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COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

**DESIGNING A KNOWLEDGE MANAGEMENT FRAMEWORK  
FOR ETHIOPIAN COMMODITY EXCHANGE**

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# DESIGNING A KNOWLEDGE MANAGEMENT FRAMEWORK FOR ETHIOPIAN COMMODITY EXCHANGE

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## Declaration

I declare that this thesis is my original work and has not been submitted for any degree in any other university. I have undertaken the study independently with the guidance and support of the research advisor.

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Date \_\_\_\_\_

Dr. Dereje Teferi

## **Abstract**

*The role of knowledge within organizations is crucial for attaining success and upholding a competitive edge. It involves explicit knowledge, which is easily documented and shared, and tacit knowledge, which is personal, experience-based, and more challenging to convey. Effective management of knowledge enables organizations to capture, store, and distribute valuable information and insights, thus promoting innovation, enhancing decision-making, and improving efficiency. By establishing an environment that encourages and supports the sharing of knowledge through collaboration, technology, and processes, organizations can continually learn, adapt to change, and enhance performance. Consequently, knowledge becomes one of the most vital assets for the growth and sustainability of organizations. The main goal of this research is therefore to investigate the current knowledge management (KM) practices at ECX and suggest a KM framework that can be used by commodity exchange organizations. To accomplish this objective, a combination of case study and design science research methods is used. The case study approach enabled an evaluation of the existing KM practices and the identification of obstacles that hinder effective KM implementation. The Ethiopian Commodity Exchange (ECX) faces a number of structural obstacles that limit its ability to effectively foster knowledge exchange and market efficiency. Lack of leadership support and understanding of the significance of Knowledge Management (KM) practices is a major issue. The gap leads to inadequate funding for essential infrastructure, such a centralized database system, which would make it simpler to access and share important data. Employees also have a cultural reluctance to share expertise, which frequently results from mistrust of organizational procedures or concern about losing a competitive edge.*

*The design science research method is employed to create a KM system specifically designed to encourage KM activities within the organization. Data for the study was collected through interviews, observations, and examination of organizational documents. Purposive sampling methods were used to select six senior and administrative officials from various departments for interviews. The investigation identified various methods for creating, storing, and sharing knowledge at ECX. It also unearthed obstacles to knowledge management within the organization. The research proposed a framework for knowledge management to assist ECX in implementing KM practices.*

*The proposed KMS is assessed for its usability and effectiveness. The evaluation results confirmed that the KMS effectively aids and improves KM management activities. This research enhances the Information Systems field by developing a Knowledge Management framework for the Ethiopian Commodity Exchange (ECX), tailored to its unique trading challenges. It aligns KM practices with ECX's strategic goals and introduces a mixed-methods evaluation approach that emphasizes scalability and knowledge retention. The framework also offers insights applicable to various industries focused on preserving critical information. In addition, it is suggested by the study that future research should prioritize knowledge management systems for organizations such as ECX to support existing KM practices.*

***Keywords:*** *Ethiopian Commodity Exchange; Knowledge; Knowledge Management; Knowledge Management Framework*

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## **ACRONYMS**

DSR	Design Science Research
DSRM	Design Science Research Methodology
ECX	Ethiopian Commodity Exchange
IM	Information Management
IS	Information System
KM	Knowledge Management
KMC	Knowledge Management Cycle
KMF	Knowledge Management Framework
KMS	Knowledge Management System
SLC	Social Learning Cycle

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to Ethiopian exchange commodity (ECX)

A commodity exchange is a centralized location where buyers and sellers carry out transactions with or without physical commodities, under a set of clearly defined rules and regulations (Rashid, 2015).

Commodities are described as basic goods used in commerce, often as inputs in the production of other materials. This work emphasizes the importance of commodities for income generation in many countries and provides a framework for understanding and operating commodities exchanges (Soumaré, 2022). Ho, (2023) also defines exchange value is the form of manifestation of the value of commodities and serves as the foundation of commodity prices.

Despite the potential benefits, organized commodity exchanges remained confined to industrialized countries for more than a century. In many countries, exchanges failed to emerge as privately profitable entities either because of underlying market failures or due to heavy government interventions in commodity markets. (Rashid, 2015)

Commodity exchanges can provide emerging market economies with orderly, transparent, and efficient markets by acting as mechanisms that mitigate price risk, discover equilibrium prices, and connect buyers and sellers. (Haile, Volk, & Rehmann, 2017)

In accordance with Proclamation 2007-550, the Ethiopia Commodity Exchange (ECX) was established in Ethiopia in April 2008. Its stated goal was "to ensure the development of an efficient modern trading system" that would safeguard the rights and interests of sellers, buyers, intermediaries, and the public.

Ethiopia's exchange was established with the goal of modernizing the agricultural industry and developing a vibrant, progressive, and effective agricultural market system.

The Ethiopian Commodity Exchange has gifted with the environment sustainable for producing high quality Different Commodity like Coffee, Horicon Bean, Maze, Burleyand Other

Commodities, that despite this, Ethiopian Commodity industry has been suffering from a number of multifaceted limitations (Amano, 2018)

As of 2024, the Ethiopian Commodity Exchange (ECX) has made significant strides in enhancing the agricultural market, registering over 600 active members, including smallholder farmers and traders (Ethiopian Business Review). In the first half of the fiscal year, ECX facilitated the trading of approximately 246,752 metric tons of agricultural products, valued at around ETB 10.1 billion. The exchange has also engaged about 100,000 mobile subscribers, integrating technology to improve market accessibility([commodity.com](http://commodity.com)). Major commodities traded include coffee and sesame, which contribute significantly to Ethiopia's export revenue, accounting for 94% of total trade volume. Furthermore, the implementation of an e-trading platform has transformed trading practices, with 89% of transactions processed through this system. Despite these advancements, challenges related to market access, pricing, and quality assurance remain a concern for stakeholders (Ethiopian Business Review).

The ECX is a unique partnership of market actors, the members of the Exchange, and its main promoter, the Government of Ethiopia. Ethiopian commodity Exchange represents the future of Ethiopia bringing integrity, security and efficiency to the market. ECX creates trust and transparency in the dissemination of market data to all market actors through clearly defined rules of trading, warehousing, payments, delivery, and business conduct. ECX provides market integrity at three important levels: the integrity of the product itself, the integrity of the transaction, and the integrity of the market actors. (Gashaw & Mebratu, 2018)

Ethiopia has the most valuable assets, like commodities. One of the reasons that the Ethiopian Commodity Exchange was established was to benefit and modernize the way trading takes place between sellers and buyers involving trading and production. By creating a novel way of exchange, ECX provided a secure and reliable platform for all users. A better-coordinated, quicker-linking marketing system that safeguards the interests of both parties to a transaction is produced by ECX.

Ethiopian commodity exchange (ECX) is a modern trading system based on standard crop contracts, establishes standard parameters for commodity grades, transaction, size, payment and delivery, and trading order matching, while at the same time preserving the origins and types of crops as distinct unlike the previous (Gashaw & Mebratu, 2018).

The ECX was started to benefit and modernize the way Ethiopia was trading its most valuable asset, its commodities. Agricultural marketing in Ethiopia had undergone several transformations over the decades (Gashaw & Mebratu, 2018).The Ethiopian Commodity Exchange (ECX) depends heavily on knowledge management (KM) to improve the effectiveness and productivity of its operations. Through a methodical process of gathering, organizing, and disseminating information, the ECX may enhance decision-making, encourage creativity, and ensure reliable service provision. By managing the massive amount of data on commodity pricing, market trends, and trade patterns, knowledge management (KM) enables stakeholders to take well-informed decisions. In addition, it guarantees that important institutional knowledge is kept preserved even after employees leave, enabling the exchange's long-term stability and growth.

The need for a Knowledge Management (KM) framework in organizations has become increasingly critical in today's fast-paced and information-driven environment. Such frameworks facilitate the systematic capture, organization, and dissemination of knowledge, which enhances decision-making and fosters innovation. By establishing a structured approach to managing knowledge, organizations can mitigate risks associated with knowledge loss, particularly when employees leave or retire. Research indicates that organizations implementing robust KM frameworks experience improved efficiency, better customer service, and enhanced competitiveness in their respective markets.

A Knowledge Management (KM) framework is a structured approach that organizations use to capture, manage, and leverage their collective knowledge and information. It typically encompasses key components such as knowledge creation, sharing, retention, and application, aiming to enhance organizational learning and decision-making. Effective KM frameworks foster a culture of collaboration and continuous improvement by ensuring that critical knowledge is accessible to all stakeholders, thereby enabling informed decision-making and innovation.

Ethiopian Commodity Exchange (ECX) is pivotal for enhancing market efficiency and transparency. By integrating KM practices into its operations, ECX can effectively address the unique challenges of the dynamic trading environment it operates within, including issues related to knowledge retention, information sharing, and decision-making processes. A well-structured KM framework enables ECX to align its knowledge resources with its strategic objectives, such

as improving operational excellence and fostering trust among stakeholders. Furthermore, it supports the exchange in capturing and utilizing critical knowledge, ensuring that vital information is preserved and accessible, which is essential for maintaining competitiveness in the agricultural market

## **1.2 Knowledge management**

Knowledge is the meaning links people make in their minds between information and its application in action in specific setting (Dixon, 2000)

Knowledge is considered as a collection of experience, appropriate information and skilled insight which offers a structure for estimating and integrating new experiences and information (Mohajan, 2016).

Today's knowledge management gaining a competitive edge over rivals requires excellent knowledge management. Using a knowledge management system, staff members may get the information they want and are encouraged to collaborate, to generate new knowledge and enhance decision-making (T.Reman, 2015).

Knowledge management is defined differently by several academics from various perspectives. As the term "Knowledge Management" has been applied to a very broad spectrum of activities designed to manage, exchange and create or enhance intellectual assets within an organization. There is no widespread agreement on what KM actually is (Shannak, 2009)

Organizations create considerable institutional knowledge when they change, grow into new markets, and define their business strategy. The company will greatly benefit from this knowledge. It must be passed on to new or less seasoned employees in order to keep operations running smoothly.

The process of systematically gathering, organizing, and utilizing an organization's knowledge to improve decision-making, creativity, and general efficiency is known as knowledge management, or KM. It entails developing procedures and systems that facilitate the sharing, retrieval, and storing of important data, guaranteeing that knowledge is available to those who require it. Organizations may enhance their capacity to handle issues, adjust to changes, and

preserve a competitive edge by managing knowledge well. This will ultimately lead to success and the accomplishment of their strategic objectives.

Lellis, Ahmed, Abdullah, & Ahmed, (2020) describe that the intangible aspects that add value to products and services are all based on knowledge. Unlike material assets that depreciate as they are used, the knowledge asset is unlimited and grows when it is stimulated and used. Physical and material resources are no longer the main pillar for satisfactory organizational performance. Some academics concur that knowledge should be handled as a strategic asset. Similar to how land, capital, and labor are managed as resources, it should be managed as an asset. The main idea driving KM is that knowledge must be managed like an asset. This involves creating, codifying and sharing knowledge (Ghani, 2009).

People in organizations have always sought used and valued knowledge (Davenport & Prusak, 1998). Knowledge management is the systematic process of acquiring, storing, retrieving, applying, generating, and reviewing an organization's knowledge assets. A knowledge management system should facilitate the ongoing cycle of acquiring, analyzing, preserving, and reusing knowledge (Watson, 2002).

Effective knowledge management implementation necessitates the adoption of numerous new processes and proactive techniques. Companies must identify the knowledge that is already available to them, comprehend how to share this knowledge to create more value, and plan how this will be implemented.

Knowledge management can be also defined as a systematic explicit and deliberated building process required to manage the purpose of which is to maximize an enterprise's knowledge – related effectiveness and create values (Stankosky, 2005). Knowledge is a key element to improve performance of organizations. Companies now a-days highly consider about knowledge for the purpose of quality information and decision making. Any organization that dynamically deals with a changing environment ought not only to process information efficiently but also create information and knowledge (Nonaka, 1994)

Dyer, (2000) emphasizes that effective management of knowledge assets leads to improved decision-making, increased efficiency, and a stronger competitive advantage. Dyer provides

insights into best practices for implementing knowledge management systems and processes that support organizational goals

Companies preserve their prior performance by gathering and storing the knowledge of their workers. Additionally, by disseminating this knowledge throughout the company, staff members are made aware of previous methods that have improved performance or better informed new plans. To achieve the goal of knowledge management, companies have to enable and promote a culture of learning and development, creating an environment where employees are encouraged to share information to better the collective workforce.

Most organizations has their own culture and knowledge to process a day to day activities, but the questions is how they process and manage knowledge. Knowledge management (KM) is the process used to handle and oversee all the knowledge that exists within a company. (Simon, 2017)

Understanding and utilizing organizational knowledge resources is crucial, as is putting the right systems in place to exchange and store both new and old information. Organizations must spend considerable time to obtain pertinent information because knowledge is not readily accessible.

A Knowledge Management System (KMS) centralizes collective knowledge to support an organization's operational tasks. It facilitates effective knowledge management by enabling the creation, capture, storage, and sharing of expertise and information, ensuring easy access to vital knowledge resources. The objective of KMS is to support creation, transfer, and application of knowledge in organizations (Engida, 2018)

Knowledge management is set of knowledge processes to communicate with different organizational components to improve organizational performance. Successful KM has to connect many organizational components, including technology, human resource practices, organizational structure, and culture, to ensure that the right knowledge is brought to the right people (L.P. Donoghue, Harris, & Weitzman, 1998)

Numerous businesses have been able to perform and implement knowledge management using knowledge management frameworks (KMFs). These KMFs have served as foundations for planning and developing knowledge management systems (KMS) in IT-based organizations to achieve operational excellence (Lubega, Rose, & Thaddeus, 2009).

Knowledge management framework is a structure or system designed to create, manage, and distribute different forms of organizational knowledge and resources. The KM framework advanced here is not oriented toward any particular kind of representation or processor. It admits the possibility of both explicit representations (e.g., the words displayed here) and tacit representations (e.g., mental states) (Joshi & Holsapple D., 2002).

A good knowledge management system should be simple to use and capable of meeting a variety of requirements. To carry out their responsibilities effectively and efficiently, employees must be aware of knowledge processes and how to manage various knowledge forms.

Global economy rising currently and successful knowledge management has become a basic activity for any competitive advantage of organizations. Organizations are accommodating integrated approaches to identify, manage, share, store and experience of employees. The relationship between knowledge management and competitive advantage as being the continuous strong relationship and interaction of tacit and explicit knowledge.

Knowledge play key role to manage the resources of organizations to make value from them they can get sustainable competitive advantage (Rahimli, 2012).Rahimli also underscores that organizations that prioritize KM are better positioned to adapt to changes, respond to customer needs, and ultimately achieve a sustainable competitive edge.

### **1.3 Statement of the problem**

Knowledge management must be integrated into every aspect of an organization's knowledge base. According to the needs of the organization, it facilitates and promotes the spread of organizational development at all levels to individuals, groups, and/or the entire organization.

Knowledge is intangible resource, which is managed by managing people and knowledge assets (Award & Ghaziri, 2007).In the past few years, however, there has been a growing interest in treating knowledge as a significant organizational resource (Alavi M. L., 2001). Businesses has to implement knowledge management to achieve their goal.

A knowledge management effort also can fail for countless reasons, but the breakdown usually starts with a “people problem.” According to Trees, (2021) the biggest barriers that hurt knowledge management implementations are awareness, time, and culture. People either are not

aware of the tools and tactics that are accessible to them, do not have the time to participate, or find it difficult or unpleasant to do so due to unwritten rules and preconceptions.

While working for the company, individuals acquire new skills and knowledge, and in order to avoid disruption and knowledge gaps, the organization needs to capture these insights through efficient knowledge management procedures. Effective knowledge management also makes it easier for workers to adapt to different roles within the organization and acquire the knowledge and abilities they need, guaranteeing a smooth role change.

Ethiopian Commodity exchange ECX is also expected to increase the concentration of buyers and sellers over a single trading floor, improving healthy market competition and reducing transaction costs. The Ethiopian Commodity Exchange assures all commodity market players the security they need in the market through providing a secure and reliable End-to-End system.

Many knowledge forms are processed in many ECX departments, but owing to proper handling and storage, many resources of knowledge processes were lost. For instance, the financial management and accounting divisions of ECX use several knowledge products that can be saved in both hard copy and soft copy formats, but only around one-third of them are actually usable. There are many knowledge resources available in ECX that can be received through various exchange product phases. However, the majority of the information are scattered among various computers in jumbled files. Knowledge is lost or obscured by new information when firms merge, reduce their size, reorganize, or change their corporate culture. When employees quit, they take their priceless expertise, materials, abilities, and experiences with them. Those who stay may be assigned new jobs and never use their wealth of accumulated knowledge. Unless managers recognize the improvisations and inventive ways people get things done, tacit knowledge, in particular, will be lost (Smith, 2001). Employees are unable to create, share, store and applied best practices for organizational learning because they are unaware of the advantages of knowledge management. To help with knowledge management, ECX's Information Technology main department has a division called Information infrastructure and support division has responsibility to manage knowledge. Despite this, there is no organized framework in place to effectively manage information sharing, storage, and retrieval.

The Ethiopian Commodity Exchange (ECX) has a lot of problems with its knowledge management procedures, mostly because its employees don't understand how important

knowledge management is. Many workers lack a thorough understanding of the need for collecting and disseminating knowledge, which impedes productive teamwork and resource optimization. Furthermore, this problem is made worse by the lack of a clear knowledge management structure since there are no predefined processes or standards to promote knowledge exchange and guarantee that insightful information is methodically recorded and applied. Employees may find it difficult to traverse the knowledge management environment without a clear framework, which could result in inconsistent practices and lost chances for growth and learning. The absence of a centralized database to hold knowledge causes these issues by preventing the organization from creating a cohesive repository of information that can be easily accessed and utilized by all staff members. This fragmentation not only limits the ability to leverage institutional knowledge but also fosters inefficiencies, as employees may duplicate efforts or rely on outdated information. Collectively, these issues hinder ECX's potential to enhance decision-making, drive innovation, and improve operational efficiency through effective knowledge management.

To overcome the gap knowledge management framework is crucial. Here is the summary of main problems in ECX.

1. **Lack of Awareness:** Employees at the Ethiopian Commodity Exchange (ECX) do not fully understand the importance of knowledge management, leading to ineffective teamwork and underutilization of resources.
2. **Absence of a Defined Framework:** The lack of a clear knowledge management structure results in inconsistent practices and missed opportunities for growth, as there are no established processes or guidelines for knowledge exchange.
3. **Centralized Database Deficiency:** Without a centralized database to store knowledge, information remains fragmented, hindering access to valuable insights and leading to inefficiencies, duplication of efforts, and reliance on outdated information.

It is therefore the aim of this study to investigate and propose a knowledge management framework. To this end, the research is expected to answer the following questions

1. What are the knowledge management problems in Ethiopia commodity exchange (ECX)?
2. What is the suitable Knowledge Management framework that enhance knowledge sharing and organizational learning at ECX?

## **1.4 Objective of the study**

### **1.4.1 General objective**

The main objective of this study is to develop a knowledge management framework for Ethiopian Commodity Exchange (ECX) that address the challenges faced by ECX and align KM practices with its strategic goals.

