The Effect of Knowledge Management Processes on Organizational Performance: The Mediating Role of Organizational Learning: In Case of Addis Ababa and Haramaya Universities

By

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A thesis submitted to the College of Business and Economics of Addis Ababa University in partial fulfillment of the requirements for MSc in Management (Specialized in Quality Management and Organizational Excellence)

Advisor: Zelalem Gebretsadik (PhD)

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Declaration

My thesis titled "The Effect of Knowledge Management Processes on Organizational Performance: The Mediating Role of Organizational Learning" has been carried out under the guidance and supervision of my advisor, Dr. Zelalem Gebretsadik. The thesis is original and has not been submitted for any degree or diploma award to any university or institution.

Researcher's name: Tekle Getachew Desta

Certification

This is to certify that Tekle Getachew Desta has carried out this research work on the topic "*The effect of knowledge management processes on organizational performance: The mediating role of organizational learning*" under my supervision. This research is his original work and has not been

presented for a degree in any university, and all sources of material used for the study have been duly acknowledged. Thus, it is sufficient for submission to partially fulfill the requirements for the award of a Master of Science in Management.

Advisor: Zelalem Gebretsadik (PhD)

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Addis Ababa University

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Dedication

In loving memory of my father (*1960-2023*), over whom death has no dominion.

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Abstract

Organizations are expected to manage their knowledge systematically and scientifically in today's knowledge-based economy to maintain competitive advantages, especially in the education sector, where knowledge is highly important. The study aimed to examine the processes of knowledge management (KM) and its effects on organizational performance (OP) with a mediating role of organizational learning (OL) in Addis Ababa and Haramaya universities. The study employed an explanatory research design. It adopted a deductive research approach by focusing on all academic staff of the two universities with a sample size of 354. The data was collected online using Google Forms through a questionnaire and analyzed using smart PLS version 4.1.0.6. The reliability and validity (measurement model) were assured using the appropriate validation techniques. Bootstrapping was used to test the significance and relevance of the structural model. The hypothesis testing outcomes reveal several key findings. Knowledge acquisition has a negative significant effect on organizational performance. Knowledge application and protection significantly and positively affect organizational performance; however, knowledge sharing and organizational performance show a positive relationship only at 10% significance level. Organizational learning acts as a partial mediating factor in the relationship between knowledge acquisition (KA), knowledge application (KAP), knowledge protection (KP), and organizational performance. Organizational learning has a full mediation effect between knowledge sharing and organizational performance. Furthermore, organizational learning has a strong and direct positive effect on organizational performance. This implies that while knowledge management processes are crucial, their effectiveness in improving performance is significantly enhanced when organizational learning is present.

Keywords- *Knowledge management, Knowledge acquisition, knowledge application, knowledge protection, knowledge sharing, Organizational learning, organizational performance*

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List of Abbreviations

GDP- Gross domestic product

FDI- Foreign direct investment

KM-Knowledge Management

KMP-Knowledge management processes

KA-Knowledge Acquisition

KAP- Knowledge application

KP- Knowledge protection

KS- Knowledge sharing

OP- Organizational performance

OL- Organizational learning

HEI- higher education institutions

KBV- Knowledge-based view

IP-intellectual property

NDA- non-disclosure agreements

OKCT- Organizational knowledge creation theory

OIPT- Organizational knowledge processing theory

PLS – partial least square

SEM- Structural equation modeling

AVE- Average variance extracted

HTMT- Hetrotrait- Monotrait

SPSS- Statistical package for social sciences

LV- Latent variable

CR- Composite reliability

VIF- variance inflation factor

OLT- Organizational learning theory

DCT- Dynamic capability theory

SECI- Socialization, Externalization, Combination, Internalization

Chapter One: Introduction

1.1. Background of the study

As a result of the information and technology revolution, businesses are facing a wave of rapid change. As a result of these changes, knowledge has become the most important strategic resource and is an increasingly important topic in organizational studies. It has become the most powerful, influential, and controlling factor in the success or failure of an organization. Knowledge is now the most characteristic feature of the institution and creates wealth for it because it is an essential resource in itself, given the demands of the age in which many intellectual concepts, such as globalization, privatization, and the information revolution, have emerged. According to Bhatti et al. (2011), essential economic resources are not capital, natural resources, and labor but knowledge. Xue (2017) confirmed that the business world is changing from the era of natural resources to the era of knowledge. Knowledge, skills, and expertise are the three primary factors that enable us to maintain the pace of our economic expansion, particularly in the face of industry disruptions brought on by technology, where the demands for skill and experience are constantly changing (Kaur & Singla, 2019).

In today's competitive business environment, organizations recognize the importance of practical knowledge management to gain and maintain a competitive advantage. According to Meso et al. (2023), knowledge management is vital for maintaining competitive advantage and improving job performance. It is a systematic and planned process that uses knowledge within an organization to change its capacity, to store and apply it (Chang and Chuang, 2011). It is a valuable tool that can improve individual employee performance and, in turn, the overall performance of the entire organization. Organizational performance, a vital indicator of any organization's success, is often used to evaluate the effectiveness of an organization's strategies. Studies by Ismail et al. (2018), Malik et al. (2014), and Shah & Jan (2014) have shown that organizational performance can significantly affect GDP, employment, and foreign direct investment (FDI) and is a reliable indicator of the health of the economy.

Knowledge management can improve organizational performance by providing employees with the skills and resources necessary for success. The process by which an organization gathers, absorbs, and uses information to enhance performance and adjust to its surroundings is known as organizational learning. For the institution to grow and prosper over time, it entails the development of new organizational insights, behaviors, and capacities. Implementing knowledge management processes enables organizations to efficiently manage, share, and utilize their intellectual capital, improving overall performance.

In higher education institutions, the effect of knowledge management (KM) processes on organizational performance is profound, with organizational learning playing a key mediating role. Universities and colleges thrive on knowledge creation, sharing, and retention, all of which are central to KM processes. By effectively managing knowledge, these institutions enhance their ability to innovate, improve teaching quality, and support student success. However, for KM processes to significantly improve institutional performance, such as faculty productivity, research output, or student outcomes, organizational learning must have a strong foundation (Ramachandran et al., 2009). Organizational learning fosters a culture of continuous improvement, where faculty and staff are encouraged to learn from successes and setbacks. This learning culture allows institutions to retain knowledge and adapt to changing educational landscapes, technological advancements, and student needs. The relationship between KM processes and performance outcomes in higher education are strengthened when organizational learning acts as a bridge, helping institutions apply what they know to drive growth, adaptability, and overall effectiveness (Fullwood et al., 2013).

In HEIs, knowledge management encompasses the systematic capturing, sharing, and application of knowledge within and across departments. This study in higher education institutions is vital for understanding how these institutions can enhance their organizational performance through structured learning. This study is important for HEIs because it underscores how leveraging KM and organizational learning can lead to better research outcomes, student satisfaction, faculty development, and overall institutional competitiveness. It also helps them design more effective strategies to meet academic goals and societal needs. Thus, this study investigates the effect of knowledge management processes on organizational performance and what mediation effect organizational learning plays in this relationship.

1.2. Statement of the problem

Recognizing the significance of companies' collective knowledge has led to an emphasis on knowledge management process research to comprehend the collection, preservation, sharing, and use of information in an organizational setting. Knowledge management processes are critical in leveraging an organization's intellectual capital and improving performance. Effective knowledge management strategies entail developing, sharing, and using knowledge to support decision-making, problem-solving, and innovation. Organizations can improve customer satisfaction and competitiveness by capturing and disseminating knowledge. Studies have shown that organizations prioritizing knowledge management practices have better financial performance, innovation, and responsiveness to market dynamics (Kianto et al., 2017; Ngoc-Tan & Gregar, 2019). Organizations must be competitive to stay in business, and to do so, they must employ effective knowledge management practices. Knowledge management is creating, capturing, storing, and disseminating organizational knowledge (Daniels et al., 2017).

Depending on the above ideas, this study tried to fill the following gaps in the literature. Prior research on knowledge management (KM) and organizational performance often focuses on corporate settings, where objectives are largely profit-driven and organizational structures are hierarchical and ignore the importance of this topic in the education sector (Ngoc-Tan & Gregar, 2019; Iqbal et al., 2019; Jain & Gupta, 2019). In corporate contexts, performance metrics are typically tied to financial and productivity indicators, but for HEIs, performance encompasses diverse metrics, such as academic excellence, research output, student satisfaction, and community engagement. Current research lacks a detailed exploration of how KM processes influence these specific performance metrics in HEIs, as well as how organizational learning processes help mediate this relationship. Numerous studies have highlighted the positive relationship between effective knowledge management processes and organizational performance (Iqbal et al., 2019; Ngah et al., 2016; Shahzad et al., 2016). Other researchers have debated that knowledge management processes do not always help businesses achieve better results (Joshi & Chawla, 2019; Sahibzada et al., 2020). Therefore, this study contributed positively to this disagreement between scholars.

Although knowledge management is vital to organizational performance, research on the role of organizational learning as a mediator of this relationship is limited. The mechanisms of organizational learning in HEIs may vary significantly, with academic staff, administrative staff, and students interacting in ways that are not directly comparable to conventional businesses. Recent research has recommended the importance of studying organizational learning (Argote & Miron-Spektor, 2011; Uy et al., 2015; Wang et al., 2011) as a mediator in this relationship. To the best of the researcher's expertise, few studies were conducted in Ethiopia, and none used organizational learning as a mediator. (Elshalom Endrias, 2019; Lemlem Mekonnen, 2017; Henock Getachew, 2021; Samrawit Kinfemichael, 2021; Tigist Sileshi, 2017; Biruk Dage, 2020; Tizita Workneh, 2021; Kebede Michael, 2016; and Workineh & Tufa, 2020) have used the same independent and dependent variables but only Workineh & Tufa, (2020) conduct in higher education context however they did not consider organizational learning as a mediator.

Organizational learning can act as an amplifier or dampener, influencing the strength of the relationship between knowledge management processes and organizational performance outcomes. Exploring the mediating role of organizational learning can provide valuable insights into how the effectiveness of knowledge management processes may vary depending on the level of learning within an organization. Understanding the mediating role of organizational learning is crucial because organizations with different levels of organizational learning may experience varying effects of knowledge management processes on their performance outcomes. This study aims to contribute to the existing literature by investigating the effect of knowledge management on organizational performance while considering the mediating role of organizational learning.

1.3. Research Questions

By examining the above factors explained in the problem statement section, the study aims to unpack the following research questions:

1. What is the effect of KMPs on the performance of HEIs?
2. What is the effect of KMPs on organizational learning?
3. What is the relationship between organizational learning and OP?
4. What is the mediating role of OL in the relationship between KMPs and OP?

Understanding the interplay between knowledge management processes and organizational learning is crucial for organizations seeking to enhance their performance. Therefore, this study argues that the link between knowledge management processes and organizational performance may be mediated by organizational learning.

1.4. Objectives of the study

1.4.1. General objective

The general objective of this study is to investigate the effect of knowledge management processes on organizational performance while considering the mediating role of organizational learning in this relationship.

1.4.2. Specific objectives

The specific objectives of this study were:

1. To examine the relationship between KMPs and OP.
2. To analyze the effect of KMPs on OL.
3. Analyzing the effect of organizational learning on organizational performance.
4. To know whether organizational learning plays a mediating role in the relationship between KMPs and OP.

1.5. Significance of the study

The study's significance sheds light on one of the most critical issues in modern organizational management: knowledge management and its effect on organizational performance. This study examines the impact of knowledge management processes on organizational performance, considering the mediating role of organizational learning. By understanding these relationships, organizations can gain insights into how to strategically align their knowledge management processes with organizational learning initiatives, leading to improved performance outcomes. This research is crucial and timely because it contributes to filling the knowledge gap observed regarding KM and its influence on higher education institutions' performance since it initiates the top management of the universities to give attention to KM. It also serves as a point of reference for future researchers.

1.6. Scope of the study

Creswell (2008) indicated that delimiting a research project using a specific time frame, location, population, or issue to be investigated helps the researcher focus on the center of attention and address the research problem in a resource and time-efficient manner. Therefore, this study will focus only on Addis Ababa and Haramaya Universities. Only the academic staff of the universities are considered the target population for this study as they are believed to have the knowledge to respond to the questionnaire (self-assumption). Besides, the study is limited to the performance of the universities from the teacher's perspective. No other universities are included in this research, though the research findings can also be helpful for other universities.

1.7. Operational Definitions

Knowledge management (KM) is a process that helps organizations find, select, organize, disseminate, and transfer important information and expertise necessary for activities such as problem-solving, dynamic learning, strategic planning, and decision-making (Lawson, 2003).

Knowledge acquisition is extracting explicit or tacit knowledge from individuals, objects, or organizational entities (Hegazy and Ghorab, 2015).

Knowledge application refers to the process of effectively utilizing acquired knowledge to enhance decision-making, solve problems, and improve performance within an organization, which transforms knowledge into actionable outcomes (Alavi & Leidner, 2021).

Knowledge protection refers to the strategies and practices used to safeguard an organization's valuable information from unauthorized access, misuse, or loss, ensuring intellectual assets remain secure and competitive (Manhart & Thalmann, 2015).

Knowledge sharing is a critical activity for spreading expertise, insights, and skills across the organization to support learning and innovation (Donate & De Pablo, 2014).

Organizational performance: measures an organization's efficiency in achieving its goals, including financial performance, productivity, customer satisfaction, innovation, adaptability, and competitiveness (Hegazy et al., 2020). It involves evaluating quantitative metrics and qualitative factors, with high performance indicating effective resource utilization (Richard et al., 2009).

Organizational learning is acquiring, retaining, and transferring knowledge to improve performance and adapt to changing circumstances. It involves collective learning efforts, systems,

training programs, knowledge management initiatives, feedback mechanisms, and fostering a culture of continuous improvement (Argyris & Schön, 1997).

Tacit knowledge: Tacit knowledge refers to the type of knowledge that is difficult to codify, articulate, or transfer to others through formalized means. It is deeply ingrained in individual experiences, beliefs, values, and intuition, and it is often acquired through practical experiences, trial and error, and personal reflection (Nonaka, 1994).

Explicit knowledge refers to codified, documented, and easily articulated or communicated. Formalized knowledge can be readily expressed in words, numbers, or tangible forms (Nonaka, 1994).

1.8. Organization of the study

This thesis has five chapters.

Chapter 1: This chapter introduces the thesis as a whole. It contains the introduction, background, research problem, objectives, scope, significance of the study, limitations, and operational definitions of keywords.

Chapter 2: This chapter reviewed prior literature and looked into the details of knowledge management, organizational performance, and organizational learning, including different models that explain the listed variables and their relationships.

Chapter 3: This chapter describes the data collection tool, methodology, research process, and data analysis method.

Chapter 4: The fourth chapter presents the data analysis and interpretation.

Chapter 5: Finally, the thesis was summarized with conclusions and recommendations based on the findings.

Figure 1: Organization of the Thesis

Chapter Two: Review of theoretical literature and empirical evidence

This chapter explores the relationships between knowledge management processes and organizational performance, examining existing research, theories, and best practices.

2.1. Theoretical literature review

2.1.1. The Concept of Knowledge Management

Knowledge management is a multidisciplinary field that effectively leverages an organization's intellectual assets to enhance performance, innovation, and competitive advantage. Scholars have provided various definitions of knowledge management, emphasizing different aspects of the discipline. According to Al Rashdi et al. (2022), KM is influenced by how well a company performs. It encompasses organizations' processes and strategies to create, capture, store, and share knowledge to enhance performance. Knowledge management is gathering internal or external expertise, converting it to new ideas or strategies, and applying and protecting it (Gold et al., 2001).

A discipline that encourages an integrated approach to discovering, managing, and sharing all of an enterprise's information needs is another definition of knowledge management (KM). According to Lee et al. (2000), these information assets could comprise databases, papers, regulations, procedures, and employees' previously unspoken knowledge and experience. Knowledge management (KM) is the intelligent process of gathering and converting unprocessed data into information elements. These data pieces are grouped and arranged into structures that reflect knowledge and are appropriate for their context. Knowledge management is a formal process that integrates people, processes, and technology to create a solution that gathers and disseminates knowledge to the appropriate individuals. Scarbrough (2003) states that knowledge management is a value-added strategy for actively exploiting expertise and skills to provide value and improve organizational effectiveness.

