Leadership (β=0.266, p<0.001) and organizational structure and strategy (β=0.260, p<0.001) have a weak but significant effect on KMP implementation in private universities.
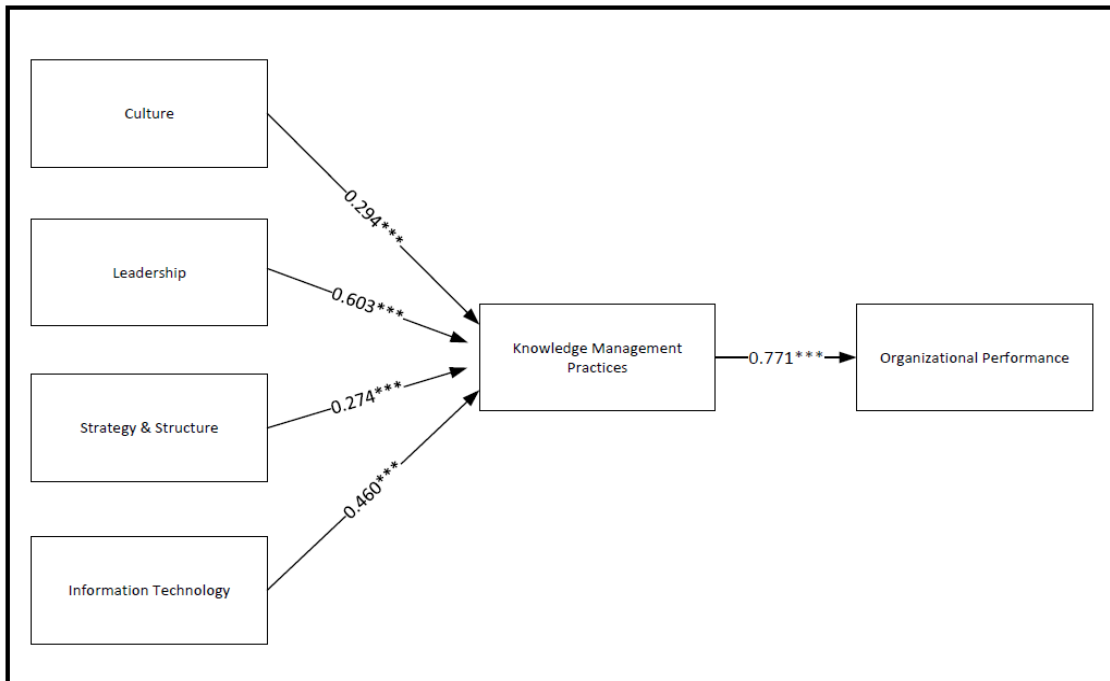
***p<0.001 **Figure 6.2. Hypotheses Test Model (Public Universities; N=183)**

As shown in figure 6.2 above, all the four constructs (leadership, culture, structure and IT) have a positive impact on KMP implementation in public universities. Among the four constructs, the impact of leadership is highest (β=0.603, p<0.001) on KMP in the UAE public universities. The association between culture and KMP although significant is low in impact (β=0.294, p<0.001). Similarly, the effect of organization structure (β=0.274, p<0.001) on KMP is also small and significant. The construct IT(β=0.460, p<0.001) has a moderate and significant effect on KMP in UAE public universities.

6.2.2.3 Differences in Relationships between Private and Public Universities

Multi-group analysis was performed to estimate the differences in the hypothesized relationships between private and public Universities. Multi-group analysis (MGA) is a

statistical technique used to assess whether a moderating variable influences the effect of an antecedent on an outcome (Memon et al., 2019). Memon et al. (2019) suggests that MGA is the preferred statistical technique when the moderator type is categorical such as university type and the moderation effect is on the entire model. The purpose of this test was to understand whether the type of university (public or private) has any influence on the effect of enablers on KM practices. It also aimed to test whether the moderator variable (university type) affects the strength /magnitude of the relationship between KMP and KM performance. The review of the literature suggested that university type has a moderating effect on the influence of specific enablers or barriers on specific KM processes. For example, the study by Chong et al. (2014) on Malaysian universities found that public universities have more barriers than private universities in engaging in KSH. However, studies have not been conducted in the past to assess the effect of different enablers on a collective set of KMP. Therefore, the test was done to gain further theoretical insights and gain a better understanding of the influence of enablers on KMP in different types of universities.

However, before proceeding with the difference in the relationships, it was important to ensure that there were significant differences in the overall model across the two groups. The $\chi 2$ difference test was used to find out whether there exists any statistically significant difference in the measurement variables and their relationship across public and private universities. The results of the $\chi 2$ difference test given in Table 6.3 show that the results are significant ($p < 0.05$), indicating that the overall model is significantly different among the private and public Universities.

Table 6.3. Chi-square difference test of the overall models (Private vs Public)

	DF	Δχ2	P-value
Overall Model	46	68.825	0.016*

*Δχ2- Chi-square difference; *p<0.05*

Since the results of the test showed that there is difference between the groups considered, the next step was to check where this difference lies in terms of the

relationship between enablers, practices and performance. The multi-group moderation test results provided in Table 6.4 indicate that the university type did not exert any significant influence on the relationships H6.3 (between structure (STR) and KM practices), H6.4 (between IT and KMP) as well as H6.5 (on the effect of KMP on organizational performance (ORGPER)). However, the results also show that there is statistically significant difference in the relationship H6.1 (relationship between culture and KMP) and H6.2 (relationship between leadership and KMP). As per the results, the perceived impact of organizational culture (CUL) on KMP was found to be greater for private than public HEIs. This suggested that the knowledge-friendly culture in private HEIs have a more enabling effect on KM practices. The below quotes from private HEI interview respondents provide evidence for the direct impact of organizational culture on KM practice implementation:

"..The freedom is basically one major factor which plays a role in knowledge creation because that motivates people to then analyze and look at their course and modify the content..".(Participant 12, private university- branch campus)

Further, the MGA results showed that Leadership (LEAD) had a much stronger effect on KMP in public universities than in private universities. This may be likely due to the long-term retention of leaders in public HEIs as such institutions mostly are headed by Emirati leaders who are on long-term contracts. In private HEIs, most of the employees including those occupying leadership positions are expatriates on short-term contracts. The private HEI interviewees had indicated that leadership turnover was detrimental to KM implementation as mentioned in the quotes below:

"I may have had five or six different bosses in the last 3-4 years. I feel a definite lack of direction, and this has created a situation for me where I no longer feel motivated". (Participant 7, private university- branch campus)

A comparative study by Al-Husseini and Elbeltagi (2018) of KM in public and private universities of Iraq yielded similar results and found that leadership in public universities were more supportive of KM implementation than leaders of private universities.

Table 6.4: Chi-square difference test of the hypothesized relationships (Private vs Public)

Hypothesized relationships	β (Private Universities) N=245	β (Public Universities) N=183	Δχ2	Interpretation
H6.1: CUL→KMP	0.494	0.294	3.358*	Significant difference
H6.2: LEAD→KMP	0.266	0.603	4.438*	Significant difference
H6.3: STR→KMP	0.260	0.274	0.108	No significant difference
H6.4: IT→KMP	0.523	0.460	0.195	No significant difference
H6.5: KMP→ORGPER	0.752	0.771	1.059	No significant difference

*β –standardized coefficients; Δχ2- Chi-square difference; *Significant at p<0.05;*
CUL- Culture; KMP- KM Practices; LEAD – Leadership; STR- Organization Structure and Strategy; IT – Information Technology; ORGPER- Organizational Performance

6.2.3 Performance Outcomes of Public and Private Universities

As provided in Table 6.5 below, the overall mean scores for the three performance outcome constructs at private universities were in the range 3.71 to 3.43 with SD less than 1. The performance outcome of innovation speed had the highest mean of 3.71 while the construct operational efficiency scored the lowest mean of 3.43. Public Universities showed similar trends with innovation speed scoring the highest mean of 3.63 and operational efficiency scoring the lowest mean of 3.28.

The P value (0.036) of the construct Innovation Quality signified that there is significant difference between private and public universities in the perceived benefits from the performance outcome of innovation quality with private universities scoring a higher mean than that of public universities. In terms of individual items, three ((INNQUAL2 with p= 0.018), (INNQUAL4 with p= 0.019), (INNQUAL5 with p= 0.001)) out of the four items within the Innovation quality construct showed a significant difference in the perception of performance benefits by private and public universities with private universities reporting a higher mean than the public universities. The statements pertaining to improved

administrative innovation and improvement in student satisfaction had statistically significant difference. The higher stakeholder satisfaction in private HEIs could be linked to the private HEIs being more responsive to customer needs in order to sustain in a highly competitive HE landscape such as the UAE. The mean scores of individual items are presented in Appendix 16.

Table 6.5 Descriptive Statistics of Performance Outcomes for Private and Public Universities (Construct level)

Constructs and items	Private University (N=245)		Public University (N=183)		Mean Difference	Sig. (2-tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
Innovation Speed (INNSPEED)	3.71	0.852	3.63	0.779	0.077	0.336
Innovation Quality (INNQUAL)	3.67	0.945	3.48	0.919	0.192	0.036*
Operational Efficiency (OPE)	3.43	0.976	3.28	0.946	0.154	0.104

Significant at p<0.05;

Comparing the performance outcomes of public and private universities, private universities were perceived to have slightly higher level of performance outcomes than public universities. The slightly but consistently higher performance of private HEIs could be attributed to the for-profit, market driven nature of UAE private HEIs necessitating them to be more efficient, agile and responsive as indicated in the below quotes:

"..We are a private institution, we have to attract students and that will bring in revenue. So for revenue generation, quality, reputation and ranking are important". (Participant 19, private university)

The strength of the relationship between KMP and performance outcomes was assessed independently for public and private universities as shown in figures 6.1 and 6.2. The path coefficient and significance values (β=0.752, p<0.001) demonstrate that relationship between KMP and organizational performance is both strong and significant in private universities.   Similarly, the coefficient and significance values for public universities (β=0.771, p<0.001) indicate that KMP have a strong positive effect on organizational

performance in UAE public universities. The results of MGA tests provided in Table 6.4 showed that there was no significant difference between public and private HEIs in the extent of impact of KM practices on HEI performance. This shows that regardless of the university type, KM is an effective managerial practice for enhancing performance of HEIs.

6.3 Chapter Summary

This chapter answered RQ4 and sought to find out if there were any differences across private and public universities in the implementation of KMP, the impact of enablers on KM practices and the impact of KMP on performance. While examining the differences between the level of implementation of KM practices across private and public universities, it was found that there was statistically significant difference in the perceived level of implementation of two of the practices namely KV and KAPL with private universities showing slightly higher level of implementation. Although not statistically significant, the perceived level of implementation of all KM practices except for KG was higher for private sector universities.

The hypothesized relationship between KM enablers and KMP was examined separately for private and public universities. It was found that the relationships between the four enablers (Culture, Leadership, Organization structure and strategy and IT) was statistically significant and positive for both private and public universities. The four hypotheses presented in this chapter were supported and the tables 6.6 and 6.7 below summarize the hypothesis results. The analysis of the results also found that the perceived impact of culture on KMP was higher in private universities (in comparison to public universities) while the perceived influence exerted by leadership on KMP in public universities was higher than that of public universities. Akin to previous studies (Masa'deh et al., 2017; Al-Husseini and Elbeltagi, 2018; Ibarra-Cisneros et al., 2023), this study also confirms that KM implementation is influenced by ownership (public or private), and socio-

demographic context. This finding is relevant not just for HE sector and shows that KM implementation and extent of enabler influence on KM implementation varies according to organisational context giving to rise to the need for tailoring KM implementation according to institutional context and mission. The perceived impact of KMP on performance outcomes was found to be positive and significant for both public and private universities. An interesting result was that there was no statistical difference in the perceived impact of KMP on performance between public and private universities. This finding implies that KMP implementation positively influences organizational performance of both public and private universities.

The next chapter will discuss the Conclusions of this study.

Table 6.6: Hypotheses test results (Private Universities)

Hypothesized relationships	β	S.E	t-statistic	Hypotheses Result	Extent of Influence
H6.1$_{private}$: KE_CUL→KMP	0.494***	0.030	7.735	Supported	Moderate
H6.2$_{private}$: KE_LEAD→KMP	0.266***	0.020	5.319	Supported	Low
H6.3$_{private}$: KE_OSS→KMP	0.260***	0.024	5.054	Supported	Low
H6.4$_{private}$: KE_IT→KMP	0.523***	0.026	8.349	Supported	Moderate
H6.5$_{private}$: KMP→ORGPER	0.752***	0.147	7.820	Supported	High

*** Significant at p< .001; β –standardized coefficients; S.E. –standard error*

Table 6.7: Hypotheses test results (Public Universities)

Hypothesized relationships	β	S.E	t-statistic	Hypotheses Result	Extent of Influence
H6.1$_{public}$: KE_CUL→KMP	0.294***	0.025	4.617	Supported	Moderate
H6.2$_{public}$: KE_LEAD→KMP	0.603***	0.032	6.508	Supported	Moderate
H6.3$_{public}$: KE_OSS→KMP	0.274***	0.034	4.141	Supported	Low
H6.4$_{public}$: KE_IT→KMP	0.460***	0.035	5.743	Supported	Moderate
H6.5$_{public}$: KMP→ORGPER	0.771***	0.187	5.186	Supported	High

*** Significant at p< .001; β –standardized coefficients; S.E. –standard error*

Chapter 7: Conclusion

7.1 Introduction to the Chapter

This chapter provides an overview of how the study has attained its research aims and objectives and, in the process, answered the research questions. The answers to each of the research questions are covered in brief in the next section of this chapter. This is followed by a discussion on the research implications of this study. The ensuing sections discuss the implications of the study for policymakers and practitioners. This is followed by a discussion on the limitations of the study and suggestions for future research. The chapter finishes with the researcher's reflections on the research study.

7.2 Research Objectives and Summary of Research Outcomes

Despite the significance of knowledge management (KM) to the HE sector, numerous gaps in the KM literature within this field motivated this study. Therefore, this research set out to examine the "what," "where," and "how" of KM practices adoption and application, along with its associated enablers and performance benefits, within the HE sector, focusing on the UAE as the research setting.

However, due to the lack of a well-established framework for empirically assessing KM practices, their antecedents, and outcomes in the HE sector, the first objective of this study was to establish an empirical assessment framework. This framework was intended to conceptualize each of the relevant KM enablers, practices, and performance metrics and examine the dynamic interplay between these components. To achieve this objective, a comprehensive review of both generic and HE-specific KM literature was undertaken. The selection of articles for the literature review was based on the criterion that the articles should focus on one or more components of the KM framework—KM enablers, practices, and performance outcomes. The literature review helped to understand the state of KM literature pertaining to the HE sector, identify existing research gaps, and develop a KM framework specific to the HE sector.

The second research objective was to apply the framework in the UAE context to empirically assess the current state of KM in the UAE HE sector. To achieve this objective, the study employed a mixed methodology, comprising a quantitative phase followed by a qualitative phase. The goal of the study and the nature of the proposed research questions mandated a dominant-status sequential explanatory design, where the quantitative method was the dominant method, and the qualitative method served as a supplementary method. The first phase of the study involved an online survey of academic and administrative staff working in the UAE, which received a total of 428 responses. The aim of the survey was to develop a broad understanding of the KM practices, enablers, and outcomes pertaining to the UAE's HE sector. The second phase of the study comprised semi-structured interviews with academic and administrative staff working in the UAE HE sector. The aim of this phase was to provide deeper insights into the quantitative findings of the study. A total of 20 interviews were conducted on the Teams platform, each lasting 30 to 45 minutes. While the survey data was analyzed using SPSS version 25.0 and AMOS version 25.0, the interview data was subjected to thematic analysis aided by a CAQDAS software (Delve tool).

Furthermore, considering that the HE sector of the UAE comprises both public and private institutions and that institutional profile might influence KM implementation, the study also sought to explore whether there were differences in KM practices, enablers, and performance benefits across private and public institutions. In achieving the first two research objectives, this study answered four research questions. The following section summarizes the main findings of this study according to these research questions and its contribution to knowledge.

