Saint Mary University
School of Graduate Studies

ASSESSMENT OF PROJECT KNOWLEDGE MANAGEMENT PRACTICES: THE CASE OF ADDIS ABABA LIGHT RAIL WAY TRAIN

BY

KASSAHUN HAILE

AUGUST 2020
ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST. MARY'SUNIVERSITY SCHOOL OF GRADUATE   STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ART IN PROJECT MANAGEMENT

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As a board of examiners of the MSC thesis defense we certify that we have read and evaluate the thesis prepared by Kassahun Haile. We recommended that the thesis be accepted since it fulfills the thesis requirement for the degree of Master of Art in project management.

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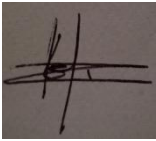Signature_____   Date_____

DECLARATION

I, the undersigned declare that this is my original work prepared under the guidance of Muluadam Alemu (PHD). All sources of materials used for the thesis have been acknowledged. I further confirm that the thesis has not been submitted for any degree.

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ENDORSEMENT

This thesis has been submitted to St. Mary's University School of Graduate Studies for examination with an approval as a university advisor.

Dr. Muluadam Alemu

_____   _____   <u>August 27, 2020</u>

Advisor   Signature   Date

ACKNOWLEDGEMENT

I would like to express my deepest gratitude and heartfelt thanks to my thesis advisor, Dr. Muluadam Alemu, for his scholarly and kindly assistance in reading and correcting this thesis. His critical remarks and comments from the preparation of the proposal to the completion of this thesis were constructive and helpful.

I am also greatly indebted to all informants, who were enthusiastic to share their knowledge and experience in the conduct of this research. I would like to extend my acknowledgment to the HR head and all employees of Addis Ababa Light railway train, who took part in the questionnaire survey. My special thanks also go to Seid Nuru, without his exclusive contribution my work would have not been complete.

My heart-felt and deepest gratitude also goes to my beloved mom Yeshi Abera, and my whole family for their consistent patience and moral encouragement during the course and throughout the research work.

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ACRONYMS

AAR   After Action Review

AALRT   Addis Ababa Light Rail Way Train

AU   African Union

BPR   Business Process Reengineering

CREC   China Railway Group Limited

ERC   Ethiopian Railway Corporation

FDRE   Federal Democratic Republic of Ethiopia

GDP   Gross Domestic product

HR   Human Resource

ICT   Information and Communication Technology

IT   Information Technology

KM   Knowledge Management

KMF   Knowledge Management Framework

KMS   Knowledge Management Systems

KT   Knowledge Transfer

LRT   Light Rail Way Train

M & A   Merger and Acquisition

SZMC   Shenzhen Metro Group Com. Ltd

SOPs   Standard Operating Procedures

TQM   Total Quality Management

ABSTRACT

Knowledge Management (KM) is a process that deals with the development, storage, retrieval, and dissemination of information and expertise within an organization to support and improve its business performance. Organizations are realizing that knowledge is a crucial resource for organizations and it should be managed judiciously. Organizations need to harness knowledge not only to stay competitive, but also to become innovative. Knowledge Management requires a major shift in organizational culture and a commitment at all levels of a firm to make it work. Through a supportive organizational climate, ideally, through effective Knowledge Management, an organization can bring its entire organizational learning and knowledge to bear upon any problem, anywhere in the world, at any time.

The main objective of this research is to assess the knowledge Management practices in Addis Ababa LRT which can be utilized to ensure the proper usage of its knowledge resources. In order to meet this objective, the research adopted a mixed method approach for data collection and analysis. Therefore, review of literature on knowledge, knowledge management and transfer and knowledge management frameworks is undertaken with the aim to assess the current practice in LRT and identify commonalities and shortcomings for suggestion. Primary data is gathered through survey questionnaire. These two efforts are combined to assess the current Knowledge Management practice in Addis Ababa LRT.

The major findings of the research show that Addis Ababa LRT has put in place a KM system that is partially implemented; this will not help the corporation to benefit from its knowledge resource fully. The corporation knowledge management structure doesn't extend to all levels down in hierarchy which creates gap in implementation of KM. Tacit knowledge from the Chinese isn't being transferred efficiently: Tacit knowledge is the main source of knowledge. Lastly, to ensure effective KM in the LRT, extending the KM structure to all level, the expansion of knowledge management technology and infrastructure, the formulation of knowledge management policy and Strategy in context of Ethiopia, and the provision of continuous training on knowledge and KM are recommended.

Keywords: Knowledge, Knowledge Management, LRT

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The world is experiencing a new economic era characterized by a rapid rate of change, globalization and knowledge-based products in which knowledge has become the primary source or wealth. Organizations no longer compete solely on the basis of financial capital and strength, rather knowledge is the new competitive advantage in business. In fact the Gross Domestic Product (GDP) growth rate is now determined, amongst other factors, by the quantum and quality of knowledge stock harnessed and applied in the production process in sectors of the economy (Omotayo, 2015). Therefore, today's competitive advantage is very much dependent on how organizations effectively and efficiently manage their knowledge.

Knowledge management is nothing new. For hundreds of years, owners of family businesses have passed their commercial wisdom on to their children, master craftsmen have taught their trades to apprentices, and workers have exchanged ideas and know-how on the job. But it wasn't until the 1990s that chief executives started talking about knowledge management. KM is the management of corporate knowledge that can improve a range of organizational performance characteristics by enabling an enterprise to be more "intelligent acting" (Wiig, 1993). KM uses intellectual capital to improve capacity to add value to a business, it incorporates knowledge *value chain model* starting with ideas, know-how, and other intangible intellectual capital assets transformed into measurable, tangible intellectual assets through patents (Lloyd, 1996).

Nonaka and Takeuchi (1995), identify the following four processes that are commonly used by organizations for knowledge conversion*: socialization, capture, dissemination, and internalization,* this processes helps an organization to realize the full value of knowledge assets by effectively transferring it between employees. Managing knowledge and information is also essential in railway cooperation. Knowledge Management (KM) in railway networks is based on the same assumptions as corporate knowledge management. Corporate Knowledge is a corporate asset which is about a business process that isn't identified within an operators or process manual that makes that business process run more efficiently (Chuck, 2015)

Like other railway organization, the management of knowledge is promoted as an important and necessary factor for organizational survival and maintenance of competitive strength in the Addis Ababa LRT by the name of technology transfer. Ethiopians expects to acquire knowhow and management skills which will help to manage the operations, though the results up to now are debatable. Engineers and workers are assumed to learn the operations from the bottom to the technical level.

Therefore, the rationale behind this research is to assess the Knowledge Management and transfer in LRT, which enables the organization to manage and transfer its knowledge effectively for years to come

1.2 STATEMENT OF THE PROBLEM

The railway network is complex system with several technologies and a multitude of stakeholders working together to solve problems created by the increasing demands on capacity, speed and mobility for the transportation of goods and passengers. To meet this high service demand knowledge on the area of railway network is essential. So managing the knowledge or intellectual capital embodied in workforce is key in achieving competitive advantage (Penicka, 2007)

Current challenges faced by railway networks on the era of globalization and the advance of Information and Communication Technology (ICT) has been shifted and identified as more complex. As a result, railway organizations now need hands on engineers, operators to run a smooth reliable operation that matches expected demand (Penicka, 2007).

During the operation and maintenance of the railway infrastructure, lots of data are collected and managed in an attempt to control and analyze the current state of the system. Data include the system architecture, maintenance reports, and work orders performed. Railway operators must have a holistic view of the railway systems to optimize operation. The managers responsible for determining operation actions face an abundance of data and have a complicated task transforming this data into information that will support operation. In addition, confusing data/remarks in the databases often lead to misinterpretations (Amparo, 2013).

Structured databases containing the complete information are required to identify where failures are located and the dominant factors causing them. Without well-functioning operation, the railway infrastructure would quickly lose its efficiency. Therefore operators need knowledge which is deeply embedded in the context of operation and maintenance (Amparo, 2013).

At the present Addis Ababa LRT is managed by Chinese companies, who have significance experience in managing the design, construction and operation of urban light railways. The initial stage of running the metro is being overseen by the Chinese company Shenzhen which is tasked with training the Ethiopian members of staff and providing knowledge transfer. Several workers were scheduled to receive formal and on job trainings. However, project knowledge management practices and its effectiveness to transfer knowledge from Chinese companies to Ethiopians has not been empirically investigated except the few office level assessments done by the Addis Ababa LRT. During the initial investigation, it was learnt that the KM system of the LRT has been criticized by employees for being subjective and highly susceptible to biases and errors. Despite this challenge, there are no adequate studies conducted to investigate the project knowledge management practices. Hence, this research is undertaken to bridge the knowledge gap created with respect to the project knowledge management practices in Addis Ababa LRT.

Thus, the research aims to assess the KM practice for the Addis Ababa LRT, that can provide knowledge base which can serve as a platform for the development of an effective knowledge management strategy, and consequently contribute a bit to fill the research gap in KM in railway cooperation's.

1.3 BASIC RESEARCH QUESTIONS

The research aims to answer the following questions:
1. What are the current status of KM practice (acquisition, storing and disseminating Knowledge) in the LRT?
2. What are the factors that have critical impact on the practices of Knowledge Management in the LRT?
3. How does LRT implement knowledge transfer activities?

1.4 OBJECTIVES OF THE RESEARCH

1.4.1. General Objective
The general objective of this research is to assess KM practice for the Addis Ababa LRT to ensure the proper usage of its knowledge resources.

1.4.2. Specific Objectives
Specific objectives of the study are:

1) To assess the current practices of KM in terms of acquisition, storing and disseminating knowledge in the LRT,

2) To identify major factors that impact on the practices of Knowledge Management in the LRT,

3) To assess the mechanism used to implement knowledge transfer activities

1.5 SIGNFICANCE OF THE STUDY

Knowledge management involves capturing, storing, sharing and using knowledge whereas knowledge transfer is the process of sharing or disseminating knowledge. In theory knowledge transfer is the practical application of transferring knowledge from one part of the organization to another. It is of the main objectives of the research to assess the current practice of knowledge management LRT. This will help in identifying the gaps in knowledge management which provides perspective on how to improve it. Therefore, this insight can assist a bit the management of the LRT to understand the true nature of the relationships that exists between an organization and knowledge management processes, and to exploit them for an organizational success. The result would contribute to knowledge and literature because it focuses on how project knowledge management can be more effective which would enable the LRT management to develop a broader understanding of project Knowledge management process. Finally, other project offices and researchers in similar or related industry could also make use of the result of this study in adjusting their project Knowledge management process.

1.6 DEFNTION OF TERMS

Definition of key words (major variables) of the study is listed below.

Knowledge (K): is a fluid mix of framed experience, values, contextual information, expert insight, and grounded intuition that provides an environment and framework for evaluating and incorporating new experiences and information. It originates and is applied in the mind of the knowers (Gamble & Blackwell, 2001).

Knowledge Management (KM): is managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value (Davenport &Prusak,2000).

Knowledge Transfer (KT): refers to sharing or disseminating of knowledge and providing inputs to problem solving, transferring knowledge from one part of the organization to another. It's the process of experienced employee passing down their expertise and skills to the employees replacing them (Davenport &Prusak, 2000).

Knowledge Management System (KMS): refer to any kind of IT system that stores and retrieves knowledge, improves collaboration, locates knowledge sources, mines repositories for hidden knowledge, captures and uses knowledge, or in some other way enhances the KM process (Gamble & Blackwell, 2001).

Knowledge Management Framework (KMF): includes essential steps intended to ensure all the necessary KM elements are in place and interconnected (Davenport &Prusak, 2000).

1.7 SCOPE OF THE STUDY

The scope of the research is confined to the organization of the AALRT, due to the limitation of time and resources; data collection is conducted from only Kalti Headquarter of LRT. The research process focuses on assessment of the current knowledge management practices in the corporation: which include the identification of knowledge resources of the corporation, knowledge management tools, methods, and processes used to manage these resources. The current level of understanding and perception of employees towards knowledge and KM, major factors that impact on the practices of Knowledge Management and techniques or tools used to implement KM activities have also been assessed. Finally based on research findings recommendation is made to enhance future KM practices of LRT.

1.8 LIMITATION OF THE STUDY

Consulting top management officials adequately was difficult to organize due to engagement in urgent operational issues. Further scope of the study is mainly limited to the Human resource unit due to other department heads unwillingness to participate in the study. Also the research is geographically limited only to AALRT Head office in Kality.

1.9 ORGNAZATION OF THE PAPER

The research document is organized into five parts. The first chapter is an introduction part in which the overview and background of the study, statement of the problem, objective of the study, research questions that the research is intended to answer, as well as significance and the scope of the study are discussed, it also provides definitions for key terminologies. The second chapter deals with literature review on the areas of knowledge management and transfer. The third chapter dealt with the research design and methodology. The fourth chapter is focused on the data presentation and analysis based on information obtained from primary data through questionnaire secondary data from literature analysis. Lastly, the paper will be concluded in chapter five, which summarizes the main findings, draws conclusions and suggests recommendations.

CHAPTER TWO

LITERATURE REVIEW

This part of the thesis presents the conceptual, theoretical and empirical framework of the study. It also presents a synthesis of the knowledge gap that has not been examined by prior empirical underpinnings and shows how the present study tries to fill the knowledge gap.

2.1 Conceptual & Operational Definition

2.1.1 THE HISTORY OF KNOWLEDGE AND KM

Historical background of knowledge and KM shows that these concepts are old quests. Although the term KM may seem new, the concept of categorizing and defining the parts of knowledge dates back to thousand years. Throughout history, philosopher such as Aristotle, Plato, and Socrates, have philosophized over the fascinating notion of knowledge. Mertins et al, (2003), stated that Socrates dealt with the question of the limit of knowledge, as early as 5th century BC. According to Fin (2013), Aristotle is also credited as being the first KM pioneer with his groundbreaking works more than 2,000 years ago.