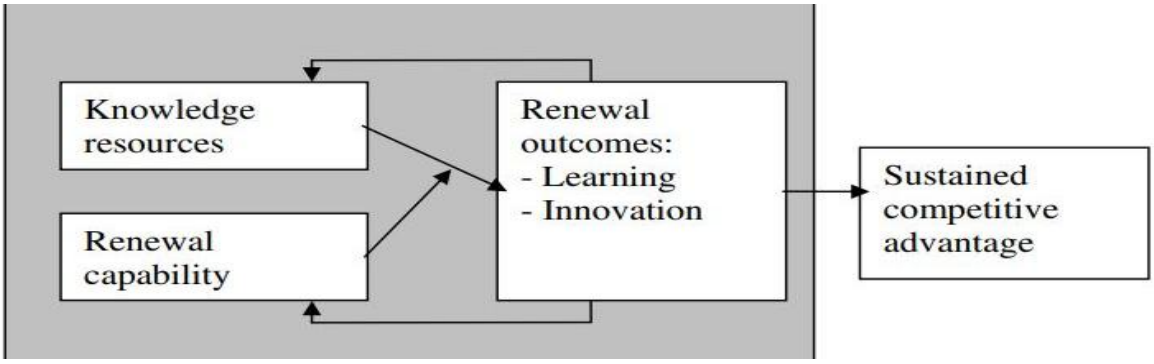
The main goal of knowledge management is to enable organizations to be aware of their knowledge and shape it so that they can effectively and efficiently apply it. Knowledge management aims to add value to information already held by a business organization, resulting

in knowledge that will be strategically useful to the organization (Von Hippel, 1994). Knowledge management is the systematic process of creating, organizing, capturing, storing, and sharing knowledge within an organization to facilitate learning, improve decision-making, and enhance performance. It involves identifying and leveraging an organization's intellectual assets, including tacit knowledge (personal insights, experiences) and explicit knowledge (formalized and codified information), to create a sustainable competitive advantage. According to Pauleen and Wang (2017), the knowledge management process may be characterized as tactics for producing knowledge products that are in line with an organization's business objectives. This knowledge is then promptly directed and disseminated to stakeholders (Wang & Wang, 2020).

2.1.1.1. Knowledge-Based View Theory

The Knowledge-Based View (KBV) theory is a perspective in strategic management that focuses on the role of knowledge and information as critical resources for organizations and emphasizes the role of knowledge and intellectual capital in creating and sustaining competitive advantage. It posits that knowledge is a vital strategic resource enabling organizations to gain and maintain a competitive edge. The theory suggests that knowledge assets, such as expertise, information, and relationships, are critical resources that enable organizations to effectively identify and exploit opportunities, solve problems, and innovate. It asserts that the firm's unique knowledge assets and capabilities are critical to its success in the marketplace (Grant, 1996).

Figure 2: Knowledge-based view



Source: Blomqvist et al. (2005)

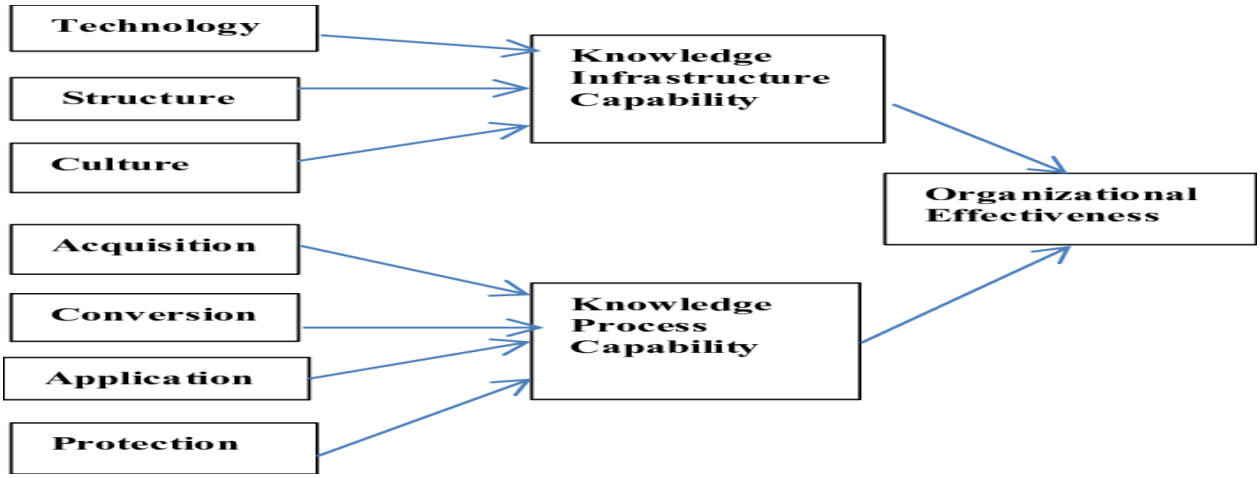
KBV is a theoretical framework for knowledge-based strategies, but critics argue it lacks empirical evidence, overlooks external knowledge sources, and does not consider the broader organizational and environmental context. They also question its generalizability across different industries, sizes,

and geographic regions, arguing that it may be more applicable to knowledge-intensive sectors like technology and pharmaceuticals (Teece et al., 1997; Choi & Lee, 2003).

2.1.1.2. Knowledge Management Capabilities Model

In their model of knowledge management capabilities, Gold et al. (2001) state that knowledge management is the capacity to manage knowledge, including accumulating and safeguarding organizational knowledge, internal or external, and translating it into new ideas or strategies. Gold et al. (2001) state that KM capabilities can be divided into KM process and KM infrastructure. Knowledge Management capabilities refer to the steps taken to gather, organize, use, and safeguard information, whereas infrastructure refers to the physical, social, and technical components that support a business. As shown in the figure below, the knowledge infrastructure and knowledge process impact organizational effectiveness and deal with expertise or human capital, financial management, customers, operations, marketing or sales, intellectual property, technical processes, and products.

Figure 3: Knowledge Management Capabilities and Organizational Effectiveness



Source: Gold et al., 2001

The Knowledge Management Capabilities Model, widely used in knowledge management research, is criticized for its simplistic view of knowledge management, overlooking the complex nature of knowledge processes within organizations (Edwards et al., 2005), and lacking adequate contextualization, which limits its applicability across diverse settings and overlooks external factors like knowledge sharing with external stakeholders (Huang & Newell, 2003). The model

provides a comprehensive framework for assessing and enhancing an organization's knowledge management practices. By focusing on these four dimensions, organizations can identify their strengths and weaknesses and implement strategies to improve their knowledge management capabilities.

1. **Knowledge Acquisition**: This process entails implementing new knowledge or replacing existing knowledge within the organization's explicit and tacit knowledge. Organizations must seek new knowledge and information both within and outside the organization. Organizations can learn new things by imitating, benchmarking, replicating, or outsourcing. This process has been deemed necessary because it generates new knowledge within the organization, which can then be applied to critical success factors and continuous innovation. Knowledge can be created, shared, and expanded through collaborative processes within organizations (Delgado, 2023). Knowledge acquisition refers to gathering information from outside sources to supplement or build upon prior knowledge. It plays a critical role in enhancing the breadth and depth of knowledge available to the firm, allowing for the development of timely strategies that contribute to organizational performance and effectiveness. Firms that excel in knowledge acquisition gain a competitive advantage by acquiring critical knowledge faster than their competitors. According to the knowledge-based perspective, knowledge acquisition activities would improve a firm's capacity to carry out its function effectively and efficiently (Grant, 1996). Businesses are more likely to reach higher levels of organizational performance if they have a more robust capability for acquiring outside knowledge (Hsiao et al., 2011).
2. **Knowledge Application**: Knowledge is used in this process to make decisions, solve problems, change the strategic direction, increase productivity, and cut expenses. Someone can utilize someone else's knowledge without acquiring it themselves (Hegazy & Ghorab, 2015). Ipe (2003) contends that to manage organizational knowledge effectively, organizations must understand how information is produced, shared, and used. To benefit from this knowledge, they must be aware of these processes. Knowledge application is crucial to translate theoretical information into workable solutions and achieve desired results in various fields, including education, business, healthcare, and technology. Bridging the knowledge gap between theoretical learning and practical application fosters creativity, problem-solving, and judgment. Hegazy and Ghorab (2015) claim that the

knowledge application process enables some people to use knowledge held by others without actually learning it or acquiring it.

3. **Knowledge protection** refers to the collection of tactics firms use to preserve their private knowledge, trade secrets, and intellectual property. It involves implementing policies, procedures, and technological solutions to prevent unauthorized access, use, disclosure, or theft of valuable knowledge assets. According to Bolisani et al. (2013), knowledge protection is a broader concept that includes intellectual property rights protection and softer protection methods that can be used to deal with the intangible nature of knowledge. Knowledge protection is crucial for maintaining a competitive advantage, preserving innovation, and ensuring the long-term viability of businesses and research institutions. There are various aspects to knowledge protection, including intellectual property (IP) rights, information security, confidential agreements and non-disclosure agreements (NDAs), employee training and awareness, and physical security measures (Brown et al., 2023).

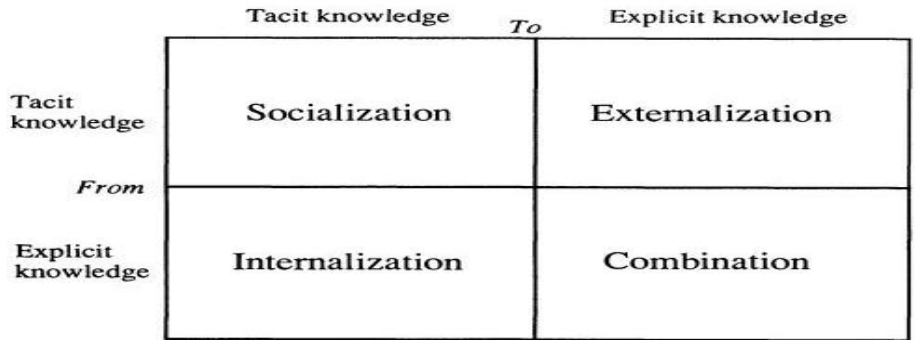
2.1.2. Organizational learning

Both scholars and practitioners are paying more and more attention to organizational learning. Organizational learning is a dynamic and complicated idea (Tsang, 1997). Organizations can convert individual knowledge into organizational knowledge through organizational learning (OL) (Basten & Haamann, 2018). One way to think of OL is as a management effort that requires planning and controlling. Its main focuses are creating, acquiring, and assimilating organizational strategic knowledge (Basten & Haamann, 2018). According to Wu and Chen (2014), OL is recognized as a crucial organizational tool for enhancing knowledge creation and utilization.

2.1.2.1. Organizational Knowledge Creation Theory

Organizational knowledge creation theory (OKCT), often associated with Ikujiro Nonaka and Hirotaka Takeuchi, is a framework that describes how organizations create new knowledge and innovation. According to the theory of organizational knowledge generation, organizational learning is a dynamic process involving explicit and tacit knowledge processes. Tactic knowledge is highly personal since it is firmly ingrained in an individual's commitment to a specific context, unlike explicit information, which may be expressed, defined, and transmitted using symbols or language (Nonaka, 1994).

Figure 4: Organizational Knowledge Creation Model



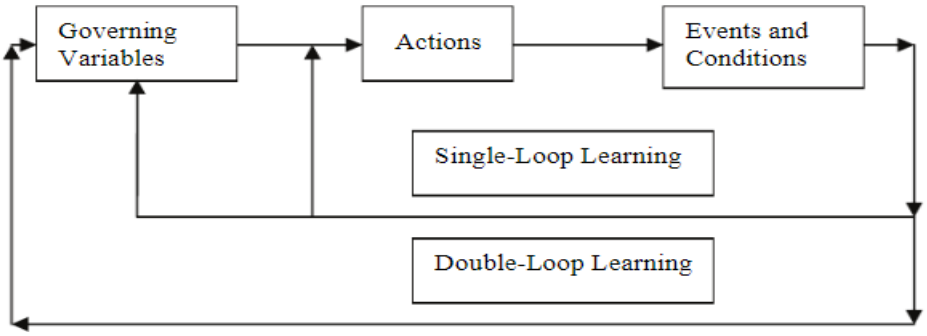
Source: (Nonaka, 1994)

The theory suggests that knowledge creation in organizations is a continuous, spiral process involving explicit and tacit knowledge evolving. It emphasizes the importance of dynamic capabilities like learning, adaptation, and innovation for competitiveness. According to academics, the theory may only apply in particular situations, overemphasizes implicit knowledge, and ignores explicit knowledge. It also lacks universal relevance and integration with other theories.

2.1.2.2. The Theory of single and double-loop learning

The theory of single-loop and double-loop learning is a component of the theory of action approach to organizational learning. Subsequent scholars studying organizational theory and learning have heavily cited and expanded upon these ideas. The creation and application of knowledge inside an organization are central to organizational learning theory. They provide insights into how individuals and organizations can learn and adapt to their environments. Single-loop learning involves adjusting existing frameworks or routines in response to feedback or experiences. In this type of learning, individuals or organizations detect and correct errors without questioning the underlying assumptions or values guiding their actions. It is a problem-solving process without challenging the fundamental beliefs or strategies.

Figure 5: Single-loop and double-loop learning



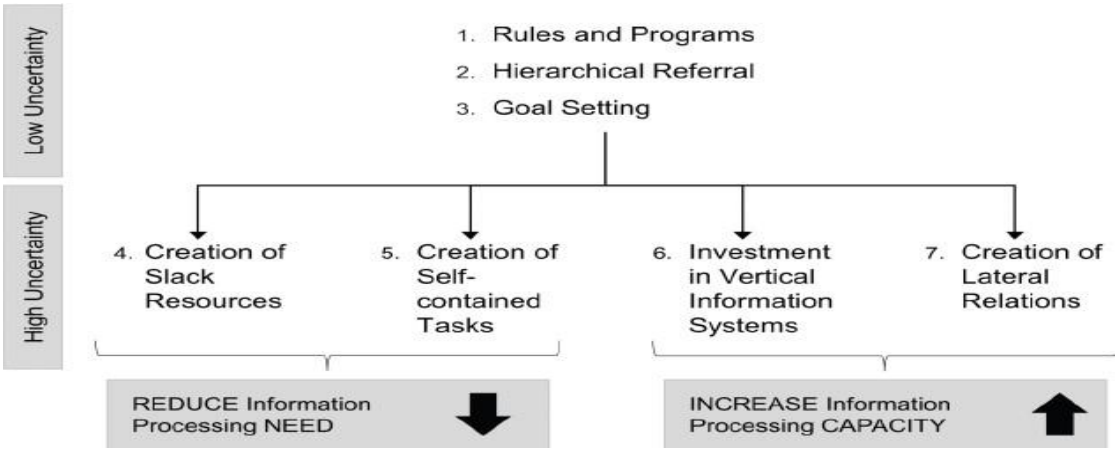
Source: (Toma, 2012)

Double-loop learning goes beyond single-loop learning by critically examining and challenging the underlying assumptions, values, or mental models that shape decision-making and behavior. It involves questioning existing norms, beliefs, and strategies and potentially restructuring them to achieve more profound and fundamental changes. Double-loop learning is more transformative and can lead to innovative approaches and greater organizational agility. Researchers argue that real-world learning often involves a combination of both types and that the distinction may not always lead to actionable insights or improved decision-making processes. They also suggest that these concepts must be integrated with other theoretical frameworks for a more comprehensive understanding of organizational learning processes (Easterby-Smith & Lyles, 2011; Edmondson et al., 1999).

2.1.2.3. Organizational Information Processing Theory

The theoretical framework known as Organizational Information Processing Theory (OIPT) was created by Herbert A. Scholars like James G. March and Richard M. Cyert expanded upon Simon. It focuses on how organizations gather, process, and utilize information to make decisions and adapt to their environments. Key concepts include decision-making processes, information processing capabilities, attention and selective perception, environmental scanning and sense-making, organizational learning, and information overload and ambiguity. OIPT emphasizes that organizations face limitations in processing information due to factors like bounded rationality, complexity, and uncertainty. It also acknowledges the importance of organizational learning from past actions and feedback mechanisms. Overall, OIPT offers insights into the complexities of organizational life and the challenges inherent in information processing and decision-making (Galbraith, 1973).

Figure 6: Organizational information processing theory model



Source: (Galbraith, 1973)

There are five building blocks of organizational learning (Basten & Haamann, 2018).

1. Systematic problem solving: decisions are based on specific methods to diagnose problems. Accuracy and precision are critical.
2. Experimentation: experimenting with novel ways encompasses both one-time and ongoing experiments. It also entails the systematic search for and testing of new knowledge.
3. Learning from past experiences: learning from individual experience and history requires constant reflection upon successes and failures to provide implications applicable to all individuals. Learning should result from careful planning rather than chance.
4. Learning from others: learning from the experiences and best practices of others comprises benchmarking with clients or other external organizations to develop new ideas. Managers must be receptive to feedback and fresh concepts.
5. Knowledge transfer: distributing information throughout the company swiftly and effectively through training, personal rotations, and written or spoken reports.

2.1.3. Organizational performance

Business performance within an organization is increasingly determined by the firm's capacity to create and employ valuable resources that are difficult for rivals to copy (Turulja & Bajgorić, 2018). In management research and business, organizational performance is regarded as one of the most critical variables and dimensions studied. Performance is one of the most crucial components

of every institution's organizational goal (Alkhasawneh, 2018). Organizational performance is a multifaceted concept examined and defined by various scholars in organizational studies. Uluskan et al. (2017) define organizational performance as the outcome of an organization's actions or achieving its goals. It represents the extent to which an organization achieves its stated goals (Daft & Armstrong, 2021). Hitt et al. (2019) see organizational performance as measuring how efficiently and effectively an organization uses its resources to achieve its objectives.

Organizational performance is the total efficacy and efficiency with which a company achieves its goals and objectives. It includes several factors: market share, innovation, staff productivity, customer satisfaction, financial performance, and operational efficiency. When evaluating an organization's competitiveness and success, organizational performance is essential.