The third objective of this study was to provide guidance and future research recommendations for scholars to advance KM research in HE context. The research implication of this study and future research directions are discussed in Section 7.5 and 7.10 respectively. Furthermore, in line with the fourth research objective, this study

provides policy recommendations (Section 7.6) and practitioner recommendations (Section 7.7) for enhancing KM in the UAE HE sector and in general in sections.

7.3 Answers to Research Questions and its Contribution to Knowledge

RQ1	*What are the key KM practices relevant for the HE sector? How and to what extent are they adopted in the UAE HE sector?*

In response to the **first research question,** the study identified nine (9) critical KM practices relevant to HEIs. These nine KM practices formed the central tenet of this study and the proposed KM assessment framework. No previous studies, in any sector, including the HE sector, have systematically and holistically identified, synthesized, and delineated the relevant constructs of KM practices, namely, knowledge acquisition, knowledge generation, knowledge validation, knowledge storage and organization, knowledge sharing, knowledge retrieval, knowledge application, knowledge protection, and continuous learning and improvement, as this study. Therefore, this contribution is significant, given that construct development is at the core of theory building (Venkatraman, 1989). From a PBV standpoint, the adoption of KM practices is central to the success of KM programs in HEIs. This study provides a list of KM practices that HEIs should prioritize and implement to achieve their desired performance outcomes.

The results showed that the perceived level of implementation of the nine practices is moderate in the UAE HE sector with the means of individual KM practices in the range $\overline{X}$ = 3.53 to 3.98. According to the survey, among the nine practices, knowledge acquisition was perceived to be the most implemented practice while knowledge application emerged as the least implemented practice. A study by Rasheed and Guo (2020) in Paksitani universities yielded similar results and found KAQ to be the most implemented and KAPL to be the least practiced KMP. None of the practices received an overall mean of 4.0 or higher in the study implying that there is scope for improving the implementation of KMP in the UAE HE sector. These results should be read in conjunction with the qualitative

findings where interviewees were broadly consistent in their opinion that while KM practices were implemented in the HEIs, not all HEIs had a systematic approach to the implementation of KM practices. Interpreting the results of both the quantitative and qualitative studies suggest that HEIs have established mechanisms for handling the practices of knowledge acquisition, sharing and generation. The KM practices of knowledge storage and organization, knowledge retrieval and protection largely appear to be reliant on the quality of IT infrastructure available in the HEI. The availability of electronic repositories which aids knowledge organization and storage also makes it easier to retrieve knowledge (Gammelgaard and Ritter, 2005). The implementation of knowledge validation, knowledge application and learn & improve appears to be haphazard and points to the need for establishing systematic mechanisms for facilitating these practices. The study participants were cognizant of the benefits that a systematic implementation of KMP could bring to the HEI.

RQ2	*What are the key enablers driving the KM practices in the HE sector? How and to what extent do they influence the KM practices adoption in the UAE HE sector?*

The **second research question** examined the key enablers of KM practices in HE and their perceived influence on KM practices. The results showed that all the four enablers (KM-supportive IT, knowledge-friendly Culture, Organization Structure and Strategy, Knowledge-oriented Leadership) had a perceived positive and significant impact on the implementation of KM practices to varying extents. While IT, culture and leadership were perceived to have moderate impact on KM implementation, Organization structure and strategy though positive was perceived to exert a low influence on KM implementation. The results suggested that IT had a considerable impact on the implementation of specific KM practices and the presence of appropriate IT infrastructure served to boost the KM efforts. In terms of the enabler culture, the study found that a knowledge-friendly culture that fosters open communication, trust, collaboration and collegiality facilitated the

implementation of KMPs. The results are consistent with studies in HE sector which showed a positive relationship between organizational culture and specific KM practices (Adeinat and Abdulfatah, 2019; Rodríguez-Gómez and Gairín; 2015) as well as the study by Liu et al. (2021) which showed that a knowledge-friendly culture enhances KM implementation. The enabler leadership was perceived to exert moderate influence on KMP implementation. A knowledge-oriented leadership that promotes a vision for the future, supports KM practices and empowers, motivates and rewards employees was found to facilitate KM practices in HEIs. These results are congruent with studies in HE sector such as Rehman and Iqbal (2020) and Iqbal et al. (2018) which found that knowledge-oriented leadership positively impacts KMP implementation. Among the four enablers, organization structure and strategy though positive was found to have the least influence on KM implementation. Studies such as Kınık and ÇETİN (2022) has also shown that organization structure has an influence on KMP implementation. The study found that while an organization structure that was decentralized and less formalized boosted KM efforts, a hierarchical structure appeared to be detrimental to the free flow of knowledge and KMP implementation. Many of the institutions did not have a KM strategy to facilitate systematic implementation of KM practices and the need for a formal KM program and policies to improve KM practice implementation in HEIs is echoed in studies such as Ramachandran et al. (2009). The study reinforced the need for systematizing KM implementation by developing KM strategy and policies.

In addition to the KM enablers considered in this study, additional enabling factors emerged from the qualitative interviews. The study found that both financial and non-financial rewards and incentives have a motivating role that encourages employees to engage in KM practices. In addition to tangible rewards such as promotions and financial rewards, participants highlighted the importance of recognition of employee efforts by leadership. The role of a suitable reward structure in enabling KMP implementation in organizations has been confirmed in other studies as well (Santos et al., 2024; Atapattu and Huybers, 2022).

Another enabling factor of KM that emerged from the interviews was the important role played by employees within an HEI. People play a central role in managing organizational knowledge and a significant proportion of organizational knowledge resides in the mind of employees (Grant, 1996). Especially in the case of a knowledge-intensive organizations such as HEIs, people are among the most important resources of an organization. A major theme that emerged from the interviews was that KM is people-driven and the fundamental role played by HEI employees including the leadership in enabling KMP and consequent organizational performance. The majority of the interviewees stressed that human factors such as their attitude, willingness to communicate, collaborate and share, their sense of belongingness towards the organization and interpersonal relationships drive KM initiatives. Employee experience, skills and competencies impact many of the KM initiatives and the need for talent management was a recurrent topic in the interviews. These results which signify the importance of people to KM implementation success should be read in conjunction with one of the KM implementation barriers that emerged from study namely employee turnover including frequent leadership change. This also points to the need for HEIs to have mechanisms to minimize loss of organizational knowledge due to employee turnover. The UAE HE sector is mostly comprised of expatriate employees on short-term contracts which can affect their institutional commitment (Austin et al., 2014). High rate of faculty turnover is detrimental to learning processes within HEIs, socialization among faculty members (Ababneh, 2016) and leads to knowledge loss specifically the tacit knowledge. The fast pace of turnover can affect the implementation and sustenance of KM initiatives within the HEI and may have a detrimental effect on university quality and productivity (Becerra- Fernandez and Sabherwal, 2014; Ashour and Fatima., 2016). Hence, it becomes important for HEIs in the UAE to work towards enhancing their HR policies and practices to improve employee retention. Future studies could examine the influence of the enablers , namely, people and rewards & incentives on KMP.

In addition to the enablers that exist within and are under the control of the organization, this study identified some external environmental enablers that potentially affect KM implementation in HEIs. The main external enablers that emerged from the semi-structured interviews were regulators (in case of UAE Ministry of Education (MOE) accredited institutions) and parent HEIs (in the case of branch campuses of foreign HEIs). Interviewees from both public and private accredited universities exerted the important role played by regulatory bodies in driving KM implementation. Although the regulatory standards do not specifically spell out the requirement for institutions to implement KM, the regulations indirectly mandate the implementation of KM practices in order to maintain compliance. For example, Ministry of Education regulations require institutions to implement policies on intellectual property, copyright which favorably influences institutional knowledge protection. Ministry regulations influence the governance, policy and procedure framework, documentation requirements, quality assurance activities and drive continuous improvement. The university classification scheme of the MOE includes a number of research performance and teaching indicators which also drive KMP. The analysis of interviews suggested that periodic assessment and monitoring of HEIs by regulators have had a positive impact on institutions in terms of implementing KM practices. The role played by HE regulatory bodies in providing direction to strengthen the quality assurance mechanisms of HEIs is well documented (Xanthidis et al., 2020). Further, the Commission for Academic Accreditation which is the UAE's quality assurance agency for HE states that its highest priority is to safeguard academic standards and work with HE providers to assure the quality, effectiveness and continuous improvement of higher education (CAA, 2022). Therefore, it can be reasonably assumed that the HE regulator in the UAE has a role in influencing and enhancing the managerial practices of HEIs.

Similarly, the interviews of participants from branch campuses revealed that parent HEI have the role of "main influencers" in the way KM is practiced in branch HEIs. The importing of knowledge, systems, resources, and practices from the parent HEI impacts

the KM efforts of the branch HEI. This finding is consistent with other studies which found that parent HEIs tend to insist on branch campuses having similar institutional practices, curriculum, QA processes and academic standards as the parent HEIs as the qualifications and certificates issued at both parent and branch are expected to be of identical value and exchangeable (Garett, 2018; Shams and Huisman, 2016). Branch campuses typically adopt and contextualize the policies and procedures of the parent campus as part of being responsive to the host country HE context while conforming to the regulations of the parent campus (Zhang and You, 2022). Also, in most cases the provision of resources to branch campuses is contingent on the parent campus. For example, the sharing of resources such as research funds, labs and systems and active research collaborations between parent and branch campuses help in improving branch HEI's research performance (Garett, 2018). The interviews revealed that the sharing of learning resources between branch and parent HEI such as course materials, library resources, and IT systems influence the KMP of the branch HEI. The academic, research and consulting collaborations between parent and branch HEI was found to influence the knowledge generation in branch HEIs. Further, parent campuses typically have robust, well-established policies and procedures with embedded KM practices and the adoption of these policies enable KM at branch campuses. In future studies, the proposed framework could be expanded with these external enablers of regulators and parent campus influence on branch campus.

RQ3	*What are the key performance outcomes (benefits) of implementing KM practices in the HE sector? How and to what extent are they realized through the adoption of KM practices in the UAE HE sector?*

The **third research question** sought to identify the key performance benefits of KM practices, and how and the extent to which they are realized through the adoption of KM practices. The strength of the relationship between KMP and performance was perceived to be positive, strong and significant indicating that implementation of KMP can contribute

to the overall performance of HEIs. Past studies have also yielded similar results such as Sahibzada et al. (2023) which found that KM practices of knowledge acquisition, creation, storage, and utilization result in greater operational performance in HEIs. Similarly, the study by Rehman and Iqbal (2020) also found that Knowledge acquisition, sharing and utilization positively impacts HEI performance. It was evident from the study that managing knowledge resources better will help HEIs in realizing better performance outcomes like improved quality of programs, efficient administrative processes, increased research productivity and development of new programs. The results of the study endorse the knowledge-based view (KBV) of an organization which asserts that an organization's ability to manage its knowledge assets will lead to enhanced organizational performance and competitive advantage (Grant, 1996; Iqbal, 2019). The qualitative data analysis showed that KM implementation yields several additional performance benefits (outcomes) which were not addressed in the quantitative study. These outcomes include improvement in HEI competitiveness, revenue generation, profitability, organizational growth and performance. They also help HEIs in ensuring business continuity, improving organizational agility, resilience, and sustainability. In addition, KM positively supports academic accreditation, and quality assurance efforts. The interviews also suggested that KM positively affects employee creativity, morale and their sense of belonging to the organization. The positive outcome of KM practices on performance benefits can be explained using theory of PBV. PBV suggests that firm performance (in this case HEI performance) will depend on the adoption of specific practices (KM practices), on how those KM practices are implemented, and the interaction of those KM practices with other practices in the firm (Bromiley and Rau, 2014).

RQ4	*How and to what extent, findings related to RQ1, RQ2, and RQ3 differ across public and private Universities in the UAE?*

The **fourth research question** examined whether there were any differences in the findings related to RQ1, RQ2 and RQ3 across public and private Universities. This implied

examining the difference in the implementation of KM practices (RQ1), differences in the way enablers influence KM practices (RQ2), and difference in the performance benefits realized from the implementation of KM practices (RQ3) across public and private Universities.

Overall, the perceived level of KM implementation at both public and private universities appeared to be moderate with private universities showing slightly higher levels of implementation than public universities in the case of eight out of the nine KM practices examined. The slightly higher level of implementation of KM practices in the UAE private HEIs could be attributed to their need to be efficient and effective in their practices as they are profit-oriented and their financial sustainability is largely reliant on tuition fees with little or no government funding (Barhem, 2017). The only KM practice that showed a higher level of implementation in public universities in comparison to private HEIs was knowledge generation. This result is congruent with the study by Ramachandran et al. (2009) which found that public HEIs have higher level of knowledge generation in comparison to private HEIs. Although there was difference between private and public universities in the level of implementation of KM practices, these differences were statistically significant only for the practices KV and KAPL with private universities having higher levels of implementation. This shows that public universities are not much behind private universities in terms of adoption of KM practices. Though not driven by profitability, public sector in the UAE are also expected to be fiscally prudent, agile and responsive to various stakeholder needs necessitating them to adopt managerial practices such as KM (Ashok et al., 2021). The differences in the implementation of KM practices among public and private Universities can be explained through the lens of PBV. It argues that even though firms adopt similar practices, there will be some differences in the way they implement these practices, and these differences bring about differences in firm performance (Bromiley and Rau, 2014).

Examining the impact of enablers on KM practices, in the case of both public and private universities, the relationship between the four enablers (KM-supportive IT infrastructure, knowledge-friendly culture, knowledge-oriented organizational structure and strategy, knowledge-oriented Leadership) and KM practices was found to be both positive and significant. However, there was difference in the strength of the relationship across public and private universities. For private universities, while the enablers culture and IT showed a moderate effect on KMP implementation, leadership and organizational structure and strategy showed a weak impact on KMP implementation. In the case of public universities, the enabler leadership and IT were perceived as moderately influencing KM implementation while the other two enablers culture and organizational structure appeared to have a low impact on KMP implementation.

Examining the association between KMP and performance outcomes, KMP was found to have a strong and positive impact on the realization of performance outcomes in both private and public universities. The result of this study which shows positive effect of KMP on performance outcomes in private universities is supported by a study undertaken in Kurdish private universities which found that KM practices positively impact organizational performance in private universities (Anwar and Ghafoor, 2017). The positive impact of KM on performance outcomes in public universities is in alignment with other studies which found that KM adoption enhances efficiency and innovation in public sector organizations (Ashok et al., 2021). When the difference between public and private HEIs in the extent of impact of KMP on HEI performance was examined, it was found there was no significant difference in the impact. This result implies that KM practices influence HEI performance and is independent of the type of university. The implementation of management practices such as KM which has a positive impact on performance of both public and private universities could be attributed to the need for HEIs to become more "business-like", entrepreneurial, innovative and achieve higher efficiencies (Robertson, 2014).

7.4 Potential KM implementation Challenges for HEIs

It was evident from the study that KM implementation in the HE sector faces challenges that needs to be addressed. The analysis of the qualitative interviews resulted in the identification of challenges such as resource constraints, lack of employee motivation, employee turnover and lack of awareness of KM. The study found resource constraints as a significant deterrent to KM implementation. One of the main constraints was the lack of time available for staff to devote to KM practices such as knowledge generation owing to heavy teaching and administrative workloads. The lack of availability of funds has an impact on the research productivity of HEIs. The inadequacy of IT infrastructure (multiple systems with lack of integration) was also pointed out in the interviews as a factor hindering KM implementation. Previous studies such as Ramjeawon and Rowley (2017) also found that lack of resources such as availability of funds and heavy workload affecting implementation of KM practices. The role of people and resources in KM implementation reflects the resource-based view of the organization, which asserts that organizations can gain a competitive advantage through their valuable resources (Kraaijenbrink et al., 2010). Interview analysis supported the notion that a motivated workforce was more likely to contribute to KM efforts. Factors such as lack of academic freedom, competition among faculty, absence of transparent and equitable policies on performance appraisals and career progression, job insecurity, decreased discourse between faculty/staff and management were deemed to affect employee motivation to engage in KM practices. The interviews highlighted that the transient nature of the workforce in the UAE and the relatively short-term tenure of staff affected the KM efforts of HEIs. The fact that employees are not invested in an organization for a longer period makes it difficult to normalize KM within institutions. Participants from private HEIs specifically raised concern about this issue and the interviews revealed that due to the relatively small size of the institutions many of the critical roles were handled by one or two persons and their leaving the organization resulted in significant knowledge loss specifically tacit knowledge.