### **1.4.2 Specific objectives**

1. To Examine knowledge handling practices at ECX.
2. To Assess the organizational culture to develop a KM framework.
3. To Investigate existing KM policies, culture, and structure at ECX.
4. To the benefits of KM in the business sector.
5. To Develop a tailored KM framework for ECX.
6. To Evaluate the effectiveness of the KM framework.

## **1.5 Significance of the Research**

The utilization of knowledge is an essential aspect of an organization's ability to process everyday operations; hence knowledge management plays a crucial part in supporting the organization's business plan. Since knowledge sharing, knowledge revealing, and knowledge preserving are used for different operations at ECX, it is important to have a well-organized structure or framework in place to manage these varied types of knowledge.

The proposed framework ensures that all employees have access to the collective knowledge maintained within the organization, enabling them to make timely, informed decisions that benefit the entire business. In this study, a comprehensive framework for knowledge management was established and developed to help break down tool silos by integrating governance, procedures, accountabilities, and technology. This KM framework ensures that the system operates autonomously while serving as a roadmap for existing systems, facilitating a cohesive approach to knowledge management across the organization.

After conducting the research, the organization benefits significantly by optimizing knowledge flows and addressing inefficiencies in knowledge sharing. The tailored framework enhances employees' access to critical knowledge resources, enabling informed decision-making aligned with strategic objectives. It also fosters a culture of continuous learning and knowledge sharing, promoting innovation and responsiveness to market changes. Additionally, the framework aids in knowledge retention, reducing risks associated with employee turnover. Overall, the research-driven KM framework empowers the organization to effectively harness its knowledge assets, driving operational efficiency and supporting long-term success.

This research on the Knowledge Management (KM) framework for the Ethiopian Commodity Exchange (ECX) presents several innovative aspects that distinguish it from existing studies. It specifically tailors the KM framework to the unique challenges of the Ethiopian agricultural market, integrating local insights that generic frameworks often overlook. Utilizing a design science research methodology, the study combines theoretical and practical elements to create a framework that is both actionable and adaptable to ECX's operational needs. This approach enhances the framework's relevance and usability, promoting effective implementation compared to traditional methods that primarily emphasize theory. Furthermore, the research advocates for a centralized KM system, which contrasts with fragmented solutions commonly found in other frameworks. This integration seeks to streamline knowledge sharing and improve decision-making efficiency, directly supporting ECX's strategic objectives. Overall, the study fills a significant gap in the literature by addressing the specific context of ECX while providing practical insights that could enhance market efficiency and transparency.

## **1.6 Scope and limitations of the study**

The scope of this research is focused specifically on the Ethiopian Commodity Exchange (ECX) headquarters, where the primary knowledge management practices, policies, and culture will be examined in detail. This localized approach allows for a thorough investigation of the existing knowledge handling processes and the development of a tailored Knowledge Management (KM) framework that addresses the unique challenges faced at the headquarters. However, this research is limited in its generalizability, as it does not encompass the 20 branches of ECX spread across Ethiopia. The exclusion of these branches may result in an incomplete

understanding of the overall knowledge management landscape within the organization, as regional differences in practices, resources, and cultural factors may exist. Consequently, the findings and recommendations derived from this study may need to be adapted or expanded upon to effectively address the diverse needs and circumstances of the various branches of ECX.

The results of this research are based on a case study carried out at ECX, a particular commodity exchange company. The results may not be as generalizable to other organizations due to the small sample size and restricted scope.

The study concentrated on the knowledge management process and found the obstacles impeding KM inside ECX, however it failed to properly take into account the variables that can have an influence on how KM techniques are implemented.

## **1.7 Organization of the thesis**

There are six chapters in this research report. The issue statement, the general and particular objectives, importance, and scope of the research are all elements of the first chapter, introduction, which is the one that was just addressed. Literature reviews on theoretical concepts and related works are offered in the second chapter. Reviewing Knowledge, Knowledge Management, Knowledge Management Processes, Knowledge Management Systems, and Knowledge Management Framework are the main topics of this chapter.

The study approach and strategies utilized to answer the research questions posed in chapter one are discussed in chapter three. The study's findings are presented in Chapter 4 together with the data from the interviews' semi-structured questions and their answers. This chapter is concluded with a summary of the findings. The knowledge management framework, data collection and analysis, as well as specific knowledge management framework development methods are covered in depth in the this chapter. The KMS architecture is also suggested in chapter 5 for the Ethiopian Commodity Exchange (ECX). The evaluation of the framework is presented in this chapter. Finally in chapter 6 conclusions and, suggestions for future study directions are presented.

# **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.1 Overview of knowledge**

Over the last decade a plethora of technologies has emerged that have been associated with knowledge management; and specifically, with the articulation, storage, transfer, creation, and retrieval of knowledge.

The concept of knowledge is complicated and multidimensional, involving more than just facts or information. It is a combination of experiences, values, contextual awareness, and professional insights. This dynamic blend offers a framework for understanding and using information in ways that are meaningful to both individuals and organizations. Knowledge is not static; rather, it changes via discussion, sharing, and improvement in a particular setting. It is essential for innovation, problem-solving, and decision-making, which makes it a valuable tool for both individual development and corporate success. Therefore, using knowledge to drive strategic objectives and sustain a competitive edge in a constantly changing environment requires effective knowledge management.

This chapter's objective is to evaluate important knowledge management research questions, knowledge management systems, and prior studies on knowledge management frameworks or phenomena. The literature review is divided into six smaller sections Definition of knowledge, classification of knowledge, knowledge management, knowledge management system, knowledge management framework, and finally knowledge management and business strategy.

### **2.2 Definition of knowledge**

Knowledge is neither data nor information, though it is related to both, and the differences between these terms are often a matter of degree. This paper start with those more well-known terminology since they are easier to comprehend and because they are more commonly used. Confusion about the definitions of data, information, and knowledge has led to significant spending on technological efforts that seldom yield what the companies investing the money believed they were receiving or wanted. Organizations frequently don't realize what they need until they've invested considerably in a system that can't deliver it (Davenport T. H., 1998).

Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. (Prusak, Davenport, & Laurence, 1997). They emphasize that knowledge is more than just data or information; it is deeply embedded in organizational processes and culture. In order to obtain a competitive edge. Davenport and Prusak highlight the significance of managing knowledge successfully. They contend that organizations that are able to successfully gather, disseminate, and apply knowledge have a better ability to innovate and adapt to changing environments.let's proceed to some definitions.

### **2.3 Data, Information, and knowledge**

Many scholars claim that data, information, and knowledge are part of a sequential order. Data are the raw material for information, and information is the raw material for knowledge (Zins, 2007). A collection of unprocessed facts and figures, or unprocessed input that when organized or processed yields meaningful output, can also be used to describe data .It have been gathered through observations or records. It is the foundation of organizational life; it is made up of disjointed words, numbers, symbols, and syllables linked to business events and procedures. Data are formalized representations of information, making it possible to process or communicate that information so, what do all these different approaches tell us? There is no unanimous definition of the term data. To be meaningful, data must be sorted, organized, examined, and summarized.

Information should be defined as a stimulus originating in one system that affects the interpretation by another system of either the second system's relationship to the first or of the relationship the two systems share with a given environment (Madden, 2014).

It is believed that there is not a single answer for "what is information?" There are different concepts of information, each one of them useful for different purposes. The semantic concept strongly links information to knowledge: information is essentially something capable of yielding knowledge; this concept is useful for cognitive and semantic studies (Lombardi, 2004).It is assumed that information provides knowledge, that it modifies the state of knowledge of those who receive it (Dretske, 1981).

Table 2. 1 Definition of data, Information and Knowledge by different authors(source:Shewanargaw Engida p16)

Authors	Data	Information	knowledge
Juris Kelley, 2002	Data is comprised of the basic, unrefined, and generally unfiltered information	Information is much more refined data. That has evolved to the point of being useful for some form of analysis	Knowledge resides in the user happens only when human experience and insight is applied to data and information
Debra M.Amido 1999	Data are elements of analysis	Information is data with context.	Knowledge is information with meaning
Thomas Davenport and Laurence prusak 2000	Data is a set of discrete, objective facts about events as structured records of transactions	Information as message in the (various) form of communication... to have an impact on judgment and behavior	Knowledge is a fluid mix of framed experience, values, contextual information, and expert insights that provides a framework for evaluating and incorporating new experience's and information

Nonaka and Takeuchi, (1995) stated definition of knowledge is that of “justified true belief”. definition incorporates three basic conditions, fact for which some authors call it the tripartite account of knowledge these conditions are

- The truth conditions
- The belief conditions
- The justification conditions

## **2.4 Classification of knowledge**

In the literature on knowledge management, there are several categories for classifying knowledge. These classifications have developed and are used in the literature on knowledge management as a reaction to the growing interest in managing knowledge and the developing understanding of its value and use. In this thesis, we use the following categorization: Explicit, Implicit, and Tacit knowledge (source: KnowledgeBase.com).

### **2.4.1 Explicit knowledge**

Explicit knowledge can be documented, transmitted, and most importantly, learned by outsiders, any information that's easy to share and understand. (Wiig, 1993) defines explicit knowledge as information that undergoes formalization, codification, and communication using systematic language. He emphasizes that this type of knowledge can be easily stored, transferred, and shared across organizations because it exists in tangible forms like documents, databases, and manuals. He also highlights that explicit knowledge is crucial for organizational learning and decision-making as it provides a foundation for structured processes and formal guidelines.

(Zack M. , 1999) discusses explicit knowledge within the context of the Cynefin framework, describing it as knowledge that is formal and codifiable. He also described explicit knowledge is knowledge that has been articulated, codified, and communicated in symbolic form and/or natural language. He says that explicit knowledge is easier to share and store within an organization since it is easier to communicate and document. Zack (1999) highlights that developing a knowledge strategy that can enhance an organization's competitive advantage requires efficient management and utilizing of explicit information.

Davenport (1998) Describe explicit knowledge as knowledge that can be expressed in words and numbers, and easily communicated and shared in the form of data, scientific formulas, specifications, manuals, and the like." They point out that explicit knowledge can be transferred through formal systems like databases or texts since it is formalized. But they provide a notice stating that "not all knowledge can be made explicit, as much of what we know is tacit and difficult to formalize.

### **2.4.2 Implicit knowledge**

Implicit knowledge is a more complex concept and is gained through real-life experience. It is obtained through experience and can be captured and transmitted. In contrast, tacit knowledge isn't articulated so easily.

Etienne & Jean, (1991) addressed implicit knowledge in the context of applied learning in their study. They argue that learning is not merely situated in practice as if it were some independently verifiable process that just happened to be located somewhere; learning is an integral part of generative social practice in the lived-in world. Thus, implicit knowledge is learned through engagement in communities of practice and becomes integrated in daily tasks and social interactions (Wenger, 1998). Wenger point out that much of what is learned in these contexts is not explicitly taught but picked up implicitly through engagement in shared activities.

Implicit knowledge is a useful asset to organizations, while onboarding new employees, sharing explicit information and knowledge is not enough. It is used to gain new skills and identify best practices that allow to work more productively. This is what implicit knowledge is all about.

### **2.4.3 Tacit knowledge**

Tacit knowledge is personal, context-specific, and typically difficult to formalize and communicate. It is acquired through experience and is often revealed through practice rather than being explicitly articulated (Alavi & Leidner, 2001).

Argyris & Schön, (1996) discuss tacit knowledge in the context of organizational learning. They state tacit knowledge is not easily articulated; it is rooted in action, commitment, and involvement in a specific context. It represents the kind of knowledge that underlies our everyday practices and is often taken for granted. It highlights the difficulties that come with recognizing and disseminating knowledge within organizations since it is more fully embedded in experiences and attitudes than it is in documents.

Tacit knowledge is not easily shared, as it is deeply rooted in the individual's experiences and actions. It is often context-specific and relies heavily on personal skills and intuition, making it challenging to articulate and transfer within an organization (Krogh, 1998). associated with tacit knowledge, particularly its dependence on individual experiences and the difficulties organizations face in leveraging it effectively.

Tacit knowledge is a form of knowledge that is difficult to transfer from one person to another by writing it down or verbalizing it. It is acquired through personal experience and is often tied to the context in which it is used (Collins, 2010). It emphasizes the challenges associated with sharing tacit knowledge and its reliance on personal, experiential learning.

In summary, tacit knowledge is a vital component of personal and organizational learning that influences how individuals and teams operate, innovate, and adapt to their environments.

#### **2.4.4 Group knowledge**

The group knowledge produced by cooperation and communication among members of a team or group is referred to as group knowledge. It is distinguished by (www.bloomfire.com) :

**Shared Understanding:** As group members contribute their unique information and perspectives, a shared understanding and set of objectives are reached. A project team might, for instance, work together to create a new product by fusing their various areas of expertise and viewpoints.

**Social Interaction:** Group knowledge is formed via the sharing of thoughts, opinions, and experiences during meetings, conversations, and cooperative projects. Group standards, best practices, and lessons gained are a few examples of this information.

**Innovation and Creativity:** As different viewpoints collaborate to solve issues and produce fresh concepts, group knowledge encourages creativity and innovation. Collaborative workshops and brainstorming sessions can improve group knowledge significantly.

#### **2.4.5 Organizational Knowledge**

The collective knowledge and intellectual resources that an organization has are referred to as organizational knowledge. Although it is more thorough and organized, it includes both individual and group knowledge. Important traits consist of (Nonaka & Takeuchi, 1995),

**Systems and Procedures:** Databases, policies, and standard operating procedures are instances of formal systems, processes, and structures that frequently contain organizational knowledge. It is possible to codify and preserve this explicit knowledge for later use.

**Culture and Values:** Knowledge is significantly shaped by an organization's culture. It affects how knowledge is used, valued, and disseminated throughout the company. Organizational knowledge is improved by fostering an environment that values transparency, cooperation, and ongoing education.

**Knowledge Repositories:** To efficiently collect, organize, and share knowledge, organizations might set up knowledge repositories including online communities, document management systems, and knowledge bases. These repositories make it easier for everyone in the organization to access important data and insights.

## **2.5 Knowledge management**

In order for an organization to attain its mission, knowledge was essential. Sharing knowledge was nothing new, but managing knowledge is crucial for all kinds of organizations. Utilizing previously developed systems, procedures, and standards, as well as maintaining and gaining fresh information for the future, are made possible for businesses through knowledge management

Dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. They rely heavily on the effective management of knowledge and the ability to leverage existing knowledge to create new knowledge (Teece, 2007).

The method of making knowledge usable by organization's members is known as knowledge management (KM). It entails gathering, holding, locating, and applying knowledge. KM entails the development of a KM system. An atmosphere that encourages organizational learning is part of the KM system. In this sense, knowledge management (KM) can be a tool for organizational change or transformation since it can assist management in fostering a culture of learning. Additionally, KM is a technique for enhancing organizational effectiveness since it encourages knowledge reuse to facilitate better decision-making.

KM is the practice of selectively applying knowledge from previous experiences of decision making to current and future decision-making activities with the express purpose of improving the organization's effectiveness. (Jennex, 2005)

### **2.5.1 Knowledge management definition**

Many scholars defined knowledge from many perspectives. Hajric, (2018) defines Knowledge management as the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical & strategic requirements; it consists of the

initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.

Knowledge management is about managing information and knowledge in such a way that it enhances productivity, efficiency, and effectiveness. It involves capturing, organizing, and sharing knowledge to ensure that the right information is available at the right time (Allen, 2001)

Knowledge management is the process of creating, sharing, using, and managing the knowledge and information of an organization. It encompasses the strategies and practices aimed at identifying, capturing, and leveraging the intellectual assets of an organization to enhance performance and competitive advantage (Bontis, 1996). This definition highlights the comprehensive nature of knowledge management as it relates to the effective handling of knowledge and information within organizations to improve overall performance.

According to Davenport (1998), Knowledge management is the process of capturing, distributing, and effectively using knowledge. It involves strategies and practices aimed at identifying and leveraging the collective knowledge of individuals within an organization to achieve organizational goals. This definition highlights the methods involved in utilizing collective knowledge for organizational success and underlines the need of managing knowledge as a strategic asset.

Knowledge management is the process of fostering learning and knowledge sharing within organizations through the development of communities of practice, where individuals come together to engage in a shared domain of interest, collaboratively build knowledge, and enhance their practices (Wenger, 1998). This approach places a strong emphasis on the social side of knowledge management, emphasizing the purpose that communities of practice have in encouraging learning and knowledge exchange inside organizations.

(Nonaka I., 1995) States that Knowledge management is the process through which organizations generate value from their intellectual and knowledge-based assets. It involves the creation, sharing, and application of knowledge to enhance innovation and competitive advantage.

### **2.5.2 Knowledge management processes**

Organizations are currently favoring knowledge management (KM). As a result, many businesses are currently having a difficult time understanding what KM really means for them

and their future. They are pondering things such, “What is the value of knowledge?” “How can we effectively utilize the knowledge of the company?” “What kind of knowledge management is best for our company?” and so on. The organization that wishes to cope dynamically with the changing environment must be able to create knowledge better and faster than its competitors (Gore, 2009).

The activities an organization implements as part of its knowledge management processes enable and support the usage of knowledge. One kind of knowledge is changed into another because of the ongoing process of knowledge management, the translation of tacit information into explicit knowledge and from explicit to tacit is supported by knowledge management techniques.

Knowledge management processes are fundamentally about enabling the creation, sharing, and application of knowledge within organizations. These processes involve understanding how knowledge is generated, how it flows within the organization, and how it can be utilized to foster innovation and improve performance. Krogh, (2000) emphasizes the importance of effectively managing the processes that facilitate knowledge creation and sharing, which are crucial for driving organizational success and innovation.

### **2.5.2.1 Knowledge Acquisition and Generation**

According to this new paradigm, organizational knowledge production differs significantly from individual knowledge creation in that it takes into account both the ontological and epistemological aspects of the process. Creating knowledge no longer has an absolute outcome, but only one that is related to the organizational context (Nonaka, 1994)

Knowledge acquisition refers to the process through which organizations obtain new information, insights, and expertise from various sources, including employees, external partners, and the market environment (Haeckel, 1999).

Knowledge generation is the process by which organizations create new knowledge or insights through collaboration, experimentation, and innovation (Haeckel, 1999). He emphasizes the need for utilizing current knowledge, fusing it with the latest information, and creating an environment that values experimentation and creativity in order to generate new knowledge. This procedure is essential for creating new goods, streamlining operations, and adjusting to environmental changes. Knowledge generation focuses on knowledge creation for exploration

and knowledge exploitation. Knowledge can be generated through(Ikenwe M. O., February 2018):

A. Writing both formal and informal.

B. Research: Examples are: Research institution, tertiary institution etc.

C. Shared problem solving

### **2.5.2.2 Knowledge Storage**

Knowledge storage is the process of gathering various forms of knowledge from internal and/or external sources. Coding and indexing the knowledge for later retrieval, and then storing and arranging the knowledge to offer a better understanding of knowledge. It acts as a repository for the information amassed in the past. Knowledge storage involves embedding knowledge in a repository such as a database or portal (Argote, S., & D, 1990).

Wang & Wang, (2012) defined knowledge storage as the systematic organization and preservation of knowledge within an organization, by ensuring that valuable information and insights are accessible for future use. They reached the conclusion that improving organizational learning and performance requires good knowledge storage. Organizations can enhance knowledge sharing, stimulate innovation, and boost competitiveness by putting in place strong knowledge storage systems.