Masa'deh et al. (2016) define organizational performance as converting inputs into outputs to achieve specific objectives. Performance provides information on the relationships between realized production and efficiency, output and effectiveness, and minimal and effective cost (economy). The organization can manage and access various resources to meet its targets and goals (Masa'deh et al., 2016). Additionally, organizational performance is a metric to evaluate how efficiently and effectively a company pursues its objectives (Al-Tit, 2015). In their book, Daft and Armstrong (2021) described organizational performance as the outcome of managers' ability to effectively and efficiently deploy resources to meet customer demands and accomplish organizational objectives. An organization can achieve its strategic goals and deliver value to stakeholders over time (Marr, 2012).

According to Imran et al. (2014), the quality of work, the effectiveness of employees in decision-making, the development of processes, the relationship of employees with managers, the provision of various services and products, innovations, market share, staff skills, and their abilities to solve problems quickly with new methods and modern tools of product development are all indicators of performance. An organization's performance is determined by its degree of coherence and stability, its capacity to obtain and use resources, its leader's reputation and image, and the interaction of numerous factors, including employee relations, communication, mission, leadership style, and recognition as well as the effectiveness of organizational processes (Khirfan & Khasawneh, 2023).

Improving professional skills for effective teaching in educational institutions is also crucial for higher education. According to Mk et al. (2017), teaching is a challenging and complex profession that requires mastery of subject matter, classroom management and organizing strategies, and a firm grasp of teaching techniques. Higher education is regarded in emerging nations as a vital tool for enhancing human existence and creating and increasing assets for the people it is meant to benefit.

2.2. Empirical Literature Review

This section will review empirical evidence related to knowledge management's effects on organizational performance conducted in different countries. In addition, we will try to see the role organizational learning plays in this relationship.

2.2.1. Knowledge Management and organizational performance

Businesses should utilize knowledge management and technological methods to enhance employee and manager performance and foster creative behaviors for organizational success. Knowledge management and organizational performance are essential for a business's success (Liao & Wu, 2009). Numerous research studies have examined the relationship between knowledge management and organizational performance. Numerous studies have highlighted the positive correlation between organizational performance and knowledge management processes.

For example, organizations that effectively manage their knowledge resources tend to experience improved innovation, productivity, decision-making, and competitive advantage (Davenport & Prusak, 1998). The utilization of technology, such as knowledge management systems and social collaboration platforms, has also been explored concerning organizational performance. Implementing and adopting these technologies can enhance knowledge sharing, information retrieval, and organizational learning, leading to improved performance outcomes (Grant, 1996).

In his master's thesis, Wagh (2023) made the point that knowledge management can be carried out either directly through specific methodologies or indirectly through the management of social processes, particular organizational structures, or the application of specific people management and culture strategies. Bhatt (2001), in his research, found that effective knowledge management processes, including the creation, storage, transfer, and use of knowledge, positively impact organizational performance. The study emphasizes aligning these three elements for effective

knowledge management. It highlights the need for appropriate technology infrastructure, a supportive organizational culture, and the role of individuals in sharing and utilizing knowledge. In addition, Youndt et al. (2004) underscored the impact of knowledge management on improving operational efficiency, customer satisfaction, and financial performance. According to Szulanski (1996) and Ndlela & Du Toit (2001), effective knowledge management facilitates external knowledge exploitation and internal knowledge sharing and develops new intellectual assets that are sources of competitive advantage.

Other studies have shown that engaging employees through training and development initiatives increases their motivation, job satisfaction, and commitment to the organization, leading to improved performance at both individual and organizational levels. Knowledge management awareness and knowledge management contribution to legal practice are essential tools for improving work performance (Meso et al., 2023). Knowledge management plays a crucial role in innovation by fostering collaboration, helping to turn tacit information into explicit knowledge, identifying knowledge gaps, and ensuring that knowledge is available and accessible, just a few of its many functions.

Abusweilem & Abualoush (2019) discovered that knowledge management processes, such as knowledge generation, sharing, and utilization, were positively associated with the performance of organizations in Jordan's banking sector. They further concluded that organizations that emphasize managing their knowledge assets can dramatically impact their operations, interactions with the market, and innovations, which results in higher performance. Similarly, another study by Namdarian et al. (2020), entitled The Impact of Knowledge Management on Organizational Performance found a direct impact of knowledge management indices on organizational performance, with a significant and positive relationship between knowledge management and dimensions of organizational performance such as financial performance, quality of goods and services, employee performance, innovation, and customer satisfaction. These findings indicate that effective implementation of knowledge management processes can lead to many benefits for organizations, such as improved decision-making and increased innovation.

2.2.2. Knowledge management in Higher education institutions

Knowledge management in HEIs is critical due to the institutions' dual role in teaching and research. Nonaka (1994) argued that knowledge is a valuable asset that can be leveraged to

improve institutional performance, particularly in knowledge-intensive sectors like higher education. In a study by Lee et al. (2000), authors emphasized that HEIs are increasingly adopting KM practices to improve organizational efficiency, foster research collaboration, and enhance student learning outcomes. Stylianou (2015) highlighted the role of KM in improving research collaboration at universities. Their study showed that when universities invest in KM systems, they facilitate the creation of knowledge networks between departments, researchers, and external collaborators, leading to enhanced research output and academic innovation. Sahibzada et al. (2020) examined the role of KM in improving administrative processes in universities. Their findings indicated that KM practices such as data-driven decision-making, process optimization, and best-practice sharing helped streamline administrative tasks and improve the efficiency of institutional operations.

The implementation of KM processes in HEIs typically revolves around several key components: knowledge creation, sharing, storage, and application. These processes are often supported by technological tools such as learning management systems (LMS), knowledge repositories, and collaboration platforms. According to Dalkir (2011), KM in HEIs involves a mix of tacit knowledge (personal know-how and experience) and explicit knowledge (documented information, research articles, and teaching materials). Andreeva and Kianto (2012) focused on how research activities, collaboration among faculty members, and interdisciplinary projects drive knowledge creation in HEIs. Their study found that universities that fostered a collaborative research environment were better at generating innovative solutions. Farrukh et al. (2019) examined the knowledge-sharing practices within a consortium of universities. They found that successful knowledge sharing was facilitated by formal and informal mechanisms, such as workshops, seminars, and conferences, which allowed faculty and researchers to exchange ideas.

The relationship between KM practices and organizational performance in HEIs is central to understanding the impact of KM initiatives. KM can influence various aspects of HEI performance, such as research output, teaching quality, student satisfaction, and administrative efficiency. Farrukh et al. (2019) found that KM practices significantly contribute to the quality of research output in universities. They argued that universities that effectively manage their knowledge resources (e.g., research papers, data, methodologies) perform better in terms of publishing high-quality research and obtaining grants. A study by Ngoc-Tan and Gregar (2019)

looked at the role of digital repositories in storing academic knowledge within universities. Their findings suggest that universities with well-organized repositories enable easier access to research outputs, helping to ensure that institutional knowledge is preserved and readily available for future use.

Psomas and Antony (2017) found that the application of knowledge in HEIs is often seen in the development of new curricula, teaching methodologies, and research innovations. They argued that effective KM leads to the application of knowledge in ways that enhance teaching quality and academic performance. Psomas and Antony (2017) further studied the relationship between KM practices and teaching effectiveness in HEIs. Their study showed that KM practices, such as the sharing of teaching resources, collaboration among faculty, and professional development, improved teaching quality and student engagement. In a broader study of the relationship between KM and institutional performance, Ismail et al. (2015) concluded that HEIs that implement KM processes effectively tend to experience better organizational performance. Their study revealed that KM impacts various performance metrics, including research impact, teaching quality, and financial sustainability.

2.2.3. Knowledge Management processes and Organizational performance

Knowledge management processes improve productivity and profitability through innovative ideas, product and service novelties (Iqbal et al., 2019; Masa'deh et al., 2017), and the research performance of universities (N. a. M. Ismail et al., 2015). Knowledge must be incorporated into the organization's goods, services, and internal processes to improve decision-making and organizational performance (Kim et al., 2003; Gandhi, 2004). Organizations with robust mechanisms for capturing, storing, disseminating, and applying knowledge are better equipped to enhance their performance. Table 1 presents a clear and thorough summary of the current academic research in knowledge management from 2011 to 2023.

Table 1: KMPs, according to scholarly studies in various sectors from 2011-2023

SN	Author name and year	Generating	Creation	Acquisition	Organization	Storage	Transfer	Sharing	Application	Knowledge	Retention	Knowledge	Utilization	Dissemination	Protection	Conversion	Capture	Registration	Refinement

1	Abusweilem M. and Abualoush S. (2019)			X				X	X				X		X				
2	Al Rashdi et al. (2022)			X				X	X						X				
3	Al-Tit (2016)			X				X					X						
4	Bolisani et al. (2013)		X												X				
5	Chang and Chuang (2011)			X		X		X		X		X							
6	Delgado Jr (2023)			X				X	X										
7	Gupta and Chopra (2018)			X					X					X	X	X			
8	Hegazy and Ghorab, (2015)			X				X	X								X		
9	Hsiao et al. (2011)			X					X					X					
10	Inkinen et al. (2015)														X				
11	Iqbal et al. (2019)			X				X					X						
12	Jain & Gupta (2019)					X	X								X				
13	Jarrahi (2017)							X	X										
14	Khirfan and Khasawneh (2023)		X					X	X						X				
15	Ngah et al. (2016)			X		X		X	X					X	X	X			
16	Ngoc-Tan & Gregar, (2019)			X					X				X	X	X				
17	Nouri et al. (2017)			X				X	X					X	X			X	X
18	Payal et al. (2016)			X					X						X	X			
19	Sahibzada et al. (2020)		X	X		X		X					X		X				
20	Supyuenyong and Swierczek (2011)			X	X			X			X		X	X					
21	Workineh & Tufa (2020)			X				X	X										
22	Xue (2017)		X	X		X	X	X	X					X	X				

23	Zaied et al. (2012)	X		X		X		X	X						X	X			
24	Akram et al (2011)		X	X				X									X		
25	Chang & Lin (2015)					X	X		X										
26	Abualoush et al (2018)	X		X		X		X	X						X				
	Total	2	5	**20**	1	8	3	**18**	**17**	1	1	1	6	7	**15**	4	2	1	1
	Percentage	8	19	**77**	3.8	31	12	**69**	**65**	3.8	3.8	3.8	23	27	**58**	15	8	3.8	3.8

As seen in Table 1, 20 of all articles reviewed concentrated on knowledge acquisition, followed by sharing with 18 articles. The third and fourth are knowledge application and protection, with 17 and 15 articles, respectively. The least attention was paid to generation, organization, knowledge access, retention, knowledge choice, knowledge capture, registration, and refinement, with one or two articles each. This study's KM processes consist of Knowledge acquisition, application, protection, and sharing based on the knowledge management capabilities model and the literature reviewed.

2.2.3.1. Knowledge Acquisition and Organizational Performance

Knowledge is created through the interplay between the act of knowing and knowledge, which is achieved through practice, activity, and interpersonal connections (Maravilhas & Martins, 2019). Knowledge is the process of constructing meaning from experience rather than merely the collection and analysis of data. This process is dynamic and continual, necessitating ongoing learning. Organizations can facilitate knowledge creation by incentivizing staff members to share their knowledge, establishing a system that enables them to practice creating new knowledge, and offering monetary and non-monetary rewards to staff members who propose novel ideas or solutions (Jarrahi, 2018). Knowledge acquisition is one of the four gears that make up knowledge management and is moved by people, not through technology. Knowledge acquisition fosters innovation and creativity within organizations. By actively seeking and incorporating new knowledge, firms can generate fresh concepts, create fresh goods or services, and enhance current procedures.

Organizations that excel in knowledge acquisition gain a competitive edge over their rivals. They can identify and exploit market opportunities more effectively by constantly learning and adapting. The growth of a learning organization is facilitated by knowledge acquisition (Zahra &

George, 2002). Organizations that encourage continuous learning and knowledge sharing among employees tend to exhibit higher levels of performance and adaptability. Effective knowledge acquisition necessitates the establishment of efficient knowledge management systems. In the words of Habib et al. (2019), to acquire knowledge, a person must have easy access to it and knowledge-based tools that allow them to capture and use new knowledge to boost the organization's existing knowledge. To find potential solutions to current problems, managers should encourage their staff to look for fresh information and collaborate on ideas. This will help the company maintain a competitive edge in the industry and improve its performance.

Hypothesis 1: Knowledge acquisition has a positive significant effect on organizational performance.

2.2.3.2. Knowledge application and organizational performance

According to Gold et al. (2001), knowledge application makes knowledge more practical and active for the firm's value creation. Hegazy and Ghorab (2015) demonstrated that knowledge enhances organizational performance when applied in decision-making and task execution. They also concluded that knowledge application is essential for individuals to utilize knowledge already possessed by others without actually acquiring or learning it. The findings of Alavi and Leidner (2001) indicate that effective knowledge management positively impacts organizational performance through increased innovation, better decision-making, and enhanced problem-solving capabilities. The authors emphasize the importance of aligning knowledge management strategies with organizational goals for optimal performance. A learning organization applies knowledge to adapt to the dynamic business environment. This approach enhances organizational flexibility, adaptability, and competitiveness. When organizations effectively apply knowledge and leverage it in their operations, decision-making processes, and strategies, they achieve better performance outcomes.

Businesses have invested in various knowledge management solutions, hoping to enhance performance and facilitate the efficient exchange of knowledge inside the company (Zamir, 2019). These insights can then be applied to inform organizational strategy and support the adoption of creative tactics that can lead to the development of new goods and procedures and increased revenue and earnings for the business.

Hypothesis 2: Knowledge application has a positive significant effect on organizational performance.

2.2.3.3. Knowledge protection and organizational performance

Studies have explored organizations' mechanisms and strategies to protect their knowledge assets. These mechanisms include legal protection through patents and copyrights, technological measures such as encryption and access controls, organizational policies, and cultural norms that foster knowledge sharing while ensuring confidentiality (Chen & Huang, 2009). Knowledge protection mechanisms, such as patents, copyrights, and trade secrets, can incentivize firms to invest in research and development (R&D) activities. Empirical studies have found a positive association between knowledge protection and innovation performance, indicating that organizations that protect their intellectual property are more likely to innovate and generate new ideas and products. While protecting knowledge can provide strategic advantages, excessive knowledge protection can hinder organizational performance. A book by Chesbrough (2003) suggests that a balance between knowledge protection and knowledge sharing is crucial.

Organizations must foster a culture that encourages knowledge-sharing and collaboration while protecting sensitive information. Finding the right balance is essential to harness the collective intelligence of employees and promote organizational learning. The effect of knowledge protection on organizational performance is a topic of significant interest within knowledge management and organizational studies. Organizations recognize the importance of knowledge as a strategic asset and seek to protect and leverage it effectively to gain a competitive advantage.

Hypothesis 3: Knowledge protection has a positive significant effect on organizational performance.

2.2.3.4. Knowledge sharing and organizational performance

While organizations cannot maintain momentum without effectively transmitting knowledge across departments and teams and to the frontline in delivering products and services, applying knowledge alone is frequently insufficient for creating value (Payal et al., 2016). Knowledge sharing constitutes an essential element of knowledge management. Studies indicate that cultivating a culture of knowledge-sharing inside a company affects performance results. By

facilitating the flow of knowledge and expertise, organizations can enhance problem-solving capabilities, reduce redundancy, and promote collaboration (Alavi and Leidner, 2001). Osterloh & Frey's (2000) study demonstrates that knowledge sharing positively affects organizational performance by enhancing problem-solving capabilities, reducing duplication of effort, and fostering innovation. The authors suggest that creating incentives and supportive knowledge-sharing structures can significantly improve organizational performance. According to Ipe (2003), Knowledge sharing facilitates the generation of new ideas, promotes learning, and enhances innovation within organizations. Employees who actively share their knowledge contribute to a continuous improvement and creativity culture, enhancing innovation performance. A competitive advantage may arise from the dissemination of knowledge.

This initiative aims to facilitate information transfer and sharing throughout the organization's departments to improve innovation, communication, and overall performance.

Within an organization, Knowledge sharing is the process by which people communicate ideas, abilities, and information. It is essential for encouraging creativity, strengthening judgment, and raising overall performance levels inside the company. Several literature reviews have explored this relationship, as discussed above. Organizations that effectively share knowledge internally foster a learning culture and promote knowledge acquisition, strengthening their ability to adapt to market changes, innovate, and outperform competitors. According to Migdadi et al. (2016), knowledge sharing refers to institutional methods that distribute knowledge across all participants in a particular process.

Hypothesis 4: Knowledge sharing has a positive significant effect on organizational performance.

2.2.4. The Mediating Role of Organizational Learning

Success in a company depends on knowledge and learning (Pandey & Dutta, 2013). Knowledge management processes stimulate organizational learning (Gupta & Chopra, 2018). Organizations that effectively manage their knowledge tend to facilitate and enhance learning processes. Research often indicates that organizations with robust KM systems experience improved knowledge sharing, transfer, and creation, which fosters organizational learning (Argote et al., 2003). Organizations that prioritize knowledge sharing through platforms, communities of practice, and other KM initiatives tend to promote a culture of learning where individuals exchange ideas, experiences, and insights, thereby enhancing collective learning within the organization (Wang & Noe, 2010).