Another challenge that emerged from the interview analysis was a perceived lack of awareness of KM and its benefits which negatively affects the extent of adoption of KM in the UAE HE sector. Although the HE sector is inextricably linked to knowledge, there is no widespread discussion of KM within UAE HEIs. The KM practices are viewed as distinct activities and there's a failure to recognize it as whole with each practice having link to the other. While participants from both private and public institutions confirmed that they practice KM to some extent, it is not discerned as KM and they do not employ explicit KM terminology. Many of the KM practices are implemented as informal departmental-level initiatives and HEIs lack structured institution-wide implementation. The interviews indicated that factors impeding full-scale institution-wide implementation of KM may be organization-structure imposed, institutional-culture imposed or employee-related factors. Some of the reasons attributed to the lack of systemic approach to KM were the absence of a centralized office to handle KM functions, lack of institution-wide policies supporting KM, mechanistic organization structure, bureaucratic culture, and lack of inter or intra-departmental collaboration.

7.5 Implications for Research

One of the main contributions of this study was to integrate the otherwise scattered literature on KM in the HE sector. First, the study was able to identify the critical components of KM, namely, KM practices, KM enablers, and KM performance benefits (outcomes) and develop them into managerially relevant constructs for HEIs (9, 4 and 3 constructs respectively for KMP, KM enablers, and performance outcomes). Second, this study was able to rigorously validate each of the KM constructs (e.g., tested face validity, content validity, convergent validity, and divergent validity) as well as establish its reliability. Further, the KM was operationalized as a second-order (higher order) latent construct comprising of nine first-order KMP. The existence of second-order constructs highlights the need to study KM holistically rather than being focused one or two practices in isolation. The 16 validated first-order constructs comprising of 9 KMP, 4 enablers and

3 performance outcomes proposed in this study and its underlying measurement items in itself is a significant contribution given that construct development is at the core of theory building (Venkataraman, 1989). None of the previous KM studies in the HE sector have covered the gamut of practices covered in this study. The majority of the KM studies in the HE context have focused on one to four KM practices (e.g, Charles and Nawe, 2017; Al-Kurdi et al., 2020; Veer-Ramjeawon and Rowley, 2020) with some exceptions like the study by Devi Ramachandran et al. (2009) which included six KM practices.

Next, the study was able to integrate the KM constructs into an empirically tractable and meaningful empirical assessment framework. The proposed framework, which was carefully developed after a thorough review of existing KM frameworks, and related hypotheses considerably fill the gap in the literature on the lack of consistency in defining the scope of KM, especially in HEIs. The framework contributes towards the theoretical advancement of KM in the HE sector. Moreover, this study was the first detailed attempt to examine KM in the UAE HE sector thereby making the findings both novel and significant. Further, researchers could utilise the pre-tested and validated survey instrument for empirical investigation in their respective settings, though the survey instrument may require adaptation/contextualization for different country settings.

The proposed framework and the operationalized constructs could be used by future researchers in HE for further refinement, validation and application. The KM framework proposed in this study could also be adapted to other service sectors. This study clearly establishes the relationship between enablers, practices and performance outcomes relevant for the HE sector. Also, the study highlights the importance of KBV and PBV for successful KM programs. According to KBV, knowledge is the most strategic resource of an organization. This view aligns with the emphasis on managing individual vs. organizational knowledge, tacit vs. explicit knowledge aspects within KMP. On the other hand, PBV emphasizes the importance of specific practices and activities in achieving organizational performance. This view highlights the role of KMP as activities that can be

systematically managed and improved to enhance performance outcomes. PBV suggests that differences in how KMP are implemented across HEIs can lead to variations in performance. This variability underscores the importance of not just adopting KMP but also tailoring their implementation to fit the unique context and strategic goals of each HEI. Together, KBV and PBV provides a holistic approach to KM that includes both the strategic management of knowledge assets (KBV) and the practical application of knowledge management activities (PBV).

7.6 Implications for Policymakers

In a country such as the UAE which is in the process of transitioning into a KBE, the development of the HE sector is of vital importance (Ashour and Fatima, 2016). This study reaffirms the positive impact of KM implementation on the performance of HEIs and the role of HE in helping UAE achieve its strategic vision. The HE sector of the UAE is highly regulated by the Ministry of Education and the regulatory framework of the Ministry heavily influence the governance, policy practices of HEIs by mandating specific requirements for policies and governance in their licensing and accreditation standards (Commission for Academic Accreditation, 2019). Therefore, including KM as a requirement or a regulatory expectation within the Ministry Standards for the HEIs may positively impact KM implementation in HEIs. This study provides regulators with the opportunity to examine the relevance and potential benefits of implementing KM in the HE sector. It was clearly evident from the interviews the potential role that regulators could play in enhancing KM implementation in HEIs. Given the positive impact of KM implementation on HEI performance and the enabling role played by regulators in enhancing KM implementation, this study calls for the national HE regulators to encourage HEIs to formally implement KM in HEIs. Moreover, the study results show that implementation of KM practices has a direct and positive impact on HEIs innovation performance. Given the importance of HEIs and their contribution to knowledge

generation and innovation in a knowledge-based economy, adoption of KM in HEIs will support countries looking to transition towards a knowledge-based economy.

7.7 Implications for Practitioners

This study gives an overview to decision-makers in UAE HEIs about the extent of adoption of KMP, the enabling factors of its implementation and the performance outcomes that HEIs realize from implementing KM practices. The study provides practitioners (HEIs) with a compendium of KM practices which when implemented would contribute to improving the performance of HEIs. The study also emphasizes the importance of implementing KMP in tandem rather than in an isolated manner as these practices are closely intertwined. The insights from this study could be used as a basis for developing a KM tool kit for HEIs.

A key finding that emerged from the study was the lack of structured approach within UAE HEIs in the implementation of KM practices. The study participants acknowledged the need to create a better understanding of KM and its benefits within the sector. There is still a lot of ambiguity about the discipline of KM and its constituents. The findings clearly indicate that KM has not been largely formalised in the UAE HE institutions with dedicated KM units, KM strategies or policies although several of the KM practices are embedded in the routine functions of HEIs. The positive impact of KM on organizational performance was evident in this study. These findings should provide decision makers in HEIs with the impetus to set up specialized KM units or roles to coordinate the KM efforts and enhance KM implementation. Another recommendation that arises out of this study is for HEIs to have a KM strategy to formalize, facilitate and direct KMP in the organization as the study found that HEIs did not have a specific KM strategy although they recognized the importance of KM. Past studies in KM have also confirmed the role of a deliberate KM strategy in enhancing KM implementation (Ho, 2009; Ramjeawon and Rowley, 2018). The study also points to the need for support, time, encouragement and resources to improve the implementation of KM. Heavy teaching and administrative workloads, lack

of rewards and incentives, and lack of time and resources were found to adversely impact KM adoption in HEIs (Ramjeawon and Rowley, 2018).

The study showed the need for HEI decision makers in the UAE to enhance enabling conditions of knowledge-oriented leadership and knowledge-friendly organizational culture to improve KMP implementation. The study confirmed the important role played by technological aspect of IT in KM implementation and confirmed the findings in studies in HE sector such as Ramjeawon and Rowley (2017) and Ramachandran et al. (2013) which acknowledged the role of IT infrastructure in KMP implementation. The study also reinforced the need for having a more decentralized organization structure to promote KM in line with studies such as Kınık and ÇETİN (2022) and Alshahrani (2018) which found that decentralized organization structure facilitates openness and interaction among organizational members thereby supporting KM implementation. The survey questionnaire can be easily adapted to an assessment/benchmarking tool which could be used by HEIs to assess the current state of KM in their organization.

7.8 General Applicability of Findings

As discussed in Chapter 1 of this study, knowledge significantly contributes to organizational success and sustainability regardless of organizational sector. The fast development of technologies such as Big Data and AI have enormously increased the availability of information and knowledge making it important for organizations to systematically manage their knowledge so that it can be effectively utilised by organizations as a strategic asset for achieving competitive advantage (Jarrahi et al., 2023). Although the KM framework proposed by this study is specific to the HE sector, it underlines the importance of implementing KM practices in a holistic fashion and the need for identifying and enhancing organizational factors (enablers) that positively impact KM implementation. This study clearly shows that managing knowledge effectively through the deployment of KM practices leads to improved organizational performance thereby signifying the relevance of KM as an effective strategic and managerial tool for

organizations to implement. The findings of this study also show that extent of influence of enablers vary according to organizational context thereby pointing to the need for tailoring KM implementation in accordance with organizational settings and strategic goals. The KM framework proposed in this study could be used as a basis for developing KM framework tailored to meet the needs of specific organizations.

7.9 Limitations of the Study

The study is not without its limitations. The study is based on data drawn from the HEIs located within one country - the UAE. This to some extent limits the generalizability of the findings. As the focus of the study was HEIs, the findings of the study may not be applicable to other sectors. The sample size of the study was only 428 participants from public and private (local and transnational) HEIs. Due to the limited sample size, it was not possible to investigate whether there are differences between private-local and private-transnational institutions in their implementation of KMP. In order to gain an in-depth understanding of the state of KM implementation in the UAE HE sector, the study sought data from both academic and administrative staff working in HEIs who may have different awareness or experiences regarding KM implementation. The study did not segregate the experiences of the two groups studied due to sample size limitations. Due to sample size limitations, the institutional size of survey participants was not considered during analysis. However, the interviews suggested that institutional size had an impact on deployment of KM practices.

The quantitative survey used in this study only included four enablers; however, additional enablers emerged from the qualitative study which were not tested using the survey. This finding implies that there may be additional enablers that may have an impact on the implementation of KM practices in HEIs. The study used KMP as a second-order construct instead of considering the impact of each of the enablers on individual KM practices. Therefore, further insights could be gained by assessing the relationship between each enabler and individual KM practice. These could be considered as

limitations although there is enough justification available from the current study and extant literature for the operationalization of the second-order constructs used in the study.

7.10 Recommendations for Future Research

As mentioned under limitations, the survey had covered only four enablers – leadership, organizational culture, structure and Information Technology. Additional enablers of KM such as people, rewards and incentives, and regulators emerged during the qualitative interview. Therefore, the study could be expanded by modifying the survey instrument to include additional enablers. The study was limited to HEIs within the United Arab Emirates. The scope of the study could be expanded using the validated survey instrument to include other countries such as those with a developing or developed HE sector. Future researchers could use the proposed KM framework to undertake multi-country comparative studies. The impact of HEI size on KM implementation could be assessed using the validated survey instrument. Further, the study was limited by the sample size and hence could not be utilized to draw the differences in perceptions across academic and administrative staff or study KM implementation in specific type of university such as branch campuses. The survey instrument could be adapted by other researchers to undertake such studies in future. The prevalence of barriers shows that it could be added as an additional component to the proposed framework to understand their role in hindering KM implementation.

7.11 Reflecting on my journey

This study provided me valuable insights into how knowledge management can be a useful managerial tool for HEIs. I was surprised by how much organizational culture can influence an HEI's employees and their way of doing things. The study broadened my understanding of knowledge management and how it is critical to the success of higher education institutions. In terms of skill development, this thesis has helped me improve

my skills in conducting both quantitative and qualitative studies. From a professional perspective, I was able to utilize my knowledge on KM to help reinvigorate the Knowledge Management Forum at my institution.

As a self-funded PhD student, with a full-time job and being a mother of three and going through the turbulent pandemic period and having been infected with the virus twice this journey though gratifying has nevertheless been challenging. One of the key challenges was managing time needed for this project while balancing my personal and professional commitments. At this stage of the project, I admit that I grossly underestimated the time required for each phase of the study which delayed my completion. Finally, having seen me go through this journey, I hope I have been able to instill in my children the importance of perseverance and hard work.

Appendix 1 Summary of Key Studies in KM in Higher Education

Study	Country	Methodology	Primary Focus	Key Findings
Alfawaire and Atan (2021)	Jordan	Quantitative survey	Investigate the effect of KM, innovation, and strategic HRM on Strategic Competitive Advantage (SCA)	There is a positive and statistically significant relationship between strategic HRM and SCA, KM and SCA, SHRM and innovation, KM and innovation.
Alghail et al. (2023)	Generic	Systematic literature review	Find the determinants of knowledge protection in HE sector	Knowledge protection in HEIs is a scantily researched area. IT infrastructure has a enhances knowledge protection within HEIs.
Sahibzada et al. (2021)	Pakistan	Quantitative survey	Effect of KM enablers and processes on knowledge worker productivity	KM enablers (trust, leadership and environmental uncertainty) have a positive direct effect on KM processes and KM processes have a direct positive impact on knowledge worker productivity
Iqbal (2021)	Pakistan	Quantitative survey	Impact of KM enablers on innovation speed and quality and assessing the mediating role of knowledge sharing in the process	Top management knowledge value and knowledge-based rewards positively impact both innovation speed and quality. Knowledge-oriented culture positively influences innovation quality. Knowledge sharing mediates the effects of these enablers on innovation.

Study	Country	Methodology	Primary Focus	Key Findings
Rehman and Iqbal (2020)	Pakistan	Quantitative survey	Examine effect of knowledge-oriented leadership on organizational performance of HEIs and examine the mediating role of KM processes and innovation	Knowledge-oriented leadership has strong direct and positive impact on organizational performance, KM processes and innovation. KM processes could enhance innovation and organizational performance, and innovation has positive effect on organizational performance.
Nawaz et al. (2020)	Europe, Asia and GCC countries	Quantitative survey	Identify the main KM practices in HE sector of multiple countries and find out if there are differences	Results showed that KM practices of knowledge perception, knowledge creation, knowledge diffusion and knowledge sharing were implemented in HEIs in all the 3 country groups studied.
Asiedu et al. (2020)	Ghana	Quantitative survey	Explore relationship between leadership, KM capabilities, organizational learning and innovation performance	Study found transformational leadership positively affects KM capabilities, innovation and organizational learning. Also, innovation is positively affected by KM capabilities and organizational learning.
Quarchioni et al. (2020)	Generic	Systematic Literature review	Systematic review of KM literature specific to HEIs with the aim of systematizing the main themes researched and identify gaps and	Six major research themes pertaining to KM literature in HEIs are managing HEIs intellectual capital, role of HEIs in transferring knowledge, adoption of IT in support of KM in HEIs, effects, constraints, and benefits of

Study	Country	Methodology	Primary Focus	Key Findings
			possible research avenues	scientific knowledge production and sharing, as well as heterogeneous studies on adoption of KM in HEIs. Studies do not consider the interplay between the different intra-organizational dynamics (human, relational, and technical aspects) that can impact KM outputs.
Al-Kurdi et al. (2020)	UK, GCC countries, Egypt, Jordan	Quantitative survey	Role of organizational climate, leadership and trust in influencing the knowledge sharing intentions among academic staff in HEIs	Organizational climate, Subjective norm, trust and leadership have a significant positive relationship with the knowledge sharing intention of academic staff. Knowledge sharing intention is a pre-requisite for actual knowledge sharing behavior.
Veer-Ramjeawon and Rowley (2020)	Mauritius and South Africa	Semi-structured interviews of academics	Compare the KM practices of Knowledge creation, knowledge sharing and knowledge transfer in HEIs in Mauritius and South Africa	HEIs in the studied countries lacked an explicit KM strategy. Knowledge creation, sharing and transfer were practiced in HEIs of both Mauritius and South Africa. Common knowledge creation activities in both countries were research, teaching and learning, organisational documentation and acquisition from external sources. Similar knowledge sharing processes were internal meetings, publications, collaborative

Study	Country	Methodology	Primary Focus	Key Findings
				platforms, seminars and conferences.
Adeinat and Abdulfatah (2019)	Saudi Arabia	Quantitative survey conducted at a single university in Saudi Arabia	Assess the impact of university's culture on KM processes of Knowledge creation, dissemination, exchange and application	From a Saudi Arabian context organizational culture had a significant positive effect on KM processes of knowledge creation, knowledge exchange and knowledge application.
Chen et al. (2019)	China	Interviews conducted at two corporate universities in China	KM functions and their evolution at corporate universities in China and their evolution through the lens of knowledge networks	Main KM functions at a corporate university are knowledge creation, transfer and knowledge services for intrapreneureship which are related and mutually reinforcing. Corporate university enhances knowledge creation and innovation and enhances communication among employees within the organization
Iqbal et al. (2019)	Pakistan	Quantitative survey of academic and administrative staff in public universities in Pakistan	Investigates the effect of KM enablers (culture, leadership and incentives) on KM processes	Leadership, culture and incentives facilitate KM processes of knowledge acquisition, sharing and utilization. Effective implementation of KM processes can improve research productivity, student satisfaction, curriculum development, responsiveness to challenges in HEIs, positively