Baskerville & Dulipovici, (2006) described knowledge storage as the systematic processes and mechanisms through which organizations capture, organize, and maintain knowledge for future retrieval and use. It encompasses the storage of both explicit knowledge (codified information such as documents and databases) and tacit knowledge. Knowledge storage, according to Baskerville and Dulipovici, is a crucial component of knowledge management and suggests a complete plan that incorporates organizational culture, technology, and processes. They support further research and the creation of theories that address the difficulties associated with knowledge storage in various organizational settings.

### **2.5.2.3 Knowledge Sharing**

Knowledge sharing as interactions between human actors where the raw material is knowledge (Helmstädter, 2003). Knowledge sharing is the exchange of experience, skills, and tacit and explicit knowledge among employ (Hoegl, Parboteeah, & Munson, 2003)

Ikenwe & Joy, (2018) knowledge sharing as a fundamental priority of knowledge management and defined it as an act through which, acquired information, knowledge, ideas, skills, and experiences are exchanged and shared among people, organizations and institutions.

The process of exchanging information, experiences, and ideas between people or organizations in order to promote innovation and advance collective understanding is known as knowledge sharing. It is essential to organizational learning because it lets staff members benefit on one another's experience and expand on what they already know. Effective knowledge sharing cultivates a collaborative culture, breaking down silos and encouraging open communication among team members. This exchange can occur through formal mechanisms, such as training sessions, documentation, and knowledge management systems, as well as informal interactions like conversations and mentoring. By facilitating knowledge sharing, organizations can improve decision-making, enhance problem-solving capabilities, and drive continuous improvement, ultimately leading to increased competitiveness and adaptability in a dynamic business environment.

Szulanski, (1996) concludes that for organizations to facilitate effective knowledge sharing, they must create an environment that encourages openness and collaboration. This involves making training investments, creating leadership behaviors that are encouraging, and putting in place reliable knowledge management systems that facilitate information accessibility. Szulanski's observations demonstrate how removing obstacles to knowledge exchange promotes creativity, advances organizational learning, and raises performance levels. Therefore, companies looking to use their intellectual capital as a competitive advantage must foster a culture of knowledge sharing.

### **2.5.2.4 Knowledge Application**

The knowledge application process is defined as the physical enactment or performance of the organization's processes. It is important to understand that here the process itself represents

knowledge while the act of performing the process is the knowledge application process (Mostert & M.M.M. Snyman, 2007)

(Spender, 1996) emphasizes that knowledge application is about embedding knowledge into daily activities, practices, and processes, ensuring that it drives productivity and innovation. Knowledge application goes beyond mere possession or storage of knowledge; it is about how knowledge is utilized within organizational routines, practices, and decision-making processes. He suggests that organizations derive value not simply from acquiring knowledge but from actively applying it in ways that enhance their adaptive capacity, innovation, and overall performance. Spender argues that knowledge must be embedded in everyday activities and organizational structures to facilitate continuous learning and improvement. Therefore, effective knowledge application requires a dynamic approach, where knowledge is constantly being transformed and integrated into practices that support the firm's objectives and competitive positioning. This view challenges static models of knowledge management and stresses the importance of viewing knowledge as a living, evolving resource that is applied strategically to achieve sustained organizational success.

In order for businesses to effectively use their intellectual capital for increased performance and innovation, knowledge application is a crucial part of knowledge management. In an ever-changing business environment, organizations can improve operational effectiveness and flexibility by methodically applying existing knowledge to guide decision-making and problem-solving. A supportive atmosphere that promotes teamwork, continuous improvement, and the incorporation of knowledge into routine tasks is necessary for the successful application of knowledge. Investing in strategies that encourage the efficient application of knowledge will not only develop an innovative culture inside organizations, but will also drive sustained growth and success in their quest for competitiveness. In the end, businesses hoping to realize their full potential and take proactive measures in response to opportunities and problems need to be able to apply information effectively.

## **2.6 Knowledge management system**

Any method that uses technology, people, and procedures to structure the way knowledge is stored and retrieved is referred to as a knowledge management system. The system serves as a company's knowledge initiatives' plan, strategy, or organizational structure.

People inside an organization may both save and access resources and information thanks to knowledge management systems. The knowledge management system is the operational framework (typically developed by a knowledge or operations team) that guarantees staff or customers have access to crucial information they require to maximize the value of organization's good or service.

The knowledge management system's components has an answer for customers in this digital era. Customers expect to be able to quickly and efficiently find answers to their questions. With the use of a knowledge management (KM) system, businesses may access and leverage an extensive knowledge base, which helps customer support teams respond quickly, accurately, and consistently. Because problems are handled more quickly as a result, customers are satisfied.

Knowledge management systems (KMS) refer to a class of information systems applied to managing organizational knowledge. That is, they are IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application (Maryam Alavi & Cook, 2001)

Gallupe, (2000) that Knowledge management systems can be thought of as systems composed of people, tools and technologies, and knowledge that interact to provide knowledge to people in the organization who need it.

## **2.7 Knowledge management framework (KMF)**

A knowledge management framework is a system that streamlines the way an organization manages, creates, and distributes its knowledge. This framework contains a mix of technologies, roles, processes, and strategy/governance that enable knowledge acquisition, sharing, maintenance, and re-use (Shahid, 2023).

A knowledge management framework retains valuable internal and external knowledge that's still there even when employees leave the organization. This framework also gets employees up to speed quickly, as they don't have to trawl through emails to find the right information it's all in one place (Shahid, 2023).

Holsapple & Joshi, (2002) defined knowledge management framework as a structured set of concepts and relationships that guide the processes and activities involved in managing knowledge within an organization. Their framework mixes people, technology, organizational

structure, and other components to focus on understanding the creation, storage, sharing, and use of knowledge. In order to enhance decision-making, innovation, and overall organizational performance, the Knowledge Management (KM) framework offers a methodical way to collect, organize, and share knowledge.

Organizations can systematically gather, store, share, and apply knowledge to improve operational efficiency and decision-making by implementing a Knowledge Management (KM) framework. It includes a number of elements, such as procedures, technology, culture, and governance, to guarantee that important information both explicit and tacit is properly handled and made available to staff members. A knowledge management (KM) framework fosters continuous learning and innovation by enabling knowledge exchange and collaboration. This allows organizations in adapting to market variations and preserving their competitive edge. It also highlights how crucial it is to develop a knowledge-driven culture in which staff members are welcomed to share their knowledge and thoughts, building a climate of trust and involvement in the process. Overall, the alignment of knowledge management projects with organizational goals through a well-designed KM framework promotes long-term success.

## **2.8 Overview of KM Life Cycles and Frameworks**

### **2.8.1 WIIG's Knowledge Management Framework**

The Wiig cycle is effective in assessing the applicability of information because it emphasizes the significance of both the creation and use of knowledge. According to Wiig, (1993) an organization must meet three requirements in order to conduct business: it must have customers and products or services; it must also have access to people, money, and facilities; and, finally, it must have the power to take action.

The Wiig KMC is built around four critical phases: building, holding, pooling, and applying knowledge. Obtaining, analyzing, reconstructing, synthesizing, organizing, codifying, and modeling knowledge are the goals of the construction stage. Simply said, many types of knowledge are gathered and examined in an effort to find connections between them.

The knowledge is then rebuilt and combined to establish broad ideas and common ground. After that, the information is codified and modeled in a way that will make it easy to comprehend and convey.

Knowledge is created and then turned into elements that help people retain it; this process is known as keeping knowledge. The goal of this stage is for people to gather knowledge, build upon existing knowledge, or contribute to it. They then embed this knowledge in repositories, where it is saved for use in the future.

The third step, known as pooling knowledge, involves organizing, putting together, and accessing and retrieving knowledge. Assembling is the act of putting knowledge sources into repositories for eventual use, whereas coordination is accumulating knowledge via persons. Finally, access and retrieval entail getting knowledge information from repositories or from others. Utilizing knowledge is the last phase.

Tasks are carried out at this phase, and knowledge is examined. Knowledge is then reviewed and synthesized after that. Final implementations are made following the adoption of appropriate decisions.

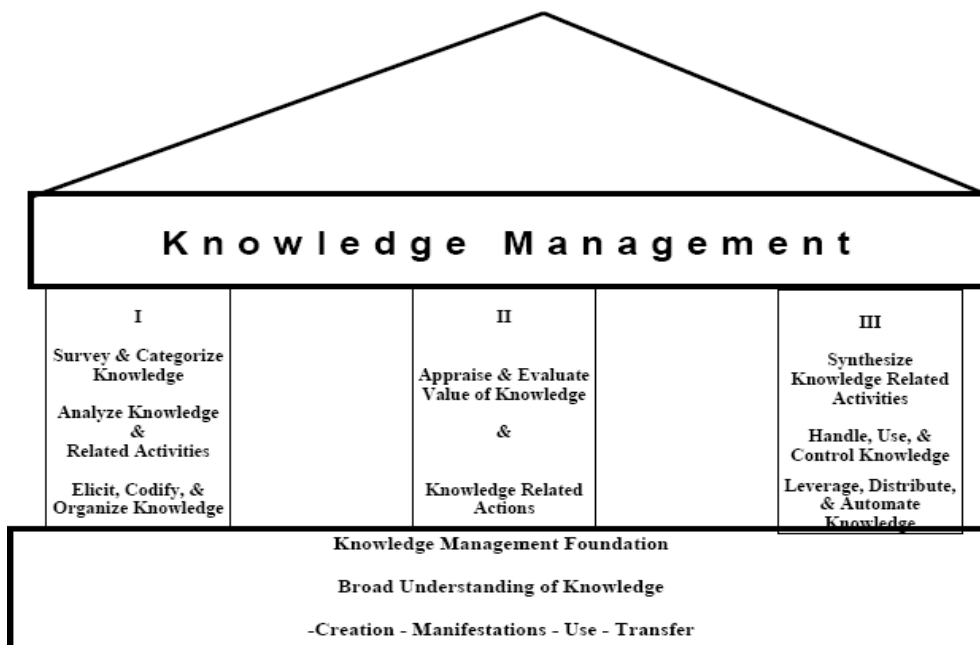


Figure 2. 1 WIIG's Knowledge Management Framework (Wigg's 1993 p 230)

### 2.8.2 Leonard-Barton's Knowledge Management Framework

The Leonard-Barton's Knowledge Management Framework has four core capabilities and four knowledge-building activities. Knowledge building involves working together to solve problems creatively, applying and integrating new tools and processes, developing and testing ideas, and importing and assimilating technology from beyond the firm's expertise. These activities involve

generating and disseminating knowledge. Physical systems, personnel knowledge and skills, administrative system routines guiding resource accumulation and deployment, providing the channels through which information is acquired and flowed, and the organization's values and norms are the four key competencies outlined in this framework.

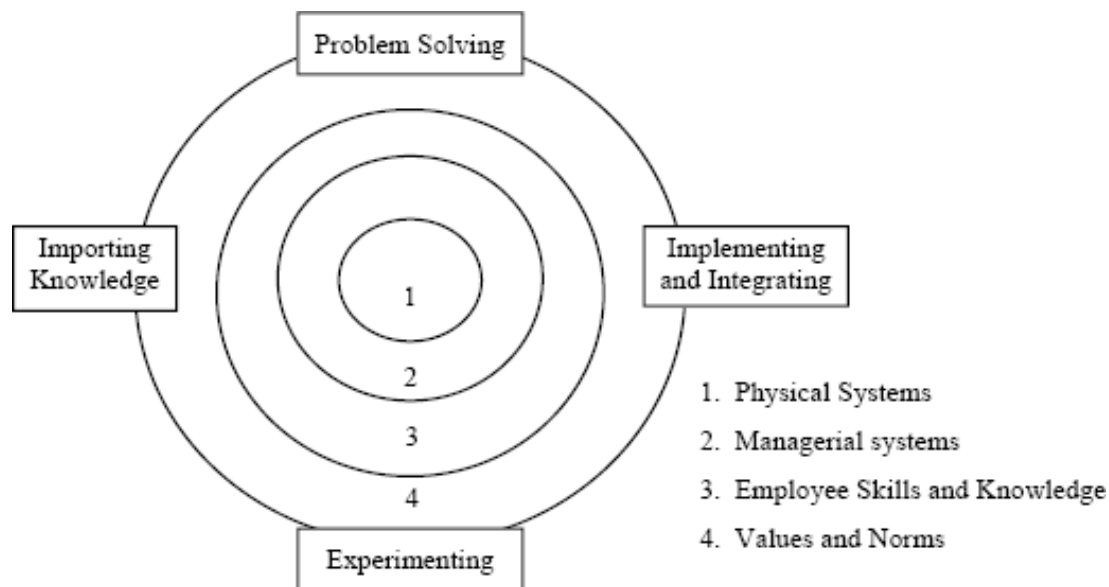


Figure 2. 2 Leonard-Barton's Knowledge Management Framework (Leonard-Barton, D. (1995))

### 2.8.3 Choo Sense-Making KM model

This model is Ideal for Decision-Making Process. The three major components that the Choo Sense-Making Model of KM shows a considerable focus on:

- Sense-Making
- Knowledge Creation
- Decision-making skills

The aforementioned three intricately linked activities are crucial to flattening the company's point of view. For any team member, the capacity for knowledge production and the willingness to put that knowledge creation into practice are of the utmost significance.



Figure 2. 3 Choo Sense-Making KM model (Chun Wei Choo 1996 p 333)

#### **2.8.4 The Meyer and Zack Knowledge Management**

The Meyer and Zack KMC was established in 1996 with the main goal of designing and developing information outputs. Although the KMC's philosophy places a strong emphasis on physical information products.

Repository and refinery are the cornerstones of the Meyer and Zack KM. The purpose of a knowledge repository is to serve as a platform for knowledge goods, also known as a product family. The company must compile all information, both digital and physical, for this phase. The five phases of information processing that make up knowledge refinery are all focused on enhancing the knowledge already available inside an organization. Acquisition, improvement, storage/retrieval, dissemination, and presentation are the first five steps.

The gathering of current knowledge and information is referred to as the acquisition phase. It also involves evaluating its quality, scope, breadth, depth, credibility, correctness, timeliness, relevance, cost, control, exclusivity, and other factors. Refinement, the process of enhancing the value of knowledge goods, comes after acquisition. Information refinement allows knowledge information to be stored flexibly to facilitate the efficient creation of a variety of products, in addition to adding value to the repository. Storage and retrieval can be visualized as a link between the knowledge platform and knowledge generation. This process stores knowledge products usually by means of computerized storage, but can also utilized physical storage means, such as folders and files. The delivery method, time, and frequency are all highlighted during the distribution phase to make that the data format is transmitted via appropriate and usable

channels. The presentation phase, which comes last, is when the newly enhanced knowledge material is presented. The KMC's success is determined by this stage. The KMC is deemed successful if value was added and the information is appropriately used. The KMC has failed if the content lacks any relevant context that may be used. Cycles of Knowledge Management Organizations may repurpose knowledge information inside their organization and make sure that it is not only displayed successfully but is also used to its best potential by using Meyer and Zack KMC.

The Meyer and Zack KMC acts as a medium for knowledge delivery in its acquisition phase, organize knowledge through refinement, storage and retrieval stores for future use, and is maintained by testing to see if the knowledge is applied. The Meyer and Zack KMC is an excellent way to guarantee that information is used correctly inside an organization since it satisfies the KMC requirements.

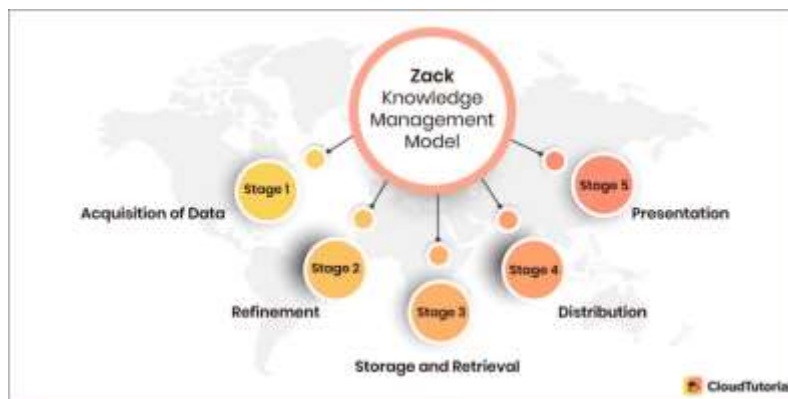


Figure 2. 4 the Meyer and Zack Knowledge Management framework (Meyer, M. H., & Zack, M. H. (1996)

### 2.8.5 Boisot I-Space knowledge management framework

The Boisot model for successful knowledge management distinguishes it from a physical asset by enabling decision-making based on valuable information. The information that is of the utmost significance to website visitors is often highlighted by Boisot's distinction of new knowledge from data. According to Boisot, M. (1998) they are completely accountable for carrying out data extraction as a required function in accordance with their training or prior expertise.

Boisot's model uses a three-dimensional cube structure:

- From uncodified to codified
- From concrete to abstract
- From undiffused to diffused

Initiating a Social Learning Cycle (SLC) that uses the I-Space to produce an outstanding model employing active knowledge workflow and five processes that facilitate problem-solving. Boisot's developed research and started the SLC.

The five steps that help in problem-solving: Scanning, Problem solving, Abstraction, Diffusion and Absorption.

The main objective of Boisot's knowledge management strategy is to provide businesses with solutions that are affordable. The company's website just implements dynamic knowledge management systems that directly support the fun aspect of the learning cycle.

#### 2.8.6 The GPO-WM-Framework

This framework has developed a three layered KM Framework and aims to incorporate KM into company procedures ( :Heisig, P. 2003).