Organizations with strong KM capabilities are more agile and responsive to market dynamics, leading to sustained competitive advantage through continuous learning and innovation. Empirical evidence indicates that organizations that effectively utilize and apply knowledge tend to have higher levels of organizational learning. This involves translating knowledge into action, experimentation, and continuous improvement (De Jesus Ginja Antunes & Pinheiro, 2020). According to Alavi and Leinder (2001), knowledge management supports organizational learning by capturing and codifying knowledge from individual experiences. Research identifies knowledge management (KM) and organizational learning (OL) as two critical competencies for companies operating in the knowledge-based economy (Dayan et al., 2017). Therefore, to gain a competitive edge, a company's knowledge resources and processes should be improved through organizational learning (Jain & Moreno, 2015). Organizational learning aids in integrating organizational knowledge into processes by facilitating knowledge creation, transfer, and application. Because knowledge is achieved through learning (Karkoulian et al., 2013), organizational learning serves as a catalyst (Moustaghfir and Schiuma, 2013).

For a considerable amount of time, organizational learning has been regarded as a predictor and an indicator of organizational business performance (Qi and Chau, 2017). Research has demonstrated that organizational learning functions as a mediating factor in the relationships between innovativeness and knowledge management (Asgarnezhad Nouri et al., 2017), performance and knowledge management capabilities (Ngah et al., 2016), and organizational performance and KMP as a general construct (Rehman et al., 2015). Thus, by breaking down KMP into four categories- knowledge acquisition, knowledge application, knowledge protection, and knowledge sharing- and considering organizational learning as a general construct, this study complements and builds upon Rehman et al.'s (2015) study, taking into account the arguments above that learning and knowledge are related concepts and that one cannot exist without the other (Karkoulian et al., 2013).

H5a: OL mediates the effect of knowledge acquisition on OP.

H5b: OL mediates the effect of knowledge application on OP.

H5c: OL mediates the effect of knowledge protection on OP.

H5d: OL mediates the effect of knowledge sharing on OP.

2.3. Research Gap

Research on the correlation between knowledge management processes and organizational performance is extensive; however, there is limited research in the education sector (Ngoc-Tan & Gregar, 2019; Iqbal et al., 2019; Jain & Gupta, 2019). Most investigations on the effect of knowledge management processes on organizational performance have concentrated on large businesses, ignoring application in higher education institutions as knowledge-driven enterprises.

To the best of the researcher's expertise, few studies were conducted in Ethiopia, and none used organizational learning as a mediator. (Elshalom Endrias, 2019; Lemlem Mekonnen, 2017; Henock Getachew, 2021; Samrawit Kinfemichael, 2021; Tigist Sileshi, 2017; Biruk Dage, 2020; Tizita Workneh, 2021; Kebede Michael, 2016; and Workineh & Tufa, 2020) have used the same independent and dependent variables but only Workineh & Tufa, (2020) conduct in higher education context however they did not consider organizational learning as a mediator.

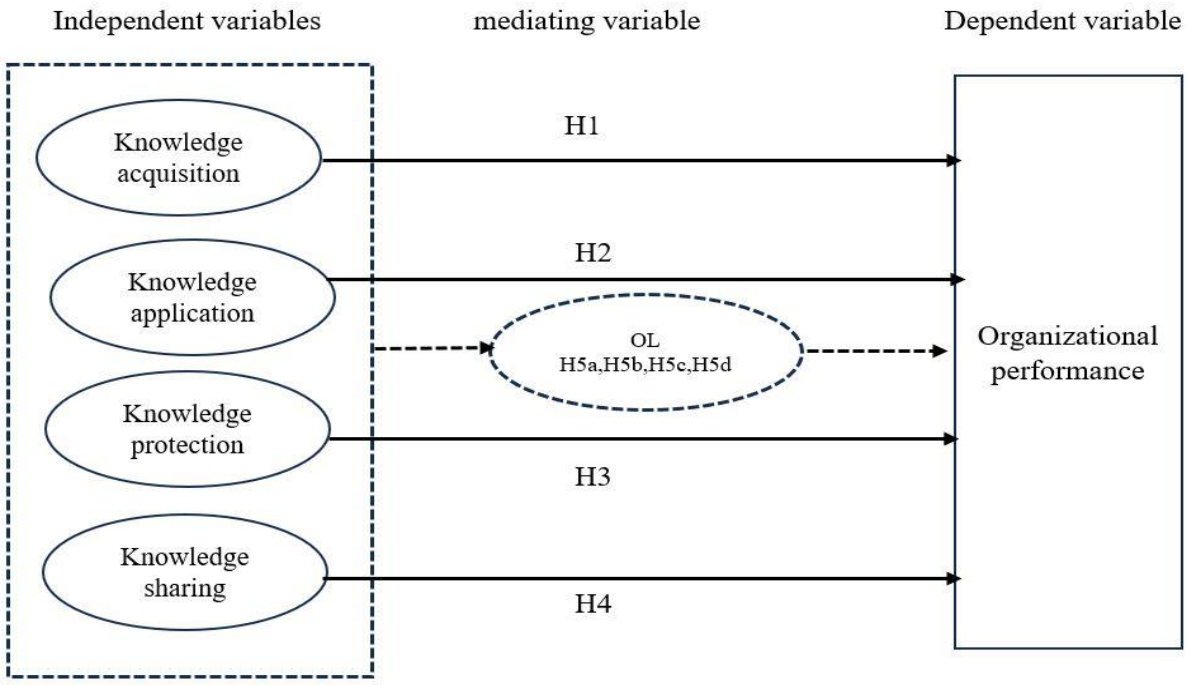
2.4. Conceptual framework

Building upon the RBV and organizational learning theory, the study developed the conceptual framework below, which it believes can help analyze the knowledge management-performance correlation by considering the role of organizational learning. The RBV theory posits that a firm's competitive advantage is primarily derived from its internal resources and capabilities, particularly those that are valuable, rare, inimitable, and non-substitutable (Kero & Bogale, 2023). Knowledge, in this context, is a critical strategic resource, and knowledge management (KM) processes are mechanisms through which organizations develop, transfer, and retain this knowledge. RBV is highly applicable to the objective of this thesis. It suggests that managing knowledge effectively (through KM processes) enables organizations to leverage their unique resources, which can improve performance metrics such as innovation, efficiency, and adaptability. RBV also allows for an exploration of how knowledge resources (managed by KM processes) create value through the development of organizational learning, a complementary asset that enhances the firm's ability to use knowledge effectively. Thus, organizational learning becomes a mediating mechanism, translating knowledge resources into performance outcomes.

Organizational Learning Theory explores how organizations adapt and evolve by acquiring, distributing, and integrating knowledge, leading to better decision-making, innovation, and

performance. In this framework, organizational learning is not just an outcome but an ongoing process that sustains competitive advantage. Since the study investigates organizational learning as a mediating factor, this theory is particularly relevant. It provides a basis for understanding how learning processes within an organization can transform knowledge acquired through KM processes into capabilities that enhance performance. Organizational Learning Theory emphasizes that knowledge needs to be actively learned and applied to be valuable, which ties in directly with KM processes (Nayak et al., 2022). It supports the idea that organizational learning facilitates the transformation of knowledge into improved performance outcomes, making it a crucial mediator. RBV and Organizational Learning Theory are used as the primary theoretical frameworks, providing a solid foundation for explaining the relationships in this study, as they capture the strategic importance of knowledge and learning processes in enhancing organizational performance.

Figure 7: Conceptual Framework



Source: Grant, 1996; Barney, 1991

Chapter Three: Research Methods

3.1. Introduction

The knowledge gap was discovered, and the body of research on knowledge management, organizational learning, and organizational performance was reviewed in the previous chapter. The literature review results establish expectations for the relationship between independent, mediating, and dependent variables. The purpose of this chapter is to present the definition of the variables, the research designs, sample selection, data collection techniques, and analysis of the collected data.

3.2. Research Approach

Saunders et al. (2023) distinguish between two categories of research approaches: deductive and inductive. Clarifying the causal linkages between the research variables is a fundamental goal of the deductive approach (Collis & Hussey, 2013). Researchers have attempted to determine the relationship between the variables in numerous explanatory studies before formulating hypotheses. Another characteristic the researcher typically uses to test the proposed hypotheses is collecting quantitative data. This approach's main feature is generalization, where researchers often move from the general to the specific situation (Bell et al., 2022). Researchers typically inductively interview respondents to learn about their knowledge and experiences (Yin, 2009). Investigators work to develop concepts and theories that serve as a framework for their study hypotheses (Saunders et al., 2023; Sekaran and Bougie, 2016). Bell et al. (2022) claim that theory development is linked to qualitative research, while theory testing is related to quantitative research.

A deductive approach was chosen to collect data for this study and answer the research questions via a questionnaire. This study is explanatory since it establishes a relationship between the chosen dependent, independent, and mediating variables. The researcher established a conceptual framework and hypotheses to examine the links between the study constructs. Because the conceptual framework and hypotheses are drawn from the reviewed literature, this study uses a deductive approach in light of the above facts (Saunders et al., 2023).

Generally speaking, the developed hypotheses are supported and verified by employing the quantitative technique and deductive approach, which use procedures acknowledged by science that result in study results. Both are utilized to evaluate the validity of the theoretical claims presented in the previous studies, which have previously undergone hypothetical testing (Guest et al., 2015). Collis and Hussey (2013) state that the quantitative approach typically facilitates the testing of ideas and concepts that are currently in use and comprise many sets of variables. The validity of theoretical generalizations is also established by quantitative research, which is currently typical in social science and business studies (Neuman, 2013). Additionally, because it rapidly establishes the causal relationship between the variables under investigation, it is a commonly employed approach in the social sciences (Collis and Hussey, 2013). Therefore, this research is quantitative due to the above-explained reasons.

3.3. Research Design

Yin (2009) emphasizes the importance of research design in reliable and valid investigations. Blumberg et al. (2014) define research design as a plan for the research project with three main types: exploratory, descriptive, and explanatory. Exploratory research is a method used to gather contextual information about a research problem, develop hypotheses, and address issues with limited prior research. It focuses on disclosing new ideas and insights, making it beneficial when researchers lack essential variables. It thoroughly uses literature searches, interviews with analysts, and focus group interviews to elucidate phenomena (Bell et al., 2022). Descriptive research describes the characteristics of an issue, situation, person, or group, offering explanations of their position (Denzin and Lincoln, 2011). It collects data on factors like frequency of shopping and demographic questions, using survey methods for comparative and correlation analyses (Neuman, 2013). However, it cannot elucidate how the study variables relate to one another (Saunders et al., 2023). Explanatory or causal research aims to explain why certain variables affect others, testing theories that explain phenomena. It looks for relationships between variables (Greener, 2008). Researchers measure variables and provide evidence to support or reject hypotheses, demonstrating the critical effects of relationships between variables. Numerous previous theories illustrate the direction and strength of these relationships.

Explanatory research is appropriate for the current study since the researcher develops hypotheses and examines the relationships between the variables, and the researcher has recognized the

research frameworks based on the body of current literature. The study is made up of four knowledge management processes (knowledge acquisition, knowledge application, knowledge protection, and knowledge sharing) as independent variables, one dependent variable (i.e., Organizational performance) measured in terms of student result, staff result, institutional result, and society result, and organizational learning is included as a mediating variable (see figure 2.5). The relationship between the variables was assessed via structural equation modeling (SEM) employing the smart-PLS (Partial Least Squares) method. The research evaluated the measurement model to analyze the reliability and validity of the latent constructs and the structural model to investigate the proposed relationships among the variables.

3.4. Unit of analysis

The unit of analysis described the level at which the research was performed and which objects were researched. This study's analysis unit was comprised of academic personnel from Addis Ababa University and Haramaya University. The first reason these universities were selected was that Structural Equation Modelling was employed when the sample size was sufficiently large (Rosseel, 2020), as these universities had relatively large populations from which large samples could be selected. The other reason was that SEM requires samples chosen judgmentally (Hoyle, 2012; Kaplan, 2008) to be compatible with the sampling technique.

3.5. Population and Sample

Since it answers the research problem, the study population is the most crucial component of a research design (Bell et al., 2022). So, population is defined as the entire universe of people or things from which a sample is selected (Greener, 2008; Bell et al., 2022). Because of the time, costs, and other constraints, a census is not a practical method of gathering information (Bajpai, 2011). A sample is a cautiously selected subset of the research population (Bell et al., 2022; Neuman, 2013; Sekaran and Bougie, 2016; Saunders et al., 2023). Sampling is the process of choosing a small number of individuals from a larger population to make assumptions about an accurate representation of the behavior or beliefs of the entire population (Hyun et al., 2022). The best way for researchers to start their work is to define and identify the population they hope to study, after which they should take a representative sample from that population (Bajpai, 2011). While the early 1800s researchers attempted to conduct a population survey, 21st-century

researchers only dealt with a sample of a population, from which they extrapolated conclusions about the population or generalized the findings (Creswell & Garrett, 2008).

The academic personnel of Addis Ababa University and Haramaya University thus made up the study's population. The academic staff was chosen because highly educated respondents are good candidates for knowledge management research since they know knowledge management activities, according to Mills and Smith (2011) and Gold et al. (2001). There were 3110 (http://www.aau.edu.et/aau-at-a-glance/) and 1254 (https://www.haramaya.edu.et/staff/) academic staff at Addis Ababa University and Haramaya University respectively. Assuming a 5% margin of error and 95% confidence level with a response distribution of 50%, 354 instructors were sampled for this study using Rao soft sample size calculator (http://www.raosoft.com/samplesize.html).

3.6. Forms of Data

It is crucial to clarify the different forms of data to identify the problem clearly and concisely before going over the data collection. Data come in two varieties: primary and secondary (Bell et al., 2022; Saunders et al., 2023; Cameron & Prince, 2009). Primary data is generally gathered to resolve problems (Mahesar, 2015). According to Cameron & Prince (2009), primary data is gathered by oneself, but others have collected secondary data. Every researcher has access to secondary data.

Cross-sectional primary data collected from the academic staff of Addis Ababa University and Haramaya University was employed to achieve the objective of this study. Cross-sectional data was used because it can be collected at one specific moment in time on one or more variables (Porter & Gujarati, 2009; Brooks, 2019; Wooldridge et al., 2016).

3.7. Data Collection

Data can be collected through questionnaires and interviews. The data-gathering method is a crucial component of the research design that gathers respondents' thoughts and beliefs about a specific topic (Sekaran and Bougie, 2016). As per Cameron and Prince (2009), the choice of the data collection process necessitates a detailed understanding of the necessary sample size, the nature of the inquiry for the study, the content, the number of survey questions, the expenses

related to producing the instrument accessible to research participants, and the amount of time needed to finish the procedure.

The self-administered questionnaire was used in this study to gather primary data. This method was chosen because researchers in social science frequently employ it (Neuman, 2013). This method allows the researcher to conclude generalizing results and provides a more reliable way of evaluating sample-specific data. In addition, it is regarded as a rapid, affordable, and effective way to administer many samples (Sekaran and Bougie, 2016; Neuman, 2013). Furthermore, because of their hectic schedules and unwavering work commitments, respondents typically do not have much time to dedicate to the in-person interview (Mahesar, 2015). The data was collected in Google Forms, so the link that directs the respondents to the questionnaire was sent via their email addresses.

3.7.1. Questionnaire Development

One often-used instrument for acquiring data is the questionnaire, which consists of inquiries to elicit pertinent data from respondents (Saunders et al., 2023; Neuman, 2013). One potential disadvantage of questionnaires for primary communication is the possibility of participants misunderstanding the question's main points. Because of this, the researcher tried to include straightforward questions so as not to confuse the respondents. The development of the questionnaire should be guided by the study objectives (Veal & Ticehurst, 2005). This study's questionnaire development procedure includes content development, wording, and response formatting. Studies indicate that participants can give relevant answers when questionnaires are developed with good question design, i.e., emphasizing positive questions, concise questions, and avoiding two claims in a single question (Frazer and Lawley, 2000; Zikmund, 2016). Finally, to motivate the respondents, the cover page offered a brief explanation of the survey's importance along with a message of gratitude.

3.8. Pilot study or Pre- Test

Before committing to a full-scale study, a pilot study is designed as a small-scale exploratory examination to evaluate a research project's viability, potential drawbacks, and efficacy. According to Mahesar (2015), a pilot study aimed to develop an intended research design used in the main test, verify the scales' reliability, improve the questionnaire's sentence structure, and

observe participant's reactions on a seven-point Likert scale for helpful feedback. Pilot research confirms the instrument's viability in terms of validity and reliability, primarily to eliminate any possible shortcomings (Zikmund, 2002). Testing the questionnaire's phraseology, arrangement, respondent understanding of technical terms, analysis procedure, completion duration, and response rate will help identify these problems.

Different researchers suggest different sample sizes for pilot studies. According to Julius (2005), estimating parameters such as the continuous measure's average and standard deviation outcome with a pilot study sample size of about 12 per group is usually possible. Hertzog (2008) advises using 10% of the sample size of the broader planned study, with at least 10 to 20 participants, to ensure a reliable estimate of the standard deviation for continuous measures. As per Wiid and Diggines's (1987) endorsement, a pilot study sample should include ten to thirty individuals selected from the research population. Furthermore, without a higher-order construct, Gokarn (2017) recommends that the sample size be greater than the total number of items in the questionnaire. The authors indicated above suggest the pilot study's minimal number of samples. From this, we can conclude that the use of a higher sample size can give us a more reliable estimate for the main study since it is evident that the precision of our parameter estimates increases as sample size increases.