In the early 17th century, Sir Francis Bacon, who is attributed with saying "Knowledge is power," studied knowledge and published his views in The Advancement of Learning. Yet the study of knowledge declined until post World War II. The history and development of KM is not clear and linear since it has evolved from so many different disciplines and domains. A number management of theorist has contributed to the evolution of KM as it stands today. Among them, Peter Drucker, Paul Strassmann, and Peter Senge are a few of them (Geisler &Wickramasinghe, 2009).

In 1991 the term knowledge management starts becoming popular, when Tom Stewart published "Brainpower" in Fortune Magazine. Perhaps the most widely read work to date is Ikujiro Nonaka and HirotakaTakeuchi"s "The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation" (1995).

Today, KM has been receiving more interest than ever before. As we move into the twenty-first century, the business world is increasingly becoming competitive and the demand for

rapid access to relevant knowledge also becomes critical (Geisler &Wickramasinghe, 2009). Globalization of business, learning organization and technological advances has been considered the major business drivers behind today's increased interest in the development and application of KM. With the advent of the information or computer age, KM has come to mean the systematic deliberate leveraging of knowledge assets (Dalkir, 2005).

2.1.2 WHAT IS KNOWLEDGE?
Defining knowledge has been and still remains a challenge for philosopher's, since the classical Greek era and this topic has led to many epistemological debates. According to Gamble and Blackwell (2001), the word of knowledge carries a depth of meaning that goes beyond simple dictionary definitions. Therefore, coming up with some simple definition for knowledge seems nearly impossible. Nevertheless, Merriam-Webster dictionary defines knowledge as "the fact or condition of knowing something with familiarity gained through study or experience".

Knowledge is a purposeful coordination of human actions (Zeleny, 1989); it's a mix of insights, experience and procedures which are considered to be subjectively reasonable and feasible. Therefore, it guides the thought, behavior and communications of people. According to Lambe (2011), knowledge is a complex cognitive process that involves a unique blend of communication and learning. Davenport and Prusak (2000: 5) indicated that knowledge is "a fluid mix of framed experience, values, contextual information and expert insight and grounded intuition that provides an environment and framework for evaluating and incorporating new experiences and information". They also added that knowledge originates and is applied in the minds of people who own it.

Different scholars have tried to define knowledge but the one thing that is universally accepted is knowledge is more than just mere data and information. Therefore many knowledge and KM literature often prefer to define knowledge in terms of data and information.

2.1.3 DATA, INFORMATION, AND KNOWLEDGE
The relationship between data, information, and knowledge is stated in a pyramid called knowledge pyramid. Knowledge is usually shown as the top, and then the hierarchy follows a sequence of information and data (Bender & Fish, 2000).
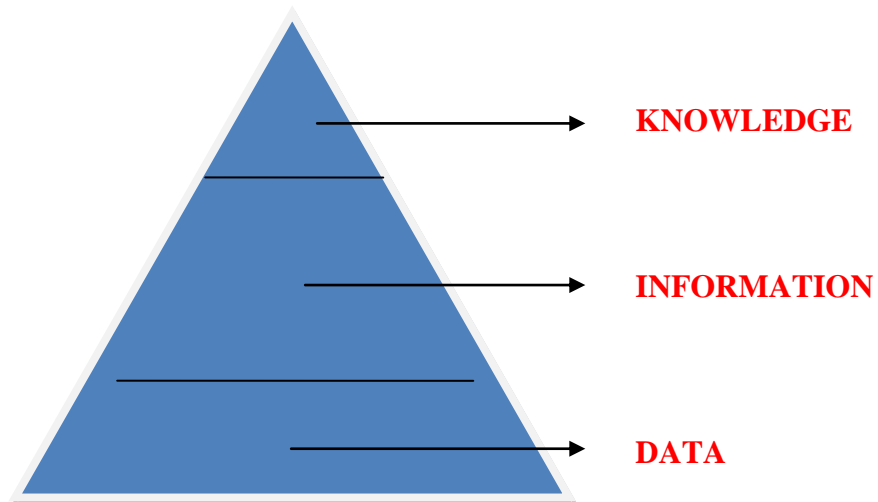
Data become information when meaning, understanding, relevance, and purpose is added on it. Similarly, information is transformed to knowledge, through personal application, values, and beliefs.

➢ **Data**

Definition of data is the least debatable, it's relatively straightforward. Data is the raw material comprising simple, discrete, objective facts measured, or recorded observations which are not in context and bear no relationship with other facts, (Davenport & Prusak , 2000). It is a sequence of numbers and letters; spoken words; pictures; even physical objects presented without a context, (Wiig, 1992). Data in Railway networks consists of unanalyzed numbers, pictures and signals that come from the railway lines in an information system.

➢ **Information**

Information is data that has been analyzed and processed by collecting, classifying and linking elements of data into a format that is meaningful and has value when taking actions or making decisions. Facts and data that are organized to describe a particular situation or condition are information (Wiig M., 1992: 66). Information also provides answers to who, what, where and when questions (Ackoff 1989, cited in Garg, Pandey, & Vashisht, 2017: 103)

➢ **Knowledge**

Data, information and knowledge are interrelated in a hierarchical structure as stated above. Data supports the generation of information, which is in turn used to generate knowledge. In Railway networks knowledge is information that has been analyzed to provide meaning or value or evaluated as to implications for the railway operation. Though data and information can provide, the building blocks of knowledge, the transformation process is not an automatic one. It rather involves the interaction and the cognitive abilities of people to analyze data and information then transform them into knowledge. Knowledge can be applied in evaluating and incorporating new information and experiences, providing the capacity for effective action and answering "how" questions (Davenport & Prusak, 2000).

2.1.4 IMPORTANCE OF KNOWLEDGE

Knowledge is an essential part of KM. Without having knowledge to manage, there would be no KM. It is the fundamental resource that allows people function intelligently. It is the agent that generates visions, the ingredient that drives peoples reasoning, and the capability that leads to intelligent-acting behavior. Knowledge is also "the factor that creates value for the organization and it is judged to be the most valuable asset that an organization has" (Wiig, 1992). Organization's decision-makers, problem-solvers and innovators rely on knowledge gained from insight and experience.

Many organizations are becoming increasingly concerned with organizational knowledge and their use of knowledge and to maximize the efficiency of their internal operations (Wiig, 1992) .In order to effectively manage organizational knowledge as a strategic asset, different scholars developed different conceptualization and partitioning or classification of knowledge.

2.1.5 CLASSIFICATIONS OF KNOWLEDGE

Knowledge has several forms or shapes, with the most popular perspective being tacit vs. explicit knowledge. Other forms of categorization are by type of knowledge in organization or in general life (Polanyi's, 1958).

➢ **Tacit knowledge**

Humans carry knowledge within themselves which is gained through from life experience, formal and informal interaction with others or professional acquaintances that is called tacit knowledge. Intuition, mental agility, effective responses to crises, and the ability to adapt

are forms of tacit knowledge. Tacit knowledge is the expertise and experience that resides in the minds of individuals and has not been formally documented. It can only be shared from one party to another through socialization, and created (stored) by the other party through experience and practice. Humans use tacit knowledge to solve complex problems and make decisions (Hislop, 2013).

➢ **Explicit knowledge**

Explicit knowledge is that which has been documented and can be shared with others (Polani, 1958). It can be readily captured, codified and communicated to others thus becoming universal knowledge. Examples of codified and articulated forms include doctrines, manuals, fact sheets, pictures, charts and diagrams (Polani, 1958).

Most of the knowledge assets of organizations reside within tacit or un-codified form, 80% and 20% of the organizations knowledge is tacit and explicit respectively. These two forms of knowledge are interdependent, explicit knowledge provide the grounding of meaning and the basis for the interpretation to a tacit activity. Tacit knowledge provides background context and warrants for assessing the codified knowledge (Duguid, 2005). Other scholars like Hislop (2013) suggest that there is no such thing as pure tacit and explicit knowledge, as all knowledge contains elements of both and they are inseparable.

Table 2.1 Comparison of Tacit Vs Explicit knowledge (Dalkir, 2005:8)

Properties of tacit knowledge	Properties of explicit knowledge
▪ Ability to adapt, to deal with new and exceptional situations	▪ Ability to disseminate, to reproduce, to access and re-apply throughout the organization
▪ Expertise, know-how, know-why, and care-why	▪ Ability to teach, to train
▪ Ability to collaborate, to share a vision, to transmit a culture	▪ Ability to organize, to systematize, to translate a vision into a mission statement, into operational guidelines
▪ Coaching and mentoring to transfer experiential knowledge on a one-to one, face-to-face basis	▪ Transfer knowledge via products, services, and documented processes

2.1.6 KNOWLEDGE MANAGEMENT

"If knowledge is viewed as a resource that is critical to an organization's survival and success in the global market, then like any other resource it demands good management" (Holsapple & Joshi, 2002:47). As knowledge is not a simple terminology to define, it should come as no surprise that the concept of KM is equally difficult to pin down (Geisler &Wickramasinghe, 2009), due to the wide range of strategies that have been advocated and adopted for managing Knowledge in organizations (Hislop, 2013).

KM has been defined in different ways by different scholars, some define it as a field others as a science. According to Davenport & Prusak (2000) KM is the methodology, tools and techniques required to gather, integrate and disseminate knowledge within an organization. It requires turning personal knowledge into corporate knowledge to be shared and put to use across an organization. Arthur Andersen in (Geisler & Wickramasinghe, 2009) defined KM as a mechanism used for an organization to exploit and leverage its knowledge assets to meet objectives. It's a formal process that engages an organization's people, processes, and technology in a solution that captures knowledge and delivers it to the right people at the right time at the right place.

From the railway perspective, KM is a discipline that promotes an integrated approach to identify, retrieve, evaluate, and share an enterprise's knowledge assets to meet operation & maintenance objectives. KM is thus much more than just managing information, i.e. getting

the right information to the right people at the right time, since its very essence is social, and keeping its social context in future might be crucial (Dalkir, 2005).

> ➢ **KM importance**

KM Several benefits including increasing competitive advantage, better decision making, better customer handling, and faster response to key business issues, improved employee skills, and increased profits (KMPG, 2000). It also helps to create shared understanding through the alignment of people, processes, and tools within the organizational structure and culture in order to increase collaboration and interaction between leaders and subordinates.

Managing knowledge will help an organization to discover its intellectual capital and to be able to apply it is a necessary and generalized capability. KM connects those who know with those who need to know by leveraging knowledge transfers from one-to-many across an organization.

This transfer or flow of knowledge also enhances shared understanding, learning, and decision making. Therefore KM is the management of an organizational asset towards the continuous renewal of the organizational knowledge base (Geisler & Wickramasinghe, 2009).

> ➢ **Components of KM**

Based on actual experiences of the leading global KM case studies, (Bhojaraju, 2005) argues that Components for KM can be broadly categorized into three classes - People, Processes, and Technology.

- ✓ **PEOPLE / CULTURE** (attitudes, sharing, innovation, skills, teamwork….)70 %
- ✓ **PROCESS**(KM maps, work flow integration, best practices…..) 20 %
- ✓ **TOOLS / TECHNOGHY** (Network, Internet, data stores, automation….) 10 %

While all three are critical to build a learning organization and get business results from KM. Most of the organizations worldwide which implement KM have found it relatively easier to put technology and processes in place, whereas the "people" component has posed greater challenges (Bhojaraju, 2005). According to Bhatt (2000, in Shannak, et al., 2015:154) 90% of KM is the people/culture and process components.Technology which is the remaining enables the application of KM to a great extent. As acquisition of knowledge is accordingly

made easier; knowledge is accessed quickly and from any location and combination of various knowledge is enabled in order to create new knowledge (Masic, et al., 2017:133).

> **Knowledge Assets (Resources)**

Organizational knowledge assets are defined as "stocks of knowledge" through which a variety of value added services flow. Knowledge or intellectual assets are also referred in general as what is known by the organization and its employees. In theory, these assets could have a long lasting, open-ended value since there is a nonlinear relationship between the effort used in creating them and the value they yield for the organization (Boisot, 1998 in Evans, et al., 2014:86)**.**

Knowledge-related assets include the knowledge possessed by the organization and its workforce in the form of information, ideas, learning, understanding, memory, insights, cognitive and technical skills, and capabilities (King, 2009). Organization's workforce, databases, documents, guidelines, policies and procedures, software, and patents are repositories of the organization's knowledge assets. Knowledge assets are held not only by an organization but reside within its customers, suppliers, and partners as well (King, 2009). Nonaka (2005) regard the knowledge assets as the basis of knowledge-creating process and define them as "firm-specific resources that are indispensable to create values for the firm".

In general, according to Geisler (2009) intellectual and knowledge-based assets fall into one of the two categories: explicit or tacit. Assets are **t**acit knowledge gained through common experiences, which include skills and know-how of individuals. Explicit knowledge which is articulated trough images, symbols, and language such as product concepts, design, and brand equity are identified as Conceptual Knowledge Assets. Having identified the generic types of knowledge resources an organization possesses, organizations formulate a set of generic types of manipulation activities they undertakes in working with those resources (Holsapple & Joshi, 2002).

> **KM Processes**

KM is viewed as "distinct but interdependent processes, where many activities are formed to carry out key elements of an organization's KM strategy and operations" (Omotayo, 2015). KM processes include activities gearing towards creating and sharing knowledge and harvesting

knowledge from either employees or external sources. At a minimum, four basic KM processes exists, which are creating, storing/retrieving, transferring, and applying knowledge.

Creation and acquisition involves developing new knowledge or replacing existing knowledge with new content (Nonaka & Takeuchi, 1995). It deals with combining new sources of knowledge. Knowledge can be created by the interaction between tacit and explicit knowledge through Socialization, Externalization, Combination and Internalization (Nonaka & Takeuchi, 1995).Knowledge creation process allows firms to amplify knowledge embedded internally and transfer knowledge into operational activities to improve efficiency and create business value (Bordeianu, 2015). In contrast to knowledge creation, knowledge acquisition involves the search for, recognition of, and assimilation of potentially valuable knowledge, often from outside the organization environment (King, 2009).