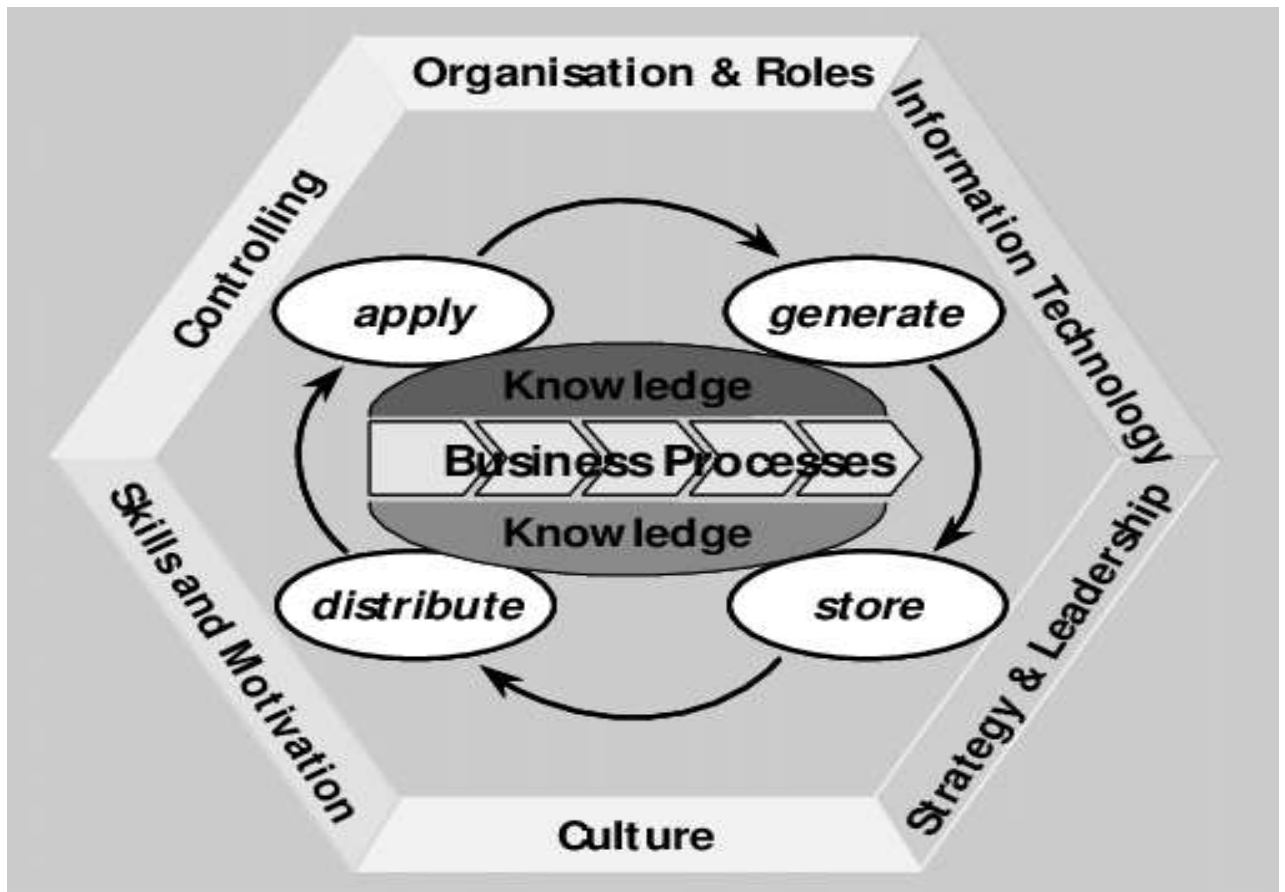
- **Business focus** the business process is the setting of application and creation of specialized domain knowledge and its tasks are the key object for analysis and design. The benefits for an organization's core operations are seen from both the management and the "knowledge workers" who perform out these responsibilities on a regular basis.

**Knowledge focus** four primary activities could be used to characterize the methodical treatment of knowledge: generate, store, share, and apply. These KM tasks combine to produce **Business focus** (: Heisig, P. (2003)

#### **Knowledge focus**

- a connected process. The term "knowledge" refers to both the resource used in the business process and the byproduct produced by it. The same or a different business procedure within or outside the company may utilize this product again. The concept of knowledge itself can take several forms. Which formats are most helpful to the organization's commercial and strategic goals must be ascertained.

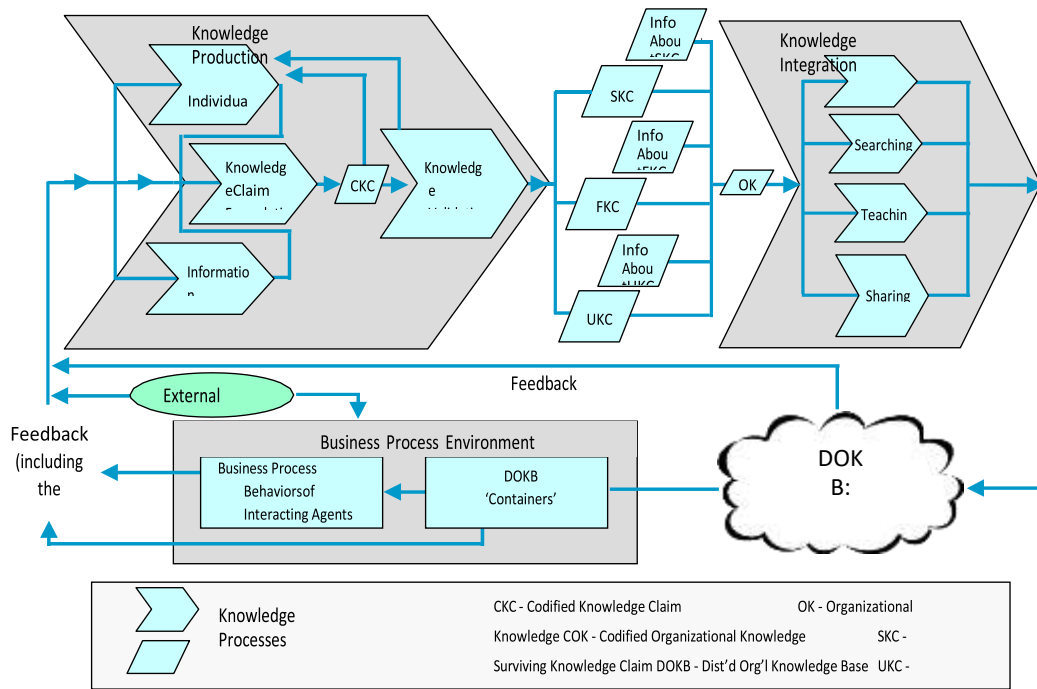
- **Enabler focus** Key enablers for successful and long-lasting KM include roles and organizations, culture, Information technology, controlling and measuring, skills and motivation, and strategy and leadership. Experience in practice has shown that any KM endeavor should begin with a good KM evaluation pertaining to these six design areas. In general, sufficient actions in each of these categories are needed for successful implementation.



.Figure 2. 5 Heisig's The GPO-WM-Framework (Heisig, 2003 p 332)

### 2.8.7 Mark W. McElroy's Knowledge Management Framework

This framework of KM shall be called 'second-generation KM' a view that places its emphasis on both knowledge production and integration. According to this framework, the knowledge management lifecycle starts with agents identifying knowledge gaps or problems. Agents then participate in business processes to gain experience with the knowledge gaps regarding how to move from current states to goal states. The lifecycle concludes with the selection of newly validated knowledge claims and beliefs. Stated differently, the agents or persons begin the knowledge lifecycle procedures with the realization of a knowledge gap and end up with the necessary



knowledge.

Figure 2. 6 Mark W. McElroy's Knowledge Management Framework (McElroy, M. W. (2003)

### **2.8.8 The Bukowitz and Williams KM Cycle**

The Bukowitz and Williams KMC's objective is to outline how organizations generate, maintain, and deploy a strategically correct stock of knowledge to create value.

Only knowledge information that will link intellectual capital to strategic needs will be used, according to this KMC. Bukowitz and Williams' KMC describes seven overall stages, however they are largely separated into two processes: tactical and strategic ones. The steps of the tactical process are "get," "learn," and "contribute."

These three stages are used to meet market-driven demands and are often used. The latter four phases are meant to be used in lengthy procedures that match intellectual capital to strategic needs. The stages of analyze, utilize, build/sustain, and divest are all part of the Bukowitz and Williams's KMC's strategy process.

Each stage is important to this KMC and helps to provide the greatest results. The get stage entails looking for data needed for making decisions, solving problems, or coming up with new ideas. The second step, assessing, is a constant process of arranging and evaluating information gathered to make sure it is practical for achieving the final goal. Formative innovations are created during the usage phase to make sure that new information will be used successfully both immediately and over time.

The construct and sustain stage monitors the longevity of knowing information to make sure that workers can apply it toward the ultimate objective, but it also identifies its usefulness and determines whether changes need to be made. Last but not least, if the knowledge information assets are no longer producing intellectual value, disposal is included in the divest process. By taking this step, you may prevent wasting money and time on activities that don't yield any benefits.

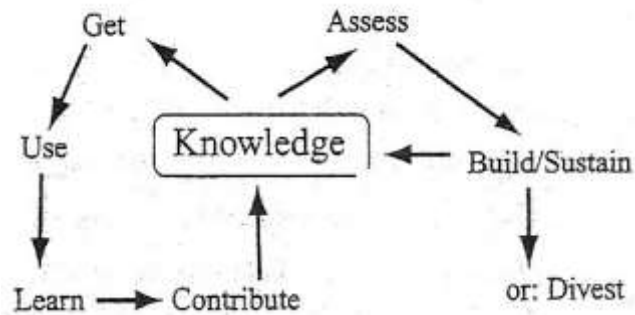


Figure 2. 7 The Bukowitz and Williams KM Cycle (Bukowitz, W. R., & Williams, R. L. (1999)

## 2.9 Knowledge management and business strategy

Knowledge management is a new word that is now in use. The relation between a company's strategic direction and its strategic approach to knowledge management is predicated on the idea that there is organizational knowledge that can be managed to support the achievement of business objectives. The recent interest in organizational knowledge has prompted the issue of managing the knowledge to the organization's benefit. Knowledge management refers to identifying and leveraging the collective knowledge in an organization to help the organization compete (von Krogh, 1998).

(Zack M. H., 1999) argues that an effective knowledge strategy is essential for organizations to leverage their knowledge assets in a way that aligns with their overall business objectives. He posits that organizations must develop a clear understanding of their strategic goals and identify the knowledge required to achieve those goals. Organization's strategic context helps to identify knowledge management initiatives that support its purpose or mission, strengthen its competitive position, and create shareholder value.

The management of knowledge at the levels of individuals and groups inside the organization as well as knowledge that crossed the organizational border from customers, suppliers, and rivals will undoubtedly be included in the strategic approach to organizational knowledge management. However, given that the top organizational leader often sets the company's business strategy. It establishes a number of objectives, all of which are being pursued by the staff.

The company's core motivation is to maintain its operations and extend their longevity. It aims to grow and turn a profit. In order to do this, it must be cost-competitive and provide goods or services that live up to client expectations. (Grant, 2005) emphasizes the importance of analyzing

both internal and external factors that influence a firm's strategic choices, offering a framework for understanding how these elements interact to shape business strategy. He also concluded that effective strategic management is essential for organizations seeking to achieve competitive advantage and long-term success in dynamic environments.

The business strategy consists either in entering and maintaining in industries that show a combination of favorable structural factors, or to leave activities where these factors should be unfavorable, or modifying some of these factors for the company in the industry to benefit from the best conditions of viability. In order to be and stay ahead in terms of technology, competition, business, marketing, and environment, it is crucial to execute a dynamic strategic monitoring. Companies may thus anticipate any growth and modify their operations and organizational structure.

By analyzing user experience and determining consumer expectations, knowledge management in business strategy may be reactive. A company's reputation, both internally and outside, may also support it. Effective collaborative work may be achieved when employees feel that they are a part of the organization. Additionally, the company's outward appeal is improved. The knowledge of a corporation depends on the knowledge of its personnel. However, if an employee becomes sick or quits, the business is left in a bind. KM is used to both see and safeguard such knowledge from a more group-based perspective. Knowledge that quickly moves across the organization's structure and does not cling to a single individual makes the business stronger.

KM is now included into business processes, particularly those involving quality, human resources, and skills management. As a result, KM satisfies the requirements for traceability and inspect ability. It is an effective tool for valuing professionals and their knowledge. It evens out stronger when put into practice from a broader viewpoint. Keeping these issues in mind, a company can assess the feasibility of implementing a KM process, and more precisely how to do it: finding the right tool, identify the ones who can implement and support this process. In short, a company needs to know how strategic issues meet KM issues. So the KM approach must meet the company's expectations, adapt to its needs and serve its strategy to be considered useful and therefore necessary to implement.

## 2.10 Related works

Various works were reviewed from related literatures written by different scholars at different periods around the globe. Some works are presented as follows

Kebede, (2018) developed a Knowledge Management (KM) framework specifically tailored for the Ethiopian public sector, aiming to enhance knowledge sharing and utilization among government institutions. The research employs qualitative methods, including interviews and surveys, to assess the current state of KM practices and identify gaps in awareness and implementation.

The main components of the designed artifact include:

- **Knowledge Creation:** Processes and practices that facilitate the generation of new knowledge, encouraging innovation and continuous improvement within public sector organizations.
- **Knowledge Storage:** Mechanisms for documenting and archiving knowledge, ensuring that valuable information is preserved and accessible for future use.
- **Knowledge Sharing:** Strategies and tools designed to promote the exchange of knowledge among employees and departments, fostering a collaborative environment.
- **Knowledge Utilization:** Approaches that encourage the application of knowledge in decision-making processes and operational practices to improve service delivery.
- **Technology Infrastructure:** The technological tools and platforms that support KM processes, including databases, intranets, and communication systems that facilitate knowledge sharing. **Organizational Culture:** The values, beliefs, and behaviors within the organization that influence how knowledge is managed and shared among employees.
- **Training and Awareness:** Programs aimed at educating employees about the importance of KM and equipping them with the skills necessary to engage in effective knowledge management practices

Nega & Ahmed, (2019) conducted a research the study aims to design a Knowledge Management (KM) framework that addresses the specific needs and challenges faced by agricultural cooperatives in Ethiopia. The research employs participatory methods, engaging

cooperative members and stakeholders to gather insights and perspectives on existing knowledge practices. The authors highlight the importance of local knowledge and community engagement in effective KM practices, identifying gaps in current approaches to knowledge sharing and utilization within cooperatives.

The main components of the designed artifact include

- **Knowledge Identification:** Processes for recognizing and cataloging valuable knowledge within the cooperative, including local and traditional knowledge.
- **Knowledge Creation:** Mechanisms for generating new knowledge through collaboration, innovation, and learning from experiences and best practices.
- **Knowledge Storage:** Systems for documenting and archiving knowledge, ensuring that valuable information is preserved and easily accessible for future reference.
- **Knowledge Sharing:** Strategies and tools designed to promote the exchange of knowledge among cooperative members, facilitating communication and collaboration.
- **Knowledge Utilization:** Approaches that encourage the application of knowledge in decision-making processes, operational practices, and improving service delivery.
- **Capacity Building:** Training and development programs aimed at enhancing the skills and competencies of cooperative members in knowledge management practices.
- **Collaboration Networks:** Establishing partnerships and networks among cooperatives and other stakeholders to facilitate knowledge exchange and collaboration.
- **Technology Infrastructure:** The technological tools and platforms that support KM processes, such as databases, online forums, and communication systems.

The researcher summarized the related works that was discussed above using the following table for better understanding.

## 2. 10.1 Related works by different authors

Various works were reviewed from related literatures written by different scholars at different periods around the globe. Some works are presented as follows

Table 2. 2 Related works by different authors (source: Shewanarega Engeda 2018 p 16)

Author & Year	Problem Explored	Approaches/ Methodologies	Key Findings	Recommendations And future work
Mekonen Kebede Knowledge Management in Ethiopian Public Sector: A Framework 2018	To develop a KM framework tailored for the Ethiopian public sector to enhance knowledge sharing and utilization.	Qualitative research through interviews and surveys	Identified significant gaps in awareness and implementation of KM practices in public institutions.	Emphasize training and awareness programs to improve understanding of KM benefits.
Tadesse Girma and Binyam Abate The Role of Knowledge Management in Enhancing Organizational Performance in Ethiopian SMEs 2020	To investigate the impact of KM practices on the performance of small and medium-sized enterprises (SMEs) in Ethiopia	Mixed-methods approach combining surveys and case studies of selected SMEs.	KM practices positively influenced organizational performance and innovation capabilities	Encourage SMEs to adopt KM frameworks to leverage their knowledge assets for competitive advantage. Explore the integration of technology in enhancing KM practices in SMEs
Mulugeta Gizaw and Kedir Mohammed A Design Science Approach to Developing a KM Framework for Ethiopian Universities 2019	To create a KM framework that supports academic collaboration and knowledge sharing among Ethiopian universities.	Employed design science principles, including stakeholder engagement and iterative development.	Found that existing KM practices were fragmented and lacked a unified strategy.	Foster inter-university collaborations and develop standardized KM practices. Conduct further research to assess the framework's effectiveness in enhancing collaboration.
Abdi Nega and Abebaw Woldemichael Designing a Knowledge Management Framework for Ethiopian	To develop a KM framework tailored to the needs of agricultural cooperatives to enhance knowledge sharing and utilization	Utilized design science methodology, including stakeholder involvement and prototyping.	Highlighted the importance of local knowledge and community engagement in effective KM.	Implement collaborative platforms for knowledge exchange among cooperatives. Investigate the long-term impacts

Agricultural Cooperatives 2021				of the framework on cooperative performance and sustainability
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The research identified significant gaps in the organization’s knowledge management practices that hinder its ability to manage and utilize knowledge effectively. One key gap is the lack of awareness among employees about the importance and benefits of Knowledge Management (KM), which limits engagement and the adoption of KM initiatives. Additionally, the absence of a centralized data repository poses a major challenge, as information is stored in fragmented systems, making it difficult to access, share, and integrate knowledge seamlessly. Furthermore, the lack of a well-defined KM framework results in unstructured processes, leading to inefficiencies in knowledge creation, sharing, and application. Addressing these gaps is essential to establish a cohesive KM strategy that supports organizational goals and enhances decision-making capabilities.

Most research in the field of knowledge management (KM) has focused on exploring the relationship between KM practices and organizational performance. However, this study takes a different approach by concentrating on the Ethiopian Commodity Exchange (ECX) and developing a tailored KM framework specifically suited to its unique needs and operational context. The ECX plays a critical role in ensuring market transparency and efficiency, yet it faces challenges such as fragmented data systems, low awareness of KM among employees, and the absence of a structured KM framework. This research aims to bridge these gaps by designing a comprehensive KM framework that integrates governance, processes, technology, and accountability. The proposed framework is intended to streamline knowledge creation, sharing, and utilization within the ECX, enabling it to achieve its strategic objectives while fostering innovation and operational excellence.

# CHAPTER THREE

## RESEARCH METHODOLOGY

Research methodology is a systematic way to solve a problem. Foundations of research are built and conducted over a structure called methodology (D. Remenyi, Money, & Swartz, 1998).

A research methodology outlines the methods and strategies for finding and evaluating data related to a particular study topic. In order to find answers to research questions or test hypotheses, research methodology is an organized, scientific method for gathering, analyzing, and interpreting quantitative or qualitative data.

### 3.1 Research Design

The term "research design" describes the overall approach taken to address the problem, which calls for the logical and cogent integration of various study components to ensure an effective solution. It serves as a guide for gathering, measuring, analyzing, interpreting, and reporting data as well as conclusions. The research problem can be approached methodically using research methodology. It can be viewed as a science that studies how scientific research is conducted.

Research design refers to the overall strategy that one chooses to attack the problem which requires integration of different components of the study in a coherent and logical way (Grover, 2015).

We can describe the research design as a blueprint, or outline, for conducting the study in such a way that maximum control will be exercised over factors that could interfere with the validity of the research results. The researcher reviewed the documentation of earlier studies and create interview questions to be utilized in this research in order to establish and formulate the framework of KM using design science paradigm.