3.8.1. Analysis And Discussion of The Pilot Study

The preliminary investigation was conducted in June 2024, and the preliminary study results were acceptable. The supervisor guaranteed its quality. A brief description of the purpose of this study was given to the respondents on the first page of the questionnaire. A Google form link that directs to the questionnaire was sent to 66 respondents, 33 to Haramaya University and 33 to Addis Ababa University academic staff members via email. Of the 66 questionnaires, 62 were filled and sent back, indicating a response rate of 94%. The least time the responders needed to complete the questionnaire was 10 minutes, and the maximum was 15 minutes.

Various individuals, including men (72.6%) and women (27.4%), have participated in this survey. 75.8% (n=47) of the participants, or the majority, were in the 26–35 age range. They are bachelor to PhD holders, of which 74.2% (n=46) are master's degree holders, 16.1% (n=10) hold PhD, and 9.7% (n=6) are bachelor degree holders. Seventy-nine percent (n=49) of the respondents possess

zero to ten years of experience. One respondent has the position of associate director, one is a business consultant, one is a first-year course chair, and one is a program head.

3.8.1.1. Reliability of the pilot study instrument

Although indicators of this instrument were modified from earlier research, Cronbach's alpha and composite reliability were used to examine each variable's reliability. Since the constructs were measured reflectively (see Chapter Four, table 9), the reliability of a measurement model is evaluated with internal consistency and indicator reliability. As shown in Table 2 below, the internal consistency of all variables in the current investigation varied from 0.731 to 0.951, and all values are in the acceptable range, i.e., 0.7 to 0.9 (Hair et al., 2021). This verifies that the general reliability of the instrument demonstrated satisfactory internal consistency.

Table 2: Internal Consistency Reliability and Convergent Validity of the Pilot Study

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
KA	0.829	0.834	0.88	0.594
KAP	0.731	0.758	0.846	0.647
KP	0.921	0.925	0.937	0.68
KS	0.832	0.84	0.9	0.75
OL	0.951	0.955	0.956	0.582
OP	0.919	0.933	0.931	0.535

Outer loadings measure indicator reliability. High outer loadings indicate that the associated indicators have much in common, which is captured by the construct. The outer loadings of all indicators should be statistically significant and exceed 0.708 (Hair et al., 2021). Bandalos (2018) explains that larger sample sizes reduce sampling errors and provide more accurate reliability estimates, reinforcing the relationship between sample size and the precision of reliability estimates. As shown in the table below (Table 3), KP7, OL2, OL10, OL11, OL14, OP1, OP4, OP5, OP7, and OP11 have loadings below 0.708 but still are in the permissible threshold. According to Hair et al. (2021), items with loadings between 0.4 and 0.7 should be deleted if and only if the removal of the items leads to an increase in composite reliability or convergent validity above the threshold value. Depending on this argument, the above indicators are retained.

Table 3: Outer Loadings of the pilot study

	KA	KAP	KP	KS	OL	OP
KA1	0.743					
KA2	0.787					
KA3	0.702					
KA4	0.82					
KA5	0.796					
KAP1		0.805				
KAP2		0.857				
KAP3		0.748				
KP1			0.829			
KP2			0.858			
KP3			0.838			
KP4			0.857			
KP5			0.875			
KP6			0.802			
KP7			0.699			
KS1				0.868		
KS2				0.821		
KS3				0.906		
OL1					0.845	
OL10					0.616	
OL11					0.699	
OL12					0.765	
OL13					0.786	
OL14					0.521	
OL15					0.765	
OL16					0.771	
OL2					0.687	
OL3					0.788	
OL4					0.802	
OL5					0.853	
OL6					0.78	
OL7					0.841	
OL8					0.793	
OL9					0.815	
OP1						0.498
OP10						0.843
OP11						0.695
OP12						0.808

OP2						0.785
OP3						0.818
OP4						0.627
OP5						0.631
OP6						0.788
OP7						0.675
OP8						0.71
OP9						0.817

3.8.1.2. Validity of the Pilot Study Instrument

As per Bryman and Bell (2011), the validity of an instrument is determined by how well it measures the variables it is designed to measure. They further stated that the definitions of the variables utilized to create any measurement significantly impact the construct's validity. In the social sciences, items are commonly used to quantify constructs because many concepts are not directly observable (Hair et al., 2021). Construct validity measurement is advantageous as it confirms the instrument's overall perceived validity. A measure is well-built on a theoretical construct if it has achieved a greater construct validity (Creswell & Plano Clark, 2011). The measurement model evaluates both convergent and discriminant construct validity.

Convergent validity is the degree to which a strong association exists between the items that make up a construct. It is a relationship between conceptually comparable indicators (Collis & Hussey, 2003; Hair et al., 2021). The variables in this investigation received an average variance extracted (AVE) value of more than 0.50, as shown in Table 2. The other validity test is discriminant validity, which is evaluated by the Hetrotrait-Monotrait ratio (HTMT) and tells us that a construct is genuinely distinct from other constructs by empirical standards. Henseler et al. (2014) suggest 0.9 as a threshold for discriminant validity. Table 4 below displays the satisfying results for all latent constructs in this investigation, indicating that discriminant validity is upheld.

Table 4: Discriminant Validity (HTMT)

		KA	**KAP**	**KP**	**KS**	**OL**	**OP**
KA							
KAP		0.789					
KP		0.778	0.625				
KS		0.862	0.733	0.762			
OL		0.791	0.671	0.831	0.884		

OP		0.731	0.654	0.75	0.783	0.844	

Regarding the wording of the questions, a PhD candidate in Russia, a former dean of CoBE at Haramaya University, recommended avoiding negative statements to make the questionnaire consistent. It was on item OL2 and rewritten like this for the main study: *Employee learning is considered more of an investment than an expense.*

3.9. Measures of the study

Designing and choosing a precise instrument that is highly relevant and accurate is an essential step in the research process towards achieving the objective of the investigation (Zikmund, 2016). He also advises considering if the tool might adequately handle the research questions concerning what will be measured (construct validity) and how it should be quantified (construct reliability) while developing and choosing a suitable instrument. The measuring system is the yardstick that tells us what corrections are necessary and gives us feedback for our best efforts. This section describes the study's independent, mediating, and dependent variables. Knowledge management processes- knowledge acquisition, application, protection, and sharing- are the independent variables. The dependent variable here is organizational performance, and the mediating variable is organizational learning. Because it is the most popular and practical way to collect data from respondents using a survey approach (Sekaran and Bougie, 2016), the Likert scale, i.e., seven points (1= strongly disagree to 7= strongly agree) was applied for this study except for the demographic variables.

3.9.1. Measuring Organizational Performance

Educational organizations cannot function without engaging in teaching-learning activities. Additionally, they engage in research and publications. Many people have contributed to the growth and development of education. As a result, the performance measurements have been linked to several characteristics. Academic success metrics were prioritized in higher education over financial results and are connected to scholarly activities, faculty and student research, publications, teaching workload, financial support, and student activities. In this measurement method, the expectations of the teachers, staff, and students are the most crucial factors that require more focus (Ruben et al., 1999). Publications and other publicly identifiable outputs, studentships, research funds obtained, research contracts obtained, professional knowledge, and panelists' and

advisory groups' opinions are the indicators for research. The indicators for teaching comprise the following: prerequisites for admission, degree outcomes, cost per student or staff-to-student ratio, completion and waste rates, and employment following graduation (Cave et al., 1989).

Organizational performance can be evaluated through various metrics, including financial and non-financial (Pinho et al., 2012), innovation (Hung & Chou, 2013), and quality (Zu, 2009). These studies have demonstrated that researchers use measurements suited to a specific business setting, and there are no universal metrics for measuring organizational performance. Most studies on Higher Education Institutions (HEIs) measure performance from an outcome viewpoint (Psomas and Antony, 2017; Burli et al., 2012; Calvo-mora et al., 2005; Badri et al., 2006; Sciarelli et al., 2020). Because it is difficult to find and obtain an objective performance measurement for educational institutions, subjective performance metrics are given priority. Furthermore, because knowledge management elements can sometimes have long-term effects that are difficult to quantify, evaluate, and relate to, it can be challenging to assess the financial performance of higher education institutions (Hung and Chou, 2013). Another study by S. Choi & Chun (2020) measures the performance of higher education from the perspectives of faculty performance, student dropout rates, employment rate after graduation, student satisfaction, and procedural transparency.

Therefore, depending on the explanations mentioned above, respondents were requested to rate their degree of agreement with the university's performance on four dimensions: student outcomes, staff and faculty outcomes, institutional outcomes, and societal outcomes. Finally, the four dimensions were aggregated into one general construct for analysis. This investigation thus adopted the perceptual metrics for evaluating organizational performance as used by (Calvo-Mora et al. 2005; Psomas & Antony, 2017; Sciarelli et al., 2020).

3.9.2. Measuring Knowledge Management Processes

Various scholars use different categories to measure the processes of knowledge management. The steps of the knowledge management process identified by Liebowitz and Beckman (2020) include identifying, capturing, selecting, storing, sharing, applying, creating, and selling. Creation, storage/ retrieval, transfer, and application according to Alavi and Leinder (2001); creating and acquiring, organizing and storing, transferring and sharing, using and applying (Wong and Aspinwall, 2004); knowledge acquisition and creation, organization and retention, dissemination, and utilization (Supyuenyong and Swierczek, 2011); knowledge acquisition, conversion,

application and protection (Gold et al., 2001). Workineh and Tufa (2020) used knowledge acquisition, knowledge sharing, and application as knowledge management practices. Hence, respondents were asked to indicate their level of agreement about the university's KMPs along each of the following four dimensions: Knowledge acquisition, application, protection, and sharing. For the criterion used for selecting the dimensions, see Table 1.

3.9.3. Measuring Organizational Learning

Different scholars used different measurement techniques, and this is highly dependent on the type of the firm in which the study was conducted. For example, experimentation, risk-taking, interaction with the environment, dialogue, and participative decision-making were used to measure the OL of software industries in Pakistan (Kazmi et al., 2021). Tohidi et al. (2012) use management empowerment and commitment, experimentation, risk-taking, openness, interaction with the external environment, knowledge transfer, and integration to measure organizational learning in Iranian ceramic tile manufacturing companies. We can conclude that organizational learning literature proposes many organizational learning enabling factors. Effective measurement of organizational learning in higher education requires a holistic approach. By building upon the work of Rehman et al. (2015), this study used the model developed by Jerez-Gómez et al. (2005) and considered OL a general construct.

3.10. Specification of Measurement Constructs and Indicators

The indicators for the constructs of the dependent variable were adopted and modified from the work of Sciarelli et al. (2020). Some indicators in the society section refer to a department and are now used to refer to the university because of scalability. Fowler (2014) emphasizes the importance of scalability in survey design, noting that well-designed departmental designs can be effectively adopted for larger populations, ensuring efficiency and resource optimization. Some indicators are excluded from the instrument because they are assumed to be either the indicator of quality rather than performance (self-assumption) or to make the instrument more precise and remove redundancy. A well-focused question that removes broad terms like "overall" can guide research and help filter out irrelevant information (Booth et al., 1995).

The indicators for the independent variables were adopted from Ngoc-Tan & Gregar (2019), Ramachandran et al. (2009), (Gold et al. (2001), and Mohammed et al. (2019), and some

modifications have been done. The indicators of knowledge acquisition were adopted from Ngoc-Tan and Gregar (2019). The authors adopted six indicators from Lawson (2003) and developed five indicators themselves. The author of this research used the five indicators developed by Ngoc-Tan and Gregar (2019) because they were designed specifically for higher education institutions. The indicators of knowledge application were adopted from Ramachandran et al. (2009). An indicator stating the protection of knowledge from illegal use inside or outside the organization is excluded from being an indicator of knowledge application because it is included in the knowledge protection construct. So, it reduces redundancy. In the knowledge protection construct, indicators were adopted from Gold et al. (2001), and some indicators were merged to form one indicator because they have the same meaning. The indicators of knowledge sharing were adopted from Mohammed et al. (2019). Indicator number 1 and 2 were merged to form one general indicator.

Organizational learning was considered a general construct, and its indicators were borrowed from the work of Jerez-Gómez et al. (2005), so no modification is necessary. The subsequent table encapsulates the measurement of the variables being examined.

Table 5: Specification of measurement Constructs and Indicators

Main variables	***Constructs***	**Indicators**	**References**
Organizational Performance	*Student results*	STR1 There is a significant decrease in student dropout rate over the past three years	(Sciarelli et al., 2020)
		STR2 There has been an improvement in graduation rate over the past three years.	
		STR3 There is a significant increase in the number of high-merit students opting for our institute.	
	People result	PR1 There has been a significant increase in faculty member's satisfaction over the past three years.	
		PR2 The number of students for each teacher in the last three years has become easier to manage.	
		PR3 The scientific performance of the teaching and research staff has significantly improved over the last three years.	
	Institute results	IR1 Number of research papers published by faculty members has increased over the past three years.	
		IR2 The number of research projects obtained from public institutions has increased over the past three years.	
	Society results	SR1 There is an active involvement of the university in social events	
		SR2 The university's reputation and image have increased in civil society over the past three years.	
		SR3 There has been a significant increase in support for cultural or sports activities.	

		SR4 The university is actively involved in protecting and preserving the environment.	
Knowledge management processes	*Knowledge acquisition*	KA1, the university recruits and hires quality professionals or teaching staff to increase the grey matter at the university.	(Ngoc-Tan & Gregar, 2019)
		KA2, the university is willing to purchase or hire intellectual products that serve the university's growth.	
		KA3, the university annually spends a certain amount of money purchasing learning and research materials.	
		KA4, the university has a mechanism for creating new knowledge from existing knowledge.	
		KA5 My university enables cross-functional training.	
	Knowledge Application	KAP1 My university has different methods for academics to develop their knowledge further and apply them to new situations.	(Ramachandran et al., 2009)
		KAP2 My university applies knowledge to critical competitive needs and quickly links sources of knowledge in problem-solving.	
		KAP3 My university has methods to research and critically evaluate knowledge to generate new patterns and knowledge for future use.	
	Knowledge protection	KP1 My university has processes to protect knowledge from inappropriate use	(Gold et al., 2001)
		KP2 My university has processes to protect knowledge from theft	
		KP3 My university has incentives that encourage the protection of knowledge.	
		KP4 My university has technology that restricts access to some sources of knowledge.	
		KP5 My university has extensive policies and procedures for protecting trade secrets.	
		KP6 My university values and protects knowledge embedded in individuals.	
		KP7 My university communicates the importance of protecting knowledge.	
	Knowledge sharing	KS1 My university has effective collaboration and information sharing between professionals, academic staff, and other universities.	(Mohammed et al., 2019)
		KS2 My university promotes an information-sharing culture.	
		KS3 My university has effective collaboration and information sharing with non-university researchers (e.g., organizations and individuals externally)	
	OL1 The university's management frequently involves its staff in essential decision-making processes.		
	OL2 Employee learning is considered more of an expense than an investment.		
	OL3 Employee learning capability is considered a critical factor in this university.		
	OL4 In this university, innovative ideas that work are rewarded.		
	OL5 All staff have generalized knowledge regarding this university's objectives.		

Organizational Learning	OL6 All parts of this university (colleges, departments, work teams, and individuals) know how they contribute to achieving the overall objectives.	(Jerez-Gómez et al., 2005)
	OL7 All parts of this university are interconnected, working in a coordinated fashion.	
	OL8 This university promotes experimentation and innovation to improve the work processes.	
	OL9 This university follows up on what other universities are doing, adopting those practices and techniques it believes to be valuable and exciting.	
	OL10 Experiences and ideas provided by external sources (advisors, customers, and training firms) are helpful for this university's learning.	
	OL11 Part of this university's culture is that employees can express their opinions and make suggestions regarding the procedures and methods in place for carrying out tasks.	
	OL12 Errors and failures are always discussed and analyzed in this university on all levels.	
	OL13 Employees can discuss new ideas, programs, and activities that might be useful to the university.	
	OL14 Teamwork is not the usual way to work.	
	OL15 The university has manuals, databases, and files that allow what has been learned in past situations to remain valid, although the employees are no longer the same.	
	OL16 The university's management looks favorably at implementing changes in any area to adapt to and keep ahead of new environmental situations.	

3.11. Data Processing and Analysis

Before data interpretation, it is crucial to decide how to analyze the collected data to prevent collecting data erroneously and getting results that are not valid (Blumberg et al., 2014; Neuman, 2013). Data coding will be done first to put numbers on research scales in a manner that could facilitate measuring. A Google form was linked to an Excel spreadsheet so that the responses would automatically be entered. The author has verified that the data was entered accurately.

The sample respondents were profiled, and the characteristics of the individuals who replied differently were established using the basic summary of statistics, including percentages, means, and standard deviations. Since it was expected that there was an indirect effect in the relationship between the variables, this study employed bootstrapping and PLS-SEM to assess the correlation's significance among the variables. The study passed the evaluation measurement model and structural model as it is recommended for this type of study (Hair et al., 2021).