Storage and retrieval is the process used to support organization's memory and individuals to access knowledge. Knowledge storage provides coding and indexing of knowledge for later recovery. Organizational memory includes knowledge stored in the minds of organizational participants, that held in electronic repositories, that which has been acquired and retained by groups or teams and that which is embedded in the business's processes, products or services and its relationships with customers, partners and suppliers (Cross & Baird, 2000).

Transfer and sharing involves the focused and purposeful communication of knowledge from a sender to a known receiver. Knowledge transfer provides communication channels and faster access to knowledge sources (King, 2009). Sharing is less-focused dissemination, such as through a repository, to people who are often unknown to the contributor.

Knowledge application assists in applying knowledge in different sites through workflow automation (Karadsheh, et al., 2009). It uses available knowledge to make decisions and perform tasks.

➢ **Factors affecting KM**

The four critical enablers and barriers of KM that have been identified by Nagendra and Morappakkam (2016) are (1) the role of leadership, (2) guidelines, processes and Standard Operating Procedures (SOPs), (3) organizational structure and (4) technological infrastructure.

Holsapple and Joshi, (2002:58) also identified three classes of factors: resource influences, managerial influences, and environmental influences.

Nagendra and Morappakkam (2016) identify KM critical factors which play an important role in management of knowledge from two perspectives, as external or environmental factors and internal or organizational factors. External factors effect on internal factors, which can act as enablers or barriers for fostering KM.

Table 2.2: Knowledge Management Critical Success Factors (Source: Sedighi & Zand, 2012: 2)

Aspects	Factors	Sub factors
Internal (organizational factors)	Corporate culture	Sharing knowledge, conformity/ individualism
	KM processes	KM measurement, processes and activities
	Strategy and leadership	KM strategy, management support , commitment
	Technology and infrastructure	IT, connectivity, security, repository
	Human and financial resources	HRM, teamwork skill, empowerment, finance
	Structure and procedures	Structure, incentive, coordination, size
External (organizational factors)	Micro factors	Partnership and alliance , benchmarking
	Macro factors	Legal, economic, political, social, educational Technological, globalization

2.1.7 KNOWELDGE TRANSFER

Knowledge Transfer is the process of transferring, disseminating and distributing knowledge in order to make it available to those who need it (Lambe, 2011). It's a practical method for transitioning knowledge from one part of your business to another. Transferring knowledge is more than just communication it involves identifying and harnessing your team members' adaptable skills and abilities to apply information. Tangible and intellectual property, expertise and skills are shared between academia and the non-academic community.

KT focuses on transferring technological platform, market experience, managerial expertise, advance corporate culture, and other intellectual capital that can improve the companies' competence. Since technical skills and knowledge are very important assets for firms' competence in the global competition, unsuccessful knowledge transfer will have a negative impact to the corporations and leads to the expensive and time-consuming M&A not creating values to the firms.

Sharing knowledge is tricky because it involves quantifying and qualifying knowledge that exists in the mind. A knowledge transfer system helps you translate that knowledge into words, visuals, and processes that can then be shared with your team.

➤ IMPORTANCE OF KNOWELDGE TRANSFER

The purpose of knowledge transfer has become significant largely because of the great number knowledgeable persons, corporate leaders and experts that have already retired or will be doing so in the near future. Companies have woken up with a jolt to the resultant loss of experience and knowledge that is now taking place on an unprecedented scale. The truth is that younger workers can't necessarily fill the void this has created. They don't have the same depth of experience or accumulated wisdom that comes with many years of working, learning and developing. In addition, younger workers tend to change jobs more frequently than their older counterparts and so are unable to match the depth of organizational expertise. All this amounts to a significant drain on organizational wisdom which in turn affects the business's capacity to grow, innovate and remain competitive. This suggests a knowledge transfer programs are paramount to exist in today's unforgiving business environment (Lambe , 2011).

Sharing of knowledge helps individuals build up knowledge. This is because it allows them to discuss and deliberate on certain topics which can encourage the generation of new knowledge (Fernie, et al., 2003). Knowledge sharing also assists in organizational learning, and in its absence, the gap between individual and organizational knowledge widens (Fernie, et al., 2003). Central to organizational learning is the conversion of individual knowledge into organizational knowledge, and this can happen if individuals share their knowledge with the rest of the   organizational members.

However, most importantly, the beauty of knowledge sharing is that knowledge grows when it is used and shared with another, and it depreciates in value when it is kept to oneself (SyedIkhsan & Rowland, 2004). So if you're looking for a way to improve your organization, then it's worth building a knowledge transfer plan.

2.1.8 KNOWLEDGE MANAGEMENT FRAMEWORK (KMF)

As Knowledge Management has evolved over time, the need for Knowledge Management Framework (KMF) has become apparent. Wig (1993) stated the importance of a framework as follows:

> " *The lack of a framework for managing knowledge on a broad and relevant basis has been a problem for managers as they have not had ways of "thinking about thinking" with practical directions for how to deal with all the required knowledge related aspects and supported by practical methods"*

Unless we have a framework that allows us to understand the present state of knowledge related affairs, to help us envision what is possible, and places in context of methods and approaches, our attempts to manage will at best be arbitrary (Wiig, 1992)

➢ **Definition of KMF**

According to Weber et al., (2002), a framework is a holistic and concise description of the major elements, concepts, and principles of a domain. The fundamental purpose of a framework is "to explain the domain and define a standardized schema of its core content as a reference for future design implementations" (Metaxiotis, et al., 2005).

A KMF is a mechanism to ensure that all necessary KM elements (Accountabilities, process, technologies and governance) are in place and interconnected (Lambe, 2011). KMF is a tool to ensure there are no gaps in the KMS, and that knowledge flows freely in the organization (King, 2009). Weber, et al., (2002) also added that "KM framework explains the world of KM by naming the major KM elements, their relationships and the principles of how these elements interact. It provides the reference for decisions about the implementation and application of KM".

➢ **Why KMF is Important?**

KM Frameworks are one of the key strategic components that are required for key KM processes in managing knowledge effectively within an organization. Frameworks, or blueprints, according to (Stankosky, 2005), help ensure organization's KM programs include these elements.KM Frameworks help people understand what KM is, what knowledge activities are involved and how the knowledge activities affect organizational effectiveness.

Most of the confusion about KM results from the lack of a comprehensive framework. Framework is important for practical and theoretical structure it can provide. Framework facilitates communication and it is also extremely useful to have a common and understood vocabulary (Holsapple & Joshi, 2002).

Mostly based on lack of clarity with respect to the definition and domain of KM, much confusion exists surrounding the notion of KM. A KMF is needed that defines the boundary of KM as well as its components, resources, actors and influences involved in the process (Holsapple & Joshi, 2002).

> **Components of a KMF**

KM frameworks explain the essentials of the KM domain and offer a plan to build and implement KM programs (Metaxiotis et al., 2005). It helps in placing & interconnecting all the necessary elements. This ensures that there are no gaps in the system, and that knowledge flows freely through the organization. Due to the broadness of the field of KM and the lack of KM standards, existing KM models vary in scope and focus. Reviewing literature on KMFs shows that researchers suggest three major components for KMFs (Marshall, 2007).

The first of these provides a taxonomy that identifies the kinds of **knowledge resources** that an organization can have and manage. Knowledge resources include: human capital (e.g. employee staff, customer and suppliers), knowledge capital (quantity and quality of knowledge possessed by the firm) and intellectual property (the product of knowledge creation that generates value).

The second component identifies basic **types of activities or processes** that can be used to manipulate organization's knowledge resources. KM processes involve activities related to knowledge flow in the organization.

The third component of a framework characterizes **classes of influences** that shape the conduct of KM in an organization. These factors include cultural, structural and technological aspects such as trust culture, structure and IT support.

➢ **Types of KMFs**

A number of individuals and organizations have developed frameworks for KM. According to Rubenstein-Montano et al. (2001), KM frameworks are divided into three classes, based on their typology: these are prescriptive, descriptive, and hybrid.

A. **Prescriptive frameworks** provide direction on the types of KM procedures without providing specific details of how those procedures can/should be accomplished. In essence, they prescribe different ways to engage in KM activities i.e., suggest a KM methodology.

B. **Descriptive frameworks** characterize or describe knowledge management. These frameworks identify attributes of KM important for their influence on the success or failure of KM initiatives (Rubenstein-Montano, et al., 2001: 7).

C. **Hybrid frameworks** are the combination of the two.

As a result of the analysis of 160 frameworks, Heisig (2009) found that half of the frameworks exhibit a hybrid character. However, Rubenstein-Montano, et al., (2001) argue that of the 26 frameworks he has investigated, the majority of frameworks presented in the literature to date are prescriptive. Weber et al. (2002), advocate for a prescriptive KM framework which suggests how things shall be done in a practical manner. Since they have the combination of the prescriptive and descriptive character a hybrid frameworks will be more advantageous.

2.2 Theoretical framework of the study

Knowledge management is essentially about getting the right knowledge to the right person at the right time. This in itself may not seem so complex, but it implies a strong tie to corporate strategy, understanding of where and in what forms knowledge exists, creating processes that span organizational functions, and ensuring that initiatives are accepted and supported by organizational members. Knowledge management may also include new knowledge creation, or it may solely focus on knowledge sharing, storage, and refinement (Emil, 2018).

It is important to remember that knowledge management is not about managing knowledge for knowledge's sake. The overall objective is to create value and leverage and refine the firm's knowledge assets to meet organizational goals (Emil, 2018).

Process Knowledge Management

Acquisition of Knowledge	Storage of Knowledge	Distribution of Knowledge	Use of Knowledge

- Organizational   - Individual   - Social contact   -
  Form of Use
  Learning   - Organization   - Community of   (Exploration/
- Knowledge   - Information   Practice
  Exploitation)
  Absorption   Technology   - Via IT Share   - Dynamic
- Creative
  capacity
  Process   - Recovery &
- Knowledge
  Transformation
  Transformation   of knowledge

Figure **2.2 Theoretical Framework of KM practice**

Nonaka and Takeuchi (1995) introduced the SECI model which has become the cornerstone of knowledge creation and transfer theory. It proposes four processes that are commonly used by organizations for knowledge conversion*: socialization, capture, dissemination, and internalization.*

*Socialization***:** sharing of experiences through observation, imitation and practice. It generally occurs through workshops, seminars, apprenticeships, and conferences, as well as at the water cooler.

*Capture***:** the conversion of tacit knowledge (e.g., what one learned at a workshop) into explicit form (e.g., written report).

*Dissemination***:** the copying and distribution of the explicit knowledge.

*Internalization***:** process of experiencing knowledge through an explicit source, *i.e*., one can combine the experience of reading the workshop report with previous experiences.

In practice KM is mostly about creating an environment where people want to share what they know, simply giving people time to talk to each other. Basically two things are essential in practicing KM: connecting people to information and connecting people to other people. The biggest challenge in KM practice is that knowledge should be decentralized; knowledge creation, storage and usage should not be centralized. The successful KM practice recognizes the distributed nature of knowledge.

KM is about making sure that an organization can learn, and that it will be able to retrieve and use its knowledge assets in current applications as they are needed. Thus implementing KM in LRT will enable to understand where knowledge is located e.g. in the mind of a specific expert, in what form this knowledge is stored e.g. the minds of experts, on paper, etc. It also helps on how to best transfer this knowledge to relevant people, so as to be able to take advantage of it or to ensure that it is not lost E.g. setting up a mentoring relationship between experienced experts and new employees, implementing a document management system to provide access to key explicit knowledge.

All the above support the idea that LRT need best practice of KM for successful knowledge & technology transfer to ensure longevity of the corporation.

2.3 Empirical framework of the study

KM emerged as scientific discipline in the early 1990's, since then scholars have tried to improve the knowledge about KM. Yet it hasn't taken its final shape to this day. There is no universally accepted KM framework / implementation process. The researcher adopted a model that best fits the study.

This section covers the KM discipline from two aspects

➢ Factors that affect success of KM practice

➢ KM practice process

Key factors of knowledge management

A. Macro environment

Organization exists with an "open" system (Wiig, 1992) where features external to the organization influence in the internal operation of the organization. These influences can include takeovers, changes in legislation, market regulation/deregulation, competition, joint ventures and pressure groups. Changes in the macro environment have a consequent effect on organizations. (Obeng & Crainer, 1996) state that when an organization is existing on the edge of chaos, reacting to unstable micro environment, it has the ability to initiate change building on pervious business environment developments, namely, TQM and BPR initiatives.

Therefore by addressing the continuity and tradition of existing organization states, replacing old with new, an organization will change. This change must be managed. KM offers a framework for systematic organization change. As the core of KM is to foster collaborative practices, the application of KM should lead to the implementation of a well-managed change program, responsive to external environment.

B. Culture

Organizational culture as a concept is considered to be a key element of managing organizational change and renewal (Peffers, 2007). Therefore to change an organization

culture, the people values, norms and attitudes must be amended so that they make the right contribution to the collective culture of the organization. These changes must address any inherent conflict between individual and group interests and the manner of structuring power, authority and control within the organization. (Crosby, 1986) states "changing a culture is not a matter of teaching people a bunch of new techniques it is a matter of exchanging values and providing role models….changing attitudes".

Culture is what is formally agreed and what actually takes place (King, 2009). The same principle can apply in KM. First an organization can have a knowledge culture where KM is expressed through the application of various knowledge initiatives, tools and techniques. Second an organization can be a knowledge organization. This entity occurs when KM is totally ingrained within the operation of the organization. Hence, a knowledge culture has been adopted throughout the organization.

A culture of confidence and trust is required to encourage the application and development of knowledge within an organization. Thus knowledge oriented culture challenges people to share knowledge throughout the organization (Davenport & Prusak, 2000).

C. People

People or employees in an organization usually conform to the culture of the organization. Change in an organization demands employees to change their mindsets and break past traditions. Thus within the field of an organizational change resulting from KM, human issues must be considered as a key factor (Peffers, 2007).

Effective dialogue within an organization is essential if knowledge to be embodied and disseminated. Peffers (2007) calls for less formal meetings and a more effective flow of dialogue in organization.