Study	Country	Methodology	Primary Focus	Key Findings
				impact organizational performance and sustainable competitive advantage.
Kanwal et al. (2019)	South Asia	Systematic literature review	Explore KM research pertaining to HEIs in South Asian countries	Individual, technological and organizational factors as well as government policies influence KM implementation in HEIs. The key stakeholders who influence KM implantation in HEIs are faculty, administrative staff and librarians. The anticipated outcomes of KM implementation include competitive advantage, organizational performance, effectiveness and learning
Mahdi et al. (2019)	Iraq	Quantitative survey	Impact of KM on sustainable competitive advantage in private universities using RBV and KBV	KM processes of knowledge identification, generation, storage, application, and knowledge goal formulation are positively related to strategic competitive advantage.
Annansingh et al. (2018)	United Kingdom	Focus group discussions	Factors influencing knowledge sharing in HEIs.	Knowledge sharing behavior in HEIs influenced by organizational structure, trust, culture and political environment. Factors like to power, promotion and career progression, may refrain individuals from sharing knowledge. Risks associated with knowledge sharing are intellectual

Study	Country	Methodology	Primary Focus	Key Findings
				property theft, knowledge leakage, knowledge stickiness, knowledge hoarding and competition.
Charles and Nawe (2017)	Tanzania	Mixed methods involving questionnaire, interview, focus group discussion and observation	Examine the state and awareness of knowledge management practices among teaching and non-teaching staff at the Mbeya University of Science and Technology (MUST) in Tanzania	KM practices include 4 pillars – knowledge acquisition, knowledge sharing, knowledge re-use and knowledge creation.The study found that the lack of integration of KM practices into the institutional management system as the reason for limited awareness and implementation of KM practices.
Ramjeawon and Rowley(2017)	Mauritius	Qualitative semi-structured interviews	To identify the enablers and barriers to the implementation of KM in HEIs	Enablers of KM are supporting IT infrastructure, some incentives, qualified staff and strong leadership. Barriers are lack of supportive policies and reward frameworks, heavy workload, individualistic culture and competitive promotion policies
Fullwood and Rowley (2017)	United Kingdom	Quantitative survey	Identify individual and organizational factors that influence knowledge sharing behavior among academics	Organizational culture is an organizational factor that affects the intention and attitude to share knowledge. Personal beliefs is an individual factor that is crucial in the knowledge sharing decision of academics.

Study	Country	Methodology	Primary Focus	Key Findings
Masa'deh et al. (2017)	Jordan	Quantitative survey conducted of lecturers at one university in Jordan	Investigate the relationship between KM processes and KM performance as well as the relationship between KM performance and job performance	KM processes have a significant positive impact on KM performance and. KM performance positively impacts job performance.
Muqadas et al. (2017)	Pakistan	Qualitative unstructured Interviews of employees in public sector universities	Factors leading to knowledge hoarding practices in public sector universities and suggest how barriers to knowledge sharing could be reduced	Knowledge sharing intentions are restricted by an unsupportive organizational culture, need to impress supervisors, lack of trust, incentives, networking opportunities, and unavailability of facilitating IT infrastructure. Knowledge sharing behavior can be enhanced by a supportive organizational culture, leadership, distributive justice, and an effective performance appraisal system.
Nunes et al. (2017)	South Asian countries	Systematic Literature review	Propose a conceptual KM framework for HEIs	The study proposed a framework consisting of 3 components: a) Pre-requisites which are required to support KM processes. The pre-requisites are classified to individual, organizational and technological factors

Study	Country	Methodology	Primary Focus	Key Findings
				b) KM processes which are acquire/create, organize, share, disseminate, discover knowledge c) Outcomes include organizational effectiveness, competitive advantage, organizational performance, organizational learning
Tan (2016)	Malaysia	Survey of academic staff in 5 Malaysian universities	Determine the individual, organizational, technological, communication factors influencing knowledge sharing among academic staff	The study found that trust, rewards, organizational culture, KM system quality (effectiveness, accessibility, dependability of knowledge available in the systems), openness in communication and face-to-face interactive communication among faculty members had a positive impact on knowledge sharing in universities.
Sunalai and Beyerlein (2015)	Generic	Integrative literature review	KM literature relating to KM processes, enablers and the impact of KM on HEI performance.	The KM processes used in HEIs include share, store, use, create, acquire, and assess. 3 categories of KM enablers identified are Organizational management, Human orientation and KM mechanism KM outcomes identified were:

Study	Country	Methodology	Primary Focus	Key Findings
				a) Achievement of HE mission in teaching, research, academic service, productivity, performance score b) Improvement of organization management c) KM effectiveness
Jamil and Lodhi(2015)	Pakistan	Survey of employees in universities located in Pakistan	Effect of KM processes on university performance	Human resources and a culture fostering KM had a positive impact on university performance. KM processes of knowledge acquisition, storage and application are significant predictors of university performance. Technology plays a moderating role in the relationship between KM dimensions of culture, HR, KM processes and university performance
Rodríguez-Gómez and Gairín (2015)	South American countries	Multi-case study of educational institutions. Survey and semi-structured interviews of various stakeholders in 4	Determine the factors enabling or hindering knowledge creation and management (KCM) processes in educational institutions.	The study found that management (leadership style) followed by people have the highest influence on knowledge creation and management processes in educational institutions. Another finding is that ICT does not significantly impact the KCM processes

Study	Country	Methodology	Primary Focus	Key Findings
		educational institutions		
Jolaee et al. (2014)	Malaysia	Quantitative survey of academic staff at one public university in Malaysia	Factors affecting knowledge sharing intention among academic staff using the lens of Theory of Reasoned Action (TRA)	The study found that attitude was positively and significantly linked to knowledge sharing intention. Self-efficacy and social network (relationships with other members of the community) have a positive effect on academic staff's attitude towards sharing knowledge. Subjective norm (social/peer pressure) and trust does not affect the intention of academic staff to share knowledge.
Fullwood et al. (2013)	United Kingdom	Quantitative survey	Investigate the attitudes and intentions of UK academics' towards knowledge sharing	There is an implicit knowledge sharing culture in universities and academics shared knowledge related to teaching, research and learning. Academics have a positive attitude and intention towards knowledge sharing and expected intrinsic rewards such as promotions and improved relations with their colleagues. Academics have higher perceptions of autonomy, relatively high level of affiliation towards their discipline than their university.

Study	Country	Methodology	Primary Focus	Key Findings
Ramachandran et al. (2013)	Malaysia	Quantitative survey conducted at four universities in Malaysia	Examine the importance of KM practices and strategic enablers in HEIs and examine their relationship	Knowledge transfer and generation are the key KM practices implemented while knowledge codification is not perceived as important or implemented. IT is the most critical enabler for promoting knowledge processes in HEIs. trong leadership support and strategy are precursors for KM implementation. Also, for KM to sustain, HEIs should have a culture of collaboration, trust and openness
Ramayah et al. (2013)	Malaysia	Quantitative survey of academic staff at 10 public universities in Malaysia	Factors that affect the knowledge sharing behavior among academic staff	Academics' attitude and subjective norm have a positive impact on knowledge sharing behaviors of academic staff with subjective norm having a higher influence. Organizational climate and perceived self-worth also influenced knowledge sharing behaviors. Anticipated extrinsic rewards and reciprocal relationships positively influence knowledge sharing attitude of academics.
Abokhodiar (2013)	Saudi Arabia	Literature review	Propose a model for the implementation of	The suggested model for KM implementation consists of four elements (sub-goals) of a)

Study	Country	Methodology	Primary Focus	Key Findings
			KM at an HEI in Saudi Arabia	Develop infrastructure to support KM b) Develop KM systems c) Create organizational structure for KM implementation d) Promote the culture of KM. The model also included strategies for achieving each of the sub goals.
Siadat et al. (2012)	Iran	Quantitative survey conducted at a single university in Iran	Investigate the effect of social capital and organizational culture on knowledge creation	Knowledge creation in HEIs is dynamic and involves ongoing interaction between implicit and explicit knowledge. Organizational culture and social capital have a positive effect on knowledge creation. Social capital which is Social capital reduces organizational and supervisory expenses and empowers employees
Omerzel et al. (2011)	Slovenia	Quantitative survey of teaching staff from two public universities in Slovenia	Relationship between organizational culture and KM processes in HEIs	KM processes of knowledge generation, storage, transfer and application are highly correlated with one other. The study failed to find significant correlations between certain types of culture (clan, market, adhocracy, hierarchy) and all of the KM processes. Specific culture

Study	Country	Methodology	Primary Focus	Key Findings
				showed correlation with specific KM process.
Vashisth et al. (2010)	India	Quantitative survey of researchers and academics at three Indian universities	Barriers and facilitators of KM in university research centers from three dimensions - individual aspects, socio-organizational aspects, and technological aspects.	Lack of time and information overload were found to be the two main barriers to knowledge gathering. Knowledge creation deterrents were teaching and administrative load, lack of infrastructure and poor access to resources. Knowledge dissemination was constrained by individualistic culture, lack of motivation and fear of being "robbed". Individual, social and organizational factors have a larger role in facilitating KM processes than technological aspects.
Tsui et al. (2009)	Japan	Survey and case study	Investigate how KM methods can be used to enhance knowledge creation in universities and research institutes	Lack of personal IT skills hinders knowledge management and sharing. The organizational variables that affects KM implementation are people, culture (open and collaborative), leadership and managerial style.
Ramachandran et al. (2008)	Malaysia	Quantitative survey	Examined the importance and effectiveness of KM	19 KM outcomes adapted from the corporate sector were found to be important for the HE sector from the perspective of academic staff.

Study	Country	Methodology	Primary Focus	Key Findings
			outcomes applicable to HEIs	
Cranfield and Taylor (2008)	United Kingdon	Case study	Understand the KM practices and perceptions within HEIs in the UK using the lens of Stankosky's Knowledge Management pillars	Some evidence for implementation of KM in HEIs was found. While some adopted a more structured approach, others were covert in their application of KM. An Organizational culture (promoting collaboration and trust) and HEI's organizational structure influence adoption of KM
Chen and Burstein (2006)	Generic	Case study analysis	Propose a model for KM informed by the Monash Task-based KM framework.	Proposed model includes six interlinked KM activities: capturing, storing, sharing, learning, exploring, and exploiting. Implementation of KM is reliant on three enablers- people, technology and policy. Implementation of KM also requires a change in organizational culture

Appendix 2 Survey Instrument

KNOWLEDGE MANAGEMENT (KM) PRACTICES IN THE UAE HIGHER

EDUCATION INSTITUTIONS

You are invited to participate in a research study titled "Knowledge management practices in the UAE higher education sector." This survey aims to understand the knowledge management practices in the UAE higher education sector, its enablers and benefits. You have been invited to participate as you have been working in the UAE higher education sector and your input will benefit this research enormously.

The survey will take about 12-15 minutes to complete and your responses will be confidential and the data you provide will be used only for this research study. The survey is voluntary and you can withdraw from the study at any time while completing the survey.

The study is conducted as part of my Doctoral studies and is in accordance with Lancaster University's ethical guidelines. This study has been reviewed and approved by the Faculty of Arts and Social Sciences and Lancaster Management School's Research Ethics Committee.

If you have any queries related to the survey, please feel free to contact me (Shalini Ajayan, s.ajayan@lancaster.ac.uk).

Thank you for your interest and participation in this study.

Shalini Ajayan

STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY

1. I confirm that I have read and understood the information sheet for the above study.
2. I understand that my participation is voluntary and that I am free to withdraw at any time during my participation in this study.
3. I understand that it may not be possible to withdraw my data after the survey is completed as data is anonymized and it will not be possible to identify and extract my contribution to the study.
4. I understand that any information given by me may be used in future reports, academic articles, publications or presentations by the researcher, but my personal information and organizational information will not be collected, and I will not be identifiable.
5. I understand that any data provided in the survey will be protected on encrypted devices and kept secure.
6. I understand that data will be kept according to university guidelines for a minimum of 10 years after the end of the study.
7. I agree to take part in the above study.

I have read and understood the information above, and I freely and voluntarily give my consent to participate in this study.

- Yes, I consent
- No, I do not consent

SECTION 1   DEMOGRAPHIC DETAILS

1.1 How would you describe your primary role at the university?

☐ Academic   ☐ Administrative

1.2 If 'academic', please indicate your job role:

☐ Instructor   ☐ Lecturer ☐ Senior Lecturer ☐ Assistant Professor   ☐ Associate Professor ☐ Professor

☐ Other: Please indicate _____

1.3 If 'administrative', please indicate your job level:

☐ Entry-level   ☐ Mid-Level ☐ Senior/Managerial ☐ Director/Executive ☐ Other: Please indicate
_____

1.4 How long have you been working at your current institution?

☐ Less than 1 year   ☐ 1 to 3 years ☐ 4 to 6 years ☐ 10 years and above

1.5 Overall years of experience in the higher education sector

☐ Less than 1 year   ☐ 1 to 5 years ☐ 6 to 10 years ☐ 11 to 15 years ☐ 16 to 20 years ☐ 21 to 25 years ☐ over 25 years

1.6 Which of the following best describes your institution

☐ Public university fully funded by the federal government

☐ Public university fully funded by individual emirate (e.g., Dubai)

☐ Locally owned private university

☐ Private university with some financial support from federal/local government.

☐ Private university – branch campus of foreign university.