3.12. Model Specification

Since there is an indirect relationship between the variables, we employed PLS-SEM to illustrate the direct, indirect, and total effects of exogenous and mediating variables on the endogenous variable (Hair et al., 2021).

Considering the conceptual framework, we have tested two statistical equations.

1. $Z_i = \alpha_0 + \alpha_{xz} x_i + u_{zi}$

$$rewriting\ again:$$

$$Z_i = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4 + u_{zi}$$

2. $Y_i = \beta_0 + \beta_{zy} Z_i + \beta_{xy} X_i + u_{yi}$

$$rewriting$$

$$Y_i = \beta_0 + (\beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + \beta_4 Z_4) + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + u_{yi}$$

$$Where,$$

α_0 and β_0 are constants

$z_i = organizational\ learning,$

$x_i = knowledge\ management\ processes,$

$Y_i = organizational\ performance$

$a_{xz} = coefficents\ of\ knowledge\ management\ processes$

$\beta_{zy} = coefficients\ of\ organizational\ learning$

$u_{zi} and\ u_{yi}\ are\ error\ terms$

3.13. Reliability and Validity

According to Sekaran and Bougie (2016), reliability is the degree of error-free measurements that produce consistent findings. According to Peeters and Harpe (2020), it has to do with scale item homogeneity, which refers to how test items measure the same construct collectively. Validity refers to how accurately a concept is evaluated and if its precise conceptual and operational definitions represent the fundamental idea that needs to be assessed (Hair et al., 2021). As it is highly recommended by Hair et al. (2021), composite reliability is suitable for PLS-SEM. This is

because Cronbach's alpha is conscious of the scale's quality and is inclined to downplay the importance of internal consistency. Therefore, this study's reliability was tested using Cronbach alpha and composite reliability tests. Additionally, discriminant and convergent validities were tested to see the independence of variables or constructs from one another. The reliability and validity were tested for both the pilot and main study.

Chapter Four: Data Analysis and Interpretation

4.1.Introduction

The study's findings are given and discussed in this section, following which the research questions and hypotheses were suitably addressed. As covered in chapter three, it is a quantitative investigation. Consequently, a questionnaire was utilized to get data from the respondents about the knowledge management processes, organizational learning, and organizational performance. After collecting the data, Structural equation modeling Smart PLS version 4.1.0.6 has been employed to examine the data and the developed model's constructions.

A thorough demographic analysis, outlier identification, data inspection, and cleaning were all conducted. The structural model's hypotheses and path coefficients within the designated model were then examined. By evaluating the model, we want to gain insight into the causal relationship between organizational performance and knowledge management processes and the role that organizational learning plays in this relationship.

4.2.Data examination

Although data screening and examination are often seen as routine and unimportant procedures, they represent a crucial first step in data analysis and comprehension, especially when anticipating SEM (Hair et al., 2021). Researchers typically look for missing data and outliers and test normality assumptions during the data screening (Tabachnick et al., 2018). This research data was collected online using Google Forms, and all the questions were designed as necessary. Consequently, there are no missing values in the dataset. An analysis by the researcher of this was limited to identifying outliers. Since PLS SEM uses prediction-oriented measures, it does not embrace the normality assumption (Chin, 1998). Descriptive statistics are also reported in section 4.5.

4.2.1. Detection of Outliers

An outlier is a data point in a dataset that significantly deviates from the other observations. They negatively impact research by introducing bias or statistical analysis errors, leading to misleading conclusions (Zikmund, 2002). According to Kline (2023), a univariate outlier can exist when a single variable has an excessive or bivariate or multivariate value, meaning these values exist in

certain situations with two or more variables. Using outside tools is one technique for locating outliers. The researcher used SPSS to identify outliers and found no outliers in the data set.

4.3.Response Rate

An email including the link to the questionnaire was sent to 354 respondents to accomplish the study objectives and obtain pertinent responses that answered the research questions. Out of which 328 (92.6%) questionnaires were returned. Three questionnaires were removed from the data set because their standard deviation is zero, which shows the respondents ignored the questions. Therefore, the analysis of the data is based on the 325 respondents.

Table 6. Response rate

Distributed questionnaire		Returned and useful	
Frequency	Percentage	Frequency	Percentage
354	100	325	91.8

Source: Survey data (2024)

4.4.Demographic Information

Table 7: Demographic characteristics

Characteristic	**Category**	**Frequency**	**Percentage**
Gender	Male	232	71.4
	Female	93	28.6
Age Group	26-35	178	54.8
	36-45	82	25.2
	46-55	48	14.8
	>55	17	5.2
Education level	Bachelor	36	11
	Masters	165	50.8
	PhD	124	38.2
Service years (work experience)	0-10	174	53.6
	11-20	97	29.8
	21-30	39	12
	>30	15	4.6

Table 7 shows 93 females (28.6%) and 232 males (71.4%) in the study sample. There were more males than females. In addition, 54.8% of the participants were in the 26-35 age range, followed by 25.2% in the 36-45 age range. One hundred sixty-five respondents (50.8%) held a master's

degree, whereas 124 (38.2%) held a PhD. 53.6% of the participants had worked for one to ten years. The following part contains the response's descriptive analysis.

4.5.Descriptive statistics of the study variables

The data has been altered to facilitate comprehension and offer a more perceptive analysis of the subject matter (Zikmund, 2002; Neuman, 2013). Descriptive statistics encompass the research variables' standard deviations, means, and frequencies, emphasizing the sample's key characteristics.

Notably, each non-demographic question in the questionnaire survey is rated on a 7-point Likert scale, where 7 indicates strong agreement, and 1 indicates strong disagreement with each item in the study's latent constructs. See Table 8 for the items' mean values and standard deviations. The overall agreement among respondents on the statements used to measure the survey's variables is evident from the average values across all indicators.

Table 8: Means and standard deviations of the items

CONSTRUCTS	ITEMS	N	MEAN	STD. DEVIATION
Knowledge Acquisition	KA1	325	3.96	1.850
	KA2	325	4.20	1.75
	KA3	325	4.61	1.63
	KA4	325	4.72	1.68
	KA5	325	4.63	1.73
Knowledge Application	KAP1	325	4.08	1.81
	KAP2	325	4.38	1.65
	KAP3	325	4.63	1.67
Knowledge protection	KP1	325	3.7	1.91
	KP2	325	4.21	1.72
	KP3	325	4.36	1.86
	KP4	325	4.44	1.8
	KP5	325	4.16	1.84
	KP6	325	4.21	1.89
	KP7	325	4.13	1.82
Knowledge Sharing	KS1	325	3.43	1.94
	KS2	325	4.29	1.82
	KS3	325	4.27	1.71
Organizational Learning	OL1	325	3.41	1.96
	OL2	325	4.15	1.75
	OL3	325	4.58	1.62

	OL4	325	4.55	1.78
	OL5	325	4.49	1.79
	OL6	325	4.32	1.83
	OL7	325	421	1.81
	OL8	325	4.18	1.77
	OL9	325	4.26	1.79
	OL10	325	4.34	1.68
	OL11	325	4.26	1.77
	OL12	325	4.14	1.83
	OL13	325	4.38	1.73
	OL14	325	4.37	1.8
	OL15	325	4.28	1.8
	OL16	325	4.18	1.84
Organizational Performance	OP1	325	3.37	1.97
	OP2	325	3.87	1.74
	OP3	325	3.43	1.67
	OP4	325	3.34	1.92
	OP5	325	4.19	1.72
	OP6	325	4.34	1.76
	OP7	325	3.9	1.9
	OP8	325	4.37	1.68
	OP9	325	4.16	1.76
	OP10	325	4.47	1.68
	OP11	325	4.69	1.68
	OP12	325	4.67	1.66

4.6.Evaluation of the measurement model

PLS-SEM often examines how one or more exogenous and endogenous variables are related (Hair et al., 2021). Generally, it gauges how well the hypothetical constructs match the data obtained (Wong, 2013). In particular, the measurement model embraces relationships between the latent variables (LVs) and their observable indicators that are predictive yet unidirectional. When testing intricate interactions with multiple dimensions, smart PLS offers some advantages.

Researchers use PLS-SEM because they think it can more accurately assess the model's prediction power and aid in determining the research model's quality (Hair et al., 2021). Usually, the measurement models evaluate all of the links between the items concurrently (Hair et al., 2021). According to Chin (1998), because PLS-SEM is more adept at handling both linear and non-linear connections, it does not require assumptions of normality. According to Hair et al. (2021), it is

focused on addressing the problems with reflective and formative components and the connections between the study constructs.

Researchers need to differentiate between formative and reflective constructs at the outset when assessing measurement models (Roy and Tarafdar, 2012; Finn and Wang, 2014). In reflective constructs, the latent construct is assumed to cause its indicator items so that the items are reflective of the fundamental latent construct. This is the reason why the relationship is visualized as arrows pointing from the latent variable to the indicators (Finn and Wang, 2014). Conversely, when the latent construct is caused by its indicators rather than being reflections of it, the model is regarded as formative (Hair et al., 2021). Therefore, a change in the indicator leads to a change in the latent construct.

To determine whether or not these measures have sufficient internal consistency, Hair et al. (2021) state that a model of reflective measurement is assessed based on indicator reliability, internal consistency reliability, and convergent and discriminant validity; in contrast, a formative measurement model is evaluated based on convergent validity, collinearity among indicators, and relevance of the outer weights. It is, therefore, preferable to designate the study's constructs as formative or reflective before analyzing the measurement model. Table 9 clearly shows the measurement model's specifications, and it is clear that all of the constructs are measured reflectively based on prior literature.

Table 9: Specification of Constructs

Construct	**References**	**Reflective?**
Knowledge Acquisition	(Latif, Nazeer, et al., 2020; Al Rashdi et al., 2022; Ngoc-Tan & Gregar, 2019; Andrej et al.,2022; Sahibzada et al., 2020)	Yes
Knowledge Application	(Al Rashdi et al., 2022; Andrej et al.,2022; Latif, Afzal, et al., 2020)	Yes
Knowledge Protection	(Al Rashdi et al., 2022; Andrej et al.,2022)	Yes
Knowledge Sharing	(Latif, Afzal, et al., 2020; Al Rashdi et al., 2022; Sahibzada et al., 2020)	Yes
Organizational Learning	(Jerez-Gómez et al., 2005)	Yes
Organizational Performance	(Iqbal et al., 2019; Latif et al., 2020; Al Rashdi et al., 2022; Ngoc-Tan & Gregar, 2019; Sahibzada et al., 2020; Andrej et al.,2022)	Yes

4.6.1. Assessment of Reflective Model

Validity and reliability are frequently used to assess reflective constructs. Convergent validity, discriminant validity, indicator reliability, and internal consistency reliability are all considered in these models. As both have distinct characteristics from the conceptualization and operationalization perspectives, the criteria established for the reflective measurement model cannot be applied to formative measurement models (Hair et al., 2021).

4.6.1.1. Reliability Assessment: Internal Consistency Reliability

The evaluation of internal consistency is the initial requirement of the reflective measurement model assessment. This is typically done using Cronbach's alpha, which estimates reliability determined by the correlations between the manifest variables (Hair et al., 2021). The number of measurement elements in the scale significantly impacts its results. Less itemized scales usually have lower Cronbach's alpha values (Briggs and Cheek, 1986). PLS-SEM prioritizes the observed variables based on individual reliability (Hair et al., 2021). Researchers have regarded Cronbach's alpha as a conservative indicator of internal consistency since the development of various SEM techniques, and it assumes all indicators are equally reliable (Monecke and Leisch, 2013; Hair et al., 2021).

Due to the drawbacks of Cronbach alpha, recent researchers are applying another measure of internal consistency that is appropriate to use, called composite reliability (CR), which accounts for the various outer loadings of the indicators (Henseler et al., 2014). Essentially, larger values indicate an increased level of composite reliability. Enough CR values for exploratory research fall between 0.60 and 0.70 and between 0.70 and 0.90 for later stages (Hair et al., 2021). They also warned that CR values greater than 0.90 and significantly greater than 0.95 are not ideal since they result from redundant items (Hair et al., 2021). As shown in the table below (table 10), the composite reliability of all the constructs is more significant than 0.7 and less than 0.95, which suggests that none of the study's constructs lack internal consistency.

Table 10: Reliability and Convergent Validity

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
KA	0.83	0.835	0.881	0.599
KAP	0.764	0.768	0.864	0.68
KP	0.852	0.853	0.888	0.531

KS	0.813	0.815	0.889	0.728
OL	0.813	0.935	0.942	0.506
OP	0.912	0.915	0.925	0.508

4.6.1.2. Reliability Assessment- Indicator Reliability

Together with internal consistency, the researcher has evaluated the reliability of individual items. This has been done to determine whether or not each study item loads onto its respective theoretical specific latent construct. High outer loadings on a construct signify a high degree of similarity among the correlated indicators, which the construct captures.

Hair et al. (2021) state that outer loadings must be at least 0.708. However, loading greater than 0.50 is acceptable if fewer than ten indicators are on a given construct (Hair et al., 2021). Additionally, they supported the idea that items with loadings ranging from 0.40 to 0.70 should be erased only if the indicators' removal leads to the construct's composite reliability, or AVE, exceeding a predetermined threshold.

As shown in the table below (table 11), some indicators have loadings below 0.70; notably, these items' loadings were near 0.70 and were inside the permissible boundary (Hair et al., 2021). The findings show that these measurement items had satisfactory individual item reliability and satisfied the established requirements. The items were loaded onto the corresponding latent variables and were found to have the required internal consistency.

Table 11: Outer loadings

	KA	KAP	KP	KS	OL	OP
KA1	0.687					
KA2	0.828					
KA3	0.801					
KA4	0.818					
KA5	0.725					
KAP1		0.801				
KAP2		0.875				
KAP3		0.796				
KP1			0.705			
KP2			0.759			
KP3			0.78			
KP4			0.704			
KP5			0.757			
KP6			0.708			
KP7			0.68			
KS1				0.843		
KS2				0.875		

KS3				0.842		
OL1					0.711	
OL10					0.7	
OL11					0.69	
OL12					0.728	
OL13					0.711	
OL14					0.738	
OL15					0.714	
OL16					0.711	
OL2					0.676	
OL3					0.723	
OL4					0.759	
OL5					0.709	
OL6					0.675	
OL7					0.735	
OL8					0.709	
OL9					0.69	
OP1						0.62
OP10						0.719
OP11						0.692
OP12						0.674
OP2						0.718
OP3						0.716
OP4						0.751
OP5						0.741
OP6						0.792
OP7						0.704
OP8						0.722
OP9						0.693

4.6.1.3. Validity Assessment: Convergent Validity

According to Saunders et al. (2023), a construct's validity is commonly defined as its ability to assess its intended purpose and complete agreement with reality. Convergent validity is the first category of validity, which describes the extent to which the indicators of a construct converge or load onto their theoretically supported constructs (Petter et al., 2007). Hair et al. (2021) claim that the reflective constructs' items are handled differently to measure the construct. As a result, a given construct's indicators need to converge and share a significant proportion of variance. Researchers typically consider average variance extracted (AVE) when determining convergent validity. Research indicates that a dependable validity score of at least 0.50 is deemed satisfactory (Chin, 2009; Hair et al., 2021).

The author has assessed AVE for the indicators loading into their specified constructs in light of the earlier arguments. Table 10 shows that the AVE is more than 0.50 for each latent construct in

the research. This suggests that every study construct complies with the convergent validity criteria (Hair et al., 2021).

4.6.1.4. Validity Assessment: Discriminant Validity

The degree to which one construct, according to empirical standards, differs from the others is known as discriminant validity (Hair et al., 2021). This suggests that the variables should not have a strong relationship (Chin, 2009). It needs to surpass the correlation found between the latent components, and it is often measured using the square root of the AVE (Fornell and Larcker, 1981). According to Fornell and Larcker, discriminant validity is confirmed if the AVE of any construct is more significant than its shared variance or the proportion of variance that a variable may account for in another variable when combined with any other latent construct.

The Hetrotrait-Monotrait ratio (HTMT) is recommended in place of the Fornell-Larcker approach, as some researchers question its effectiveness in identifying discriminant validity. Henseler et al. (2014) suggest the maximum threshold for assessing discriminant validity to be 0.9. As shown in Table 12, this study's discriminant validity has obtained satisfactory results for all of the latent constructs and discriminant validity is supported.