This can be developed by creating trusting and meaningful relationship within a team. The need for dialogue is important because it facilitates the process of creation, organization and dissemination of knowledge. Conversations are the way employees discover what they know and share with their peers.

D. Technology

Technology is a key contributor in practicing KM. This perspective is related to technological ability in capturing data, information and knowledge that surpasses human capacity in absorbing and analyzing these in a focused manner (Davenport & Prusak, 2000). Knowledge technologies push users to think beyond their current, thus facilitating organizational activity, promoting continuous improvement and growth through innovation.

Systematic management of knowledge has emerged as a result of several developments including that of information technology (ICT). In today's knowledge intensive organization the primary objective of ICT is to lead users to the information they need. This includes creating, gathering, storing, assessing and making available the right knowledge. Thus the pervasive use of IT in organization, qualifies as a natural medium for information flow (Davenport & Prusak, 2000).

KM practice process

The main important character of KM is KM Process. KM Process is the core function in KM activity. Various attempts have been made to provide a categorization for KM processes. For example, DeLong (1997) classified the processes into capturing, transferring and using knowledge. Leonard-Barton (1995) on other hand classifies it as acquisition, collaboration, integration and experiment. Grant (1996) indicated the effectiveness KM process should be conducted frequently, consistently and flexibly. Each KM process has its own advantages in each implementation. The KM process includes:

➢ *Knowledge Creation/ Acquisition* it is as a knowledge construction. In this stage the most important task is to identify which knowledge is relevant or essential to the company or institution.

➢ *Knowledge Organization/Storage* Involves gathering a massive number of knowledge into knowledge asset or database without a well-designed knowledge organization.

➢ *Knowledge Distribution* Knowledge distribution is the retrieval and dissemination of the knowledge to use in another learning experience. It includes "pushing" knowledge to its users and users "pulling" the knowledge they need (Davenport & Prusak, 2000).

➢ ***Knowledge Application*** It is the process of using and applying the knowledge in order to accomplish task and mission.

The important components of KM are people, culture and technology. People are the ones to produce, use and share knowledge. Culture of sharing is crucial to the success of KM and Internet based learning. Process and technology are integral parts of KM.

2.4 Knowledge Gap

As stated in the introduction part of the study KM is an emerging discipline and it hasn't taken its final shape. The full scope of knowledge management (KM) is not something that is universally accepted. So it's logical to assume the field of knowledge management has gaps to be filled. This section sees the one area in the field of KM that needs further study.

Knowledge is one of the critical assets to leverage when pursuing enterprise competitive advantage. The key knowledge-management (KM) challenges facing companies today are determining what robust system to implement, which user friendly processes and practices to institute that are not complex, and what added value intellectual capital to capture. In response to issues arising from the uncertainty over identifying the enablers and barriers to implementing KM, a number of value studies have been published addressing this concern (Nonaka, 1991; Barney, 1995). Several studies proposed the concept of ''knowledge gap'' to describe the difference between the company's current capability and the capabilities required for KM. (Wiig ,1992) defined the knowledge gap as the quantitative and qualitative difference between the knowledge needed and available in the organization. This inability to identify and resolve any gaps prior to implementation of KM is greatly impacting the implementation process. Thus it would be best for a company to build a framework that would analyze the corporate knowledge needs, evaluate the implementation activities of KMS and identify any inhibitors to success.

Finding what kind of capability a company possess and what it lacks is essential to successfully create & implement KMS. Companies should review their internal and external environment to determine the knowledge required to enhance its competitiveness. Fail to do so may result in a gap between the knowledge required to enhance the competitiveness of a company as perceived by management staff and the knowledge actually required.

In future studies of KM, ways to know what kind of knowledge a company needs in respect to its strength, weakness, opportunities and threats should be investigated. This helps to acquire needed information to formulate a suitable KM strategy.

2.5 Conceptual framework of the study

This section deals with knowledge management conceptual frameworks or model. It lays down the foundation to study the practice of KM in LRT. A good model can integrate elements and show relationships in a way that is much harder to do in writing. Below there is a conceptual framework on how knowledge management put into practice.

Human focus:
Create & Sense Capture

Human focus:
Organize, Personalize &

Knowledge Creation & Sensing

Knowledge Organizing & Capture

Rich KM Solutions

Knowledge Sharing & Dissemination

Technology focus:
Share, collaborate & Access
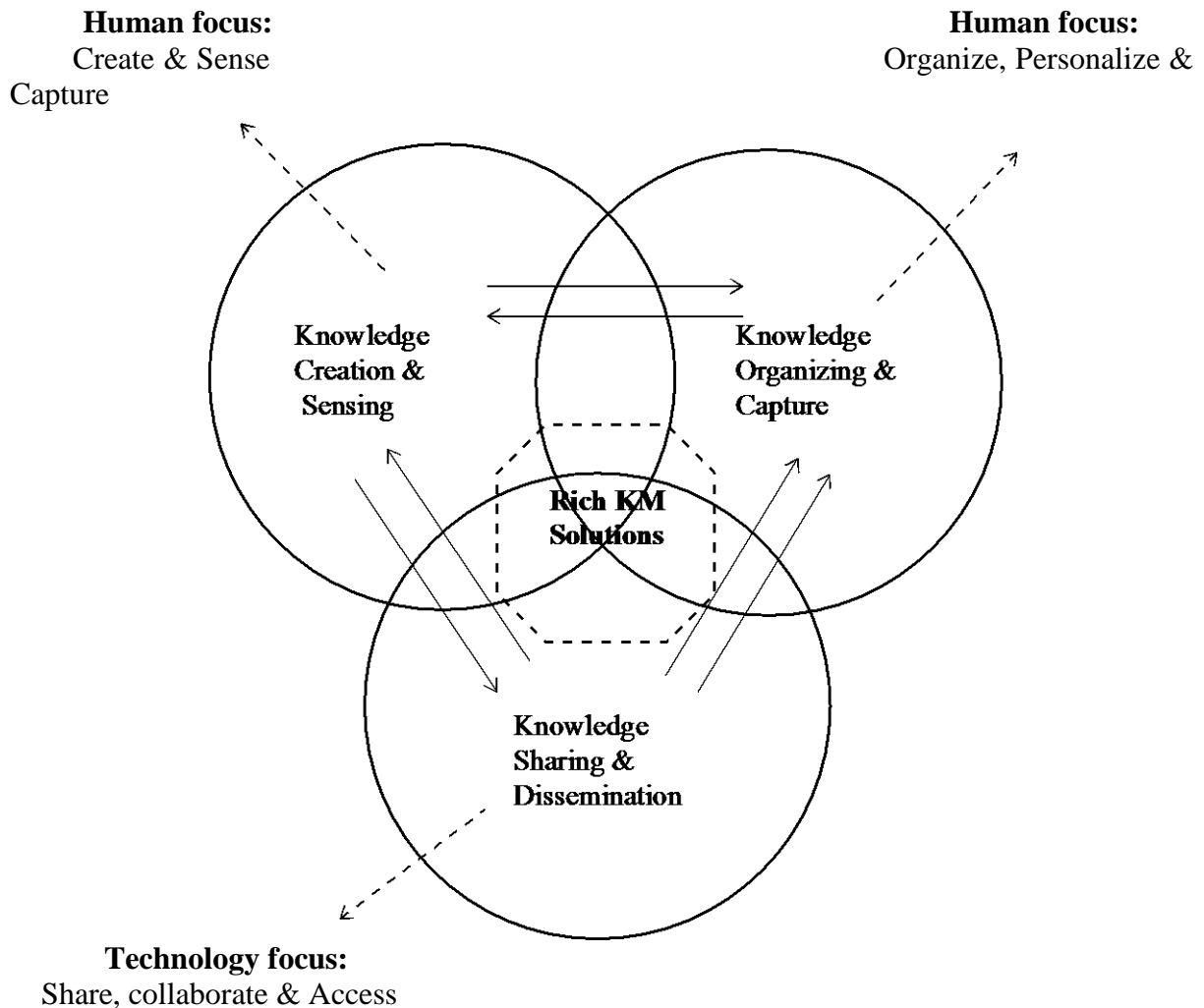
Figure **2.3 KM implementation process**

26

This concept attempts to offer a more realistic overview of the KM implementation process. The three broad categories overlap and interact with one another. It does include the creation of new knowledge as a specific KM initiative.

The model further shows which of the three categories are more people oriented and which are more technology focused. Whether or not knowledge sharing should be largely technology focused is certainly debatable and it is something that should be addressed in future studies. However, for better or for worse, this is largely how organizations tend to approach the issue i.e. as a technological rather than organizational and social challenge.

The KM practice starts with detect and discover: i.e. Search for existing knowledge as well as hidden knowledge within information and data. Once knowledge is created, it exists within the organization. However, before it can be reused or shared it must be properly recognized and categorized.

The second phase is Organize and Assess: which is grouping & analyzing of knowledge assets. Knowledge is categorized, evaluated, and made easier to access (by providing maps etc.). In order to determine what resources, they have at their disposal and to pin point strengths and weaknesses, management needs to organize the knowledge into something manageable. The point is, that in order for knowledge to be shared (either for reuse in a business situation or as a tool for knowledge creation), it must be prepared in such a way that it can be identified, retrieved, and understood by the knowledge user.

The final part is sharing and dissemination: organization can use existing knowledge to meet objectives. KM is fundamentally about making the right knowledge available to the right people at the right time. Knowledge sharing can be described as either push or pull. The latter is when the knowledge worker actively seeks out knowledge sources (e.g., seeking out an expert, collaborating with peers, library search etc.), while knowledge push is when knowledge is "pushed onto" the user (e.g. Training, education).

In case of this study, i.e. assessing the practice of KM in LRT is very much associated with these three parts of implementation process. Applying the KM implementation process to the best of ability will go a long way for fulfilling a good practice of KM.

2.6 Summary of the Literature Review

The literature review consists five parts; the first one is conceptual & operational definition where basic concepts of KM are discussed. Main variables & elements are defined, also put into context. This section helps readers to grasp the discipline of KM. In broad definition KM "is managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value" (Davenport & Prusak , 2000).

The second part is the theoretical framework of study which proposes a theory why a problem in the study exists i.e. the importance of assessing the knowledge management & transfer in LRT. It raises the significance of KM for an organization to remain competitive & sustainable. The theoretical framework also covers the dimension that's essential for successful completion of KM.

The third part is empirical framework of study. It uses previous studies of KM to cover the most important part of KM practice. The section provides a brief overview of factors that affect KM success and its implementation process.

The fourth part is the research gap in the literature review & previous studies of KM that needs addressing. The main gap that is found is the concept of ''knowledge gap'' which describes the difference between the company's current capability and the capabilities required for KM.

The final part is the conceptual framework of the study which shows how the KM practice should be put into effect. It helps as the basis to assess KM practice in the organization.

The researcher also observed that the practice of KM in business is relatively new in the country. As there is a growing need for the development, it is evident that the discipline of KM is necessary to import technologies and systems. Thus it's imperative to study and apply KM for future developmental needs of the country.

CHAPTER THREE

RESEARCH METHODOLOGY

3. RESEARCH APPROACH

According to Creswell et al., (2003) mixed method research is where researcher mixes or combines quantitative and qualitative research techniques into a single study. Its central premise is that the use of quantitative and qualitative approaches in a combination provides a better understanding of research problems than either approach alone. Quantitative data includes closed-ended information such as personal info, understanding and attitude….. etc. The analysis consists of statistically analyzing scores on instrument to answer research questions. In contrast Qualitative consists of open-ended information in which participant allowed to supply answers in their own words. The analysis of qualitative data follows the path of aggregating the words into categories of information and presenting the diversity of ideas gathered during data collection (Creswell et al., 2003). This implies embedding one dataset within the other so that one type of data provides a supportive role for the other dataset.

Based on the above definition mixed method research has been adopted to achieve the aim of this research since the study focuses on assessing the KM practice and knowledge transfer for the Addis Ababa LRT. Assessing the current status of KM is essential in achieving the main aim of the paper, this requires obtaining information from participant in their own words to get the real picture and avoid biases (qualitative data) as well as closed-ended information (quantitative data).

3.1 RESEARCH DESIGN

Research designs are procedures for collecting, analyzing, interpreting, and reporting data in research studies (Creswell et al., 2003). The researcher has selected a mixed methods approach for a study; the next step is to decide on the specific design that best addresses the research problem.

The researcher selected the Embedded Design; it is a mixed methods design in which one data set provides a supportive, secondary role in a study based primarily on the other data type (Creswell et al., 2003). The premises of this design are that a single data set is not sufficient, that different questions need to be answered, and that each type of question requires different types of data. This design is particularly useful when a researcher needs to embed a qualitative component within a quantitative design.
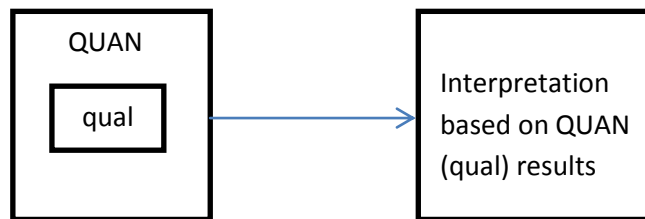
Figure 3.1 **Mixed method approach Embedded design (Creswell et al., 2003)**

3.2 DATA TYPES AND SOURCES

Data for the study consists of both primary and secondary data. Primary data is an original and unique data, which is directly collected by the researcher from a source according to his requirements. Secondary data refers to the data which has already been collected for a certain purpose and documented somewhere else.

Primary source of data are questionnaire distributed to participant who contain closed-ended questions (quantitative) and open-ended questions (qualitative). Secondary data is obtained from previous research, books, journals-articles, and other internet resources related with Knowledge, KM, and KT in the business in general and in the railway context in are reviewed.