In this study design science research is followed to conduct the study. Design science research (DSR) is a research methodology focused on the creation and evaluation of innovative artifacts to address complex problems in various domains, including information systems, engineering, and management. DSR aims to develop practical solutions to real-world problems through a systematic and iterative process of design, implementation, and evaluation. It is fundamentally a

problem-solving paradigm. DSR seeks to enhance human knowledge with the creations of innovative artifacts and the generations of design knowledge via innovative solutions to real - world problem (Alan, et al., 2004)

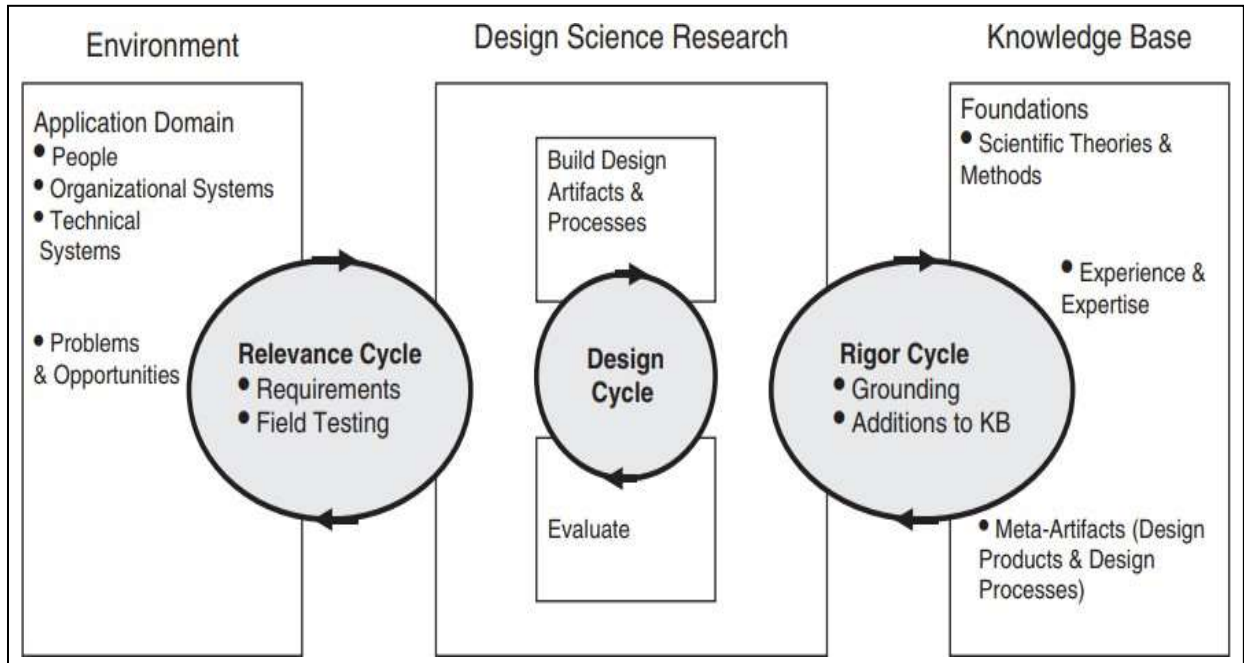


Figure 3. 1 Design Science Research Cycles (Hevner, 2004)

From the figure above it focuses on three inherent research cycles. The Relevance Cycle bridges the contextual environment of the research project with the design science activities. The Rigor Cycle connects the design science activities with the knowledge base of scientific foundations, experience, and expertise that informs the research project. The central Design Cycle iterates between the core activities of building and evaluating the design artifacts and processes of the research.

Figure 3.2 below presents the six steps of design science research methodology process model suggested by Peffers et al (2008).

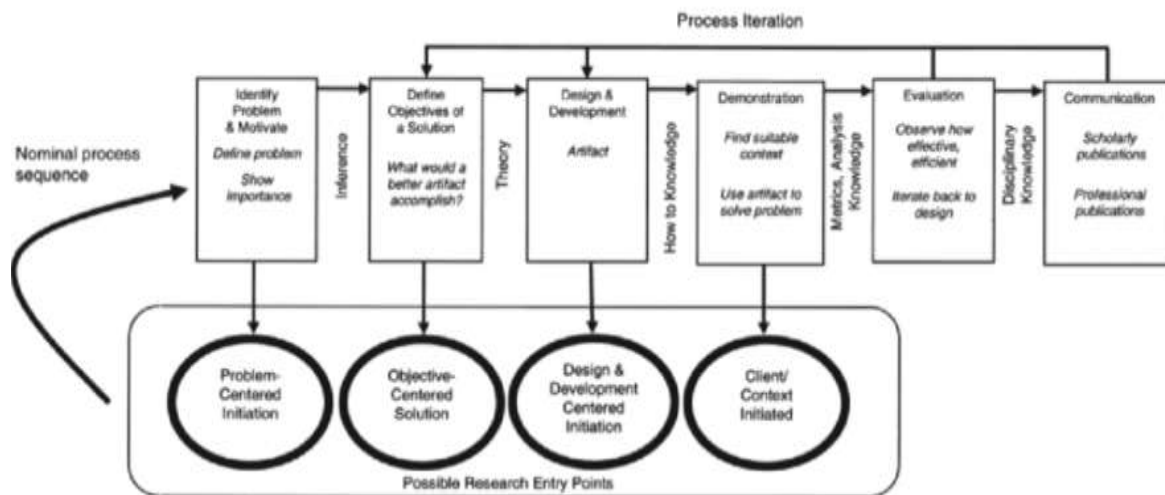


Figure 3. 2 DSRM Process Model (Peppers et al, 2008)

### 3.2 Problem identification and motivation

Kumar, (2019) defines research approaches as systematic methods that guide researchers in the process of inquiry and investigation. He also highlights the significance of selecting the appropriate research approach based on the nature of the research questions, objectives, and the context of the study. This foundational understanding is crucial for conducting effective research. Research approaches also refer as to the systematic and structured ways that researchers use to conduct research, and they differ in terms of their underlying logic and methods of inquiry. Basically, there are three types of research approach.

#### Qualitative approach

A qualitative approach refers to a research methodology focused on exploring and understanding phenomena through detailed examination of qualitative data. In qualitative research, researchers seek to understand the complexities, meanings, and subjective experiences associated with a particular topic or phenomenon. Qualitative research involves thorough investigation and exploration of a specific research topic or phenomenon, often through methods such as interviews, observations, and focus groups.

#### Quantitative approach

A quantitative approach refers to a research methodology focused on collecting and analyzing numerical data to understand and explain phenomena. In quantitative research, researchers use structured methods to gather data that can be quantified, measured, and statistically analyzed.

### **Mixed approach**

Mixed methods research combines elements of quantitative research and qualitative research in order to answer your research question. Mixed methods can help you gain a more complete picture than a standalone quantitative or qualitative study, as it integrates benefits of both methods.

Identification of issues within the Ethiopian Commodity Exchange (ECX) identifies a number of significant obstacles that impact the organization's efficacy and efficiency in carrying out its mission. Transparency, operational efficiency, and decision-making are all hampered by the inefficient handling of knowledge and information. It is difficult for stakeholders to easily access and share critical information because of the silos created by the disjointed technological infrastructure and reliance on antiquated technologies. Inconsistent governance and accountability frameworks also make it difficult to establish explicit knowledge management procedures and processes, which results in a lack of uniformity and misunderstandings between departments. Additionally, employees' ability to retain and apply important information is hampered by inadequate training programs and knowledge-sharing platforms, which create obstacles to skill development and knowledge transfer. In order come up with the solution the researcher followed qualitative data collection instruments.

### **Expert Interview**

The researcher began the investigation by reviewing the literature to compile pertinent requirements and features of the current data center. To obtain pertinent information from the reputable organizations, the researcher employed both primary and secondary data collection methods. While observation and semi-structured interviews are primary methods, document analysis is a secondary method of data collecting that is employed to obtain relevant information. Utilizing those tools in this thesis is demonstrated in the description that follows.

### **Primary Data Collection Techniques/Instruments**

Primary data collection techniques provide the researcher with appropriate first-hand information that contributes more for solving the existed problems.

### **Interview**

These entails having in-depth, in-person discussions with people or groups to learn about their viewpoints, experiences, and views on a particular topic. This is mostly because of their adaptability and efficiency in gathering insightful observations, thoughtful viewpoints, and important concepts that substantially increase the overall richness of the research. Semi-structured interviews were the primary mode of data gathering employed in this study. To combine structure and flexibility, a semi-structured interviewing method was selected. Rich qualitative data was obtained by the researcher through the use of semi-structured interviews.

### **Observation**

Direct observation of the organization's operations, activities, interpersonal relationships, and other observable facts of human experience was carried out as part of the main data collection. This required keeping a close observation on and recording the many dynamics within the company in order to get insightful knowledge and direct experience. Actively monitoring these components allowed for the collection of a comprehensive, first-hand data source.

### **Secondary Data Collection Techniques/Instruments**

#### **Document Review**

This study employed a variety of recorded data sources to investigate the knowledge management practices within the organization. Numerous written materials and papers, such as publications, reports, organizational structure documents, and other pertinent sources, were gathered and examined. The research sought to provide complete insights into the knowledge management processes of the company by integrating various data sources.

### **3.3 Research Area**

Ethiopian Commodity Exchange is the organization selected for the research. Realizing the significance of proper understanding and management of knowledge resources, ECX needs a knowledge management system framework in order to manage knowledge, advance its information systems, and advance its knowledge management activities. As attempted literature

review problems employees are unable to create, share, and store best practices for organizational learning because they are unaware of the advantages of knowledge management. Despite this, there is no organized framework in place to effectively manage knowledge sharing, storage, and retrieval.

The study targeted 185 permanent employees at the Ethiopian Commodity Exchange (ECX), focusing specifically on senior staff from departments such as Facilities Management, Human Resources, Finance, IT, Compliance, and Market Operations, who are involved in knowledge management (KM) practices. Through semi-structured interviews, document reviews, observations, and preliminary studies, the research gathered detailed insights into KM practices at both individual and organizational levels. Using purposive sampling, the study selected key informants with relevant expertise to ensure the information obtained was highly relevant. Out of the full workforce, a representative sample of 48 respondents was chosen due to resource constraints and time limitations. This sample was intended to reflect the broader population's diversity while providing practical insights. By targeting those most familiar with KM processes, the researcher balanced efficiency with depth, ensuring a manageable study scope.

Table 3. 2 Sample selection for the Interview

No	Department	Position	Number of respondents
1	Information technology Department	Information Infrastructure and support Division CEO	1
2	Human resource Department	Recruitment and HR Admin Division CEO	1
3	Finance Department	General Accounts Division Officer	1
4	Facilities management Department	Project Management Division Vice director	1
5	Market operation Department	Trading Operations Division Officer	1
6	Compliance Department	Investigate and Enforcement Division Officer	1
Total			6

### **3.4 Data Collection**

It is a process for compiling data from numerous sources in order to answer a specific study question or goal. Numerous techniques may be used, such as experiments, observations, interviews, surveys, and written analysis. The objectives of the study, the type of research (qualitative), and the available resources all influence the choice of data gathering method. The data collection mechanisms used in the research are semi-structured interviews, personal observations, informal and formal discussions, questionnaires and interactions with the management and employees.

### **3.5 Data analysis and presentation method**

Qualitative data were linked and merged to produce information that addressed the study questions. Semi-structured interviews were employed by the researcher to get qualitative information from participants. Participants' answers to the interview results were clearly described and appropriately interpreted. In addition, related works of the literature review, observation and secondary documents used to support the findings. The goal of the research is taken into consideration when analyzing and interpreting the information acquired through questionnaires, observation and interviews.

### **Define the objectives for a solution**

The objectives of a solution can be inferred from the description of the issue and a grasp of what is practical and achievable. The problem statement should be used to reasonably derive the objectives. In models of the research process for design science, this is the second step. Using knowledge of the current state of issues, the study seeks to determine the prerequisites for creating the proposed. Knowledge management framework. It seeks to respond to the research questions about "what a superior artifact achieves? Once an issue has been identified and its applicability assessed, It is necessarily to design a frame work as a solution. The use of qualitative goals which explained how a suggested structure should help solve issues that haven't been dealt with.

Data should be narrated and summarized after being gathered from reputable sources. Data preparation, analysis, and interpretation are all part of it. Analysis of qualitative data approach is employed to examine the information gathered from interviews, observations and

document analysis. The study employed thematic coding analysis to categorize the results of the interviews into main groups. Lastly, by describing and analyzing the qualitative data, the proper generalization can be developed and presented appropriately.

### **3.6 Design and development**

The result is an artifact. Conceptually speaking, any designed thing that incorporates a research input into the overall design can be considered a DSR artifact. Just before the creation of the real artifact, the activity determines the architecture and intended functioning of the item. A purposeful IT artifact created to address an important organizational problem (Alan, et al., 2004).

A framework is a model artifact that provides a broad overview or skeleton of interlinked items which helps as a guide to achieve the specific objective. After all the above stages are completed the appropriate and suitable framework was developed. The framework is developed based on best experiences from various literatures and possible modifications. The proposed design demonstrates each element's capabilities to address the issues that have arisen in the ECX. Knowledge strategy, knowledge resource, Technology, Knowledge barriers and Knowledge management processes are the main component and they are addressed in depth in Chapter 5. Although the developed knowledge management system is exclusive to ECX, it can be applied to other businesses with a few small adjustments.

### **3.7 Demonstration**

Demonstration of the Knowledge Management (KM) framework for the Ethiopian Commodity Exchange (ECX) using the Design Science approach involves implementing the framework components KM processes, KM resources, KM barriers, technology, and KM strategy in a controlled environment to test their effectiveness. The demonstration starts by integrating the KM processes into ECX's operations, focusing on how knowledge is captured, stored, shared, and applied. The implementation then incorporates KM resources, such as the skills, expertise, and knowledge repositories available within ECX, to ensure they are adequately leveraged to support the framework. The next step involves identifying and mitigating KM barriers, such as organizational culture, inadequate training, or resistance to change, through targeted interventions like workshops and awareness sessions. The technology component is

demonstrated by deploying digital tools and platforms that facilitate efficient knowledge sharing and collaboration, ensuring that these systems are accessible and user-friendly for employees. The KM strategy is also tested by aligning the framework with ECX's organizational goals, such as improving market efficiency and transparency, to verify that the KM activities support these strategic objectives. Real-world scenarios and simulated tasks are used throughout the demonstration to collect feedback from employees and management, allowing adjustments and enhancements to be made. This iterative process ensures that the KM framework is practical, adaptable, and capable of addressing ECX's knowledge management needs effectively.

### **3.8 Evaluation**

The assessment measures how well an item aids in finding a solution to the issue. In this activity, the goals of a solution will be compared with the real outcomes that are observed when the artifact is used in its proper context. Assessment can take many different forms, depending on the type of artifact and the problem addressed. At the end of this activity the researchers can decide whether to iterate back to step three to try to improve the effectiveness of the artifact or to continue on to communication and leave further improvement to subsequent projects.

To determine their effectiveness and alignment with organizational goals. The evaluation begins by examining the KM processes, ensuring that knowledge capture, storage, sharing, and application mechanisms function efficiently and contribute to decision-making and operational improvement. Next, the KM resources are assessed to determine whether the available expertise, knowledge repositories, and skills are effectively utilized within the framework to support knowledge management activities. Evaluating KM barriers involves identifying obstacles like resistance to change, inadequate training, or cultural challenges and assessing how effectively the framework addresses these issues. The technology component is evaluated by testing the integrated tools and systems to verify that they enhance knowledge access, sharing, and collaboration among ECX stakeholders without creating new silos or usability issues. Lastly, the KM strategy is assessed by reviewing how well the framework aligns with ECX's strategic objectives, such as improving transparency, market efficiency, and operational excellence. Feedback is collected from stakeholders through surveys, focus groups, and performance metrics to gauge the framework's impact. This comprehensive evaluation helps identify strengths and areas for improvement, ensuring the KM framework is effective, scalable, and adaptable to ECX's dynamic environment.

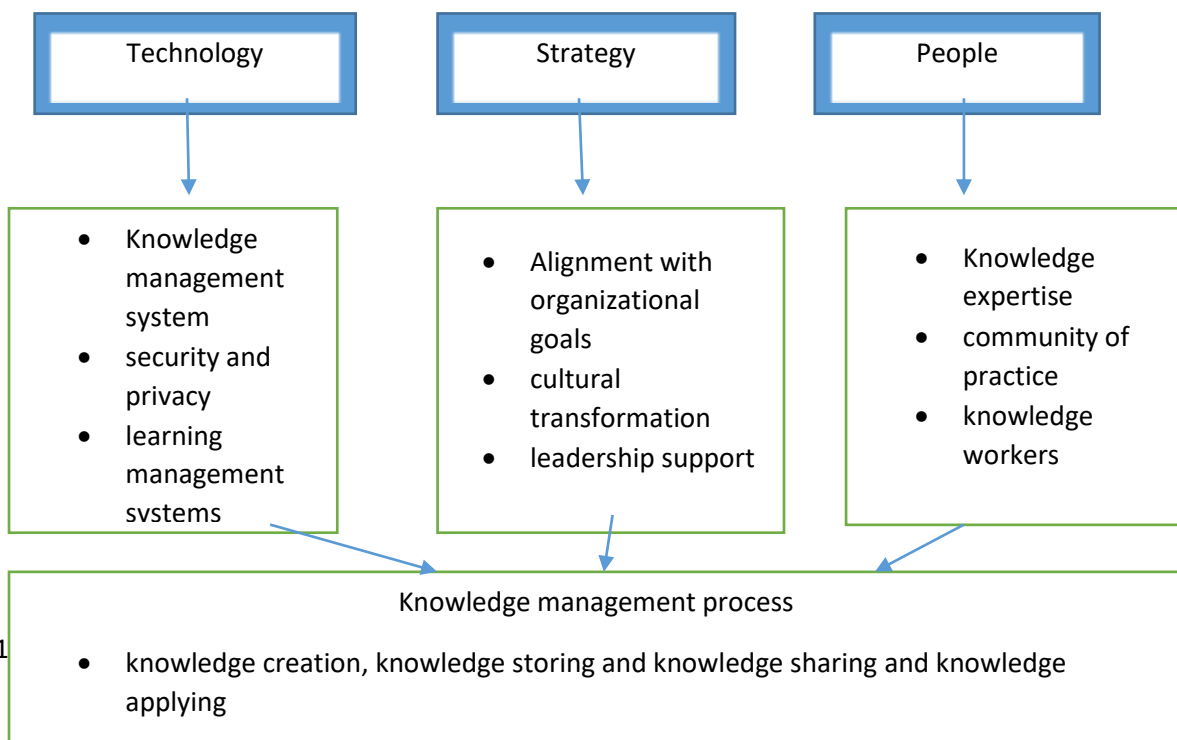
(Prat, Comyn-Wattiau, & Akoka, 2015) present a taxonomy for evaluating information systems artifacts, focusing on ensuring their effectiveness and applicability. Their evaluation methods categorize criteria into four key areas:

1. **Validity** - Checks if the artifact accurately solves the problem and meets its intended objectives, ensuring its relevance and correctness.
2. **Reliability** - Assesses the artifact's consistent performance across various scenarios, confirming that it functions as expected under different conditions.
3. **Utility** - Measures the artifact's usefulness and practicality, determining whether it effectively addresses user needs and provides value.
4. **Robustness** - Evaluates the artifact's resilience, ensuring it can handle stress, disruptions, or unexpected changes without failure.