1.7 If you have selected private university - branch campus of foreign university, please indicate the country of the parent campus

☐ Australia   ☐ United States   ☐ United Kingdom   ☐ India   ☐ Other: Please indicate
_____

1.8 How long has your university been in operation in the UAE?

☐ Less than 3 years   ☐ 3 to 5 years ☐ 6 to 10 years ☐ 11 to 15 years ☐ over 15 years

1.9 Number of students enrolled in your university?

☐ Less than 500 students   ☐ 500 to 2000 students   ☐ 2001 to 5000 students   ☐ over 5000 students

SECTION 2 KNOWLEDGE ACQUISITION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

My university…………	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
2.1 Regularly invites academics/industry practitioners who are experts in their discipline to give guest lectures	1	2	3	4	5	N/A
2.2 Actively gathers information on the current developments and best practices in the HE sector	1	2	3	4	5	N/A
2.3 Actively gathers information on internal processes (such as what succeeded and what failed)	1	2	3	4	5	N/A
2.4 Actively gathers employee suggestion and feedback	1	2	3	4	5	N/A
2.5 Actively gathers student suggestion and feedback	1	2	3	4	5	N/A
2.6 Actively gathers information from stakeholders (e.g., employers, alumni) on industry needs	1	2	3	4	5	N/A

SECTION 3 KNOWLEDGE GENERATION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
3.1 My university actively cooperates/collaborates with other Universities on projects such as developing joint degree programs and research projects	1	2	3	4	5	N/A
3.2 My university actively engages with companies on joint projects (e.g., research projects, start-ups)	1	2	3	4	5	N/A
3.3 At my university, staff are actively involved in research activities	1	2	3	4	5	N/A
3.4 At my university, students are actively involved in research activities	1	2	3	4	5	N/A
3.5 My university has established knowledge centres/ institutes (e.g., R & D centres, specialised labs)	1	2	3	4	5	N/A
3.6 My university utilizes existing knowledge to create new knowledge (e.g., new programs, inter-disciplinary research, interdisciplinary programs, etc.)	1	2	3	4	5	N/A

SECTION 4 KNOWLEDGE VALIDATION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

At my university…………	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
4.1 Knowledge generated/acquired is checked for accuracy/correctness	1	2	3	4	5	N/A
4.2 Knowledge generated/acquired is checked for usability/applicability	1	2	3	4	5	N/A
4.3 The authenticity/reliability of the knowledge source is checked	1	2	3	4	5	N/A
4.4 Existing knowledge is checked to ensure that it is relevant/up-to-date (e.g., program review, course review, policy review, etc.).	1	2	3	4	5	N/A

SECTION 5 KNOWLEDGE STORAGE AND ORGANIZATION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

At my university…………..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
5.1 Knowledge is well categorised and organized	1	2	3	4	5	N/A
5.2 Knowledge is electronically stored in repositories (e.g., shared drives, intranet, learning management system, etc.)	1	2	3	4	5	N/A
5.3 Latest information technology applications are utilised to store knowledge	1	2	3	4	5	N/A
5.4 A well-structured documentation of employees' competencies and achievements is maintained	1	2	3	4	5	N/A
5.5 Various publications such as reports and manuals are used to store knowledge	1	2	3	4	5	N/A
5.6 Databases of root causes and solutions to frequently encountered problems are maintained	1	2	3	4	5	N/A
5.7 Databases of best practices is maintained	1	2	3	4	5	N/A

SECTION 6 KNOWLEDGE SHARING/DISSEMINATION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

My university……….	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
6.1 My University has practices in place for the formal exchange of ideas/knowledge between staff (e.g., staff meetings, committees)	1	2	3	4	5	N/A
6.2 My university has practices in place for the informal exchange of ideas and knowledge between staff (e.g., team outings, departmental lunches etc.)	1	2	3	4	5	N/A
6.3 At my University, staff present their innovation/research to colleagues (e.g., internal research seminars)	1	2	3	4	5	N/A

My university……….	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
6.4 At my University, employees share knowledge gained from attending external conferences, trainings, workshops, and seminars	1	2	3	4	5	N/A
6.5 My University regularly conducts internal training workshops, symposiums and seminars	1	2	3	4	5	N/A
6.6 My University uses the latest file-sharing systems	1	2	3	4	5	N/A
6.7 At my university, timely reports (e.g., newsletters, annual reports, policy updates) with appropriate information are send out to employees	1	2	3	4	5	N/A
6.8 At my University, best practices and lessons learned are shared across the institution	1	2	3	4	5	N/A
6.9 At my University, experienced staff transfer their knowledge to new or less experienced workers (eg: induction, mentoring, coaching etc.)	1	2	3	4	5	N/A

SECTION 7 KNOWLEDGE RETRIEVAL

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

At my university…………	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
7.1 It is easy to search and retrieve stored institutional knowledge (e.g.: reports, policies & procedures. Course material etc.)	1	2	3	4	5	N/A
7.2 Knowledge is available for retrieval in a format and structure that is convenient to use	1	2	3	4	5	N/A
7.3 Knowledge can be retrieved any time anywhere from repositories	1	2	3	4	5	N/A
7.4 Knowledge can be accessed using different devices such as computers, smartphones, tablets, etc.	1	2	3	4	5	N/A

SECTION 8 KNOWLEDGE APPLICATION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

My university…………..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
8.1 Successfully applies its own past experience for solving new challenges	1	2	3	4	5	N/A
8.2 Utilizes stored knowledge in repositories for solving problems and challenges	1	2	3	4	5	N/A
8.3 Has mechanisms in place to correctly assign the task to employees that match with their expertise	1	2	3	4	5	N/A
8.4 Is not reluctant to try out new knowledge acquired/created	1	2	3	4	5	N/A

My university…………..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
8.5 Has processes for applying knowledge learned from mistakes	1	2	3	4	5	N/A

SECTION 9 LEARN AND IMPROVE (CONTINUOUS IMPROVEMENT)

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

My university…………..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
9.1 Has processes to systematically identify knowledge gaps (e.g., employee training needs, updating curriculum, new programs, etc.)	1	2	3	4	5	N/A
9.2 Takes efforts to close knowledge gaps	1	2	3	4	5	N/A
9.3 Uses feedback from projects to improve subsequent projects	1	2	3	4	5	N/A
9.4 Has processes for benchmarking performance	1	2	3	4	5	N/A
9.5 Has processes devoted to identifying best practice	1	2	3	4	5	N/A

SECTION 10 KNOWLEDGE PROTECTION

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

My university…….	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
10.1 Has several mechanisms (such as patents, copyrights, etc.) to protect organizational knowledge (e.g., research outcomes, creative work, documents, etc.)	1	2	3	4	5	N/A
10.2 Has mechanisms to protect organizational knowledge from inappropriate or illegal use inside of the institution	1	2	3	4	5	N/A
10.3 Has mechanisms to protect institutional knowledge from inappropriate or illegal use outside of the institution	1	2	3	4	5	N/A
10.4 Clearly identifies restricted knowledge	1	2	3	4	5	N/A
10.5 Has policies and procedures for protecting knowledge from misuse	1	2	3	4	5	N/A
10.6 Uses the latest technology for protecting knowledge from misuse	1	2	3	4	5	N/A

SECTION 11 KNOWLEDGE ENABLER - CULTURE

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

At my university………..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
11.1 Employees are recognised for new ideas and initiatives	1	2	3	4	5	N/A
11.2 Employees are encouraged to explore and experiment	1	2	3	4	5	N/A
11.3 Employees are encouraged to ask others for assistance when needed	1	2	3	4	5	N/A
11.4 Employees are encouraged to discuss their work with people in other departments	1	2	3	4	5	N/A
11.5 A climate of openness is present	1	2	3	4	5	N/A
11.6 A considerable level of trust exists between employees	1	2	3	4	5	N/A
11.7 There is a willingness to collaborate across different departments	1	2	3	4	5	N/A
11.8 There is a willingness among employees to accept responsibility for failure	1	2	3	4	5	N/A
11.9 Open communication is encouraged	1	2	3	4	5	N/A
11.10 There is a willingness among employees to share/transfer their knowledge/experience to other employees or groups of employees	1	2	3	4	5	N/A

SECTION 12 KNOWLEDGE ENABLER - LEADERSHIP / TOP MANAGEMENT SUPPORT

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

At my university..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
12.1 Leaders demonstrate a personal commitment to knowledge management	1	2	3	4	5	N/A
12.2 Senior managers emphasize to employees the importance of knowledge management to the organization's success	1	2	3	4	5	N/A
12.3 Senior managers provide funding and other resources for knowledge management initiatives	1	2	3	4	5	N/A
12.4 Individuals are rewarded for their contributions to organisational knowledge (innovation in teaching and learning, process improvements, research initiatives etc.)	1	2	3	4	5	N/A

SECTION 13 KNOWLEDGE ENABLER – INFORMATION TECHNOLOGY

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

At my university…..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
13.1 State-of-the-art IT infrastructure is used	1	2	3	4	5	N/A
13.2 IT facilitates collaboration in the work place regardless of time and place	1	2	3	4	5	N/A
13.3 IT facilitates seamless communication among organization members	1	2	3	4	5	N/A
13.4 IT systems are in place help employees work more efficiently	1	2	3	4	5	N/A
13.5 Advanced database systems are used	1	2	3	4	5	N/A
13.6 Adequate training to use IT systems are provided	1	2	3	4	5	N/A

SECTION 14 KNOWLEDGE ENABLER – ORGANIZATION STRUCTURE AND STRATEGY

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

My university…..	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
14.1 Has a decentralised organizational structure	1	2	3	4	5	N/A
14.2 Has low levels of formalization	1	2	3	4	5	N/A
14.3 Has organizational structure that facilitates free flow of information across departments	1	2	3	4	5	N/A
14.4 Has organizational structure that facilitates the transfer of knowledge across different departments	1	2	3	4	5	N/A
14.5 Has established KM policy and procedures	1	2	3	4	5	N/A
14.6 recognises knowledge management as a vital part of the institution's strategy	1	2	3	4	5	N/A

SECTION 15 OVERALL INSTITUTIONAL PERFORMANCE

Please rate your agreement with the following statements using a scale of 1 to 5 where: 1 = Strongly Disagree and 5 = Strongly Agree. Please select not applicable if a particular factor does not apply to you

In the last two years, at my university …	Please rate the level of agreement					
	Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
15.1 There has been an increase in the number of new programs & courses/modules developed	1	2	3	4	5	N/A
15.2 Reputation has improved	1	2	3	4	5	N/A
15.3 The time taken to develop new programs has decreased	1	2	3	4	5	N/A

In the last two years, at my university …		Please rate the level of agreement					
		Strongly Disagree (1)	Disagree (2)	Neither agree not disagree (3)	Agree (4)	Strongly Agree (5)	Not Applicable
15.4	Existing degree programs and their curricula has been improved/ updated in response to market needs	1	2	3	4	5	N/A
15.5	Administrative innovation has improved	1	2	3	4	5	N/A
15.6	Innovation in teaching and learning has improved	1	2	3	4	5	N/A
15.7	Student satisfaction has improved	1	2	3	4	5	N/A
15.8	Employee satisfaction has improved	1	2	3	4	5	N/A
15.9	Staff productivity has increased	1	2	3	4	5	N/A
15.10	The time to complete departmental projects has decreased	1	2	3	4	5	N/A
15.11	Administrative efficiency has increased	1	2	3	4	5	N/A
15.12	Service quality has improved	1	2	3	4	5	N/A
15.13	Stakeholder engagement has improved	1	2	3	4	5	N/A
15.14	Staff accountability has improved	1	2	3	4	5	N/A
15.15	There has been an increase in research productivity (number of articles or books written, number of conference presentations, number of patents filed, etc.)	1	2	3	4	5	N/A
15.16	The ability to respond to unanticipated changes has improved	1	2	3	4	5	N/A
15.17	The ability to respond to crisis has improved	1	2	3	4	5	N/A

SECTION 16 COMMENT

16.1 In your opinion, how have the knowledge management practices in your organization impacted its overall performance?

_____
_____

16.2 Please provide any comments or remarks that you may have about this survey or the knowledge management practices in your institution

_____
_____

SECTION 17 DEMOGRAPHIC PROFILE

Now that we have completed the survey, please answer the following questions about yourself:

17.1 Your gender

☐ Female   ☐ Male

17.2 Your nationality: _____

Appendix 3 Survey Instrument and Literature Source

KM Construct and Items	Literature Source
Knowledge Acquisition	
Regularly invites academics/industry practitioners who are experts in their discipline to give guest lectures	Adapted from Omerzel et al. (2011)
Actively gathers information on the current developments and best practices in the higher education sector Actively gathers information on internal processes (such as what succeeded and what failed) Actively gathers employee suggestion and feedback Actively gathers information from stakeholders (e.g., employers, alumni) on industry needs	Ramachandran et al. (2013)
Knowledge Generation	
My university actively co-operates with other universities on projects such as developing joint degree programs and research projects My university actively engages with companies on joint projects (e.g., research projects, start-ups) At my university, staff are actively involved in research activities At my university, students are actively involved in research activities My university has established knowledge centres/ institutes (e.g., R & D centres, specialised labs)	Adapted from Omerzel et al. (2011)
My university utilizes existing knowledge to create new knowledge (e.g., new programs, inter-disciplinary research, inter-disciplinary programs)	Gold et al. (2001)
Knowledge Validation	
Knowledge generated/acquired is checked for accuracy/correctness Knowledge generated/acquired is checked for usability/applicability The authenticity/reliability of the knowledge source is checked Existing knowledge is checked to ensure that it is relevant/up-to-date (e.g., program review, course review, policy review etc.).	Adapted from Blackman and Kennedy(2009) and McElroy (1999)
Knowledge Storage and Organization	
Knowledge is electronically stored in repositories (e.g., shared drives, intranet, learning management system etc.)	Adapted from Lawson (2003)
Latest information technology applications are utilised to store knowledge Various publications such as reports and manuals are used to store knowledge	Adapted from Ngoc-Tan and Gregar (2018)
Databases of best practices is maintained A well-structured documentation of employees' competencies and achievements is maintained	Adapted from Omerzel et al. (2011)
Databases of root causes and solutions to frequently encountered problems are maintained	Ramachandran et al. (2013)
Knowledge Sharing/ Dissemination	
My University has practices in place for the formal exchange of ideas/knowledge between staff (e.g., staff meetings, committees) My university has practices in place for the informal exchange of ideas and knowledge between staff (e.g., team outings, departmental lunches) At my university, timely reports (e.g., newsletters, annual reports, policy updates) with appropriate information are send out to employees	Adapted from Masa'deh et al. (2017)

KM Construct and Items	Literature Source
At my University, staff present their innovation/research to colleagues (e.g., internal research seminars) At my University, employees share knowledge gained from attending external conferences, trainings, workshops, and seminars	Adapted from Tan (2016)
My University uses the latest file sharing systems	Omerzel et al. (2011)
My University regularly conducts internal training workshops, symposiums and seminars	Ngoc-Tan and Gregar (2018)
At my University, experienced staff transfer their knowledge to new or less experienced workers (eg: induction, mentoring, coaching etc.)	Cranfield (2011)
Knowledge Retrieval	
It is easy to search and retrieve stored institutional knowledge (e.g.: reports, policies & procedures, course material etc.)	Adapted from Gold et al. (2001)
Knowledge is available for retrieval in a format and structure that is convenient to use Knowledge can be retrieved any time anywhere from repositories Knowledge can be accessed using different devices such as computers, smart phones, tablets etc	Adapted from Al-Busaidi and Olfman (2005) and Lee and Choi (2003)
Knowledge Application	
Successfully applies its own past experience for solving new challenges Has mechanisms in place to correctly assign task to employees that matches with their expertise	Omerzel et al. (2011)
Is not reluctant to try out new knowledge acquired/created Has processes for applying knowledge learned from mistakes	Adapted from Gold et al. (2001)
Learn and Improve	
Has processes to systematically identify knowledge gaps (e.g.: employee training needs, updating curriculum, new programs etc.) Takes efforts to close knowledge gaps	Ramachandran et al. (2013)
Uses feedback from projects to improve subsequent projects Has processes for benchmarking performance Has processes devoted to identifying best practice	Gold et al. (2001)
Knowledge Protection	
Has several mechanisms (such as patents, copyrights etc.) to protect organizational knowledge (e.g.: research outcomes, creative work, documents etc.)	Masa'deh et al. (2017)
Has mechanisms to protect organizational knowledge from inappropriate or illegal use inside of the institution Has mechanisms to protect organizational knowledge from inappropriate or illegal use outside of the institution Clearly identifies knowledge that is restricted Uses latest technology for protecting knowledge from misuse	Adapted from Ngoc-Tan and Gregar (2018)
Knowledge Enabler – Culture	
Employees are recognised for new ideas and initiatives	Adapted from Lawson (2003)

KM Construct and Items	Literature Source
Employees are encouraged to explore and experiment Employees are encouraged to ask others for assistance when needed Employees are encouraged to discuss their work with people in other departments	Adapted from Gold et al. (2001)
A climate of openness is present A considerable level of trust exists between employees	Ramachandran et al. (2013)
There is a willingness to collaborate across different departments There is a willingness among employees to accept responsibility for failure	Adapted from Lee and Choi (2003)
Knowledge Enabler – Leadership/ Top Management Support	
Senior managers emphasize to employees the importance of knowledge management to the organization's success Senior managers provide funding and other resources for KM initiatives	Adapted from Al-Busaidi and Olfman (2005)
Individuals are rewarded for their contributions to the development of organisational knowledge	Ramachandran et al. (2013)
Knowledge Enabler – Information Technology	
State-of-the-art IT infrastructure is used IT systems are in place to help employees work more efficiently Advanced database systems are used	Adapted from Ramachandran et al. (2013)
IT facilities seamless communication among organization members IT facilitates collaboration in the work place regardless of time and place	Lee and Choi (2003)
Knowledge Enabler – Organization Structure and Strategy	
My University has low levels of formalization My University has organizational structure that facilitates free flow of information across departments My University has organizational structure that facilitates the transfer of knowledge across different departments	Adapted from Gold et al. (2001)
My University has a decentralised organizational structure	Adapted from Liebowitz and Suen (2000)
Overall Institutional Performance	