3.3 TARGET POPULATION AND SAMPLING

The research was conducted at Addis Ababa Light Rail Transit at Kality main depot. The target population for questionnaire survey was the HR department and the maintenance and operation unit. The HR department was selected because it responsible for implementing KM in the corporation. Also maintenance and operation unit is selected due its importance in knowledge and technology transfer.

Due to lack of interest from some employees to participate in the study, the sample is taken from people easy to contact or reach. The researcher used convenience sampling in distributing questionnaire due to financial and time constraint of the study. Therefore non-probability sampling techniques are used in this study.

Non- probability sampling represents a group of sampling techniques that help researcher to select units from a population that they are interested in studying. The core characteristic of Non- probability sampling techniques is that samples are selected based on the subjective judgment rather than random selection. Convenience sampling is used to access the easiest group of population to reach, there no formula used to reach the sample size. The corporation currently has 34 employees in HR department and 138 staff members in the maintenance and operation unit. Out of which 75 employees that are willing and easy to contact were chosen.

3.4 DATA COLLECTION METHOD

3.4.1 Primary Data Collection
> *Questionnaire*

Survey questionnaire are used to collect information on organizational knowledge assets, KM processes and tools being used, employee's perception towards knowledge and KM, and challenges/factors that affect knowledge management in the LRT. The questions are generated from the literature, "An Evaluation of Knowledge Management Practices in Nonprofit Community Services Organizations in Australia", (Downes, 2014) and has been modified to meet the research questions and the LRT specific context.

3.4.2 Secondary Data Collection
> *Documents Review*

A review of books, journals-articles, and other internet resources is done to gain knowledge and understanding on different concepts of KM, knowledge transfer, frameworks. The purpose is to generate concepts and theoretical knowledge available and to back up the data collected through questionnaire in the study. The researcher faced difficulties in accessing documents and studies of the corporation due to confidentiality matters. The researcher tried to exert efforts to get important documents with negotiations with the HR department to no avail.

3.5 METHODS OF DATA ANALYSIS

Data preparation involves checking for accuracy; checking the missing data. The researcher contacted the HR head to recover missing values (E.g. personal info of respondent) and also used educated guessing (E.g in the Likert scale if there are all agree i fill the missing value as agree). Quantitative data mostly collected through survey questionnaire is analyzed using

descriptive statistics techniques. The analysis is done using Statistical Package for the Social Sciences (SPSS) version 20. Frequency, average and percentage values are used for discussion of the data collected from the survey.

The questionnaire is designed in a structured way containing close-ended questions with Likert scale and choices to be ticked, open-ended questions that will be filled by the respondent. Mixed method data analysis is used that involves qualitative and quantitative data analysis which are combined, connected, or integrated. In view of this, the data analysis began after organizing the data collected through primary data collection methods, where exerting maximum effort to keep the originality of the research. First quantitative data have been analyzed independently and then qualitative data were analyzed and embedded in to play a supportive role.

3.6 REABLITY AND VALIDITY

The researcher has conducted internal consistency reliability of the instruments by Cronbach's alpha reliability in the form of split half methods by dividing the instrument in the form of even and odds. Cronbach's alpha reliability coefficient normally ranges between 0 and 1 and it is used to determine the internal consistency or average correlation of items in a survey instrument to gauge its reliability. Creswell et al., (2003) provide the following rules of thumb: "> 0.9 = Excellent, > 0.8 = Good, > 0.7 = Acceptable, > 0.6 = Questionable, > 0.5 = Poor, and <0.5 =Unacceptable". To test the instrument the researcher has taken a total of 15 responses, five from each functional area (HR, maintenance and operation). The result is o.8. This result indicated that the questionnaire is reliable to collect the data.

Validity is the extent to which an instrument measures what it supposed to measure and performs as it's designed to perform. It's rare, if nearly impossible that an instrument to be 100% valid. The instrument is prepared to accurately measure what to intend to measure based on objective of the study. It is used to make sure that all the relevant variables are included and irrelevant ones were excluded. It also assures all the variables considered are accurately measured. Validity was examined by evaluating the percent of the total variance explained per dimension obtained by applying confirmatory factor analysis (CFA) (Joreskog and Sorbom, 2004). The percent of total variance are much higher than 50.0% indicating acceptable survey instrument construct validity   .

3.7 ETHICAL CONSIDERATIONS

This relates to moral standards that the researcher should consider in all research methods in all stages of the research design. In the context of research, "ethics refer to standards of behavior that guide the researcher's conduct in relation to the rights of those who become the subject of the work, or are affected by it" (Saunders et al., 2012).

The utmost effort is exerted to maintain the respondent's right and privacy. The respondents pursued consent for participation with full awareness of what it is. The researcher informed the respondents prior to conducting the surveys. All this was done not to cause harm to respondents in any way.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4. INTRODUCTION

In this chapter, quantitative and qualitative data obtained from survey is presented and analyzed. The major aim of this chapter is to assess and analyze the Addis Ababa LRT knowledge management practice. Data collected from the respondents were organized in to tables and figures, data obtained from internet and books were used to explain the tables and figures further. A total of 75 questionnaires were distributed and 49 were received, out of which 11 questionnaires were not fully filled and no questionnaires were discarded due to missing data. Therefore, 49 questionnaires were considered for the study. To make the data presentation and analysis clear and easy those responses with "agree" and "strongly agree" are considered as agreement, and „disagree‟ and „strongly disagree‟ are merged as disagreement. As a matter of fact, as shown in each table, there are no or very few responses in the „strongly agree‟ and „strongly disagree‟ category.

4.1 Brief Description of Addis Ababa Light Rail Transit- AALRT

The government of Ethiopia in commitment to realize the millennium development goals towards achieving middle level economy in 2025 planned to develop the infrastructure including transport sector. It established the Ethiopian Railways Corporation (ERC) to implement its mission in the railway transport operation and networking industry by regulation number 141/2007 of the council of ministers of FDRE (www.addisababa.gov.et).

Accordingly, the government planned the Addis Ababa light Rail Transit (AALRT) project for Addis Ababa city which is the capital of Ethiopia and the African Union (AU) as well. The project has two fleet corridors namely NS line (for North South) and EW line (for East West). The operation of AALRT was planned to begin in January 2015, but due to several reasons and incompletion of facilities for the operation, it was finally arranged to commence in September 2015.

This phase of AALRT has a total length of 31km with EW line 17.01km, NS line 16.69km and a 2.6km common section with a total of 39 stations and 41 rolling stock vehicles. The project was anticipated to greatly improve the traffic conditions and boost urban

development. After consultation with the ministry of transport and the government, ERC decided to outsource the management of the company for a fixed period of time and to train the local staff with the necessary intellectual and psychological skills to start and maintain the operation of AALRTS. Accordingly an international request was forwarded to Shenzhen Metro Group Co., Ltd (SZMC) and China Railway Group Limited (CREC) to take charge of the operation, management and technology transfer of AALRTS in 2014.

4.2 Characteristics of Respondents
In these section general characteristics of the respondents is provided. The variables include Gender, Age, Experience, Title/rank and Educational qualification.

4.2.1 Frequency of Distribution of Respondents by Gender and Title
In this research, respondents are from five job categories which are Signal maintainer, Train driver, Train dispatcher, Railroad mechanic, Switchman and also from other disciplines. As shown on the Table 4.1., the data collection attempted to maintain a balanced representation from each job category. In general, the highest numbers of respondents (67. 3%) are male. However; it differs from one area to the other due to the nature of the work. A total number of 49 responses have been out of 85 with a response rate of 57%.

Table 4.1: Frequency of Distribution of respondents by gender and title

Title/rank													
Signal maintainer		Train driver		Train dispatcher		Railroad mechanic		Switchman		Others		Total	
M	F	M	F	M	F	M	F	M	F	M	F	M	F
5	3	4	3	4	2	7	1	3	2	10	3	33	16
Total												49	

4.2.2 Frequency of Distribution of respondents by education and work experience
In the case of educational background, more than half of the respondents, 28 (57. 1%) are BA degree holders, 10(20.4 %) have Master's Degree and the rest 11(22.4%) have Educational

Qualification of College Diploma. This indicates that more than 77% of the respondents hold First Degree and above. With regard to years of experience, 35 (71%) of the respondents have an experience of 2 to 4 years in LRT, plus 5(10%) have more than 4 years of experience and the remaining 9 employees served the corporation for less than 2 years.

Table 4.2: Frequency of Distribution of respondents by education and experience

Educational Qualification	Work experience in LRT						Total		
	Less than 2 years		2 to 4 years		Above 4 years		Total		
	M	F	M	F	M	F	M	F	T
College Diploma	5	4	0	2	0	0	5	6	11
BA Degree	8	3	4	1	7	4	19	8	28
Master's Degree	0	0	2	1	6	1	8	2	10
Total	13	7	6	2	13	5	33	16	49

4.2.3 Frequency of Distribution of respondents by Age group

With respect to age, respondents are put into five groups of age. Table shows that about 24(48%) are in the age group of 25 to 34 , then followed by the age group of 35 to 44 with 14(28.5%) respondents. The remaining are 4(8.1%) are under25, and 7(14. 2%) are in the 45 to54 age group. From this it is possible to infer that the workforce composition of the respondent is young and thus require training and mentorship on the new technology in LRT.

Table 1 **Table 4.3: Frequency of Distribution of respondents by age group**

Age	Frequency	Percentage
Under 25	4	8.1
25-34	24	48
35-44	14	28.5
45-54	7	14.2
Total	49	100

4.3 KNOWELDGE MANAGEMENT IN GENERAL

4.3.1 THE WAY LRT ENGAGES IN KM ACTIVITES

The majority of the respondents 40(81.6%) conformed that Addis Ababa LRT has a formal knowledge management policy which suggests the corporation takes KM seriously at least from planning perspective. Out of the remaining 9 respondents 6(12.24%) believed that

corporation engages in KM informally and the rest 3(6.12%) indicated that Addis Ababa LRT doesn't have a KM policy or has not been engaging in KM activities.
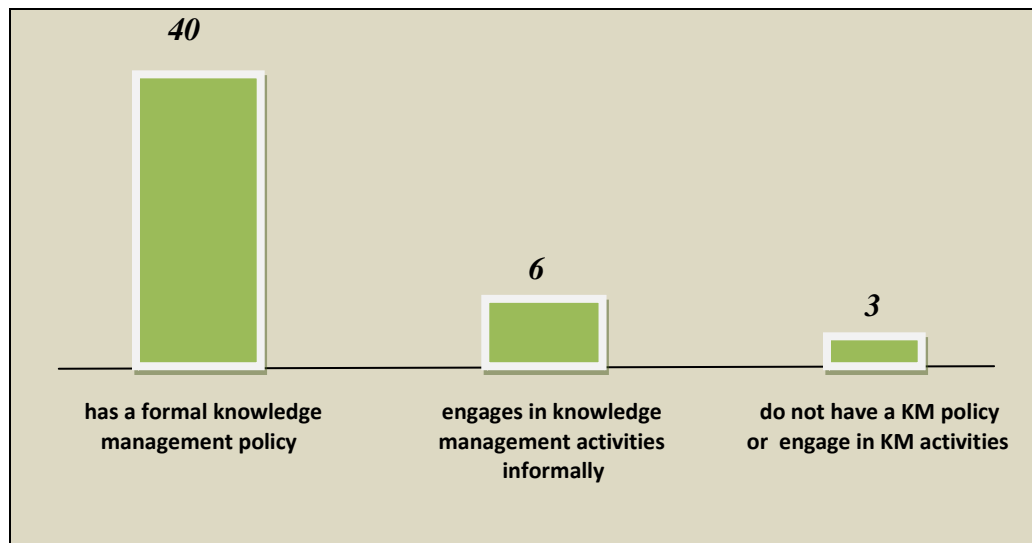
Figure 4.1: The way the LRT engaged in KM activities

Formal KM policy is beneficial in setting clear expectation for all staffs against which performance can be managed and judged (Davenport & Prusak, 2000). It ensures that everyone knows what is expected of them in terms of KT, and why it is important for the corporation. A good KM policy will establish the guidelines on how to disseminate the corporation existing knowledge and promote continuous learning and cultural exchange (Davenport & Prusak, 2000).

The fact that the technology used in AALRT is new to the country makes engaging in KM activities a matter of survival for the corporation. For sustainable existence of the corporation locals should be fully equipped to operate this new technology. Having a formal KM policy will make the knowledge and technology transfer efficient and faster, but prior to the preparation of the policy employees deficiency in using the new technology should be defined.

Addis Ababa LRT has policies and procedures that govern the management of Knowledge within the organization for each work discipline. Policies and procedures were directly derived from Chinese companies who are in charge of the management of knowledge & technology transfer. This has created limitation in its implementation because they were not contextualized to the country capabilities, which lead for the local to believe the Chinese are obscuring things for their purpose. The KM policy is not contextual means it did not consider

the circumstances in Ethiopia; there are obvious gaps between the Chinese and the locals competencies, so deriving the policy will make the KM practice harder. Ethiopian engineers and technicians need to be highly appreciated and accolade for their deeds to meet this limitation.

4.3.2 DURATION IN WHICH LRT HAD BEEN ENGAGED IN KM ACTIVITES

Addis Ababa LRT has been in operation since September 2015, so it is expected to have been engaged in KM activities for 5 years up to now. This is because one of the main objectives of the project is to provide knowledge and technology transfer. Engaging in KM activities will make employees spend less time on existing knowledge, e.g. less time spent in asking questions about repetitive/routine operation. Railway operation is demanding, KM activities will help employees make fewer mistakes and provide better service to customers. Employees should embrace KM activities; they should not fear it will take much of their time or that sharing their knowledge will reduce the value they provide and put their job at risk.

It is important for the corporation to prepare KM activities that easy to implement, it should be based on technical capacity of the work staff and communication line should be put in place to address challenges faced by the employees while engaging in KM activities. This communication line will be helpful in making the KM practice effective and give ideas for future improvement on KM policy based on feedback. If the beneficiaries do not have the ability to benefit from engaging in KM activities then there is no point of implementing KM.