Table 12: Discriminant Validity (HTMT)

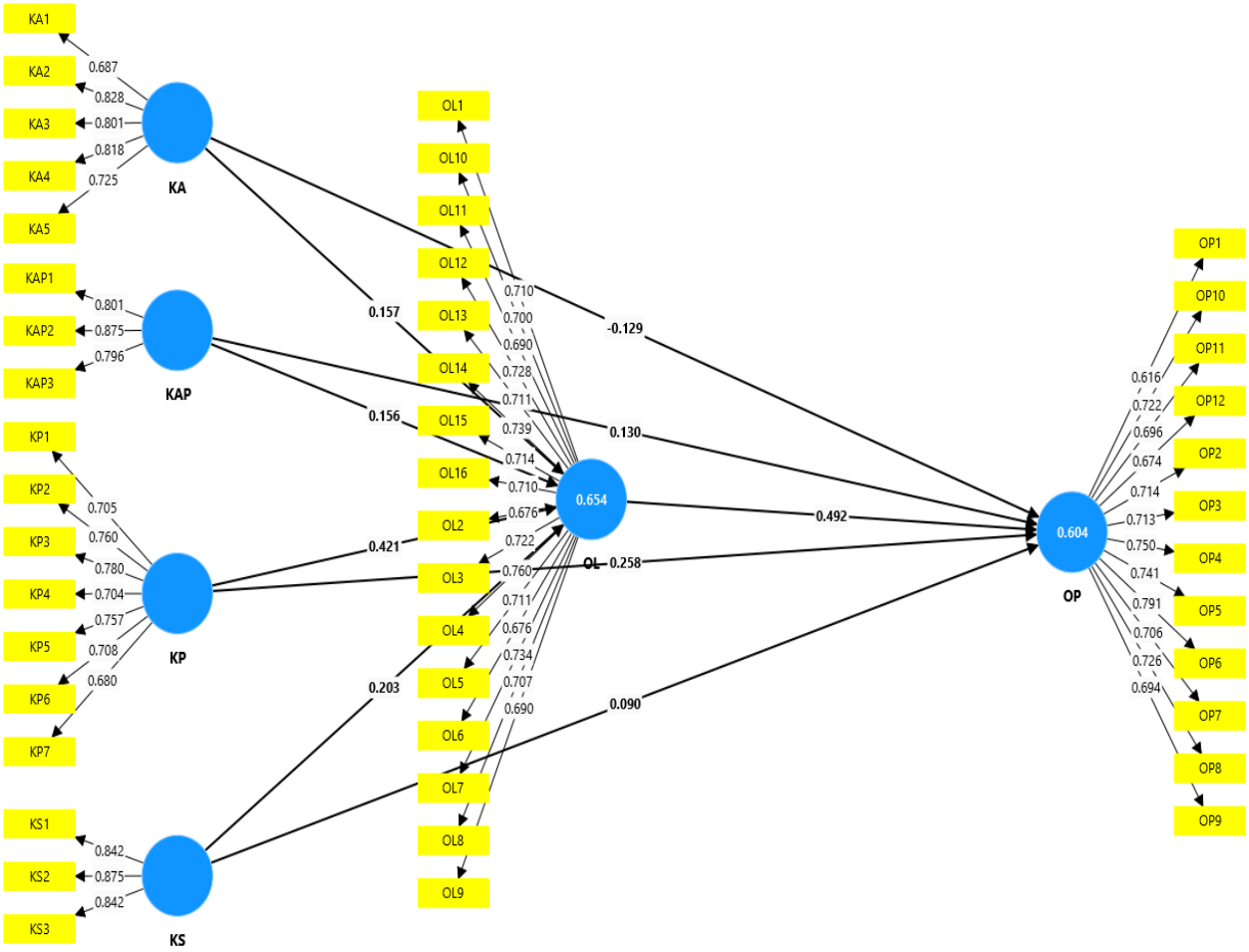
	KA	KAP	KP	KS	OL	OP
KA						
KAP	0.888					
KP	0.741	0.759				
KS	0.736	0.767	0.776			
OL	0.74	0.765	0.836	0.762		
OP	0.566	0.677	0.766	0.677	0.798	

4.7.Evaluation of The Structural Model

After establishing the validity and reliability of the study's constructs, the next stage is to examine the structural model (Chin, 2009; Wong, 2013). The current study's structural model comprises KMPs (knowledge acquisition, application, protection, and sharing) as exogenous variables, organizational learning as a mediator variable, and organizational performance as an endogenous variable (See Figure 8). The structural model evaluation is primarily used to test the

proposed hypotheses and assess the research model's explanatory power. It also comprises the model's prediction ability and the correlations between the exogenous and endogenous variables (Hair et al., 2021).

Figure 8: Working model of the research



Hair et al. (2021) state that the structural model's explanatory power (R^2), effect sizes (f^2), predictive relevance (Q^2), collinearity concerns, significance and relevance of the structural model relationships, and other factors are all taken into consideration while evaluating the model. Since PLS-SEM is on the notion of distribution-free variance, it does not support statistical testing of the model's general goodness of fit (Tenenhaus et al., 2005). As a result, it uses non-parametric statistics to evaluate the general model fit (Hair et al., 2021). Generally, PLS-SEM utilizes R^2 to assess the quality of the complete structural model and AVE to determine the measurement quality of the entire model. Researchers evaluate the degree to which the predictor variables influence the predicted variable using effect sizes (f^2).

Table 13: Criteria for the evaluation of the structural model

Criterion	Description	Acceptable fit
Explanatory power (R^2)	The variance in dependent variables explained by the independent variables can be understood by the coefficient of determination (Tabachnick and Fidell, 2018; Hair et al., 2021).	R^2 values of 0.67, 0.33, and 0.19 are classified as large, moderate, and weak, respectively (Chin, 2009).
Predictive relevance (Q^2)	It assesses the model's capacity to forecast R^2 through sample reuse (Hair et al., 2021).	Q^2 values of 0.02 are weak, 0.15 is medium, and 0.35 is high predictive relevance (Cohen, 2013; Chin, 1998).
Effect sizes (f^2)	represents the proportion of the prediction improvement brought about by the model fitting (Tabachnick and Fidell, 2018)	The same as predictive relevance.

4.7.1. Assessment of Collinearity Issues Between Constructs

A high correlation between items or constructs is called collinearity (Hair et al., 2021). High correlations are not expected between constructs (Henseler et al., 2014) because they impact the study model estimates (Mackenzie et al., 2005). We employ the variance inflation factor (VIF) since the structural model's collinearity assessment is the same as the formative models (Hair et al., 2021). They go on to specify that the VIF must be less than 5. The latent construct's VIF values are displayed in Table 14, and every value is below the critical threshold (5). This means that the concerns of multi-collinearity do not affect constructions. Therefore, there is no need to deal with this issue.

Table 14: Collinearity Statistics (VIF)-Inner model

	VIF
KA -> OL	2.36
KA -> OP	2.43
KAP -> OL	2.31
KAP -> OP	2.38
KP -> OL	2.13
KP -> OP	2.64
KS -> OL	2.05
KS -> OP	2.17
OL -> OP	2.89

4.7.2. Assessment of the significance and relevance of the structural relationships

PLS-SEM is used to generate estimates for the relationships in the structural model, such as path coefficients that show the correlations between the predicted study items (Kaplan, 2008; Wong, 2013). Standardized path coefficients vary from -1 to +1. Path coefficients of +1 indicate a significant positive correlation, whereas, for -1 values, the opposite is true (Tenenhaus et al., 2005; Hair et al., 2021). Shallow values of path coefficients close to 0 are typically non-significant. Researchers usually employ the bootstrapping resampling method to generate more consistent p values and stable resample path coefficients, and every significant path coefficient depends on the standard error (Hair et al., 2021).

The direct and indirect impacts can be employed to assess the magnitude of path coefficients. Total effect is the total of direct and indirect effects. According to Hair et al. (2021), this strategy is helpful for studies examining the effects of many exogenous variables on the endogenous variable through the mediator. To comprehend the signs (direction), magnitude, and predicted path coefficients connecting the constructs' statistical significance, hypothesis testing has been done. Higher path coefficients indicate stronger relationships between the explanatory and explained variables.

4.7.2.1. Direct Hypothesis Test Results

The relevance of the hypothesized relationships was established by measuring the significance of the p-values for each path with a threshold of $p<0.05$, and the inferences have been drawn based on this value. The results of hypothesis testing are shown in Table 15.

The table shows that the first hypothesis (H1) showed a positive significant relationship between knowledge acquisition and organizational learning. The outcome implies that organizations improve their capacity for organizational learning as they acquire knowledge. This aligns with earlier studies that suggest knowledge acquisition is a critical factor in organizational learning (Cheng et al., 2024; Kordab et al., 2020; Inkpen, 1998). Organizations can obtain information from outside sources through knowledge acquisition, which can be analyzed, assimilated, and utilized to enhance learning procedures (Nonaka, 1994). This hypothesis's outcome is consistent with the Organizational Learning Theory (OLT) and resource-based view. Obtaining fresh perspectives

and understandings via knowledge acquisition can assist companies in finding more innovative and flexible solutions to problems. Acquiring knowledge broadens an organization's range of resources, enhances its learning capacity, and ultimately confers a competitive advantage. Therefore, knowledge acquisition enhances organizational learning.

The second hypothesis (H2) tests the relationship between Knowledge Acquisition (KA) and Organizational Performance (OP). Contrary to the assertion and most surprisingly, the study found a significant negative relationship between KA and OP (β= -0.129, t=1.878, p= 0.030). Although knowledge acquisition is expected to impact organizational performance positively, the negative coefficient suggests that increased knowledge acquisition might reduce organizational performance. Several factors can cause this counterintuitive finding. The first factor is information overload. Eppler and Mengis (2004) suggest that excessive knowledge acquisition can overwhelm an organization, leading to confusion, slower decision-making, and reduced effectiveness. The other factor is the resources required for knowledge acquisition. Acquiring knowledge consumes time, money, and human resources. Short-term performance can be negatively affected if these resources are diverted from core operational activities to focus on knowledge acquisition (Zahra and George, 2002). Newly acquired knowledge can challenge existing beliefs and practices, leading to cognitive dissonance, resistance to change, and disruptions and negatively impacting performance. If the acquired knowledge does not align with the organization's needs and goals, the result can be inefficiency and reduced performance. We can take a real-world situation that happened in the 2000s due to paralysis by analysis. Due to its overly analytical and hesitant approach, BlackBerry could not quickly adjust to the advent of touchscreen smartphones, which caused severe delays in both innovation and market adaptation. BlackBerry lost its competitive edge because, by the time it took action, rivals like Apple and Android had already taken over the market.

The third hypothesis in the table reveals that knowledge application positively and significantly affects organizational learning. The result of this research is in line with the conclusions of Cheng et al. (2024), Obeso et al. (2020), and Lin and Chiang (2022). Previous research often highlights the importance of effectively applying knowledge within an organization as a critical factor for fostering organizational learning. For instance, when organizations systematically apply knowledge, they are better positioned to learn from their experiences (Workineh & Tufa, 2020),

adapt to changes (Demir et al., 2021), and improve their overall processes (Argote & Miron-Spektor, 2011). According to Gupta and Chopra (2018), people who directly apply their knowledge to organizational processes cultivate a learning culture in which they constantly improve their knowledge and abilities. If organizations want to enhance their learning capabilities, they could develop better systems for capturing and sharing knowledge, train employees to apply knowledge effectively, or promote ongoing education and the implementation of novel discoveries.

The fourth hypothesis in the table showed a significant positive relationship between knowledge application and organizational performance. The result is similar to the findings of existing literature (e.g., Bayari et al., 2021; Andrej et al., 2022), emphasizing the importance of applying knowledge effectively to drive organizational success. When effectively used, knowledge is a critical resource that can lead to a sustained competitive advantage. Organizations that effectively apply knowledge can better respond to market changes and improve efficiency, leading to superior performance (Darroch, 2005). The resource-based view also confirmed this by saying that the primary source of competitive advantage is the creation and application of knowledge (Grant, 1996).

The fifth hypothesis in the table tests the relationship between knowledge protection and organizational learning. The relationship is statistically significant and is positive. This relationship is consistent with emerging research emphasizing the importance of protecting knowledge assets to ensure continuous learning. Knowledge Protection ensures that valuable knowledge is retained within the organization, which is crucial for ongoing learning processes. This aligns with the idea that organizations with solid knowledge protection mechanisms are better equipped to foster continuous learning (Dyer and Hatch, 2006). Knowledge protection mechanisms can enhance organizational learning by creating a secure environment where knowledge is preserved and effectively utilized (Andreeva and Kianto, 2012). When organizations protect their knowledge, they maintain the learning loops essential for adapting to changes and innovating (Teece, 2007). Therefore, knowledge protection encourages organizational learning.

The sixth hypothesis examines the relationship between knowledge protection and organizational performance. As shown in the table, the relationship is positively significant, and it is in line with the findings of Hannah and Robertson (2015), Michailova and Minbaeva (2012), and Carlucci et

al. (2004). These researchers support the idea that safeguarding critical knowledge assets is crucial for maintaining a competitive edge. This suggests that organizations that effectively protect their knowledge assets experience better performance outcomes. Marr et al. (2004) argue that knowledge protection mechanisms, such as intellectual property rights, non-disclosure agreements, and robust security protocols, are essential for preserving the value of organizational knowledge, thus contributing to long-term performance.

Knowledge sharing significantly impacts organizational learning (see Table 15). The body of research clearly shows that knowledge sharing and organizational learning are positively related. The outcome of this research showed the same result as previous research (e.g., Wang and Noe, 2010; Foss et al., 2010; Islam et al., 2015; Ipe, 2003). Effective knowledge sharing facilitates the dissemination of best practices, enhances the collective understanding of processes, and accelerates problem-solving, all of which contribute to improved organizational learning. The social capital theory underscores the importance of networks and relationships within an organization for knowledge sharing. According to the theory, strong employee relationships and trust boost knowledge sharing, supporting organizational learning. KS promotes innovation and ongoing progress by creating a learning atmosphere.

The eighth hypothesis shows how KS and OP are related. The findings show that the relationship is not supported at 5% significance level but can be supported at 10%. At 5%, the results imply that no relationship exists between knowledge sharing and the performance of an organization. The results of Djangone and El-Gayar's (2021) study, which emphasizes the influence of knowledge acquisition, sharing, and utilization on the organizational performance of higher education institutions, are supported by this study. This result may be due to the following potential reasons. The insignificant direct effect of knowledge sharing (KS) on organizational performance (OP) suggests that KS may impact OP indirectly through organizational learning (OL). In the model, KS significantly influences OL, which strongly affects OP. This implies that organizations must internalize and apply shared knowledge via learning processes before it leads to improvements in performance. Improvements in organizational performance may take time to materialize after expertise is shared, particularly in complex organizations. Short-term measurements may not capture long-term benefits, making it harder to detect a statistically significant relationship in the current study period. If the shared knowledge is not actionable or

aligned with the organization's strategic needs, it may not directly translate into performance gains. However, according to earlier research, KS may foster advantageous organizational effects such as increased problem-solving skills, managerial efficacy, and creativity (Chiu and Chen, 2016; Muqadas et al., 2017).

In conclusion, a positive and substantial relationship exists between organizational learning and organizational performance. Research has demonstrated that there is a favorable correlation between organizational learning and performance, as demonstrated by Kuo (2011), Jimenez-Jimenez and Sanz-Valle (2011), García-morales et al. (2007), and Real et al. (2012). Organizational learning improves an organization's capacity for innovation, adaptation, and optimization, improving financial and operational results. According to the Dynamic Capability Theory (DCT), companies with significant learning capabilities can better keep their advantages over competitors and adjust to changing surroundings, which leads to higher performance. According to Jiménez-Jiménez and Sanz-Valle (2011), organizational learning is essential for boosting performance through innovation and better decision-making procedures. Strong learning capabilities put a company in a better position to improve performance, adjust to changing market conditions, and increase operational efficiency.

Table 15: Hypothesis testing results (Direct effects)

	Path coefficient	**Standard deviation**	**T statistics**	**P values**
H1. KA -> OL	0.157	0.063	2.507	0.006
H2. KA -> OP	-0.129	0.069	1.878	0.030
H3. KAP -> OL	0.156	0.051	3.073	0.001
H4. KAP -> OP	0.130	0.060	2.159	0.015
H5. KP -> OL	0.421	0.075	5.632	0.000
H6. KP -> OP	0.258	0.089	2.882	0.002
H7. KS -> OL	0.203	0.057	3.552	0.000
H8. KS -> OP	0.090	0.059	1.517	0.065
H9. OL -> OP	0.492	0.079	6.256	0.000

4.7.2.2. Mediation Analysis Results (Indirect Effects)

Mediation occurs when a third variable intervenes between two related variables. The purpose of the mediation analysis in this research is to assess the role that organizational learning plays in the links between performance and knowledge acquisition, performance and knowledge application,

performance and knowledge protection, and performance and knowledge sharing. Table 16 presents the results.

The table revealed a negative significant direct effect (*β= -0.129, p= 0.003)* of knowledge acquisition on organizational performance and a positive significant specific indirect effect (*β=0.007, p=0.009)* of knowledge acquisition on organizational performance through organizational learning. Partial mediation occurs when both direct and indirect effects are statistically significant. Suppose the signs of the direct and indirect effects are different. In that case, the type of partial mediation is called competitive, and if it is the same, it is called complementary partial mediation (Hair et al., 2021, p. 235). As we can see in the table, both a direct effect and an indirect effect are significant; therefore, organizational learning plays a competitive partial mediation role. This shows that while the direct effect is negative, the overall influence of KA on OP through OL is partially positive. This partial mediation suggests that OL is a crucial conduit for turning KA into performance gains. According to recent studies, improving performance requires more than just acquiring knowledge; it also requires a good learning culture. The study's conclusions supported Martinez-Conesa et al. (2017), Jansen et al. (2005), Zahra and George (2002), and Lopez-Nicolás and Meroño-Cerdán (2011). The SECI model developed by Nonaka (1994) emphasizes that for knowledge to be valuable, it must go through a cycle of socialization, externalization, combination, and internalization. Organizations that deliberately include knowledge acquisition in their learning processes typically outperform those that do not (Chen and Huang 2009). They highlight that continuous learning and adaptation are essential for transforming acquired knowledge into actionable insights that drive performance.