KM Construct and Items	Literature Source
There has been an increase in the number of new programs & courses/modules developed Reputation has improved The time taken to develop new programs has decreased Has improved existing degree programs and their curricula in response to market needs Student satisfaction has improved Employee satisfaction has improved Staff productivity has increased The time to complete departmental projects has decreased Administrative efficiency has increased Service quality has improved Stakeholder engagement has improved Staff accountability has improved There has been an increase in research productivity (number of articles or books written, number of conference presentations, number of patents filed etc.) The ability to respond to unanticipated changes has improved The ability to respond to crisis has improved	Adapted from Liebowitz and Suen (2000) Adapted from Iqbal (2021)
Administrative innovation has improved	Adapted from Windrum (2008)
Innovation in teaching and learning has improved	Adapted from Windrum (2008)

Appendix 4 Assessment of normality (Item Level)

Variable	Skewness	Kurtosis
KAQ1	-1.360	1.414
KAQ2	-1.122	1.075
KAQ3	-.868	.099
KAQ4	-.854	.070
KAQ5	-1.296	1.499
KAQ6	-.782	.326
KG1	-.449	-.657
KG2	-.531	-.511
KG3	-.848	.067
KG4	-.444	-.596
KG5	-.521	-.701
KG6	-.757	.097
KV1	-.814	.661
KV2	-.651	.282
KV3	-.770	.630
KV4	-1.027	1.076
KSO1	-.803	.269
KSO2	-1.265	.231
KSO3	-.953	.420
KSO4	-.586	-.485
KSO5	-.787	.423
KSO6	-.227	-.598
KSO7	-.274	-.704
KSH1	-1.000	.587
KSH2	-.595	-.444
KSH3	-.613	-.392
KSH4	-.527	-.632
KSH5	-1.021	.858
KSH6	-.752	-.081
KSH7	-.880	.271
KSH8	-.541	-.525
KSH9	-.747	-.130
KRET1	-.829	.189
KRET2	-.703	.078
KRET3	-.706	-.019

Variable	Skewness	Kurtosis
KRET4	-.769	.246
KAPL1	-.522	-.385
KAPL2	-.397	-.368
KAPL3	-.533	-.533
KAPL4	-.642	-.028
KAPL5	-.402	-.331
KLM1	-.467	-.758
KLM2	-.491	-.581
KLM3	-.464	-.478
KLM4	-.467	-.636
KLM5	-.276	-.844
KPT1	-.384	-.638
KPT2	-.491	-.462
KPT3	-.465	-.395
KPT4	-.392	-.260
KPT5	-.638	-.038
KPT6	-.517	-.176
KE_CUL1	-0.529	-0.621
KE_CUL2	-0.646	-0.448
KE_CUL3	-0.859	0.129
KE_CUL4	-0.641	-0.347
KE_CUL5	-0.638	-0.502
KE_CUL6	-0.583	-0.556
KE_CUL7	-0.612	-0.323
KE_CUL8	-0.340	-0.775
KE_CUL9	-0.674	-0.391
KE_CUL10	-0.662	-0.244
KE_LEAD1	-0.622	-0.484
KE_LEAD2	-0.531	-0.598
KE_LEAD3	-0.293	-0.794
KE_LEAD4	-0.479	-0.716
KE_IT1	-0.923	0.249
KE_IT2	-1.097	0.887
KE_IT3	-1.020	0.84
KE_IT4	-1.191	1.339
KE_IT5	-0.738	-0.1
KE_IT6	-0.968	0.519
KE_OSS1	-0.110	-1.039

Variable	Skewness	Kurtosis
KE_OSS2	-0.016	-0.937
KE_OSS3	-0.269	-0.927
KE_OSS4	-0.319	-0.845
KE_OSS5	-0.262	-0.561
KE_OSS6	-0.319	-0.636
INNSPEED1	-0.821	0.154
INNSPEED2	-0.744	0.093
INNSPEED3	-0.242	-0.531
INNSPEED4	-0.685	-0.097
INNQUAL1	-0.821	0.209
INNQUAL2	-0.387	-0.689
INNQUAL3	-0.891	0.265
INNQUAL4	-0.577	0.02
INNQUAL5	-0.237	-0.788
OPE1	-0.450	-0.401
OPE2	-0.211	-0.546
OPE3	-0.402	-0.552

Appendix 5 Assessment of normality (Construct Level)

Variable	skewness	kurtosis
KAQ	-0.92	0.901
KG	-0.472	-0.164
KV	-0.876	1.23
KSO	-0.716	0.806
KSH	-0.619	0.124
KRET	-0.696	0.363
KAPL	-0.508	-0.065
KLM	-0.39	-0.508
KPT	-0.442	-0.097
KE_CUL	-0.592	-0.33
KE_LEAD	-0.479	-0.568
KE_IT	-1.039	1.033
KE_OSS	-0.241	-0.628
P_INNSPEED	-0.608	0.137
P_INNQUAL	-0.545	-0.149
P_OPE	-0.371	-0.408

Appendix 6 Scatterplot of Variables (Samples)
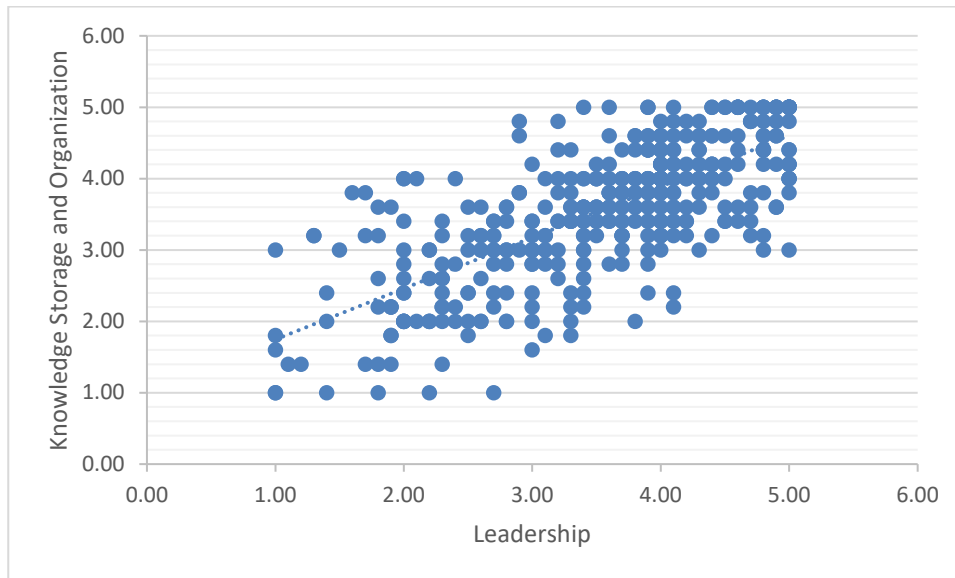
Figure: Scatterplot of Leadership and Knowledge Storage and Organization
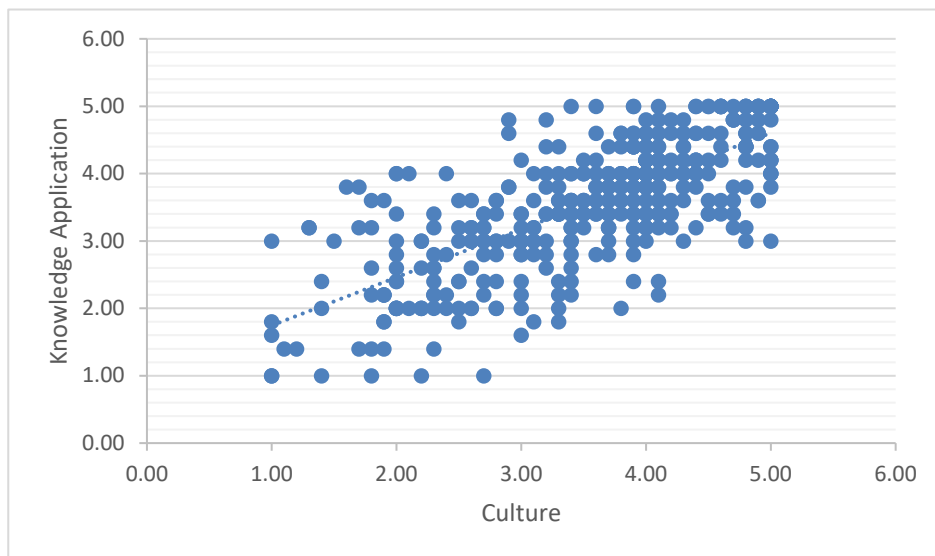
Figure: Scatterplot of Culture and Knowledge Application
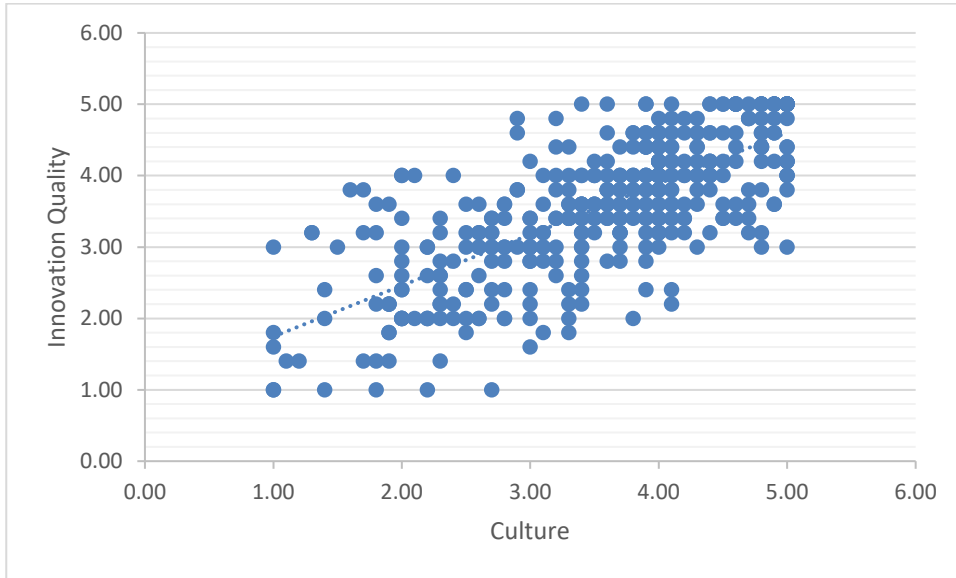
Figure: Scatterplot of Culture and Innovation Quality

Appendix 7 Variance Inflation Factor for Enabler and Practice Constructs

Constructs	VIF
Culture	3.843
Leadership	3.117
Organization Structure and Strategy	2.520
Information Technology	1.643
Knowledge Acquisition	2.358
Knowledge Generation	2.229
Knowledge Validation	2.384
Knowledge Storage and Organization	3.740
Knowledge Sharing	3.679
Knowledge Retrieval	2.548
Knowledge Application	3.915
Learn and improve	3.614
Knowledge Protection	2.188

Appendix 8 First Order Confirmatory Factor Analysis – Enablers

Constructs (No. of items)	Culture	Leadership	Structure	IT
CUL_1	.790			
CUL_2	.862			
CUL_3	.848			
CUL_4	.812			
CUL_5	.891			
CUL_6	.886			
CUL_7	.837			
CUL_8	.805			
CUL_9	.884			
CUL_10	.825			
LEAD_1		.925		
LEAD_2		.942		
LEAD_3		.790		
LEAD_4		.764		
STR_1			.688	
STR_2			.622	
STR_3			.925	
STR_4			.927	
STR_5			.740	
STR_6			.787	
IT_1				.842
IT_2				.908
IT_3				.890
IT_4				.873
IT_5				.841
IT_6				.827

* All factor loadings were significant at p<0.001

Appendix 9 First Order and Second Order CFA – KM Practices

Constructs	First Order Factor Loadings									Second Order Factor Loading
	KAQ	KGEN	KVAL	KO	KSH	KRET	KAPP	KPT	KLIMP	
KAQ										**.798**
KAQ_1	.564									
KAQ _2	.698									
KAQ _3	.734									
KAQ _4	.775									
KAQ _5	.693									
KAQ _6	.750									
KGEN										**.795**
KGEN_1		.656								
KGEN _2		.675								
KGEN _3		.592								
KGEN_4		.706								
KGEN _5		.683								
KGEN _6		.746								
KVAL										**.783**
KVAL_1			.885							
KVAL _2			.910							
KVAL _3			.823							
KVAL _4			.756							
KO										**.911**
KO_1				.813						
KO_2				.640						
KO_3				.764						
KO_4				.734						
KO_5				.726						
KO_6				.759						
KO_7				.783						
KSH										**.912**
KSH_1					.719					
KSH_2					.670					
KSH_3					.716					
KSH_4					.754					
KSH_5					.723					
KSH_6					.714					
KSH_7					.737					
KSH_8					.793					
KSH_9					.776					
KRET										**.771**
KRET_1						.915				
KRET_2						.927				
KRET_3						.833				
KRET_4						.723				

Constructs	First Order Factor Loadings									Second Order Factor Loading
	KAQ	KGEN	KVAL	KO	KSH	KRET	KAPP	KPT	KLIMP	
KAPP										**.924**
KAPP_1							.846			
KAPP_2							.846			
KAPP_3							.818			
KAPP_4							.696			
KAPP_5							.849			
KPT										**.719**
KPT_1								.762		
KPT_2								.901		
KPT_3								.896		
KPT_4								.818		
KPT_5								.823		
KPT_6								.768		
KLM										**.887**
KLM_1									.856	
KLM_2									.892	
KLM_3									.892	
KLM_4									.770	
KLM_5									.865	

* All factor loadings were significant at p<0.001

Appendix 10 First Order Confirmatory Factor Analysis- Performance

Constructs	First Order Factor Loadings			Second Order Factor Loading
	INNSPEED	INNQUAL	OPE	
INNSPEED				**.975**
INNSPEED_1	.708			
INNSPEED_2	.754			
INNSPEED_3	.698			
INNSPEED_4	.774			
INNQUAL				**.984**
INNQUAL_1		.802		
INNQUAL_2		.865		
INNQUAL_3		.825		
INNQUAL_4		.867		
INNQUAL_5		.827		
OPE				**.925**
OPE_1			.891	
OPE_2			.804	
OPE_3			.893	

* All factor loadings were significant at p<0.001

Appendix 11 Correlation between Constructs

	KAQ	KG	KV	KSO	KSH	KR	KAPL	LIMP	KPT	KE_CUL	KE_LEAD	KE_IT	KE_OSS	INNSPEED	INNQUAL	OPE
KAQ	1	.638**	.619**	.641**	.635**	.450**	.626**	.642**	.455**	.579**	.592**	.498**	.502**	.564**	.597**	.482**
KG		1	.587**	.615**	.625**	.418**	.617**	.629**	.548**	.609**	.619**	.457**	.536**	.584**	.574**	.493**
KV			1	.721**	.628**	.543**	.620**	.597**	.528**	.607**	.562**	.466**	.524**	.530**	.588**	.514**
KSO				1	.746**	.695**	.739**	.710**	.627**	.648**	.636**	.630**	.586**	.596**	.627**	.565**
KSH					1	.708**	.777**	.733**	.620**	.755**	.657**	.679**	.623**	.637**	.652**	.622**
KR						1	.691**	.586**	.508**	.594**	.540**	.592**	.493**	.516**	.531**	.513**
KAPL							1	.787**	.631**	.763**	.717**	.622**	.703**	.653**	.706**	.664**
LIMP								1	.694**	.743**	.753**	.614**	.698**	.692**	.738**	.648**
KPT									1	.622**	.635**	.571**	.568**	.625**	.620**	.547**
KE_CUL										1	.802**	.622**	.749**	.690**	.737**	.696**
KE_LEAD											1	.538**	.723**	.704**	.733**	.665**
KE_IT												1	.481**	.578**	.625**	.611**
KE_OSS													1	.649**	.681**	.669**
INNSPEED														1	.837**	.776**
INNQUAL															1	.821**
OPE																1

**Correlations significant at p<0.01

Appendix 12 Model Fit Indices

Fit Index	Description	Range	Recommended level	Reference
χ^2 /DF	It measures the magnitude of discrepancy between predicted and observed covariance matrices	0 (ideal fit) to ∞ (low fit)	<2 (excellent) <3 (good) <5 (acceptable)	Hull et al. (1991) Hoe (2008)
CFI	It compares the amount of departure from close fit for the hypothesised model against that of a more restricted model called the null model	0 (no fit) - 1(perfect fit)	>0.90 (good) .80 to .89 (adequate but marginal fit) .60 to .79 (poor fit) <0.60 (very poor fit)	Kline (2015) Meyers et al. (2013) Weston and Gore Jr (2006)
GFI	It is the proportion of variance in the sample correlation/covariance that is accounted for by the predicted model	0 (no fit) - 1(perfect fit)	>0.90 (good) >0.95 (excellent)	Shevlin and Miles (1998) Meyers et al. (2013)
AGFI	It adapts the GFI based upon degrees of freedom of a model relative to the number of variables	0 (no fit) - 1(perfect fit)	>0.90 (good) >0.95 (excellent)	Hooper et al. (2008) Schumacker and Lomax (2016)
RMSEA	It measures the discrepancy between the observed and estimated covariance matrices per degree of freedom	Typically, 0 to 0.10	<0.05 (excellent) <0.08 (good) <0.10 (mediocre fit)	(Hoe, 2008)

Appendix 13 Interview Protocol

Pre-interview Questions

- How long have you been working in the UAE higher education sector?
- How long have you been working at the current institution?
- What is your role/job title?