Out of the 49 respondents, just over half of them 25(51%) said the corporation had been engaged in KM activities for 3 to 5 years. Then followed by 16(32.65%) which said between 1 to 3 years. The remaining 8(16.3%) respondents don't know for how long LRT had been engaged in KM activities.
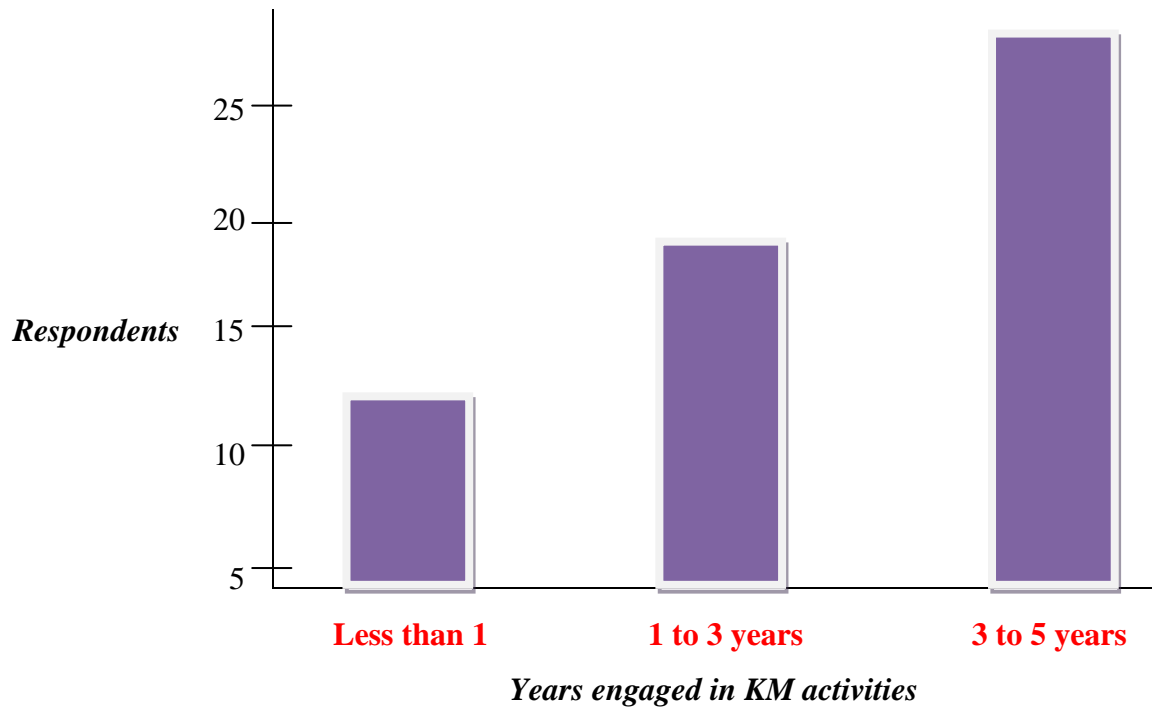
Figure **4.2: Duration in which LRT engaged in KM activities**

The data shows a disagreement among employees on the time that LRT has been engaged in KM activities. AALRT is expected to fully engage in KM activities for the whole time since the commencement of the project five years ago. The fact that there is conflict of thought among employees about the time LRT had been engaging may indicate that KM is not implemented to full scale as planned. KM is not fully implemented means KM activities such as creation, storing, sharing and utilizing have not taken place as planned. Knowledge should be created and used regularly in response to new innovation/ technology. The knowledge base that has been developed 5 years ago in LRT might not be adequate for the latest technology used in railway network. Managing knowledge regularly and actively through KMS makes way for innovation and cultural exchange. It enables work place employees to express their ideas and use creativity to perform tasks.

4.3.3 LEVEL OF UNDERSTANDING ABOUT KM IN ADDIS ABABA LRT

As to the level of understanding of KM in LRT, most of the respondents 37(75.51%) have replied they have some kind of awareness towards KM. only 9(18.37%) said they have proper understanding about KM, whereas 3(6.12%) have no idea at all. This implies over 93% of the respondents have at least some level of awareness of KM, but to implement KMS and gain the maximum benefits proper or good understanding of KM is important. Without good knowledge of KM from the work staff the corporation will be wasting resource and time; LRT cannot gather, store, disseminate and utilize knowledge in a way that is intended. IT software products, processes and procedure that can enable the effective implementation of knowledge will be useless.

Not having a good knowledge of KM in LRT will have its implication on the sustainable knowledge transfer from Chinese to the locals. This because locals will not know what LRT knows, where this knowledge is located, in what form this knowledge is stored.

I have a good knowledge of KM	9	18.37
I have some knowledge of it	37	75.51
I have no idea about it	3	6.12
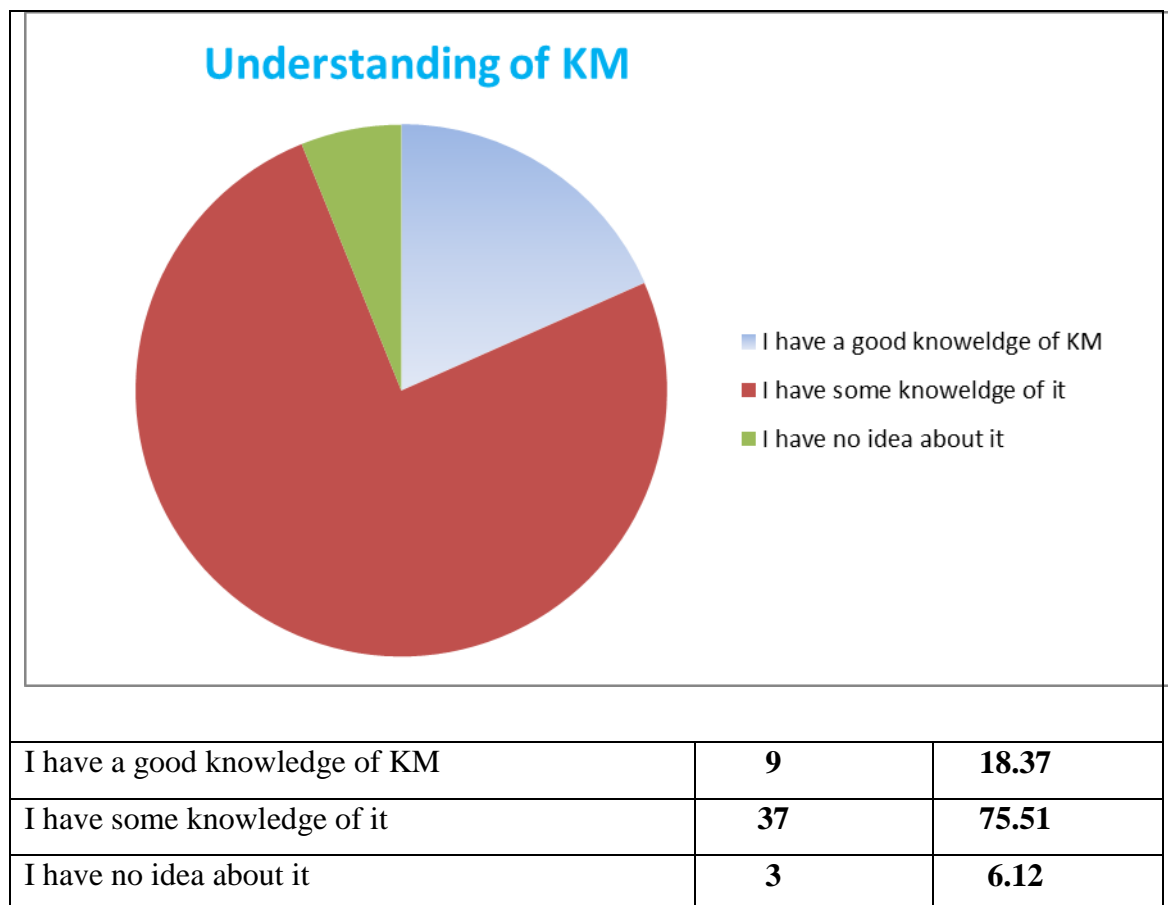
Figure 4.3: Level of Understanding on KM

Respondents have acknowledged that knowledge and KM seem simple to many people; however it is a complex phenomenon. Most people consider knowledge as information or

education, and therefore they use these words interchangeably. Although in general employees are aware of KM, it's not ideal that most of the employees don't have proper or full knowledge about KM. This definitely is one of the factors that affect KM practice. At least employees need to be familiar with procedural doings of KM.

4.3.4 PERCEPTION TO KM WITHIN LRT

When it comes to how KM is considered within LRT 29(59.18%) of the respondents believed that KM plays an important role for the effective accomplishment of the operation of the corporation. For 16 (32.65%) of the respondents, KM is more than that; it is a matter of survival for the organization. The remaining 6(12.24%) still believe that KM is important, however, it is not that much significant for them. This indicates much of the respondents see KM as an essential part of LRT going forward.

Good perception will enable the employees to embrace KM and take advantage of its benefits. KM practice will be easier and knowledge transfer will take place in shorter time. The corporation should communicate with employees on how building up intellectual capital is important in being competitive in today's business environment. Leveraging its knowledge asset will help the corporation in meeting business objectives. Knowledge assets include databases, reports, documents, files, financial statements, procedures, policy and even experience of all the workers. KM practice can also be further pressed upon by the fact that it drives cultural change and can speed up the process of learning. KM leads to a culture of sharing knowledge; this serves in collaboration of data, locating various sources of knowledge, enhancing the KM process and data mining. Making learning a habit and routine will create a kind of culture which is inclined towards self-assessment as well as self-improvement.

All the above suggests KM plays important role for effective mission accomplishment of LRT. If KM practice is successful, LRT will be able to make better business decision. This leads to meeting its targets long term which is effective mission accomplishment (satisfying Addis Ababa transportation needs).
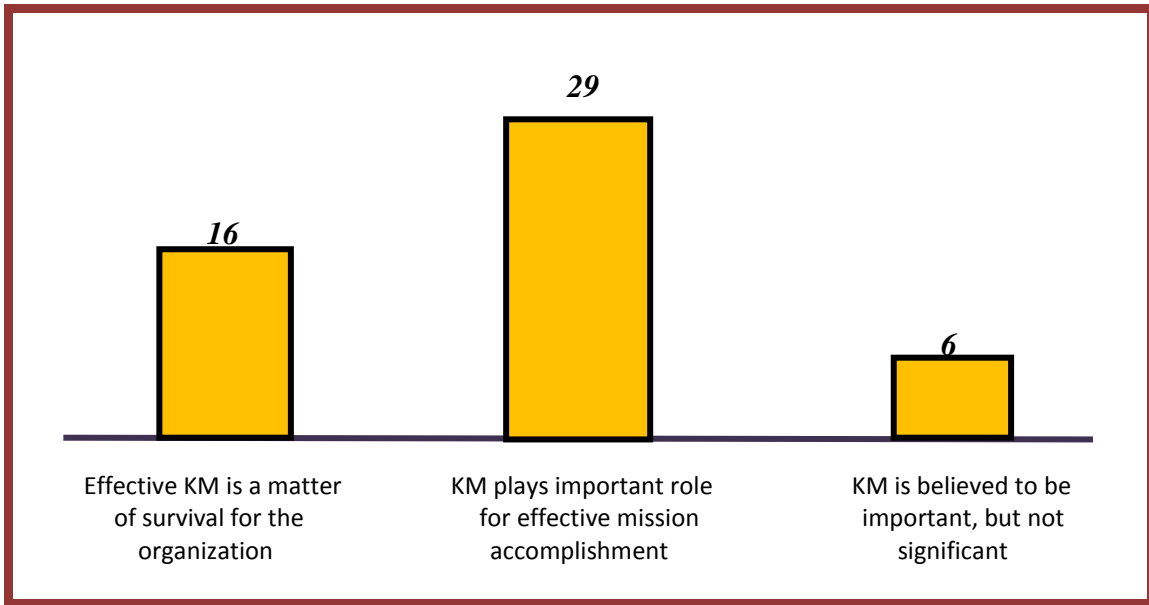
Figure 4.4: Perception towards KM

In context of AALRT KM activities should be a matter of survival. Without full knowledge management taking place the existence of the corporation is questionable for obvious reason that is the technology is new to the country. Regardless of this knowledge is a critical asset for any organization which brings competitive advantage among other benefits. Building up intellectual capital is needed to meet the high demands of customers.

AALRT is a government intervention to meet the transport demand of the city of Addis Ababa. For faster operation of the railway network equipped professionals is essential. This ultimately reiterates KM should be a matter of survival.

4.4 KNOWLEDGE MANAGEMENT PRACTICE IN THE LRT

The purpose of KM from the railway perspective is to create a safe, reliable operation and maintenance system to satisfy public transportation demand (European safety & reliable association, 2019).Effective KM practices increases collaboration and interaction between management and staff, creates value in terms of better decision making to meet objectives of an organization.(Dumitru,2015). In this section, the researcher has gathered information regarding the KM practices in the LRT to get a view in to the specific context of the LRT in regard to KM. The questions asked and the data gathered on KM practice are related to the process, resource, and training.

In the process related questions, there is no agreement made among the respondents in their replies to the questions whether LRT has standard process for properly availing reference materials such as policy documents, books, practical information. Accordingly, about 22(44.89%) confirmed that the LRT has standard process for properly availing reference materials and the remaining 23(46.93%) have expressed their disagreement on the issue. However, the information collected from the head of HR department confirmed that the organization has standard way of collecting and storing reference materials to be used whenever needed. Therefore, it can be said that LRT has standard processes for the storage of these knowledge resources. This is because management staffs are assumed to have reliable information (could have more information than the respondents participated in the survey). Every day LRT receives data and information, while some of this data may not be important at all other pieces of information could be crucial in filling areas lacked by the corporation (difference between the company's current capability and the capabilities required). This important piece of data/information should be stored in a standard way, it will be utilized to take critical decisions and enable certain employees to improve their overall knowledge and skills.