Using the evaluation criteria proposed by (Prat, Comyn-Wattiau, & Akoka, 2015), the Knowledge Management (KM) framework for the Ethiopian Commodity Exchange (ECX) can be assessed to ensure its quality and effectiveness based on the components of KM processes, KM resources, KM barriers, technology, and KM strategy. The criterion of validity involves evaluating whether the KM framework effectively captures, stores, and disseminates knowledge, aligning with ECX's strategic goals of improving market efficiency and transparency. It assesses if the KM processes, resources, and strategies are integrated correctly and provide the intended benefits. Reliability focuses on determining whether the framework consistently supports knowledge management activities under different conditions, such as changes in market operations or internal organizational shifts. This includes evaluating if the technology used in the framework remains stable and accessible for users across various scenarios. Utility measures the practicality of the KM framework in the ECX context, ensuring that the technology, KM resources, and strategies are effectively utilized to enhance decision-making and operational excellence. It assesses whether the framework addresses the knowledge-sharing challenges posed by existing KM barriers. Finally, robustness evaluates the framework's resilience, ensuring that it can withstand disruptions such as technical issues or organizational changes without losing functionality. This comprehensive evaluation ensures that the KM framework is not only effective and aligned with ECX's goals but also reliable, practical, and adaptable to the organization's dynamic environment.

### 3.9 Communication

The communication stage in the Knowledge Management (KM) framework for the Ethiopian Commodity Exchange (ECX) is crucial for ensuring effective knowledge sharing and collaboration among stakeholders. Within the KM processes, this stage involves establishing clear channels for knowledge capture, dissemination, and application, facilitating smooth interactions and the exchange of ideas among employees. Utilizing KM resources—such as subject matter experts, knowledge repositories, and training materials—can enhance communication by providing access to relevant information and fostering a shared understanding of best practices. However, various KM barriers, including organizational silos, cultural resistance, and inadequate communication skills, can impede effective dialogue and knowledge flow. To overcome these challenges, the KM framework must leverage appropriate technology solutions, such as collaborative platforms and communication tools, that enable real-time information sharing and support interactive discussions among teams. Additionally, the KM strategy should prioritize communication by promoting a culture of openness and inclusivity, encouraging feedback, and reinforcing the value of knowledge sharing as a key component of ECX's operational success. By focusing on this communication stage, the KM framework can create a dynamic environment that enhances collaboration, drives innovation, and ultimately leads to improved decision-making and efficiency within ECX.



### 3.10 Conceptual framework of the research

Figure 3. 3 Conceptual framework of the research

Bryan, Scott, & Robert, (2012) conceptual framework as a structured system of concepts, theories, and principles that serves as a guide for research or practical application within a specific area. A theoretical structure of presumptions, guidelines, and regulations that unites the concepts that make up a wide notion is also a conceptual framework.

Figure shows the conceptual frame work of the study. On this study the dependent variable is knowledge management process (measured in three perspectives as knowledge create, share and store) and the independent variables are Technology, organizational strategy, people and factors affecting knowledge management.

#### 3.10.1 Knowledge management process

**Knowledge creation:** Encourage individuals or teams to generate new knowledge to research, innovation and collaboration.

**Knowledge storage:** establishing repositories and database to store and organized knowledge assets in structured manner enabling easy retrieval and reuse.

**Knowledge sharing:** facilitate the dissemination of knowledge through formal and informal channels including, collaboration and training session.

#### 3.10.2 Technology

**Knowledge management systems:** implement technology platforms and tools specifically design to support knowledge management processes such as document management, collaboration software and knowledge repositories.

**Security and privacy:** implement security measures to protect sensitive knowledge and balancing the need of accessibility with the need of confidentiality.

**Learning Management Systems:** Platforms for delivering training, e-learning courses, and knowledge-sharing sessions to enhance employee skills and capabilities.

### 3.10.3 Organizational strategy

**Alignment with Organizational Goals:** Ensuring that knowledge management initiatives are aligned with the organization's mission, vision, and strategic objectives.

**Cultural Transformation:** cultivating knowledge sharing where learning, collaboration, and knowledge sharing are encouraged and rewarded.

**Leadership support:** supporting employees 'knowledge sharing culture through recognition, and communication.

### 3.10.4 People

**Knowledge experts:** Subject matter experts who provide guidance, and support in their areas of specialization.

**Communities of Practice:** Groups of individuals with shared interests or expertise who collaborate to share knowledge, solve problems, and innovate.

**Knowledge Workers:** people within the organization who possess valuable expertise, experience, and insights.

## **CHAPTER FOUR**

### **PROBLEM IDENTIFICATION AND DEFINING OBJECTIVE OF THE ARTIFACT**

#### **4.1 Overview**

The main goal of this research is to create a knowledge management system framework for Ethiopian commodity Exchange (ECX). By enabling technologies, the framework is intended to provide insights and implement solutions for improving knowledge management practices within ECX. In order to answer the research questions posed in the first chapter, the research findings from the data gathered through semi-structured interviews are presented in this chapter of the thesis.

#### **4.2 Discussion and findings of the survey**

The participants for this research included Facilitates Management department, Human resource department, Finance department, Information technology department, Marketing operation department, and Quality operation department. In order to make sure that the selected respondents could offer insightful and pertinent information that matched the goals of the study, the purposive sampling method was employed. To get detailed feedback and high-level perceptions of knowledge management procedures related to this research field, the researcher conducted six (6) interviews with senior staff members. These six respondents were purposefully chosen according to predetermined standards, including position role, seniority, knowledge management exposure, and departmental role. Through these interviews, the study hopes to learn more about the organization's current knowledge management procedures as well as the obstacles to those procedures.

The interviews were conducted in person and phone call. The information gathered from these interviews was then translated into English and transcribed into Microsoft Word. Apart from the information obtained from the interviews, questioners, research process observations and relevant document reviews were also incorporated. The results of a semi-structured interview with senior staff members within the organization helped to organize the interview and reveal the respondents' perceptions of knowledge management practices as well as the level of awareness of knowledge management at each organizational unit (ECX).

Each of the participants' responses for each interview questions were captured and interpreted to associate with the research findings and objective. This section continues the description of semi-structured interview discussions with the sample population and the researcher findings based on strategies of knowledge management, knowledge management practice works in ECX, awareness and support of leadership for KM, and main obstacles to implement KM framework presented as follows.

Every participant's answer to every question during the interview was recorded and analyzed to correlate with the goal and study findings. The description of semi-structured interviews with the sample population and the researcher's conclusions based on the following topics will continue in this section

Table 4. 1 Presented the result of semi-structured discussion and findings

Semi-structured question	result	findings
Q1. Does the organization has KM policy, strategy or any kind of document that governs KM in ECX	ECX has policies, strategies, and documents that govern information management though they are not explicitly labeled as KM.	The Ethiopian Commodity Exchange (ECX) does not have a specific KM policy or strategy. Even though it participates in a variety of KM activities, these are more concerned with information management than with actual knowledge.
Q2. How does ECX go about doing KM? Who oversees KM within the ECX?	- The Ethiopian Commodity Exchange mostly uses its current information management procedures to approach knowledge management (KM). The organization's emphasis on data management, cooperation, and information handling indirectly manages knowledge.	Knowledge Management (KM) at the Ethiopian Commodity Exchange (ECX) is mostly carried out using current information management procedures. Although there isn't a specific department, organization, or policy for knowledge management.

	-There is no specific role or department dedicated solely to KM at ECX.	
Q3. Why does ECX need to manage knowledge?	-effective decision-making -preserve institutional knowledge -foster innovation	The organization's long-term performance and survival depend on ECX's capacity to use its combined experience, streamline procedures, react to changes in the market, and hold onto important insights. All made possible by proper KM.
Q4. When senior staff leave ECX, how can other employees effectively use the KM system to access and utilize the knowledge?	- Most of the time they share their experience with new employee but it is not enough, since it depends the willingness of the senior. -There is at least a month to share basic best practices and if the senior employee recalls all processes.	When senior employees leave ECX, the organization can face several challenges related to knowledge management like loss of Institutional Knowledge, Knowledge Gaps, Challenges in Knowledge transfer, risk of Knowledge Silos.
Q5. Regarding KM, how do you perceive the role of leadership in ECX?	- level of low support from the leadership. - level of low awareness about Knowledge Management.	The support from leadership for KM is limited. Without clear leadership backing, KM activities are not prioritized or systematically integrated into the organization's operations. Lack of leadership emphasis on KM can lead to missed opportunities for innovation, inefficiencies in decision-making and potential loss of valuable knowledge.
Q6. Is there a	- does not have a centralized data and	The lack of a centralized system for

<p>centralized data and KM center? Is there any technology or KM system in place to facilitate knowledge creation, capture, and transfer?</p>	<p>knowledge management center.</p> <ul style="list-style-type: none"> <li>- ECX does not appear to have a dedicated system in place to facilitate knowledge creation, capture, and transfer.</li> </ul>	<p>storing, sharing, and creating knowledge leads to it being scattered across various departments, teams, and individual employees, making it difficult for the organization to access and utilize knowledge effectively.</p> <p>This implies that a KM framework is critical to solving the problem of scattered information.</p>
<p>Q7. What do you believe to be the main obstacles that might have an impact on the organization's ability to manage knowledge effectively and efficiently?</p>	<ul style="list-style-type: none"> <li>- Issues with the accuracy, consistency, and integration of data from various sources can affect the quality of knowledge.</li> <li>- lack of a well-defined KM strategy aligned with the organization's goals.</li> <li>- Leadership and Governance Issues.</li> <li>- Employees may resist new KM practices or technologies.</li> </ul>	<p>High-quality, integrated data is crucial for effective knowledge management.</p> <p>The roles and responsibilities of governance bodies and leaders are outlined in a well-designed knowledge management framework. It gives guidelines for decision-making, resource allocation, and performance monitoring.</p>
<p>Q8. Finally, do you think ECX needs to standardize the management of its knowledge process?</p>	<p>-Yes, Standardizing the management of knowledge processes at ECX could be beneficial for several reasons like Consistency, Efficiency Knowledge Sharing, Compliance and Security.</p>	<p>The majority of respondents concur that ECX needs to standardize how its knowledge process is managed, which suggests that creating a framework for knowledge management is required.</p> <p>Standardized KM processes, decision-makers can rely on accurate and up-to-date information.</p>

According to the responders, the main cause of this is that ECX does not have a strong framework to support standardized knowledge management procedures.

The research's respondents believe that in order to overcome the difficulties with knowledge management system, the organization must create a mechanism to harmonize and standardize knowledge management processes with high sensitivity care for its knowledge creation, sharing and storing. Therefore, the research's findings suggested a knowledge management framework to oversee the company's priceless knowledge management.

### 4.3 Analysis of the Finding

This chapter's first section covers the respondents' overall backgrounds. It provides a brief explanation of position, year of experience, and educational background. The analysis, analytic interpretation, testing of various linear regressions, and model interpretation are all provided in the second section.

#### 4.3.1 Demographic Overview of the Research Participants

Demographic overview of this research provides a summary of key characteristics of a population, including variables such as position, educational background, and work experience.

##### 4.3.1.1 Position of the Respondent

The percentage distribution of respondents across organizational positions is shown by 44.3% holds the position of Associate Leader, 22.6% of respondents are CEOs, 32.2% of Officers and 6.3% of respondents are not select the position.

Table 4. 2 Position of respondent (Source: computed by the researcher on SPSS)

		position			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CEO	13	26.5	27.1	27.1
	Associate Leader	20	40.8	41.7	68.8
	Officer	15	30.6	31.3	100.0
	Total	48	98.0	100.0	
Missing	System	1	2.0		
Total		49	100.0		

### 4.3.1.2 Educational Background

According to the data on educational backgrounds, 0.9% of respondents did not choose their educational background, 57.4% hold a bachelor's degree, and 35.7% have holds Masters and 6.1% has PhD. Overall, 100% of the valid respondents (114 out of 114) have at least a degree, with a substantial portion holding advanced degrees.

Table 4. 3 Educational Background (Source: Computed by the researcher on SPSS)

		Education			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Degree	23	46.9	47.9	47.9
	Masters	21	42.9	43.8	91.7
	phd	4	8.2	8.3	100.0
	Total	48	98.0	100.0	
Missing	System	1	2.0		
Total		49	100.0		

### 4.3.1.3 Work experience

The largest group of respondents (43.5%) has between 1 to 5 years of service experience, 36.5% have between 6 to 10 years of experience, 19.1% has more than 10 years of experience

Table 4. 4 work experience (Source: Computed by the researcher on SPSS)

		service			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	1-5	22	44.9	45.8	45.8
	6-10	15	30.6	31.3	77.1
	11-<	11	22.4	22.9	100.0
	Total	48	98.0	100.0	
Missing	System	1	2.0		
Total		49	100.0		

### **4.3.2 Interview Interpretation**

Interview questions were prepared by adopting from literatures and modified according to the researcher's case. The result of the interview helps for identifying each and every problem in the regional health bureau. It is based on the interview results, observation and literatures that the framework was developed.

After the interview was conducted with the information technology staffs the next step is preprocessing in an appropriate manner and finally analysis is performed. An interview finding is broadly categorized into 5 sections.

#### **4.3.2.1 Strategies of knowledge management**

Employees at the Ethiopian Commodity Exchange (ECX) express concerns that the lack of a Knowledge Management (KM) strategy leads to uncertainty and inconsistency in how knowledge is managed and shared across the organization. Without a unified approach, employees struggle to access information, collaborate effectively, and leverage knowledge for decision-making and innovation. They also note that there is limited awareness and engagement in KM activities, inconsistent training, and a fragmented use of knowledge systems, which creates silos and inefficiencies. Additionally, the absence of a strategy results in a lack of technology support for KM, as well as no clear metrics or accountability to measure and improve knowledge practices. Collectively, these issues hinder ECX's ability to fully utilize its knowledge assets.

#### **4.3.2.2 Knowledge acquisition, creation, storage, sharing and applying in ECX**

Employees at the Ethiopian Commodity Exchange (ECX) point out a number of knowledge management-related difficulties, such as collecting, creating, storing, sharing, and using knowledge. They point out that there is no organized method for obtaining outside knowledge, and a large portion of the knowledge generated inside the company is unrecorded and restricted to particular people or groups. Information is dispersed across multiple systems and stored inconsistently, making it challenging to retrieve when needed. Informal, relationship-based interactions are the main source of knowledge sharing, which results in silos and little cross-departmental cooperation. Employees also point out that a lack of clear standards or a supportive culture prevents the application of information from being integrated into decision-making.

processes, which leads to underutilized knowledge and lost potential for innovation and operational efficiency.

#### **4.3.2.3 Awareness and support of leadership for KM**

Employees at the Ethiopian Commodity Exchange (ECX) indicate that their ability to adopt successful knowledge management (KM) methods is impeded by a lack of leadership support and understanding for KM. They point out that leadership frequently has a clear grasp of the significance of knowledge management (KM), which leads to inadequate resources, prioritizing, and investment in required technology and training. Leaders rarely communicate the advantages of knowledge management (KM), which results in low participation and a weak culture of information sharing. Staff members become confused as a result of unclear KM vision and strategy, and advancement is further hampered by leadership's reactive style and aversion to change. Even though some workers appreciate leadership's occasional good work, they frequently feel that these efforts are inconsistent and lack sustained dedication.

#### **4.3.2.4 Key Challenges to implement Knowledge management in ECX**

Employees at the Ethiopian Commodity Exchange (ECX) identify several key challenges in implementing Knowledge Management (KM), including a lack of awareness and training, insufficient leadership support, and the absence of a clear KM strategy. They mention that fragmented knowledge systems and inadequate technology infrastructure make it difficult to store and share information efficiently. Cultural barriers, such as a lack of trust and resistance to change, further hinder knowledge-sharing efforts and collaboration across departments. Additionally, employees note that time constraints and heavy workloads limit their ability to engage in KM activities, while the absence of performance measurement metrics results in a lack of accountability and incentives. These challenges highlight the need for a comprehensive approach, strong leadership support, and a centralized system to effectively implement KM at ECX.

### **4.4 Discussion of Findings**

Without a formal knowledge management strategy, implementing effective KM is challenging. Individuals and departments capture and share knowledge in their own ways, which leads to inconsistencies and redundancies in knowledge management practices and creates a lack of coordination and collaboration across the organization. Given these trends, ECX should consider

establishing a formal knowledge management strategy and team. The findings of the study indicate that ECX lacks a well-defined knowledge management strategy and a KM department or teams dedicated to managing knowledge. There is no explicit indication of any established procedures or systems to facilitate knowledge capture, storage, sharing, and dissemination at the organizational level.

The study indicated that knowledge is created through a combination of processes that involve individual expertise, collaborative efforts, external relationships, and technology-driven systems. Knowledge creation is essential in ECX for improving market operations, ensuring transparency, and fostering innovation.

One of the primary ways knowledge is created in ECX is through experiential learning. Employees, such as market analysts, traders, and warehouse managers, gain tacit knowledge over time through hands-on experiences, dealing with daily operations, and solving real-time challenges. Through socialization, where people exchange their tacit knowledge through face-to-face communication, informal interactions, problem-solving meetings, and team discussions.

Knowledge is captured and stored in ECX using a variety of methods, such as recording work activities, having conversations among coworkers, speaking with senior staff members, conducting interviews with retired employees, and keeping knowledge resources on personal computers. The most important instrument for gathering and preserving knowledge is the documentation of job activities. This can entail recording the results of specific tasks and efforts in addition to maintaining thorough records of guidelines, methods, and best practices. On a personal level, nevertheless, the documentation and recording practices are beneficial, but they are exclusive to the person.

Talking among colleagues is one way to gather and distribute knowledge. Through promoting employee experiences and insights between themselves, companies can leverage the collective knowledge within their workforce. Conducting interviews with departing employees is an additional effective means of gathering and archiving knowledge. Exit interviews are not an often-employed strategy at ECX, though. Consequently, the company has lost knowledgeable staff members.

An additional essential instrument for information exchange is to ask seasoned workers for solutions to issues. Employees with experience have a wealth of information about the

organization's history, culture, and lessons learned throughout time, all of which can be extremely beneficial to its success. According to the study, most workers would rather talk to senior staff members than read written materials.

Nevertheless, knowledge resources like process documentation, training manuals, and best practice guidelines are available locally on personal computers; there is no knowledge management technology specifically made for knowledge exchange and preservation. This suggested that ECX has to create a knowledge management platform so that staff members have access to it anytime they need it.

Actual observation and interview revealed that poor management support, employee unwillingness to share knowledge, lack of incentive and recognition, lack of commitment, lack of knowledge management technology, and lack of employee awareness of knowledge management are the main factors impeding knowledge management practice.

Many workers were unaware of the importance of knowledge management and the ways in which their expertise could be utilized to improve performance levels inside the company. This is the outcome of a lack of understanding of the significance of knowledge management inside the company.

Another barrier that hinders knowledge management in ECX is a lack of commitment .The absence of genuine dedication and involvement from both leadership and employees in implementing and sustaining KM initiatives. This can severely undermine the success of KM efforts within an organization, as commitment is a critical factor in ensuring that knowledge is effectively captured, shared, and utilized.

The lack of knowledge management (KM) technology in the Ethiopian Commodity Exchange (ECX) can present significant challenges to the organization's ability to effectively capture, store, share, and utilize knowledge. Knowledge management technology is crucial for facilitating the flow of information and ensuring that relevant knowledge is available when needed. The study found that without these systems in place, some issues occur, like knowledge loss, especially when employees leave the organization or change roles. Without a centralized repository to store knowledge, valuable information becomes inaccessible to others, leading to inefficiencies and duplicated efforts.