Interview Questions

- What is your understanding of knowledge management?
- How significant is knowledge management for the HE sector? Why?
- How is knowledge management practiced in your department and at the Institution? Please provide some examples
- How do you perceive the role of organizational culture in supporting/hindering knowledge management? Any examples?
- What is the approach for adopting knowledge management at your department/institution? Is it top-down or bottom-up? Incremental or fast-paced?
- How do you perceive the role of leadership in promoting knowledge management?
- How do you perceive the role of IT infrastructure in supporting knowledge management practices?
- How would you describe your organizational structure? How does it influence knowledge management practices?
- How and in what ways has your organization benefited from implementing KM practices?
- What are the main challenges in adopting knowledge management? What is your recommendation in overcoming these challenges?

Appendix 14 Descriptive Statistics for KMP for Private and Public Universities

Constructs and items	Private University			Public University			Mean Difference	Sig. (2-tailed)
	N	Mean	Std. Deviation	N	Mean	Std. Deviation		
Knowledge Acquisition (KAQ)	245	4.04	0.751	183	3.91	0.812	0.130	0.088
KAQ1	245	4.06	1.104	183	4.12	0.993	-0.063	0.542
KAQ2	245	4.07	0.975	183	4.02	0.972	0.048	0.618
KAQ3	245	3.96	1.053	183	3.80	1.071	0.160	0.124
KAQ4	245	3.94	1.016	183	3.66	1.202	0.278	0.010*
KAQ5	245	4.33	0.829	183	4.01	1.064	0.316	0.001**
KAQ6	245	3.86	1.015	183	3.82	0.981	0.042	0.671
Knowledge Generation (KG)	245	3.69	0.834	183	3.72	0.727	-0.031	0.692
KG1	245	3.58	1.141	183	3.48	1.123	0.095	0.393
KG2	245	3.65	1.059	183	3.75	1.039	-0.096	0.352
KG3	245	3.89	1.027	183	3.94	1.033	-0.046	0.648
KG4	245	3.58	1.112	183	3.58	0.956	-0.001	0.992
KG5	245	3.53	1.216	183	3.72	1.056	-0.195	0.084
KG6	245	3.89	1.000	183	3.83	0.966	0.059	0.539
Knowledge Validation (KV)	245	4.02	0.751	183	3.81	0.848	0.206	0.008**
KV1	245	4.02	0.854	183	3.77	0.945	0.254	0.004**
KV2	245	3.93	0.851	183	3.69	0.952	0.233	0.008**
KV3	245	3.98	0.863	183	3.83	0.956	0.150	0.089
KV4	245	4.14	0.862	183	3.95	0.951	0.188	0.033*
Knowledge Storage and Organization(KSO)	245	3.84	0.774	183	3.70	0.794	0.140	0.068
KSO1	245	3.88	0.942	183	3.74	1.031	0.140	0.145
KSO2	245	4.19	0.844	183	4.13	0.852	0.066	0.425
KSO3	245	3.99	1.022	183	3.88	1.009	0.108	0.278
KSO4	245	3.73	1.082	183	3.53	1.147	0.205	0.060
KSO5	245	4.03	0.849	183	3.89	0.966	0.142	0.107
KSO6	245	3.48	0.998	183	3.33	1.050	0.144	0.149
KSO7	245	3.55	1.022	183	3.37	1.121	0.175	0.093
Knowledge Sharing (KSH)	245	3.84	0.821	183	3.73	0.777	0.114	0.148

Constructs and items	Private University			Public University			Mean Difference	Sig. (2-tailed)
	N	Mean	Std. Deviation	N	Mean	Std. Deviation		
KSH1	245	4.09	0.923	183	3.92	1.019	0.166	0.079
KSH2	245	3.75	1.063	183	3.64	1.074	0.106	0.309
KSH3	245	3.74	1.050	183	3.70	1.038	0.038	0.710
KSH4	245	3.72	1.082	183	3.50	1.119	0.216	0.045*
KSH5	245	3.95	1.003	183	4.04	0.907	-0.093	0.325
KSH6	245	3.79	1.080	183	3.82	1.051	-0.028	0.790
KSH7	245	3.96	1.023	183	3.87	0.995	0.085	0.391
KSH8	245	3.73	1.045	183	3.47	1.143	0.257	0.016*
KSH9	245	3.83	1.046	183	3.55	1.142	0.277	0.010*
Knowledge Retrieval (KRET)	245	3.87	0.851	183	3.71	0.898	0.154	0.071
KRET1	245	3.89	1.000	183	3.73	1.000	0.158	0.108
KRET2	245	3.83	0.958	183	3.67	1.017	0.161	0.096
KRET3	245	3.82	0.996	183	3.63	1.018	0.192	0.051
KRET4	245	3.93	0.898	183	3.82	0.964	0.107	0.239
Knowledge Application (KAPL)	245	3.65	0.839	183	3.36	0.888	0.288	0.001**
KAPL1	245	3.77	0.945	183	3.40	1.069	0.368	0.000***
KAPL2	245	3.58	0.935	183	3.34	0.997	0.245	0.010*
KAPL3	245	3.56	1.057	183	3.31	1.112	0.248	0.019*
KAPL4	245	3.76	0.960	183	3.51	1.063	0.246	0.013*
KAPL5	245	3.58	0.987	183	3.25	1.069	0.334	0.001**
Learn and Improve (KLM)	245	3.60	0.958	183	3.48	0.953	0.118	0.207
KLM1	245	3.57	1.105	183	3.47	1.147	0.101	0.356
KLM2	245	3.57	1.075	183	3.47	1.098	0.101	0.339
KLM3	245	3.67	1.041	183	3.50	1.048	0.172	0.092
KLM4	245	3.64	1.065	183	3.55	1.082	0.085	0.419
KLM5	245	3.53	1.081	183	3.40	1.059	0.130	0.214
Knowledge Protection (KPT)	245	3.71	0.866	183	3.69	0.833	0.017	0.841
KPT1	245	3.59	1.066	183	3.54	1.073	0.052	0.617
KPT2	245	3.70	1.043	183	3.71	0.999	-0.008	0.934
KPT3	245	3.73	0.992	183	3.74	0.969	-0.013	0.896
KPT4	245	3.72	0.965	183	3.69	0.906	0.034	0.712
KPT5	245	3.84	0.943	183	3.79	0.968	0.054	0.563
KPT6	245	3.69	1.014	183	3.70	0.961	-0.019	0.843

*** *Significant at p< .001; **Significant at p<0.01; *Significant at p<0.05;*

Appendix 15 Descriptive Statistics of KM Enablers for Private and Public Universities (Construct and item level)

Constructs and items	Private University			Public University			Mean Difference	Sig. (2-tailed)
	N	Mean	Std. Deviation	N	Mean	Std. Deviation		
Culture (KE_CUL)	245	3.69	0.939	183	3.42	0.986	0.263	0.005**
KE_CUL1	245	3.65	1.101	183	3.44	1.174	.216	0.052
KE_CUL2	245	3.76	1.110	183	3.50	1.153	0.262	0.018*
KE_CUL3	245	3.93	0.981	183	3.68	1.053	0.249	0.012*
KE_CUL4	245	3.76	1.087	183	3.54	1.083	0.222	0.037*
KE_CUL5	245	3.67	1.123	183	3.32	1.258	0.351	0.003**
KE_CUL6	245	3.61	1.131	183	3.36	1.191	0.248	0.029*
KE_CUL7	245	3.71	1.075	183	3.47	1.078	0.244	0.021*
KE_CUL8	245	3.41	1.119	183	3.11	1.199	0.303	0.007**
KE_CUL9	245	3.69	1.102	183	3.39	1.217	0.302	0.008**
KE_CUL10	245	3.67	1.041	183	3.44	1.136	0.232	0.029*
Leadership (KE_LEAD)	245	3.56	1.018	183	3.46	1.035	0.104	0.302
KE_LEAD1	245	3.72	1.092	183	3.48	1.171	0.242	0.029*
KE_LEAD 2	245	3.64	1.124	183	3.50	1.153	0.144	0.197
KE_LEAD 3	245	3.35	1.148	183	3.40	1.100	-0.057	0.602
KE_LEAD 4	245	3.53	1.182	183	3.45	1.151	0.087	0.449
Information Technology (KE_IT)	245	3.89	0.903	183	3.92	0.902	-0.027	0.763
KE_IT1	245	3.78	1.082	183	3.92	1.042	-0.134	0.197
KE_IT2	245	3.96	0.972	183	3.98	1.030	-0.020	0.835
KE_IT3	245	3.93	0.972	183	3.94	0.990	-0.013	0.889
KE_IT4	245	4.01	0.969	183	4.00	0.961	0.012	0.897
KE_IT5	245	3.79	1.033	183	3.81	1.094	-0.022	0.829
KE_IT6	245	3.88	1.035	183	3.86	1.026	0.018	0.856
Organization Structure and Strategy(KE_OSS)	245	3.33	0.936	183	3.07	0.925	0.264	0.004**
KE_OSS1	245	3.23	1.140	183	2.86	1.177	0.371	0.001**
KE_OSS2	245	3.26	1.088	183	2.76	1.088	0.498	0.000***
KE_OSS3	245	3.37	1.132	183	3.07	1.198	0.302	0.008**
KE_OSS4	245	3.43	1.138	183	3.11	1.167	0.323	0.004**
KE_OSS5	245	3.31	1.080	183	3.25	1.070	0.063	0.550
KE_OSS6	245	3.40	1.125	183	3.37	1.080	0.030	0.783

*** Significant at p< .001; **Significant at p<0.01; *Significant at p<0.05;

Appendix 16 Descriptive Statistics of Performance Outcomes for Private and Public Universities (Construct and item level)

Constructs and items	Private University			Public University			Mean Difference	Sig. (2-tailed)
	N	Mean	Std. Deviation	N	Mean	Std. Deviation		
Innovation Speed (INNSPEED)	245	3.71	0.852	183	3.63	0.779	0.077	0.336
INNSPEED1	245	3.85	1.057	183	3.76	0.953	0.093	0.346
INNSPEED2	245	3.74	1.039	183	3.72	0.980	0.017	0.860
INNSPEED3	245	3.47	1.030	183	3.33	0.967	0.137	0.162
INNSPEED4	245	3.77	1.043	183	3.71	1.015	0.061	0.545
Innovation Quality (INNQUAL)	245	3.67	0.945	183	3.48	0.919	0.192	0.036*
INNQUAL1	245	3.78	1.087	183	3.72	0.986	0.058	0.568
INNQUAL2	245	3.57	1.090	183	3.31	1.170	0.260	0.018*
INNQUAL3	245	3.84	1.074	183	3.80	1.026	0.039	0.706
INNQUAL4	245	3.77	0.965	183	3.55	0.993	0.225	0.019*
INNQUAL5	245	3.38	1.133	183	3.00	1.177	0.376	0.001**
Operational Efficiency (OPE)	245	3.43	0.976	183	3.28	0.946	0.154	0.104
OPE1	245	3.47	1.085	183	3.38	1.040	0.096	0.355
OPE2	245	3.34	1.030	183	3.22	1.021	0.115	0.253
OPE3	245	3.47	1.054	183	3.22	1.109	0.249	0.018*

*** Significant at p< .001; **Significant at p<0.01; *Significant at p<0.05;*

Appendix 17 Construct, Items and their Abbreviations

| Construct/ Item	Abbreviation
Knowledge Acquisition	**KAQ**
My university regularly invites academics/industry practitioners who are experts in their discipline to give guest lectures	KAQ1
My university actively gathers information on the current developments and best practices in the higher education sector	KAQ2
My university actively gathers information on internal processes (such as what succeeded and what failed)	KAQ3
My university actively gathers employee suggestion and feedback	KAQ4
My university actively gathers student suggestion and feedback	KAQ5
My university actively gathers information from stakeholders (e.g., employers, alumni) on industry needs	KAQ6
Knowledge Generation	**KG**
My university actively cooperates/collaborates with other Universities on projects such as developing joint degree programs and research projects	KG1
My university actively engages with companies on joint projects (e.g., research projects, start-ups)	KG2
At my university, staff are actively involved in research activities	KG3
At my university, students are actively involved in research activities KG4	KG4
My university has established knowledge centres/ institutes (e.g., R & D centres, specialised labs)	KG5
My university utilizes existing knowledge to create new knowledge (e.g., new programs, inter-disciplinary research, inter-disciplinary programs etc.)	KG6
Knowledge Validation	**KV**
At my university knowledge generated/acquired is checked for accuracy/correctness	KV1
At my university knowledge generated/acquired is checked for usability/applicability	KV2
At my university the authenticity/reliability of the knowledge source is checked	KV3
At my university existing knowledge is checked to ensure that it is relevant/up-to-date (e.g., program review, course review, policy review etc.).	KV4
Knowledge Storage and Organization	**KSO**
At my university knowledge is well categorised and organized	KSO1
At my university knowledge is electronically stored in repositories (e.g., shared drives, intranet, learning management system etc.)	KSO2
At my university latest information technology applications are utilised to store knowledge KSO3	KSO3
At my university a well-structured documentation of employees' competencies and achievements is maintained	KSO4
At my university various publications such as reports and manuals are used to store knowledge	KSO5
At my university databases of root causes and solutions to frequently encountered problems are maintained	KSO6
At my university databases of best practices is maintained	KSO7
Knowledge Sharing	**KSH**
My University has practices in place for the formal exchange of ideas/knowledge between staff (e.g., staff meetings, committees)	KSH1

| Construct/ Item	Abbreviation
My university has practices in place for the informal exchange of ideas and knowledge between staff (e.g., team outings, departmental lunches etc.)	KSH2
At my University, staff present their innovation/research to colleagues (e.g., internal research seminars)	KSH3
At my University, employees share knowledge gained from attending external conferences, trainings, workshops, and seminars	KSH4
My University regularly conducts internal training workshops, symposiums and seminars	KSH5
My University uses the latest file sharing systems	KSH6
At my university, timely reports (e.g., newsletters, annual reports, policy updates) with appropriate information are send out to employees	KSH7
At my University, best practices and lessons learned are shared across the institution	KSH8
At my University, experienced staff transfer their knowledge to new or less experienced workers (eg: induction, mentoring, coaching etc.)	KSH9
Knowledge Retrieval	**KRET**
At my university it is easy to search and retrieve stored institutional knowledge (e.g.: reports, policies & procedures. Course material etc.)	KRET1
At my university knowledge is available for retrieval in a format and structure that is convenient to use	KRET2
At my university knowledge can be retrieved any time anywhere from repositories	KRET3
At my university knowledge can be accessed using different devices such as computers, smart phones, tablets etc.	KRET4
Knowledge Application	**KAPL**
My university successfully applies its own past experience for solving new challenges	KAPL1
My university utilizes stored knowledge in repositories for solving problems and challenges	KAPL2
My university has mechanisms in place to correctly assign task to employees that matches with their expertise	KAPL3
My university is not reluctant to try out new knowledge acquired/created	KAPL4
My university has processes for applying knowledge learned from mistakes	KAPL5
Learn and Improve	**KLM**
My university has processes to systematically identify knowledge gaps (e.g.: employee training needs, updating curriculum, new programs etc.)	KLM1
My university takes efforts to close knowledge gaps	KLM2
My university uses feedback from projects to improve subsequent projects	KLM3
My university has processes for benchmarking performance	KLM4
My university has processes devoted to identifying best practice	KLM5
Knowledge Protection	**KPT**
My university has several mechanisms (such as patents, copyrights etc.) to protect organizational knowledge (e.g.: research outcomes, creative work, documents etc.)	KPT1
My university has mechanisms to protect organizational knowledge from inappropriate or illegal use inside of the institution	KPT2
My university has mechanisms to protect institutional knowledge from inappropriate or illegal use outside of the institution	KPT3
My university clearly identifies knowledge that is restricted	KPT4