More than 75% of respondents reply that LRT has limitations in the following two aspects of KM. These are

> ➢ No proper mechanisms for converting tacit knowledge from individuals in to explicit form. This is a global challenge that can be best described "we know more than we can tell" (Polanyi 1958).
> ➢ Not storing knowledge in a form that is readily accessible to its employees.

Similarly, when respondents are asked whether the information held in facilities such as databases, other information technology applications, manuals or resource centers, are updated regularly, 38% have no information whereas 60% mentioned that these resources are not updated regularly. Only insignificant portion i.e. below 2% confirmed that it has been updated regularly. Information gathered from the HR head also coincides with this response. When the corporation is faced with certain problems, then the help of knowledge databases may be needed. If these databases are not updated regularly they can't be used in solving existing problems. In such a situation linking knowledge to people will be time consuming because first you have to find who know how to solve the problems (experts). To solve this

hiring content manager is needed; he will be responsible for gathering information, editing and updating it, as well as ensuring that it is useful and accurate.

Table 4.4: Knowledge management Practice

Questions	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
Process related practices					
The corporation has a standard process of storing references material such as procedures, manuals, ideas or other practical information	5	17	4	19	4
The corporation has a mechanism for converting tacit knowledge into explicit from	2	6	2	28	11
The corporation store knowledge in a form that is readily accessible to staffs	0	5	7	30	7
Information held in facilities databases, manuals, resource center are updated regularly	0	1	19	20	9
Resource related practices					
Key experts in the corporation are readily identified and contacted	4	9	2	27	7
For each activity performed by staffs there is an action review from which lesson can be reviewed	2	9	8	28	2
The corporation utilizes written documents such as newsletter, pamphlets, or manuals to share best practice from one unit to other	0	3	6	35	5
The corporation has resource center or other forums to disseminate information or expertise	0	8	1	31	9
The corporation has a knowledge retention program to ensure experience and expertise is not lost when staff leave	0	7	5	29	11
Training related practices					
The corporation provides training in new ways of doing things and overcoming potential challenge	6	26	5	9	3
The corporation provides training in its knowledge management process	2	11	0	24	2
Knowledge sharing is incorporated in staff performance review discussion	1	6	2	37	3

As to resource related questions, majority of the respondents 34(69.38%) indicated that they can't easily access key experts in LRT. Yet HR head confirmed that these key experts provide expert advice and support in many activities upon request. The researcher believes the gap here is from both sides (the corporation and the employees). The corporation should have implemented an official expertise location program managed by the HR, this program contain knowledgeable colleagues profiles based on their job titles and expertise. An expertise location program will make access key to experts easier. The employees also

mentioned that sometimes they feel too busy to contact experts, but this can be addressed by specifically allocating time for them to seek expertise. Correspondingly 30(61.22%) noted that there is no regular After Action Review (AAR) after each activity from which lessons can be drawn. AAR could have been a key method for creating and transferring organizational knowledge. It will help staffs to learn from their mistakes to ensure so that mistakes are not repeated.

When the respondents are asked if the organization utilizes written documents such a newsletters, pamphlets, or manuals to share best practices from one unit to the other, as well as resource centers or other forums to disseminate information or expertise, overwhelming 95% of respondents indicated they are not sure whether the company has been using written documents to share best practices from one unit to the other. The same is true for knowledge retention, according to the respondents LRT has nearly no knowledge retention program to ensure that experience and expertise is not lost when staff leave. But management staffs do not agree with this claim. They argue that knowledge retention programs are currently implemented through succession planning, especially for those who leave the organization through termination of contract and retirement. The system may not be effective enough, but it is in place.

The final group of question in the KM practices is related to training. More than half of respondents (54%) have expressed their agreement that the organization provides training on its KM processes. On the other hand, only 23% agree that the organization provides training in new ways of doing things and overcoming potential challenges. With regard to performance review, above 80% of the respondent indicated team work and knowledge sharing aren't incorporated in staff performance review discussions.

4.4.1 KM INFRASTRUCTURE IN LRT

KM infrastructure means all the things that combine to facilitate the flow of knowledge (Lambe, 2011). It includes technical IT infrastructure, human, social and organizational element. These elements stimulate the creation and sharing of knowledge within the organization.

Information technology (IT) is an important component of KM (Sedighi & Zand, 2012). IT is the pipeline and storage system for knowledge exchange (Davenport & Prusak, 2000).Combination of data processing, storage, and communication technologies make up the network of IT infrastructure. However one has to note that IT is an enabler, the significant factor is the human aspect. Humans are the one who uses IT, they must be trained and equipped to use the technology. The physical work environment and layout of work area should also encourage knowledge sharing

Table 4.5: Knowledge Management Infrastructure

Questions	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
The corporation provides appropriate resources facilitate knowledge sharing	1	8	13	20	7
The corporation utilizes information communication technology to support knowledge sharing among its employees	2	7	5	34	1
Social networks are encouraged in the corporation	2	9	21	7	10
The physical work environment and layout of work area encourage knowledge sharing	4	33	9	3	0
The corporation has database polices to store polices, manuals procedures and other corporation resources	4	5	14	23	3

Responses against the questions related to technology infrastructure; show that LRT has not yet fully embraced the necessary technological infrastructure for the benefit of KM. Only 16% of the respondents have expressed their agreement that the corporation provides appropriate resources to facilitate knowledge sharing. Similarly, the majority of the respondents 71% replied that the organization doesn't properly utilize ICT to support knowledge sharing among its workforce. When asked about whether the corporation has databases to store policies, manuals, procedures and other corporation resources, as well as whether social networks are encouraged in the organization, only 19% of the respondents agree. On the other hand, the physical work environment and layout of work area is found to be encouraging for knowledge sharing, as confirmed by 76% of the respondents. In addition to this an organization can utilizes non-information technology supported knowledge management tools such as white board, flipcharts, and workflow diagrams for knowledge sharing.

4.5 KNOWELDGE TRANSFER PRACTICE IN LRT

In case of Addis Ababa LRT knowledge management activities is essential since the technology is a new to Ethiopians and also to ensure the sustainability of the railway system. The Chinese are scheduled to over hand the full operation of the LRT by the end of 2020, this is impossible without KM. So knowledge management practice is immense for locals so that they take over future railway operations.

Table 4.6: Knowledge Transfer Practice

Questions	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
The corporation has a formal knowledge transfer plan	5	36	8	0	0
There is a good knowledge transfer process	2	4	11	28	4
The corporation employees exchange ideas & knowledge	3	42	0	3	1
The corporation expertise(Chinese) share their knowledge with staff members	2	3	2	22	20
Young employees(Ethiopians)gets mentorship from the Chinese experts	6	9	7	15	12
The Chinese has a mechanism to store / distribute their skill & experience	0	6	14	23	6
The Chinese experts are willing to share their knowledge	2	8	19	12	8
The Chinese experts spend a lot of time interacting with young employees (Ethiopians)	6	5	1	31	6
There is a value created by the knowledge transferred	7	4	24	10	4
In the cooperation, there is a high acceptance of reusing previously shared knowledge	3	5	21	12	11
The cooperation has a history of successful knowledge transfer	9	8	1	17	14

Responses to KT practice shows that majority of the respondents 41 said LRT has a formal knowledge transfer plan. Information from the HR department also tells Young Ethiopian professionals taking part in a knowledge management program with their Chinese counterparts. The plan includes robust theoretical and practical training from Chinese experts. An effective knowledge management plan will support locals as they transition to a new role within the corporation, it will shorten adaption time for new hires or interns in their roles and ensure key knowledge from departing employee is stored and shared with future employees. But before coming up with KT plan internal analysis of the corporation to identify various issues should be done. Information stored in the database and experience and knowledge possessed by employees need to be evaluated to align the KT plan with business goals and objectives.

About 69% of the respondents indicated that the knowledge management process has lot to be desired. For example one of the effective way to KM practice is mentorship (side by side practical demonstration), but respondents have told the researcher this hasn't been done properly, so far. The survey data indicate that about 94% of employees in LRT exchange ideas and knowledge in one way or another. The respondents admire heartfelt side of the employees to pass on their best practices to each other for the common good and cause. This practice helps in increasing intellectual asset of the organization and also significant in conducting collaborative operation in the corporation.

Experience sharing from the senior Chinese experts is an important source of knowledge management in this project. However, about 42(85.71%) of respondents confirmed that such effort has not been successful for different reasons. This shows how locals have reservation on their Chinese counterparts' willingness to invest on them. About 27(55.1%) of respondents replied they didn't receive mentorship from the Chinese experts. Some employees told the researcher they haven't had guidance from the Chinese, they tried to learn things as they encountered them. Also over 59% of respondents don't believe that the Chinese have a mechanism to store or distribute their skill and experience.

As to if the Chinese are willing to share their knowledge, majority of the respondents is not sure. This may raise a doubt on the eagerness of the Chinese to pass on their experience. More than 75% of respondents noted that the locals don't interact much with the Chinese. Lot of this is attributed to the fact that there is a language a barrier.

Close to half 48% of the respondents indicated that are not sure if there is a value created by the knowledge transferred. The researcher believes this is because the locals are not taking the main positions in the corporation.

Similarly 42% the respondents are not sure if there is a high acceptance of reusing previously shared knowledge in LRT. This may affirms there is not a lot of knowledge shared from the Chinese, at least not up to expectation. It may also be due to the fact that technological changes are rapid and previously shared expertise may not be appropriate for current situation. Finally 63% of the respondents don't believe LRT has a history of successful KM practice. This implies locals are not well equipped to use the new technology and are not in a position to take over the railway operation any time soon.

4.6 KNOWELDGE MANAGEMENT TOOLS & TECHINQUES

According to the head of HR department LRT uses different methods to manage and share knowledge. All of the techniques are not specific to the railway domain and but also common in the business world.

One of the best methods used throughout the LRT is training &education. To start with 60 young Ethiopians received training of up to 18 months of training in Zhengzhou Railway Vocational and Technical College. The work of the railway also demands team work by its nature and training and education are routine and continuous activities of the LRT. Engineers and head technicians have a regular period where they speak with their staffs in an informal setting. In support of this, 76% of the respondents have agreed that all the techniques of KM and knowledge transferring listed in Table 4.7, except the two i.e., After Action Review and coaching and mentoring are used to transfer and share knowledge in the LRT.

As Hasnani (2016) mentioned, knowledge sharing is an indispensible element of KM, and successful knowledge management demands a good medium between the knowledge actors.

According to the information gathered from employees, non-ICT tools are mostly used for knowledge sharing in the corporation than the ICT based ones. This is partly due to the limitation in the utilization of ICT in the organization for the purpose of KT. What is crucial for LRT is the selection of an appropriate mechanism for knowledge management.

Table 4.7: Knowledge Management tools & techniques

LRT uses the following knowledge transfer tools & techniques	*Response in No.*	*Response in %.*	*Ranking*
After action review (AAR)	7	14.28	5
Lesson learned system	27	55.1	4
Team work (peer to peer)	44	89.79	1
Training & education	41	83.67	2
Manual, procedure and other reference material	38	77.55	3
Coaching & mentoring	5	10.20	6

After Action Review technique could have made a huge impact in knowledge management process. Chinese expertise and locals would have been provided with an opportunity to assess what happened and why in work situation. For example in running operation AAR can be done after only one session to analyze what to do better in the next session. Coaching &

mentoring also could have been an effective way of passing down tacit know-how from the Chinese to locals. It will provide for the locals to practice under the guidance of the Chinese. Unlike Training & education the apprentice or mentee is given practical tasks, under the supervision and guidance of his mentor.

4.7 ORGNAZATIONAL STRUCTURE & CULTURE

KM depends to a considerable extent on the organization's structure. Organizational structure determines the manner and extent to which roles, power, and responsibilities are delegated, controlled, and coordinated, and how information flows between levels of management. If the organizational structure does not facilitate knowledge sharing, KM will fail. If individual members are not eager to share their experiences with their colleagues on the basis of mutual trust and respect, there will be no generation of social, collective knowledge within that organization (Dalkir, 2005).

It is also important to realize the driving force behind successful KM is not only a good organization's structure; it is also people who operate on them. The capabilities of the personnel are an essential part of a successful that must be taken into account in preparing a KM plan.

Table 4.8: Organizational Structure & Culture

Questions	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
Structure					
The corporation knowledge management structure (if any) extends to all levels down in hierarchy	0	3	10	28	8
The corporation structure facilitates information flow in all direction in the organization(top down, bottom up, and vertical)	12	25	6	4	2
The corporation structure promotes team work to facilitate knowledge sharing rather than strict hierarchical structure	11	32	1	5	2
Culture					
Mistakes are accepted as opportunities to learn and develop	9	35	0	2	3
The benefits of knowledge sharing are acknowledged from employees as well as organization perspective.	4	26	7	10	2
The corporation rewards employees for sharing their knowledge	6	18	4	16	5
Great attention is given to the role & importance of knowledge held by experts	5	19	3	18	4

Replies for organizational structure questions indicate that LRT knowledge management structure has not been extend to all levels. Human resource department is responsible for knowledge management, and the formal structure only extends to the HR manager and his close team. Yet informally KM structure exists in all levels. Even though formal KM structure dedicates knowledge flow, informally KM structure represents the way employees actually interact and share information (tacit knowledge).

More than 75 % of the respondents agree that the corporation structure facilitates information flow in all direction in the organization. Efficient flow of information means employees will learn quickly. About 87% of the respondents said corporation structure promotes team work to facilitate knowledge sharing rather than strict hierarchical structure. This implies although there is no designated structure to all levels to administer KM the hierarchy doesn't limit and affect the interaction of people in the process of sharing information.

Similar to structure, organizational culture and climate may either help or hinder knowledge sharing. An organizational culture that encourages discovery and innovation will help, whereas one that nurtures individual genius will hinder (Dalkir, 2005). An organization that rewards collective work will help create a climate of trust, whereas a culture that is based on social status will hinder knowledge sharing. Without a receptive knowledge-sharing culture in place, effective knowledge exchanges cannot occur. Significant organizational changes may need to take place before effective knowledge sharing can begin to take place (Dalkir, 2005).