The second row in Table 16 shows a significant positive direct and specific indirect effect of knowledge application on organizational performance through organizational learning. Since both effects are positive and significant, organizational learning plays a complementary partial mediation role. This outcome is in line with the results of Jerez-Gómez et al. (2005), López et al. (2005), Jiménez-Jiménez and Sanz-Valle (2011). The partial mediation by organizational learning indicates that while applying knowledge benefits performance, its impact is enhanced when coupled with organizational learning processes. Lee et al. (2000) found that knowledge application is often more effective when mediated by organizational learning, as it ensures the knowledge is adapted and utilized to enhance performance. This relationship underscores the need to acquire knowledge and apply it proficiently. The mediation by organizational learning suggests that

organizations that actively learn and adapt their processes based on applied knowledge tend to achieve superior performance. This aligns with the dynamic capabilities view, asserting that an organization's capacity to combine, develop, and reorganize internal and external capabilities is vital for sustaining performance in dynamic environments.

The third row in the table revealed a significant positive direct and specific indirect effect of knowledge protection on organizational performance through organizational learning. Since both effects are positive and significant, organizational learning plays a complementary partial mediation role. This relationship was found in the works of Heisig et al. (2016) and Z. Wang and Wang (2012). This suggests that knowledge protection enhances OL, which fully translates into better performance outcomes. Knowledge protection prevents leakage, theft, and misuse of an organization's trade secrets, intellectual property, and vital information. This is critical in industries where innovation and specialized expertise are essential for a competitive edge. The literature suggests that knowledge protection secures the organization's assets and fosters a safe environment for organizational learning. Organizations can enhance their performance by sharing and expanding their knowledge without fear of loss when knowledge is safeguarded. According to recent studies, businesses that have substantial knowledge protection policies are better positioned to maintain their success over the long run, particularly in information-intensive sectors like technology and pharmaceuticals.

Finally, the table showed a significant specific indirect effect of KS on OP through OL (β= 0.100, t=2.975, p=0.001) and an insignificant direct impact of knowledge sharing on organizational performance ($p>0.05$ at 5% significance level). Organizational learning fully mediates the relationship since the direct effect is insignificant and the specific indirect effect is significant (Hair et al., 2021, p. 235). However, if we consider the 10% significance level, organizational learning will have to mediate this relationship partially. This suggests that KS needs efficient organizational learning procedures to have a favorable impact on performance. Previously, this relationship was confirmed by Z. Wang and Wang (2012), Liao et al. (2007), Yang (2010), and Donate and Guadamillas (2011). The non-significant direct effect of knowledge sharing on organizational performance indicates that sharing knowledge alone may not directly boost performance. However, the full mediation by organizational learning suggests that knowledge sharing significantly improves performance only when it leads to enhanced organizational learning. While sharing knowledge is essential, its impact on performance is realized only when it contributes to

organizational learning. This emphasizes how crucial it is to foster an environment that promotes knowledge sharing and efficiently integrates that knowledge into processes for learning and innovation. Sharing knowledge is a prerequisite for group learning and innovation, which are critical performance factors in the modern information economy. The full mediation effect implies that organizations must focus on sharing knowledge and how shared knowledge is internalized and used to foster continuous learning and improvement.

Table 16: Mediation Analysis Results

Direct effect		**Specific indirect effect**				
β	***P***	***Hypotheses***	***β***	***T***	***P***	***results***
-0.129	0.003	KA -> OL -> OP	0.007	2.387	0.009	Partial
0.130	0.015	KAP -> OL -> OP	0.007	2.764	0.003	Partial
0.258	0.002	KP -> OL -> OP	0.207	4.037	0.000	Partial
0.090	0.065	KS -> OL -> OP	0.100	2.975	0.001	Full

Full and partial mediation contributes significantly to developing organizational strategies, mainly in how organizations utilize knowledge management processes to improve performance. Organizational learning accounts for the relationship between knowledge sharing and performance in full mediation. In this situation, organizations should prioritize systems that facilitate learning. This might involve investing in internal training programs, creating knowledge repositories, and ensuring smooth communication across departments. Resources should be directed toward improving the mediating process as it is the critical performance driver. Finally, creating a culture of continuous learning becomes a key strategic focus.

In partial mediation, both the direct and indirect effects are significant. This indicates that the predictor influences performance, but the mediator enhances this effect. In this case, organizations need a balanced strategy. This dual focus can ensure that they capitalize on immediate gains while leveraging long-term learning benefits. Partial mediation allows for more flexibility. For instance, an organization may realize immediate improvements from knowledge acquisition or protection but needs to ensure that organizational learning supports long-term competitiveness. This understanding can lead to phased or dynamic strategies where ongoing learning improvements complement immediate gains.

4.7.3. Coefficient of determination (R^2)

As per Hair et al. (2021), the third stage of the structural model evaluation procedure involves assessing the model's explanatory power. The determination coefficient (R^2) quantifies the extent to which the independent variable explains the variance in the dependent variable (Chin, 2009). It reflects the aggregate influence of the exogenous latent variables on the endogenous variable. Its value essentially lies between 0 and 1, where greater values correspond to higher precision of the prediction (Hair et al., 2021). The quantity of measuring explanatory variables determines R^2 values, meaning that a higher number of these variables generally results in higher R^2 values and vice versa. The researcher also suggested that a moderate R^2 would be appropriate if a few variables explain the inner model's dependent variable. The R2 value must be significant when adequate exogenous factors are included.

Table 17: Explanatory power (R^2)

	R-square	**R-square adjusted**
OL	0.654	0.649
OP	0.604	0.598

The findings reveal that four predictor variables, knowledge acquisition, application, sharing, and protection, explain variances of 0.654 in organizational learning. The five explanatory factors explain 60.4% of the variation in organizational performance (note that organizational learning also has an explanatory effect on organizational performance). Models with R^2 values of 0.67, 0.33, and 0.19 are considered substantial, moderate, and weak, respectively (Chin, 1998). Cohen (2013) suggested that R^2 values of 0.26, 0.13, and 0.02 were significant, mild, and weak, respectively. Table 17's findings demonstrate that the R^2 value for each endogenous variable is greater than 0.60, indicating a significant explanatory power for the model (Cohen, 2013).

The change in the R^2 is estimated if a particular exogenous construct is removed from the model to more accurately quantify the explanatory value of each exogenous variable in the model. This is called effect size (f^2). The effect size of every exogenous variable indicates how much it affects the dependent variable. It illustrates the degree to which an explanatory variable influences the R^2 value of an explained variable. Effect size evaluates the strength or magnitude of the correlation between the latent variables. When an explanatory variable is removed from the PLS path model,

the variance in squared correlation values is measured to see whether the removed explanatory variable has a significant impact on the dependent variable's R^2 value. The impact of the predictor variable at the structural level is substantial if the effect size is 0.35, medium if f^2 is 0.15, and minimal if f^2 is 0.02, according to Cohen (2013). The following table (table 18) revealed that f^2 ranged from 0.009 (negligible) for KS on OP to 0.241 for KP on OL.

Table 18: Effect size(f^2) and predictive relevance (Q^2)

	f square		**Q square**	
	OL	**OP**	**OL**	**OP**
KA	0.03	0.017	0.637	0.5
KAP	0.03	0.018		
KP	0.241	0.063		
KS	0.058	0.009		
OL		0.212		
OP				

4.7.4. Predictive Relevance (Q^2)

A model's predictive relevance is determined by its predictive relevance score. It proves the endogenous construct's predictive relevance. The model is well-reconstructed and predictively meaningful when Q^2 values exceed zero (chin, 1998; Henseler et al., 2014). Predictive relevance values of 0.02, 0.15, and 0.35 are regarded as weak, moderate, and robust, respectively, according to Hair et al. (2021) and Cohen (2013). The predictive relevance of the constructs in Table 18 shows a significant predictive relevance of the variables. OL has a Q^2 value of 0.637, implying a high predictive relevance. Likewise, with a Q^2 value of 0.5, OP exhibits greater predictive relevance. This demonstrates the two predicted constructs' strong predictive relevance and a reasonable degree of model fit. Since no negative indices exist, the corresponding constructs are accurately estimated (Tenenhaus et al., 2005).

Chapter Five: Conclusion, Recommendation, and Future Research Direction

5.1. Conclusion

The study's objective was to understand the effect of knowledge management processes while taking organizational learning's mediating role into account in light of Ethiopian HEI by taking two prominent universities as a unit of analysis. According to the study, knowledge management processes in higher education include a multi-dimensional construct formed by four factors: knowledge acquisition, application, protection, and sharing.

Knowledge acquisition subsumes five indicators. The rise of knowledge acquisition in research marks a change in how complicated phenomena are understood, moving toward more systematic and data-driven methods. Knowledge application consists of three indicators. The emergence of knowledge application in research emphasizes the transition from merely acquiring knowledge to effectively using it in real-world contexts. Knowledge protection was measured using seven indicators. In research, knowledge protection prevents sensitive data, intellectual property, and important information from being misused or accessed without authorization. This is essential for preserving competitive advantage, upholding moral principles, and abiding by the law. In research, knowledge sharing refers to sharing data, perspectives, and skills across individuals or groups to promote innovation and teamwork. It facilitates the development of collective knowledge, expedites the resolution of issues, and prevents effort duplication.

The hypothesis testing outcomes reveal several key findings. Organizational learning serves as a partial mediating factor in the relationship between knowledge acquisition (KA), application (KAP), protection (KP), and organizational performance. Organizational learning (OL) has a full mediation effect, which means that organizational learning acts as a complete mediator between KS and organizational performance at a specified level of significance. But this result is not

sufficient to conclude that knowledge sharing and organizational performance has no relationship since the relationship is accepted at 10% significance level. Furthermore, organizational learning has a strong and positive impact on organizational performance. This implies that while knowledge management processes are crucial, their effectiveness in improving performance is significantly enhanced when organizational learning is present.

5.2. Recommendations

The researcher suggests the following recommendations for organizations based on the research findings. Encouraging more efficient ways to gather new knowledge, such as through training, industry partnerships, or leveraging data, could be beneficial. This helps organizations stay informed and adaptable in changing environments. Organizations might consider focusing on how to apply the knowledge they acquire better. Fostering a culture where employees feel empowered to use new insights in problem-solving and decision-making may lead to more innovative and effective practices. Paying attention to safeguarding critical organizational knowledge can help prevent knowledge loss. Organizations could explore strategies like enhancing data security or developing better knowledge retention practices to preserve valuable insights.

Creating an open and collaborative work environment where sharing knowledge is valued may help maximize the potential of knowledge management efforts. Incentivizing employees to share their expertise and ideas through formal platforms or informal discussions can enhance learning. Investing in tools and systems that promote continuous learning, such as internal training programs or knowledge repositories, could significantly improve performance. A learning-oriented culture allows organizations to adapt and evolve based on past experiences. It may be helpful to integrate knowledge management initiatives with broader organizational objectives. This ensures that knowledge-related efforts directly contribute to performance improvements, making it easier to track their effectiveness. Adopting technology, such as knowledge management platforms, can support efficient knowledge sharing, retrieval, and application. This may improve organizational agility and responsiveness to changes.

5.3. Future Research Directions

Future research could examine how knowledge management (KM) processes and organizational learning differ across various industries. Identifying industry-specific practices or challenges might provide insights into how organizations can tailor KM strategies to maximize performance in different sectors. As organizations increasingly adopt digital tools and technologies, future studies could focus on how digital transformation impacts knowledge management and organizational learning. Studies could examine how big data, AI, and machine learning affect knowledge acquisition, sharing, and application.

Future studies could discover the mediating role of organizational learning (OL) in the relationship between knowledge sharing (KS) and organizational performance (OP) more explicitly. Research could specifically look into how various forms of knowledge shared (such as explicit vs. tacit), the quality of knowledge shared, or contextual factors (like organizational culture or leadership) affect how well OL translates knowledge into improved performance.

Conducting long-term studies to monitor the impact of knowledge management processes on organizational performance could offer more profound insights. This could reveal how sustained knowledge management practices contribute to continuous learning and long-term success. Researchers could investigate how different organizational structures (e.g., hierarchical vs. Flat organizations) impact the effectiveness of knowledge management processes. Understanding how structure influences knowledge flow, learning, and innovation could guide the design of more effective knowledge-driven organizations.

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Appendices

Addis Ababa University

College of Business and Economics

Department of Management

MSc in Management program

Specialized in Quality Management and Organizational Excellence

Research Questionnaire

Dear Respondents

Greetings,

My name is Tekle Getachew, and I am a double degree student at Addis Ababa University and Hochschule Mainz University of Applied Sciences, Germany. In my master's thesis, I am researching the topic of Knowledge management and using the data from this survey exclusively for scientific purposes.

For the study's success, it is vital that you complete the survey in full and do not omit any of the questions. Please note that some of the questions may sound similar for methodological reasons. This survey will take 10-15 minutes to complete. All data will be collected anonymously, and your answer will be traced as strictly confidential.

If you have any questions about this survey, please feel free to contact me at sewnetgech21@gmail.com or tekle.getachew.desta@students.hs-mainz.de

Thank you in advance for your participation

Tekle Getachew

Part I: Demographic Information

1. Gender
    a. Male
    b. Female
2. Age
    a. 26-35 C. 46-55
    b. 36-45 D. Above 55
3. Education level
    a. Bachelor
    b. Master
    c. PhD
4. Service years
    a. 0-10 C. 21-30
    b. 11-20 D. 31 and above
5. If you have any position_____

Part II: Knowledge Management Processes

Please answer the following questions by choosing your agreement level per the following scale.
1= Strongly Disagree 2= 3= 4= Neutral 5= 6= 7= Strongly Agree

Knowledge Acquisition Items	1	2	3	4	5	6	7
1. My university recruits and hires quality professionals or teaching staff to increase the grey matter at the university.							
2. My university is willing to purchase or hire intellectual products that serve the university's growth.							
3. My university annually spends a certain amount of money on purchasing learning and research materials.							
4. My university has a mechanism for creating new knowledge from existing knowledge.							
5. My university enables cross-functional training.							
Knowledge Application Items	**1**	**2**	**3**	**4**	**5**	**6**	**7**

1. My university has different methods for academics to develop and apply their knowledge to new situations.							
2. My university applies knowledge to critical competitive needs and quickly links sources of knowledge in problem-solving.							
3. My university has methods to research and critically evaluate knowledge to generate new patterns and knowledge for future use.							
Knowledge protection items	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. My university has processes to protect knowledge from inappropriate use.							
2. My university has processes to protect knowledge from theft.							
3. My university has incentives that encourage the protection of knowledge.							
4. My university has technology that restricts access to some sources of knowledge.							
5. My university has extensive policies and procedures for protecting trade secrets.							
6. My university values and protects knowledge embedded in individuals.							
7. My university communicates the importance of protecting knowledge.							
Knowledge Sharing items	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. My university has effective collaboration and information sharing between professionals, academic staff, and other universities.							
2. My university promotes an information-sharing culture.							
3. My university has effective collaboration and information sharing with non-university researchers (e.g., organizations and individuals externally).							
Organizational Learning items	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. The management of the university frequently involves its staff in essential decision-making processes.							
2. Employee learning is considered more of an investment than an expense.							
3. Employee learning capability is considered a critical factor in this university.							
4. In this university, innovative ideas that work are rewarded.							
5. All staff have generalized knowledge regarding this university's objectives.							

6. All parts of this university (colleges, departments, work teams, and individuals) know how they contribute to achieving the overall objectives.							
7. All parts of this university are interconnected, working in a coordinated fashion.							
8. This university promotes experimentation and innovation to improve the work processes.							
9. This university follows up on what other universities are doing, adopting those practices and techniques it believes to be valuable and exciting.							
10. Experiences and ideas provided by external sources (advisors, customers, and training firms) are considered helpful instruments for this university's learning.							
11. Part of this university's culture is that employees can express their opinions and make suggestions regarding the procedures and methods for carrying out tasks.							
12. Errors and failures are always discussed and analyzed in this university on all levels.							
13. Employees can talk among themselves about new ideas, programs, and activities that might be useful to the university.							
14. In my university, teamwork is the usual way to work.							
15. The university has manuals, databases, and files that allow what has been learned in past situations to remain valid, although the employees are no longer the same.							
16. The university's management favors carrying out changes in any area to adapt to and keep ahead of new environmental situations.							
Organizational Performance Items	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. There has been a significant decrease in student dropout rates over the past three years.							
2. There has been an improvement in graduation rates over the past three years.							
3. There is a significant increase in the number of high-merit students opting for our institute.							
4. There has been a significant increase in faculty member's satisfaction over the past three years.							
5. The number of students for each teacher in the last three years has become easier to manage.							
6. The scientific performance of the teaching and research staff has significantly improved over the last three years.							

7. The number of research papers published by faculty members has increased over the past three years.							
8. The number of research projects obtained from public institutions has increased over the past three years.							
9. The university is actively involved in social events.							
10. The university's reputation and image have increased in the civil society over the past three years.							
11. There has been a significant increase in support for cultural or sports activities.							
12. The university is actively involved in the protection and preservation of the environment.							