Another major obstacle that prevents knowledge management in the case organization is the widespread presence of poor managerial support for knowledge management. Because there is no reward or recognition for knowledge efforts, some ECX personnel are reluctant to share their expertise with others.

The Ethiopian Commodity Exchange (ECX) faces several key challenges: lack of leadership awareness on knowledge management (KM), the absence of a centralized database, and cultural resistance to knowledge sharing. These issues hinder efficient information management and market operations. Solutions include training leaders to emphasize KM's strategic value, developing a unified KM system for better information access, and promoting a collaborative culture with incentives for knowledge sharing. Addressing these problems can align KM practices with ECX's goals of improving market efficiency and operational excellence.

Targeted programs build leader support for KM, align initiatives with strategic goals, and promote a knowledge-sharing culture. Developing a unified database improves information access, reduces redundancies, and supports market efficiency with accurate, accessible data. Another solution is Developing a unified database improves information access, reduces redundancies, and supports market efficiency with accurate, accessible data.

### **Objective of the solution**

1. Establish a formal knowledge management (KM) strategy and dedicated KM team at ECX to ensure consistent knowledge capture, storage, and sharing practices across the organization.
2. Develop and implement a centralized knowledge management platform to store, access, and preserve knowledge resources, reducing redundancies and knowledge loss when employees leave or change roles.
3. Increase employee awareness of the importance of knowledge management by providing training programs that emphasize the strategic value of KM for enhancing market operations, transparency, and innovation.

4. Foster a collaborative knowledge-sharing culture by offering incentives, recognition, and managerial support to encourage employees to share their expertise and experiences.
5. Leadership support and commitment to knowledge management by aligning KM initiatives with ECX's strategic goals, improving market efficiency, operational excellence, and decision-making.

# CHAPTER FIVE

## PROPOSE KNOWLEDGE MANAGEMENT FRAMEWORK

### 5.1 Overview

The relevance cycle (chapters one and four) discusses the problem or need for the research, the context or research environment, and the design requirements. This chapter represents the design cycle of the design science approach where the rigor cycle and the relevance cycle intersect.

The rigor cycle (chapter two) establishes a foundation for rigorous design research by drawing on preexisting knowledge bases, including theories, techniques, and design products. To find similarities and weaknesses in the current KMFs, a review of the literature on knowledge, knowledge management, and previously created KMFs is being conducted in this process.

Surveys, key informant interviews, and observations are used to collect primary data in order to determine the corporate context and knowledge management needs. These two initiatives are brought together in this chapter to create a thorough KMF that is suitable for the ECX particular environment, as required by the chosen research methodology.

### 5.2 Framework development

The Ethiopian Commodity Exchange (ECX) serves as a vital hub for the trading of agricultural commodities, playing a crucial role in the nation's economy. Since its inception, the ECX has transformed the way commodities are traded in Ethiopia, fostering greater transparency, efficiency, and fairness in the market. However, the continued success and growth of the exchange depend heavily on the establishment and maintenance of a robust operational framework.

A well-structured framework is essential for the ECX to manage its complex operations, ensure regulatory compliance, and effectively mitigate risks. It provides a standardized approach to trading, enhances market transparency, and supports the integration of advanced technologies. Moreover, such a framework fosters trust among stakeholders, including farmers, traders, and international buyers, ensuring that the exchange remains a reliable and credible marketplace. As

the ECX continues to evolve, a solid framework will be instrumental in driving its long-term sustainability and competitiveness in both local and global markets.

### **5.3 Components of the proposed knowledge management framework**

The proposed framework includes all three of the standard comprehensive framework's components (knowledge strategy, KM process, and KM barriers), plus two more components that are included and ordered to meet the ECX's requirements. The following five components are integrated in to the framework. Each of the components is discussed further in the discussion section (5.4). Here is a very brief description on why these are selected as a component in the framework.

- 1. Knowledge management Strategy** A comprehensive KM strategy within a proposed KM framework for ECX is essential for fostering a culture of knowledge sharing, optimizing knowledge assets, and driving organizational success. By clearly defining objectives, processes, tools, and metrics, ECX has to develop a robust KM strategy that aligns with its goals and enhances its ability to manage knowledge effectively and efficiently.
- 2. Knowledge assets** In the Knowledge Management (KM) framework, the Knowledge resource represents the core assets that form the basis for knowledge generation, sharing, and utilization within an organization. These resources encompass various types of knowledge, from documented data and information to the tacit expertise of individuals. Understanding and effectively managing these knowledge resources is crucial for an organization to maximize its intellectual capital and maintain a competitive edge.
- 3. Knowledge management processes** it refers to the systematic approach used to handle knowledge within an organization. It encompasses the methods and techniques to create, capture, store, share, and effectively use knowledge to meet organizational objectives.
- 4. Technology** is a key enabler that supports and improves the processes of knowledge creation, capture, storing, sharing, and application in a knowledge management (KM) framework. It offers the architecture and tools necessary to enable the smooth administration and flow of knowledge within organization.

5. **Knowledge management barriers** are barriers that prevent knowledge from being effectively captured, shared, and used inside the organization. These obstacles may have a detrimental impact on decision-making, operational effectiveness, and overall
6. performance. Main KM obstacles at ECX consist of : Cultural Resistance, Lack of Leadership Support, fragmented systems and Inconsistent Processes

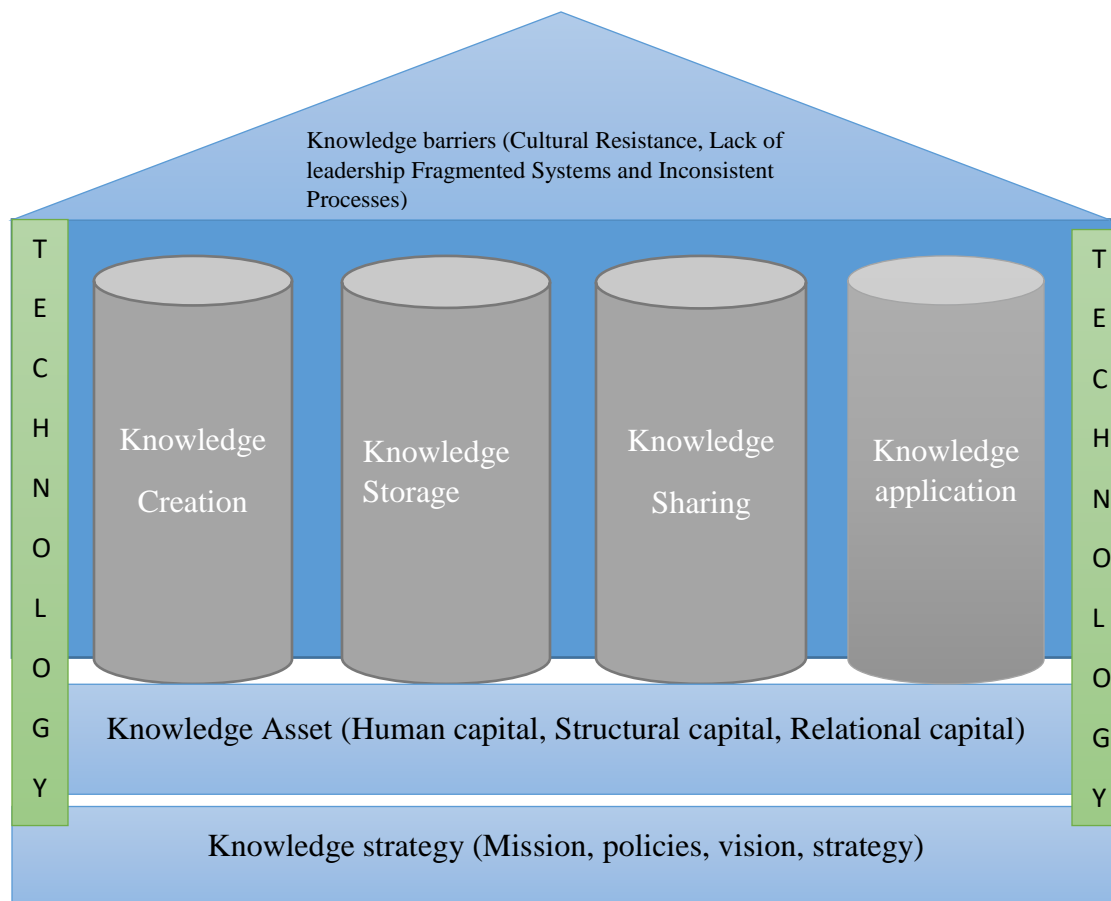


Figure 5. 1 The proposed knowledge management framework (adopted from WIIIG’s KM framework)

#### 5.4 Components of the proposed Knowledge Management Framework

##### Discussion

Every components of the suggested KMF is covered in detail in this section. For knowledge management (KM) to be effective within the organization, all eight of these components must be realized in logical balance.

### **5.4.1 Knowledge Strategy**

KM is an essential strategic tool for organizations to handle increasing complexity and rapid technological changes (Scheer & Klaus, 2009). Knowledge management (KM) is difficult because it is a relatively new concept that requires deep understanding, insights, and systematic approaches. Managers and knowledge professionals need structured methods to analyze knowledge-related situations, make informed decisions, and deal with practical limitations (Wiig, 1993).

A knowledge strategy is the plan or approach that an organization develops to manage and leverage its knowledge assets in alignment with its overall business strategy and objectives. It defines how knowledge should be created, shared, stored, and utilized to achieve specific goals like innovation, competitive advantage, or improved performance. It also focuses on aligning knowledge resources and practices with business goals, determining what knowledge is important, and how to use it effectively for organizational success.

It is important for any kind of activity to begin with the organization's broader mission and vision, which is why the framework's first element is designed to be the organization, with its mission, vision, policies, and strategies as a foundation. This relationship serves as a reminder to the organization to consider and think of the organizational broader aspects in all of its activities related to knowledge management (KM) and ensure that KM efforts are aligned with it. Any kind of effort should start with the organization's broader mission and vision. In view of this, the first element of the framework is designed to be the organization, with its mission, vision, policies, and strategies as a foundation.

A Knowledge Management (KM) strategy defines the approach and processes that an organization like the Ethiopian Commodity Exchange (ECX) uses to manage, utilize, and maximize the value of its knowledge assets. In the ECX's KM framework, a well-designed KM strategy helps align knowledge processes with the organization's goals, ensuring that the right knowledge is available to the right people at the right time.

### **5.4.2 Knowledge management process**

In the context of the Ethiopian Commodity Exchange (ECX), the knowledge management process usually consists of a few essential components that are customized to the objectives and workings of the organization. As a platform for trading agricultural commodities, ECX

significantly depends on effective knowledge management to enhance market transparency, optimize trading procedures, and support stakeholders. The key KM process for the development of knowledge management framework appropriate for ECX as follows

- a) **Knowledge Creation** Creating new content or updating current content inside the organization's explicit and tacit knowledge is known as knowledge acquisition and creation. It is the process by which new information is produced, whether by inventiveness, teamwork, research, or individual insight. This dynamic process occurs in companies and incorporates both tacit knowledge (personal experiences and know-how) and explicit information (which is easily documented). Knowledge can be produced by a variety of activities, including brainstorming, teamwork, experimentation, and experience-based learning.

In the Ethiopian Commodity Exchange (ECX), knowledge is primarily created through various formal and informal processes. Every commodity transaction produces data on trade volumes, pricing, supply, and demand. Explicit knowledge derived from analyzing transactional data is crucial for forecasting market trends, evaluating performance, and arriving at informed decisions.

Collaboration can be the other way to create knowledge internally and externally. Internally Departments include treasury, trade, risk management, and IT work together to develop knowledge. The sharing of insights throughout various divisions facilitates building a unified view of market and operational difficulties. Externally International organizations, governmental agencies, and academic institutions are all partners of ECX. Through these collaborations, knowledge is produced through research projects, training programs, and outside expertise.

- b) **Knowledge Storage** The purpose of knowledge capture is to maintain knowledge in order to improve organizational performance and ensure that knowledge available is stored for future reference (Wagner & Zubey, 2005). Knowledge storage ensures that organizations do not lose important information, insights, or experiences, especially as employees transition roles, retire, or leave the organization. Organizational learning occurs through a process of detecting and correcting errors, which is facilitated by the systematic analysis of

actions and outcomes to create new knowledge and improve organizational practices (Schön, 1978). Here are some benefits of storing knowledge in organizations.

- **Prevent Knowledge Loss:** Protect against the loss of critical knowledge and expertise when employees leave or organizational changes occur.
- **Enhance Accessibility:** Ensure that knowledge is easily accessible to employees when they need it, facilitating faster decision-making and problem solving.
- **Enable Knowledge Reuse:** Allow for the reuse of existing knowledge in future projects or contexts, improving efficiency and reducing duplication of effort.

The Ethiopian Commodity Exchange (ECX) stores knowledge through various methods and systems designed to preserve and manage both structured and unstructured information. Document management systems are used for ECX to store documents, reports, policies, and procedure manuals. These systems offer a centralized location for digital document management and access. Effective knowledge storing is fundamental for enhancing operational efficiency, supporting strategic decisions, retaining expertise, ensuring compliance, fostering innovation, improving collaboration, managing stakeholder relations, facilitating training, and achieving cost efficiency. It helps organizations like ECX build a robust knowledge base that contributes to long-term success and resilience.

- c) **Knowledge sharing** Knowledge sharing is the exchange of experience, skills, and tacit and explicit knowledge among employees. Knowledge sharing as a key element in knowledge management. (Prusak, Davenport, & Laurence, 1997) underlines on the implementation of culture, trust, and communication in ensuring effective knowledge sharing within organizations.

Knowledge sharing is integral to the successful operation of the Ethiopian Commodity Exchange. By facilitating the dissemination of market information, promoting training and capacity building, and leveraging both traditional and digital platforms, ECX helps market participants especially smallholder farmers—access the knowledge they need to participate effectively in commodity trading. This promotes transparency, enhances market efficiency, and ultimately contributes to economic growth in Ethiopia. Knowledge

sharing in the Ethiopian Commodity Exchange (ECX) plays a vital role in ensuring smooth operations, enhancing market transparency, improving decision-making, and fostering innovation.

Research and experience indicate that extended learning processes, as opposed to straightforward communication processes, are necessary for successful information transfer. Knowledge is dispersed when it is exchanged inside an organization in order to accomplish a purpose. Knowledge is shared both formally and informally, and it is done so using a variety of tools and techniques. Effective knowledge transmission is a critical issue for ECX for obvious reasons.

- d) **Knowledge application** Knowledge application is the process of using acquired knowledge to make decisions, solve problems, and enhance performance within an organization. It involves converting information and insights into actionable steps, integrating them into workflows, and leveraging them to improve processes or outcomes (Alavi & Leidner, 2001). Effective knowledge application requires not just access to relevant information but also the ability to adapt and utilize it in various contexts. It is critical for organizations aiming to stay competitive, as it ensures that learning and innovation translate into tangible improvements and value creation. By embedding knowledge into systems, practices, and culture, organizations can create an environment where information continuously contributes to achieving strategic objectives and operational excellence (Nonaka I. , 1995)

### 5.4.3 Technology

Technology is an essential part of the Knowledge Management (KM) architecture because it makes it easier for knowledge to be gathered, stored, shared, and used inside a company. It supports the procedures and strategies needed for effective knowledge management by acting as a facilitator. All knowledge management operations, including that of ECX, are made possible by technology. Technology is used by ECX in every aspect of the knowledge management system; from producing to managing and disseminating knowledge .Technology is essential to every employee's everyday activities and forms the basis for using KMS in ECX properly. The dissemination of knowledge is facilitated by the widespread usage of information technology. The management of knowledge generation, storage/retrieval, transfer, and application for

knowledge management practice in ECX must be supported and improved by the use of knowledge-based technology. As a result, selecting the appropriate technology is crucial for ECX. Knowledge management technology should provide persistence and appropriate techniques so that individuals can find information that was developed in the past and regenerate it to create new knowledge through the practical use of current knowledge. The use of technology is an enabling tool that can assist ECX in fostering creativity and teamwork, facilitating information sharing practices, and providing knowledge management with the speed, efficiency, and cost-effectiveness to execute knowledge management procedures.

In summary, technology forms the backbone of KM in the ECX by facilitating the effective capture, storage, sharing, and application of knowledge, thus driving efficiency and innovation in commodity trading.

#### **5.4.4 Knowledge assets**

The term "knowledge assets" refers to an organization's intangible resources, which include the relationships, knowledge, expertise, and abilities that add to the organization's value, competitive advantage, and operational success. The organizational capital that is accumulated via the invention, application, storage, and acquisition of knowledge can be conceptualized as knowledge assets. They can take many different forms, such as external relationships, technology systems, processes in organizations, and human expertise. Effective asset management is essential to the long-term viability and expansion of contemporary businesses. knowledge asset can be classified as follow

- **Human Capital (Individual Knowledge Assets)** refers to the knowledge, skills, expertise, and experience possessed by individuals within the organization. This includes both explicit knowledge (which is easily codified and documented) and tacit knowledge (which is personal, experiential, and harder to transfer).
- **Structural Capital (Organizational Knowledge Assets)** refers to the knowledge that is embedded in the organization's systems, procedures, databases, infrastructure, and intellectual property. Structural capital, as opposed to human capital, stays in the company even after personnel depart.

- **Relational Capital (External Knowledge Assets)** The knowledge and value derived from relationships with external stakeholders, including partners, suppliers, customers, regulators, and the larger community, is referred to as relational capital. It includes the mutual respect, standing, and information that exist between the organization and its surroundings.

#### 5.4.5 Knowledge management barriers

They are barriers that prevent knowledge from being effectively captured, shared, and used inside the company. These obstacles may have a detrimental impact on decision-making, operational effectiveness, and overall performance. Main KM obstacles at ECX consist of:

- Cultural Resistance** the organization's absence of a culture of sharing knowledge and resistance to change can hinder KM initiatives. Fear of losing their significance or influence might make people reluctant to share their knowledge.
- Lack of Leadership Support** employee involvement and the overall effectiveness of KM projects are hampered by the lack of knowledge regarding KM's advantages in ECX. To address this, the business needs to show the concrete benefits of knowledge management (KM) through improved leadership support, training, and communication.
- Fragmented Systems and Inconsistent Processes.** The lack of a cohesive KM strategy and disjointed processes may cause knowledge to be siloed across departments, limiting its accessibility.

#### Solutions for the Knowledge management barriers

Several solutions can be put into practice to solve the issues of cultural resistance, a lack of leadership support, and disjointed systems in the Ethiopian Commodity Exchange (ECX). First, by rewarding staff members for sharing important information and holding training sessions that highlight the advantages of knowledge management (KM), a culture of knowledge sharing may be fostered. To reduce resistance, change management techniques should involve staff members early in knowledge management projects. Second, leadership support can be increased by enlisting them as advocates in KM initiatives, giving them specialized training, and showcasing the real advantages through pilot projects. Lastly, silos will be broken down, and consistency across departments will be ensured by investing in user-friendly technological solutions,

standardizing KM procedures, and creating a centralized KM strategy and system. By implementing these tactics, ECX can establish an effective and integrated KM environment that enhances collaboration and organizational efficiency.