Construct/ Item	Abbreviation
My university has policies and procedures for protecting organizational knowledge from misuse	KPT5
My university uses latest technology for protecting knowledge from misuse	KPT6
Culture	**KE_CUL**
At my university employees are recognised for new ideas and initiatives	KE_CUL1
At my university employees are encouraged to explore and experiment	KE_CUL2
At my university employees are encouraged to ask others for assistance when needed	KE_CUL3
At my university employees are encouraged to discuss their work with people in other departments	KE_CUL4
At my university a climate of openness is present	KE_CUL5
At my university a considerable level of trust exists between employees	KE_CUL6
At my university there is a willingness to collaborate across different departments	KE_CUL7
At my university there is a willingness among employees to accept responsibility for failure	KE_CUL8
At my university open communication is encouraged	KE_CUL9
At my university there is a willingness among employees to share/transfer their knowledge/experience to other employees or groups of employees	KE_CUL10
Leadership	**KE_LEAD**
At my university leaders demonstrate a personal commitment to knowledge management	KE_LEAD1
At my university senior managers emphasize to employees the importance of knowledge management to the organization's success	KE_LEAD 2
At my university senior managers provide funding and other resources for knowledge management initiatives	KE_LEAD 3
At my university individuals are rewarded for their contributions to organisational knowledge (innovation in teaching and learning, process improvements, research initiatives	KE_LEAD 4
Information Technology	**KE_IT**
At my university state-of-the-art IT infrastructure is used	KE_IT1
At my university IT facilitates collaboration in the work place regardless of time and place	KE_IT2
At my university IT facilities seamless communication among organization members	KE_IT3
At my university IT systems are in place to help employees work more efficiently	KE_IT4
At my university advanced database systems are used	KE_IT5
At my university adequate training to use IT systems are provided	KE_IT6
Organization Structure and Strategy	**KE_OSS**
My university has a decentralised organizational structure	KE_OSS1
My university has low levels of formalization	KE_OSS2
My university has organizational structure that facilitates free flow of information across departments	KE_OSS3
My university has organizational structure that facilitates the transfer of knowledge across different departments	KE_OSS4
My university has established KM policy and procedures	KE_OSS5
My university recognises knowledge management as a vital part of the institution's strategy	KE_OSS6
Innovation Speed	**INNSPEED**

Construct/ Item	Abbreviation
There has been an increase in the number of new programs & courses/modules developed	INNSPEED1
There has been an increase in research productivity (number of articles or books written, number of conference presentations, number of patents filed etc.)	INNSPEED2
The time taken to develop new programs has decreased	INNSPEED3
The ability to respond to crisis has improved	INNSPEED4
Innovation Quality	**INNQUAL**
Existing degree programs and their curricula has been improved/ updated in response to market needs	INNQUAL1
Administrative innovation has improved	INNQUAL2
Innovation in teaching and learning has improved	INNQUAL3
Student satisfaction has improved	INNQUAL4
Employee satisfaction has improved	INNQUAL5
Operational Efficiency	**OPE**
Staff productivity has increased	OPE1
The time to complete departmental projects has decreased	OPE2
Administrative efficiency has increased	OPE3
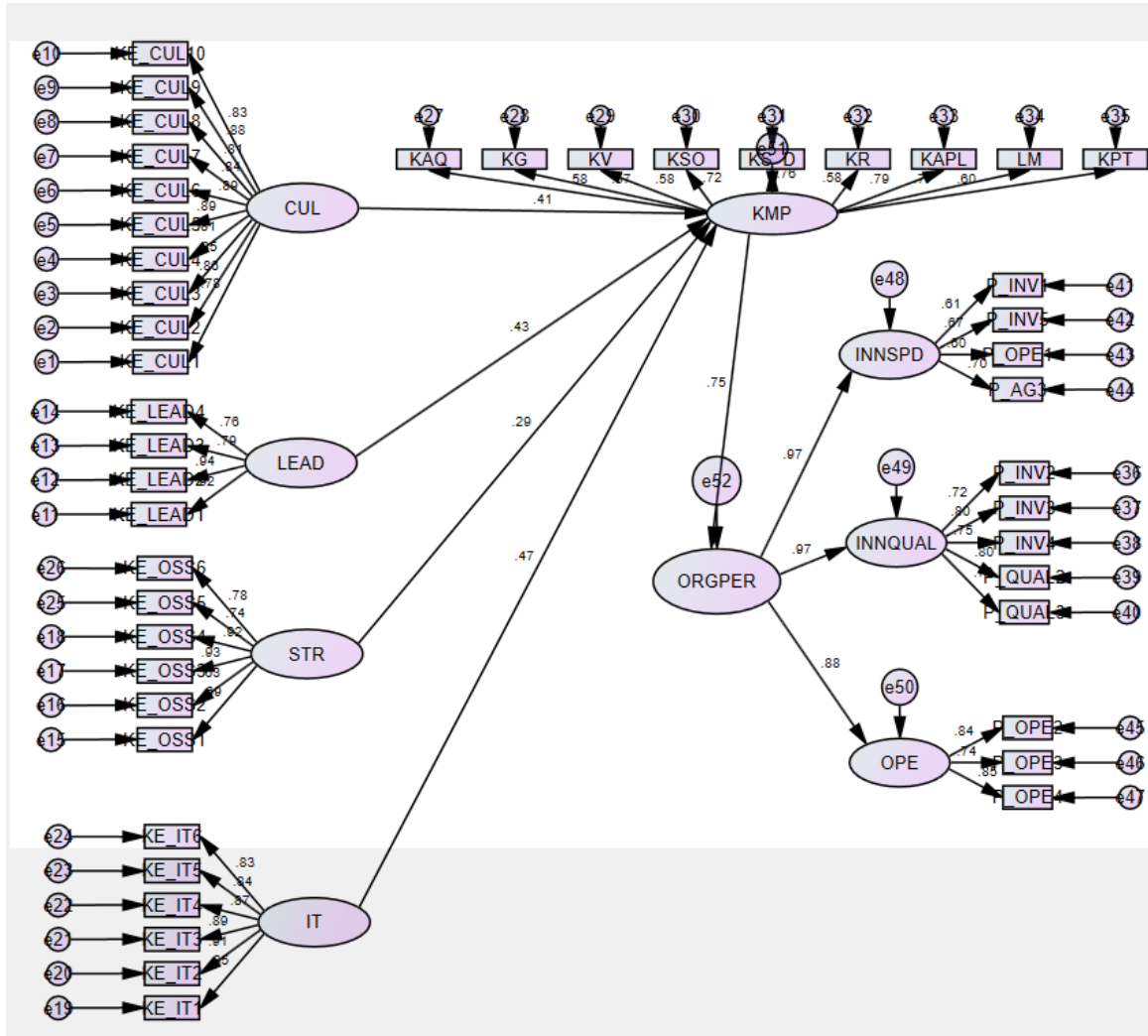
Appendix 19 Hypothesis Test Result Private Universities
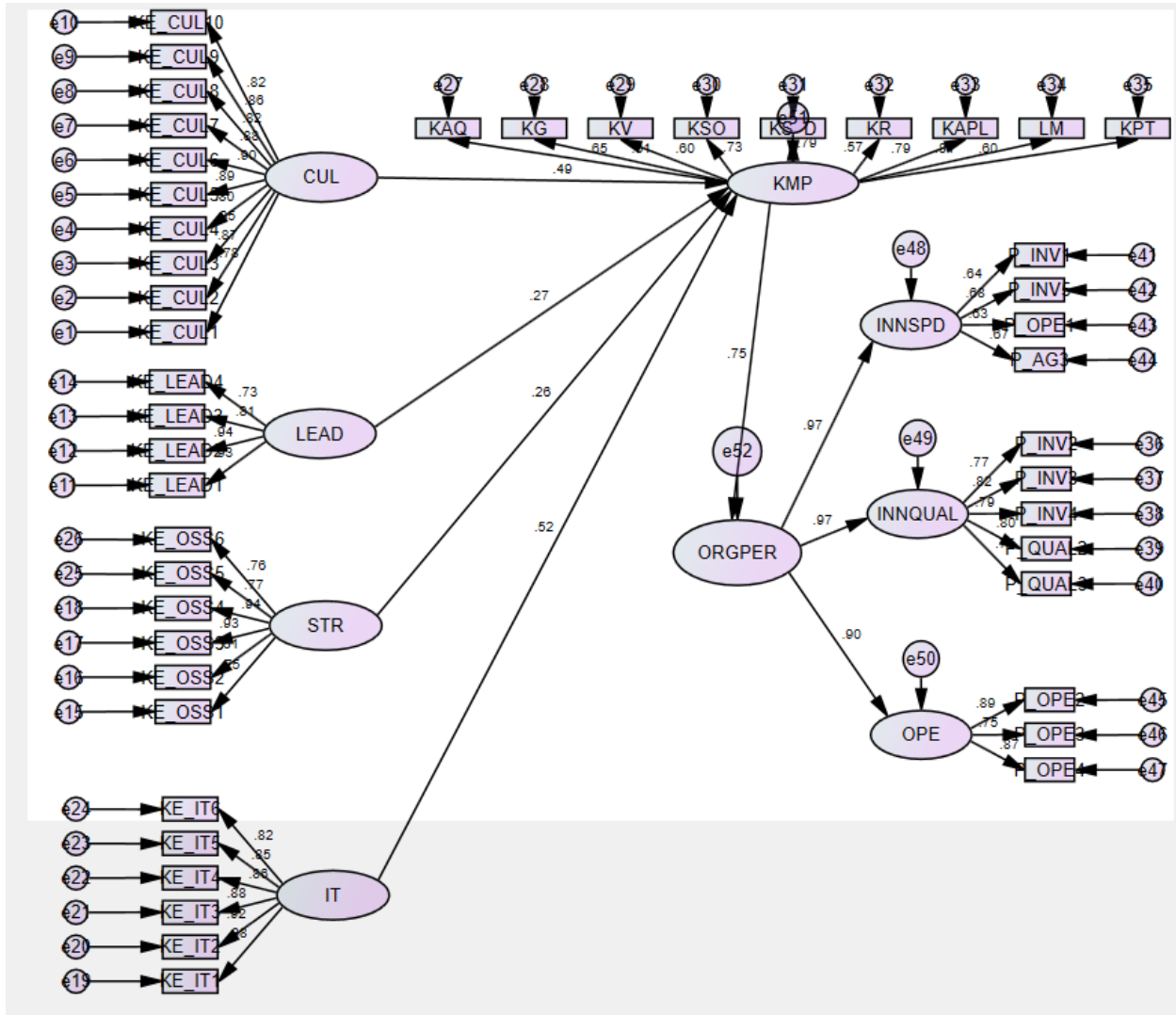
Appendix 20 Hypothesis Test Result Public Universities
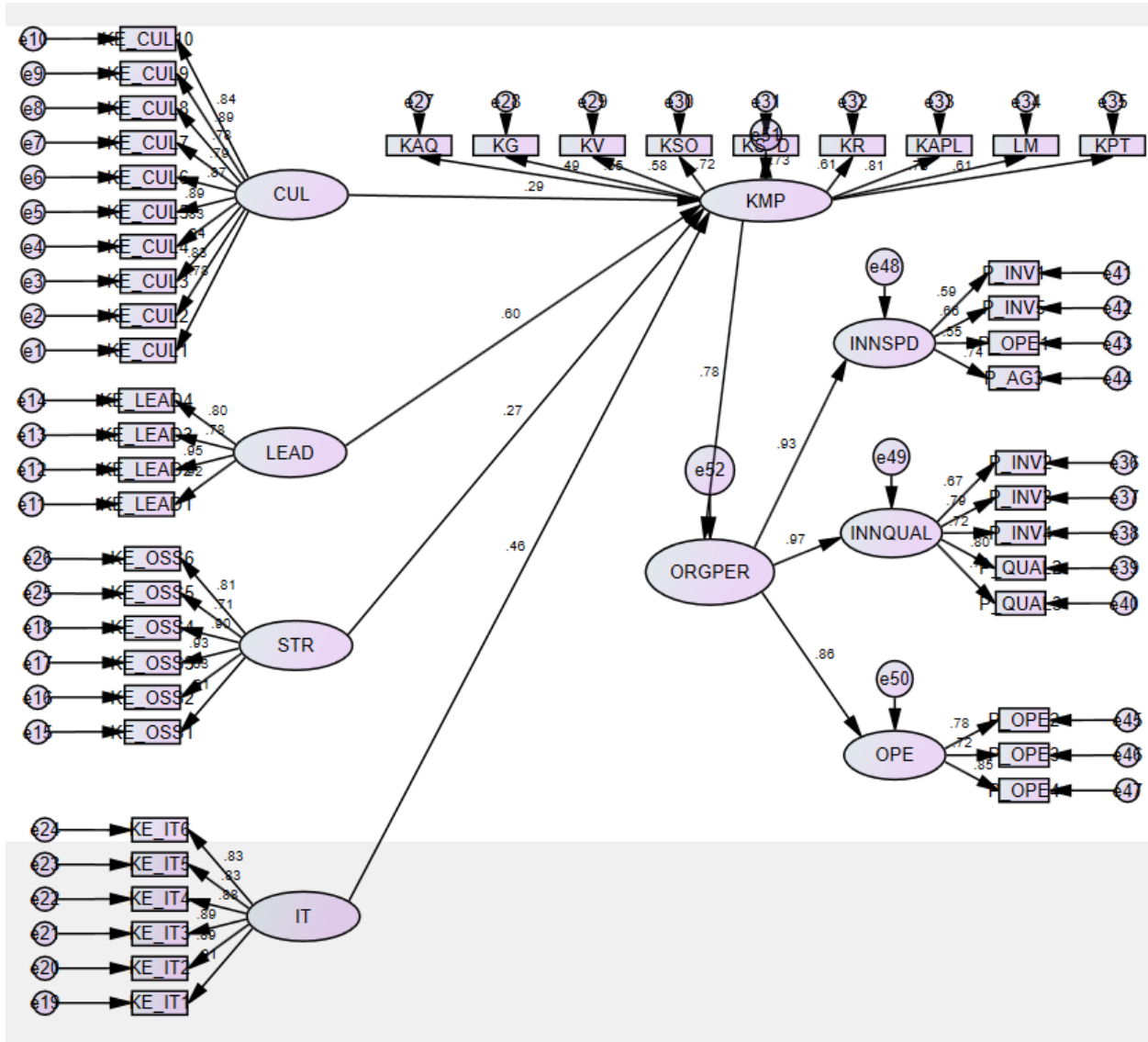
List of abbreviations

ADEK	Abu Dhabi Department of Education and Knowledge
AGFI	Adjusted Goodness of Fit Index
CAA	Commission for Academic Accreditation
CAQDAS	Computer Assisted Qualitative Data Analysis Software
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
DF	Degrees of Freedom
EFA	Exploratory Factor Analysis
GCC	Gulf Cooperation Council
GFI	Goodness of Fit index
HE	Higher Education
HEI	Higher Education Institution
KBE	Knowledge-based Economy
KBV	Knowledge-Based view
KHDA	Knowledge and Human Development Authority
KM	Knowledge Management
KMP	Knowledge Management Practices
MOE	Ministry of Education
p	Significance level
PBV	Practice-Based View
R	Range
RBV	Resource-Based View
RMSEA	The Root Mean Square Error of Approximation
SE	Standard Error
SD	Standard Deviation
SEM	Structural Equation Modelling
UAE	United Arab Emirates
VIF	Variance Inflation Factor
$\bar{X}$	Arithmetic Mean
α	Cronbach alpha
β	Standardized Path Coefficient
χ2	Chi-square statistic

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