Organize workshops and meetings to present the framework to key stakeholders, including leadership, department heads, and employees. This direct engagement allows for discussions about the framework's benefits and how it aligns with ECX's strategic. By Creating user-friendly documentation, such as brochures or infographics, that clearly outlines the KM framework's structure, purpose, and expected outcomes. It can help simplify complex information and make it more accessible. Establish a feedback loop where employees can share their thoughts, concerns, and suggestions about the KM framework. This participatory approach fosters a sense of ownership and encourages continuous improvement based on user experiences. Consider conducting a pilot project within a specific department(IT infrastructure and support department) to demonstrate the framework's effectiveness. Highlighting positive outcomes from the pilot can serve as a compelling case for broader adoption across the organization. Develop and conduct training sessions focused on the KM framework, emphasizing its components, processes, and potential impact on improving efficiency and knowledge sharing within ECX.

## **5.5 Evaluation of the proposed Framework**

One of the most important tasks after developing the knowledge management system is evaluation. Evaluation is accomplished by having domain experts examine the knowledge management framework and verify that it accurately captures organizational knowledge.

Utilizing human expert evaluation techniques, the researcher assessed the knowledge management framework's effectiveness. Senior staff members who took part in semi-structured interviews during the data gathering processes provided the evaluation data (in chapter four). It was crucial to confirm that the knowledge management framework can accomplish its goals by using this human expert evaluation method.

Once the necessary framework has been developed, it must be assessed by eight ECX IT experts. There have been two stages of evaluation for the established framework. Information infrastructure and support department employees were given access to it for a more thorough assessment in the first phase Following the required comments and suggestions during

evaluation, the framework has been updated and corrected. The experts asked some question about the framework like usability, relevance, and effectiveness of the framework mentioned. Here are the questions asked to experts.

1. How user-friendly do you find the KM framework?
2. Does the framework address the key knowledge management needs of ECX?
3. To what extent does the framework improve knowledge sharing and collaboration within the organization?
4. How likely is the framework to reduce knowledge redundancies and improve efficiency in accessing and using information?

Information infrastructure and support expert replied as

*As an answer to the question, I find the KM framework quite user-friendly overall. The structure and processes are clearly laid out, which makes it accessible even for users with varying levels of experience in knowledge management. That said, some sections or steps could be simplified to reduce the number of actions required to complete tasks. Adding automated features, like document tagging or AI-assisted knowledge categorization, would also help by reducing manual input, making the framework even more accessible and efficient for users."*

Finance department senior expert replied

*The Knowledge Management framework effectively addresses many of our department's needs, particularly in enhancing access to shared knowledge resources and improving documentation processes. This alignment is beneficial for reducing data silos and retaining critical financial information, which supports our long-term budget forecasting and analysis.*

*However, there are still some areas for improvement. While the framework is helpful for general knowledge retention, it could better support real-time data sharing and offer tools specific to financial data analysis. Additionally, we face unique challenges related to data security and compliance, which are critical to our operations. Customizing the framework to include finance-specific processes—like workflows for financial audits and enhanced knowledge capture during budget reviews—would further increase its effectiveness.*

*Overall, the framework is a strong foundation, but with further customization, it could fully meet the specific knowledge management needs of the finance department at ECX.*

The senior Human resource replied based on the questions

*The Knowledge Management framework has made noticeable improvements in knowledge sharing across the organization, particularly by centralizing access to essential HR policies, training resources, and employee data. This centralized repository reduces information gaps and improves transparency, which is essential for collaboration. It's now easier to work with other departments on projects like onboarding and employee engagement initiatives since everyone has better access to up-to-date information.*

*However, while the framework provides a solid foundation, there is still room for enhancement. For instance, adding more interactive tools for real-time collaboration, like live document editing or project tracking, would be valuable. These features could make cross-departmental projects even more efficient and responsive, especially when coordinating on performance management or employee development.*

*Overall, the framework supports better knowledge sharing, but with some additional customization—particularly for the unique, collaborative needs of HR—it could become an even more powerful tool for fostering teamwork and building a culture of shared knowledge.*

The second stage of one from Finance and all the data are included in the evaluation. The company employs technology workers from diverse backgrounds like business, human resource and so on . The explanation for why the researcher and the reason ICT staff wants a financial representative to participate in the presentation is because he will assist in improving the organization-wide adoption process from different perspective.here The implementation of a Knowledge Management (KM) framework at the Ethiopian Commodity Exchange (ECX) offers numerous benefits, including enhanced market efficiency, transparency, and operational excellence. By centralizing and streamlining knowledge flows, the framework supports informed decision-making, preserves critical organizational knowledge, and fosters collaboration among employees. It also enables ECX to adapt and scale as needed, ensuring long-term sustainability and compliance with regulatory standards. Additionally, the KM framework optimizes resource use, reduces operational costs, and supports continuous improvement, making ECX more competitive and innovative. Overall, the KM framework helps ECX maintain its leadership position by building a resilient, knowledge-driven organization.

## 5.6. Discussion of results

The study based on developing a Knowledge Management (KM) framework for the Ethiopian Commodity Exchange (ECX) is distinct from existing KM research in several ways. Unlike studies that focus on the Ethiopian public sector, SMEs, universities, or agricultural cooperatives, the research targets ECX, a unique marketplace with specific requirements to improve market efficiency, transparency, and operational excellence. While existing research typically introduces basic KM frameworks or general KM practices. The study also integrates KM strategies directly with ECX's organizational objectives. This approach emphasizes governance, streamlined procedures, accountability, and the elimination of tool silos to support informed decision-making, setting it apart from frameworks developed for other sectors.

Additionally, the study methodology diverges from others by using the Methodology Process Model adapted from Peffers et al. (2008) within a Design Science framework, emphasizing iterative feedback from stakeholders to ensure the framework is practical and aligned with ECX's needs. While similar to the design science approach used in some academic KM frameworks, the research approach uniquely addresses the dynamic environment of ECX. Furthermore, it places a strong emphasis on identifying and overcoming KM barriers specific to ECX, such as technology, strategy, and process challenges, tailoring KM processes to support a marketplace environment. Finally, the research focus on evaluating the proposed framework directly with ECX employees aims to ensure that it meets the practical demands of the organization. This hands-on approach to testing and implementing the KM framework is designed for real-world applicability, distinguishing this paper from research that generally suggests broader, less customized implementations.

This research's main goal was to provide a knowledge management framework that ECX could use to make sure it was utilizing its knowledge resources as efficiently as possible. To accomplish this goal, the study tried to address the following two fundamental research concerns.

1. What are the knowledge management problems in Ethiopia commodity exchange (ECX)?
2. How valuable is to develop knowledge management framework to manage knowledge?



# CHAPTER SIX

## CONCLUSION AND RECOMMENDATIONS

### 6.1 Overview

This chapter presents an overall summary of the research undertaken. It focuses on demonstrating how the study's findings connect to the initial research questions and goals outlined in the thesis. The chapter also included suggestions for more research to be done in order to assess the validity and consistency of the suggested framework, as well as recommendations derived from this study.

### 6.2 Conclusion

Organizations often face challenges in effectively managing knowledge due to limited employee awareness about the importance of Knowledge Management (KM), the absence of a well-defined KM framework, and the lack of centralized systems for data storage. Employee awareness is critical for fostering a culture of knowledge sharing and utilization, yet many organizations struggle to ensure that their workforce understands KM's value. Without a structured KM framework, processes for knowledge creation, sharing, and application remain fragmented, hindering organizational efficiency. Furthermore, the absence of a central repository to store and organize data results in siloed information, making it difficult to access and leverage knowledge for informed decision-making. Addressing these issues is essential for organizations aiming to enhance their knowledge management practices and achieve operational excellence.

Throughout the years, a significant number of skilled and qualified employees have left ECX. Regretfully, these retiring employees have left without sufficiently sharing their insightful and useful experiences because there was no knowledge management structures in place. Consequently, the organization has lost important knowledge. As a result of the realization that this problem must be solved and a knowledge management (KM) platform must be put in place in order to preserve and leverage the information already present in the company and to facilitate efficient procedures for capturing, storing, and sharing knowledge. In order to promote a culture of continuous learning and organizational development, ECX can guarantee that the expertise of departing employees is preserved and made available to current and future personnel by putting in place a strong knowledge management system. This study's primary goals were to investigate

and comprehend ECX's present knowledge management procedures and to provide a knowledge management framework. The researcher employed a blend of case study and design science research techniques to achieve the objectives and address the research inquiries. The scenario study technique was used to evaluate the knowledge management procedures currently in use among staff members and identify any barriers that would prevent the successful application of KM. Furthermore, a knowledge management system that supports and promotes knowledge management initiatives inside the organization was designed and developed using the design science research methodology. The study's data was acquired through document examinations, observations, and interviews.

This thesis employed the Design Science Research (DSR) approach, a methodology well-suited for creating and evaluating innovative artifacts to address organizational challenges. The DSR process emphasizes the iterative development of solutions that are both practical and theoretically grounded. Following this approach, the study systematically identified the gaps in knowledge management practices, including employee awareness, the absence of a well-defined KM framework, and the lack of centralized data storage. A tailored KM framework was then designed to address these issues, integrating governance, processes, technology, and accountability. The framework's relevance and utility were evaluated through iterative feedback from employees, ensuring that it aligns with organizational goals and practical needs. By leveraging the DSR approach, the thesis produced a robust and actionable KM framework grounded in both theory and practice.

According to the findings, ECX does not have a department specifically tasked with managing knowledge activities or a clear knowledge management strategy. There are no defined protocols or processes in place at the organizational level to help with the collection, archiving, sharing, and distribution of knowledge.

In ECX, methods for solving issues, daily tasks, and on-the-job training are the primary means by which knowledge is created. Many methods are used to capture and save knowledge, such as documenting work activities, having conversations among colleagues, speaking with senior staff members, conducting interviews with retired employees, creating presentations, and keeping knowledge resources on personal computers.

Knowledge management methods at ECX are challenged by low management support, inadequate knowledge management technology, a lack of incentives and recognition for employees, and a lack of employee commitment to knowledge management. Resolving these obstacles is necessary for knowledge management techniques to be effective and raise performance levels inside the organization.

Effective knowledge management techniques in the context of ECX are severely limited by the lack of appropriate knowledge management technologies. As a result, important knowledge resources are not as easily accessible or shared inside the organization.

The research using the design science paradigm comes with several challenges and limitations. One significant challenge is ensuring the practical relevance and applicability of the framework, as design science must balance rigor with real-world utility. Additionally, there is the complexity of integrating different knowledge management components (e.g., technology, strategy, processes) cohesively, requiring iterative refinement that may be time-consuming and resource-intensive. Another limitation is the generalizability of the findings, as design science research typically focuses on specific organizational contexts, making it challenging to apply the framework universally. Despite its contributions, this thesis has several limitations. Firstly, the framework's evaluation was conducted within a specific organizational context, limiting its generalizability to other industries or organizations with different structures and needs. Secondly, the study relied heavily on employee feedback, which may introduce biases or subjective interpretations that could influence the framework's refinement. Additionally, while the Design Science Research approach emphasizes iterative development, time constraints may have limited the number of iterations and the depth of testing. Furthermore, the absence of extensive longitudinal studies means the long-term effectiveness of the proposed framework remains unverified. Addressing these weaknesses in future research could enhance the framework's applicability and ensure its sustained impact across diverse contexts.

This research primarily focused on the headquarters of the Ethiopian Commodity Exchange (ECX), located in Addis Ababa, where the main operations and management activities occur. However, it is important to note that the ECX has an extensive network of 20 branches spread across Ethiopia. These branches play a crucial role in connecting various regional markets and

supporting the exchange's overall operations. Due to resource and logistical constraints, the scope of this study was limited to the headquarters, potentially leaving out insights and dynamics present at the branch level that could influence the broader implementation and effectiveness of the knowledge management framework.

### **6.3 Contribution to the field**

This research uniquely contributes to the Information Systems (IS) field by developing a Knowledge Management (KM) framework specifically tailored for the Ethiopian Commodity Exchange (ECX), addressing the unique challenges of a dynamic trading environment. It aligns KM practices with ECX's strategic goals of market efficiency, transparency, and operational excellence, offering a model for aligning KM systems with organizational objectives. The research introduces a mixed-methods evaluation approach, integrating qualitative and quantitative assessments to ensure relevance, efficiency, and adaptability. It emphasizes the importance of scalability, flexibility, and compliance, providing valuable insights for developing adaptable IS solutions. Additionally, it highlights the significance of knowledge retention and organizational memory, presenting a framework that can be adapted for other industries where preserving critical information is essential.

### **6.4 Recommendations**

Based on the findings of the study, the researcher forwarded the following recommendations for practice and for future works

#### **6.4.1 Recommendation for practices**

The researcher recommends that ECX create a knowledge management (KM) strategy that aligns with its organizational objectives of enhancing market efficiency, transparency, and operational excellence. By developing a clear KM strategy, ECX will ensure that its internal and external stakeholders (such as traders, brokers, farmers, and employees) can access the necessary data, expertise, and information to make better decisions.

Another important recommendation for ECX is it has to ought to make investments in technology that facilitates the effective gathering storage, and sharing of knowledge. By pooling its knowledge and experience, ECX would be able to create a centralized knowledge management system (KMS) that would make information easily accessible to both market

participants and employees. The initiative's effectiveness depends on raising staff members' understanding of knowledge management attitudes and encouraging their use of the KMS system. The advantages of knowledge management should be actively promoted by ECX, and employees should be encouraged to adopt and make use of the tools and resources that are available. In order to maintain the effectiveness of the KM strategy, ECX needs to consistently assess and enhance its KM procedures.

This entails routinely evaluating the effectiveness of the knowledge management system, assessing the value of the knowledge being disseminated, and finding any gaps in the knowledge that require further knowledge capture.

ECX may enhance operational effectiveness, market transparency, and decision-making by putting in place a strong knowledge management strategy. By utilizing its current knowledge, supporting innovation, and improving risk management through a KM approach, ECX will be able to establish itself as a market leader for commodities in Ethiopia. Farmers, traders, and dealers will all profit from ECX's dynamic, knowledge-driven environment, which will be established with the proper technology, culture, and procedures in place.

#### **6.4.2 Recommendation for future Work**

The researcher created a conceptual knowledge management framework for an organizational knowledge repository based on the assessment. Still, there are a number of areas that need more research.

One important opportunity for future research is examine how to improve knowledge sharing, automation, and security by integrating cutting-edge technologies like block chain, AI, and machine learning into knowledge management systems and investigate how these technologies affect knowledge development, transfer, and application processes in knowledge management.

Finding and analyzing the variables that affect knowledge management procedures in the commodity exchange sectors is another important area that has to be given careful consideration. It will be possible to tailor and improve the KM framework to meet the unique requirements and challenges faced by commodity exchange organizations if these elements are thoroughly understood.

Based on this study of the Knowledge Management (KM) framework for the Ethiopian Commodity Exchange (ECX), future researchers should consider expanding the research scope to include all 20 branches of ECX for a more comprehensive understanding of KM practices across regions. Utilizing mixed-methods approaches, including both qualitative and quantitative data, will enhance the depth of findings. Longitudinal studies can track the evolution of KM practices over time, while engaging diverse stakeholders can provide valuable insights into organizational performance. Additionally, comparative studies with similar organizations may reveal best practices, and focusing on training and cultural initiatives can help promote effective knowledge sharing within ECX.

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ANNEXES

Annex 1: Survey Questionnaire

**QUESTIONNAIRE**

Dear participants,

I sincerely want to express my gratitude for your valuable time and prompt responses. This questionnaire is designed as a requirement for my Master's in Information System. The purpose of this study to develop a framework design for knowledge management framework for Ethiopian commodity Exchange (ECX).

The purpose of the knowledge management framework is to create a centralized location for important campaign documents that is accessible to all staff and handling knowledge effectively and efficiently

Please be assured that all the information collected will be treated as confidential and solely used for academic purposes. Your participation in filling out the questionnaire would be greatly appreciated, and I kindly request a few minutes of your valuable time for this purpose.

Thank you once again for your cooperation.

Sincerely

Mikias Mebratie 0912028331

Knowledge management needs assessment

Please complete this survey and all information kept confidential. Thank you for your time and cooperation

Your age\_\_\_\_\_

Position\_\_\_\_\_

Year of service\_\_\_\_\_

Department\_\_\_\_\_

Educational background\_\_\_\_\_

Questions **People**

Strongly  
Disagree

disagree

Not sure

agree

Strongly  
agree

1. ECX keeps knowledge in a format that employees may easily access.
2. To assist employees with performance management, ECX offers knowledge management services.
3. Knowledge management provides effective communication channels between employees to accelerate and improve work.
4. Knowledge management helps to update the information available to employees to enhance their operational excellence
5. Knowledge management helps workers extract knowledge from their minds, thus achieving competitive advantage
6. ECX assists and disseminates best practices to staff members
7. There is enough awareness about knowledge management among employees
8. Managers are aware of the need for knowledge management adoption and fully support it
9. Managers empower their staff to enable them develop their potential

10. Employees are engaged and participate in knowledge sharing activities?

#### Questions about technology

1. Technologies used in ECX are user- friendly and easily accessible by employees
2. ECX offers the necessary tools to promote information exchange.
3. Information and communication technology is used in ECX to encourage knowledge sharing among its staff
4. ECX uses databases to store policies, manuals, procedures, and other organizational resources.
5. Information held in facilities such as databases, other information technology applications, manuals or resource centers, are updated regularly
6. ECX share knowledge using non-IT supported knowledge management technologies (white boards, flipcharts, workflow diagrams, etc.)
7. ECX uses tools like email, Groupware, Decision management system for storing and sharing of knowledge.
8. ECX ensures that the security and confidentiality of knowledge stored and shared through technology
9. Security measures implemented in ECX to protect data within the KMS
10. Information stored in ECX are confident with privacy policies and practices

## Questions about Knowledge management process

1. KMS is effective in facilitating knowledge sharing and collaboration
2. Knowledge management processes contribute positively to achieving organizational goals.
3. ECX recognize knowledge management as part of their asset base
4. ECX trained staff members on best practices and distributed their knowledge
5. Methods or tools are utilized for knowledge sharing among employees
6. ECX uses written resources like bulletins, brochures, and manuals to distribute best practices among its sections.
7. Data stored in repositories like manuals, resource centers, databases, and other IT apps are updated on a regular basis
8. To share ideas and knowledge, ECX frequently holds symposiums, presentations, seminars, and training sessions.
9. ECX has a knowledge retention program to ensure experience and expertise is not lost when staff leave
10. There are specific roles or teams dedicated to managing knowledge within ECX

## Questions about Strategy

1. ECX follows a set of strategies for keeping reference materials including manuals, guidelines, rules, processes, concepts, and other useful data

2. ECX has a framework and a designated manager for knowledge management administration
3. ECX'S knowledge management structure extends at all levels down the organizational hierarchy
4. ECX strategy facilitates information flow in all direction within the organization (top down, bottom up)
5. Instead of using a rigid hierarchical structure, the organizational strategy encourages teamwork to allow knowledge sharing
6. ECX has a formal knowledge management strategy that is aligned with its strategic vision
7. ECX strategy encourages the exchange of ideas and knowledge between individuals and groups
8. Measures were taken to ensure that knowledge management supports innovation and continuous improvement?
9. knowledge management integrated into the decision-making processes within ECX
10. ECX prioritize knowledge management initiatives in resource allocation and planning?