According to the survey data, about 89% of the respondents noted that accepting mistakes as opportunities to learn and develop has been one of the enabling characteristics of LRT culture. This confirms the fact that acquiring knowledge is a learning curve; acquiring new skill or knowledge takes time. Over 61% of the respondents indicated that benefits of knowledge sharing are acknowledged from employees as well as organization perspective. But some respondents are skeptical that although the benefits of KM are accepted there is a hesitation to act upon it aggressively. Management must create a culture where knowledge sharing is seen as beneficial for the individual as well as the corporation. Managing corporate culture change is needed; Trust is a particularly important issue, since workers need to feel secure that they are not jeopardizing themselves by engaging in knowledge sharing.
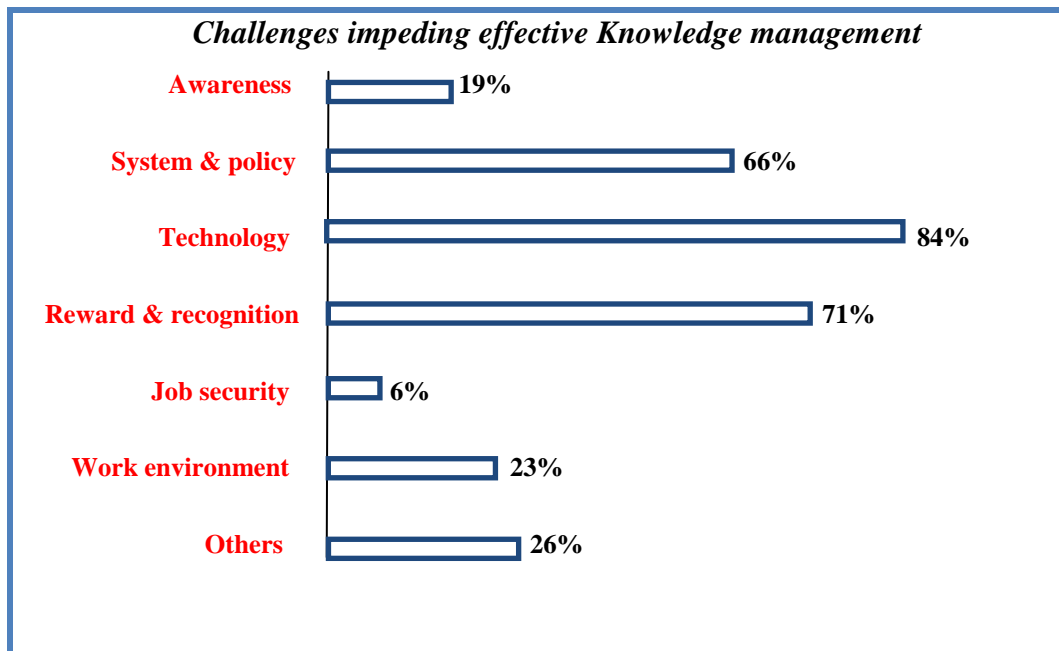
However, when the respondents are asked whether the organization rewards employees for new ideas and sharing their knowledge, there is a conflicting of beliefs. Close to half (48%)

of the respondents noted that the corporation rewards employees for new ideas and sharing their knowledge, the rest disagrees or are not sure. This shows that organizational efforts in regard to rewards for sharing of knowledge are not well appreciated by its employees. Publicly acknowledge employees who participate in knowledge sharing in a team meeting or privately thanking employees with a hand written note/ personal gift can make employees to appreciate the reward system. Similarly there is no agreement as to the attention given to the knowledge held by experts between respondents. Half (50%) of the respondents have expressed their agreement and the other half do not. This might suggest LRT is not big on tapping on knowledge held by expertise (tacit knowledge). Tacit knowledge is the most valuable source of knowledge, and the most likely to lead to breakthroughs in the organization. So if LRT is going to hand over the railway operation to locals as scheduled attention is needed to the knowledge held by experts.

4.8 CHALLENGES ON KNOWELDGE MANAGEMENT ACTIVITES

The conduct of KT in an organization is influenced by a variety of factors. KT literatures have identified a broad range of factors that can influence KT in organizations. A fundamental part of KT is to spread and make knowledge accessible and usable. Knowledge which is not shared and used or applied for a specific purpose is useless.

The most important factor is culture related that is the organizational culture must enable and support knowledge sharing. When the environment does not favor knowledge sharing and trust, individuals may fear to lose prestige when 'giving away' their knowledge (Lambe, 2011).

Challenges impeding effective Knowledge management

- Awareness — 19%
- System & policy — 66%
- Technology — 84%
- Reward & recognition — 71%
- Job security — 6%
- Work environment — 23%
- Others — 26%

Table 4.5: Challenges affecting knowledge transferring

The major factor that is impeding effective knowledge sharing in the LRT that have been agreed upon by 84% of the respondents is Technology limitation. In theory technology should not have been the main challenge rather it should be the enabler in implementing KM, the fact that LRT is lacking in the technological aspect rather than the main challenges in KM activity like organizational culture is surprising. The other main issue as 49% of the respondents said is lack of reward and recognition.

This indicates motivating incentives like bonus or even simple gesture of appreciation are not implemented. In addition 66% of the respondents claim KM system and policy is another main issue. KM system and policy mostly become an issue if it is not aligned with business objectives and technical capacity of employees. That's why internal and external analysis should prior to implementation of KMS. Finding what kind of capability a company possess and what it lacks is essential to successfully create & implement KMS. Only small percentage of employees mentioned the physical work environment, lack of awareness and job security are hindering knowledge transferring.

In the data technological limitation is the greatest factor in hindering knowledge sharing, confirming the suggestion of the employees that non-ICT tools are mostly used for knowledge sharing in the corporation than the ICT based ones. Although IT is considered as one of the most important factor in KT but still not the most important, one has to believe that knowledge resides in the mind of peoples IT only facilitate knowledge sharing.

To mitigate technological limitation knowledge sharing systems such as best practice databases and expertise locater system should be implemented. Best practice databases describes successful efforts from previous operation, expertise locater system are knowledge repositories that attempt to organize knowledge by identifying experts who possess specific knowledge.

4.9 CHAPTER SUMMARY

LRT employees believe that KM plays an important role for the effective accomplishment of the mission of the organization. It has been clear that the corporation engages in multi-dimensional KM activities formally and informally, since it cannot survive without doing so. However, these efforts are carried out with the essence of information rather than knowledge. Most people consider knowledge as information or education, and therefore they use these words interchangeably. The corporation has structure, policies, and procedures that govern the management of information within the organization. It utilizes all the techniques of KM provided in the instrument, except After Action Review and coaching& mentoring**.**

As culture and structure is concerned, the LRT has good yet not great organizational culture and structure that promotes teamwork and knowledge sharing among its members. Leaders and managers in the organization are openly supportive of the knowledge sharing and learning opportunities among their staff, but the staffs are the ones who share ideas and expertise much of the time with minimum help from the leadership. The physical work environment and layout is found to be encouraging for knowledge management.

On the other hand, the organization has limitations in the utilization of modern technology to facilitate KM. The available ICT infrastructure does not meet the needs of individual users when it comes to knowledge management. Organizational efforts have also limitation in the development of formal and effective KM practices.

LRT need real-time knowledge deeply embedded in the context of the operational area so that they can make good decisions in running the railway system in efficient manner. Similar to the civilian sector, the railway environment includes the state of technology and the condition of social, political, economic, and legal influences; therefore its KM activities are affected by the same factors that affect the business sector. Technological limitations and lack of reward and recognition are the major factors that affect knowledge sharing within the LRT.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents an overall summary of the research undertaken. It focuses on showing how the results of the study relate to the original research questions and objectives set out in the thesis. The chapter also provided recommendations which have emerged from this study and further research to be undertaken to evaluate the knowledge management practice in AALRT.

5.2 SUMMARY AND CONCLUSION

The general objective of this research is to assess KM practice for the Addis Ababa LRT to ensure the proper usage of its knowledge resources. In order to achieve this objective the research attempted to answer the following three basic research questions:

 ➢ What is the current status of KM practice in terms of (acquisition, storing and disseminating knowledge) in the LRT?
 ➢ What are the factors that have critical impact on the practices of Knowledge Management in the LRT?
 ➢ How does LRT implement knowledge transfer activities?

The current status of KM practice in the AALRT

The following are the key findings:

- AALRT has a formal knowledge management policy to implement KM activities, but it is directly driven from the Chinese which has created limitation. It has because the KM policy was not contextualized to Ethiopian capabilities.

- AALRT has limitations in converting tacit knowledge from individuals in to explicit form. However this is a global challenge that can be best described as "we know more than we can tell". Storing knowledge in a form that is readily accessible to its employees also has been seen as a weakness. The same is true for knowledge retention, as there is no knowledge retention program to ensure that expertise is not lost when staff leaves.

The HR head argue that knowledge retention programs are currently implemented through succession planning.

- Data from the survey shows Chinese are not big on sharing their expertise which has created suspicion on the KM ambition. There is also a language barrier which makes the situation worse.

- The AALRT has HR department as a designated party to take charge of KM but no real structure that extends to all level for administering KM. However, despite the absence of the designated structure, it is observed that the existing structure facilitates information flow in all direction in most part due to the strong will of the employees.

Factors that have critical impact on the practice of KM in the AALRT

In the study, organizational factors that affect the practice of KM as enablers or impeders, and additional KM requirements critical to the LRT context have been identified.

- As organizational requirements are concerned, the major factors that can affect knowledge sharing practices in the LRT are found to be technological limitation and lack of reward and recognition.

- Other factors like physical work environment, lack of awareness on knowledge management and job security are found to be less of a challenge in implementing knowledge management activity.

The way AALRT implements knowledge management activities

- The corporation utilizes different methods and tools for KM. All of them are common to the business world not only in the railway industry. Team work and training and education are the two most popular method used to transfer knowledge followed by manual, procedure and other reference material and lesson learned system.

- The best knowledge management tool that is found to be from the history of the AALRT is training and education. In support of this statement in 2014 young Ethiopians received training of up to 18 months of training in Zhengzhou Railway Vocational and Technical College before the commencement of the project.

- However, the finding confirmed that the organization doesn't properly utilize ICT to support knowledge management among its employees. The existing ICT infrastructure does not meet the needs of individual users for knowledge sharing and the use of technology-based tools for knowledge sharing is limited to some areas in the organization. Therefore non-ICT tools are mostly used for knowledge sharing than the ICT based ones.

5.3 RECOMMENDATIONS

Based on the observed gaps and problem areas identified during the analysis the following recommendations covering four major aspects, implementing KM system that extends to all level, the development of KM technology and infrastructure, the formulation of KM policy and Strategy, and training, are forwarded.

➤ **AALRT should put in place KM system that extends to all level**

The responsibility to manage knowledge should not exclusively reside within the KM head that is designated to run KM activities. It should extend to all levels down in hierarchy: in case of AALRT it is the HR head that is in charge, with only few people working with him in a formal structure. Full KM structure that extends to all level assists KM head in implementing a sound KM approach to facilitate the flow of knowledge throughout the corporation. Then employees at all levels will benefit by understanding KM function and how to utilize it.

The formal structure must not be so rigidly enforced so as to stifle informal structures such as communities of practice, where knowledge creation and sharing may take place. It is the knowledge manager's job to understand the knowledge dynamics of the corporation and to recognize how the formal and informal structures coexist. Knowledge officers should be put in place at all levels to make the communication line effective and report to chief knowledge officer when issues arise in KM process.

➢ **The corporation needs to develop its KM technology and infrastructure**

Some kind of infrastructure is normally required to support an organization's KM activities. Today, technological tools are becoming more and more available for capturing, distributing and finding knowledge. Particularly in railway organizations in which knowledge is essential to run an efficient operation, technology is becoming a critical enabler. ICTs play an important role in facilitating a good communication and quality of services in the railway network.

The railway can be divided into different systems depending on functionality, such as the rolling stock, the track, the power supply, the signaling system, etc. Signaling systems play an important role in the control, supervision and protection of rail traffic. The system is a complex combination of software and hardware; which suggests AALRT must develop its technological infrastructure, so that employees in the area of operation & maintenance can be connected to knowledge. The technology also needs to be functional, easy to use and as appropriate, standardized, so that connectedness can be effectively realized. The technology will also focus on supporting various aspects of the knowledge activities.

Knowledge management systems such as best practice databases and expertise locater system should be implemented to solve technological limitation. Best practice databases describe successful efforts from previous operation, it will retrieve successful events and store it in the database for later uses when need arise. Expertise locater system is knowledge repositories that attempt to organize knowledge by identifying experts who possess specific knowledge. The system contains profile of experts with their area of expertise. Employees should log into this system and seek help from the experts on what they lack.

➢ **AALRT should formulate KM policy and Strategy in Ethiopian context**

The corporation needs to formulate a KM strategy considering the country's capabilities with the aim to transform the LRT to a knowledge centric organization. This is because people do not usually respond well to foreign system that they do not understand. Enforcing a copied system will make it harder to adjust. A contextualized system will give AALRT an opportunity to adjust to minor issues and learn from mistakes to better improve the corporation KMS.

KM strategy is a plan of actions that describes how the organization will manage its knowledge better for the benefit of the organization. What is critically important to be considered in the formulation of KM strategy is the need to closely align it with the organization's ambition and capabilities. The need to align KM strategy with organization strategy was identified as critical to the success of knowledge management (Omotayo, 2015).

The KM policy also will not be successful if it is not based on technical and systemic capacity of the corporation. Difference between the company's current capability and the capabilities required for KM need to be assessed prior to formulating KM policy. KM policy should provide guidelines for employees on how to acquire knowledge on areas they are lacking.

- ➢ **Trainings on knowledge and KM to be conducted on regular basis**

Training, education, or any activity that help develop employee's capacity in knowledge and KM is important for successful KM. In AALRT there is not a lack of awareness on KM but employees don't have a great deal of knowledge about it, for example how it operates. To fill this gap the corporation needs to develop and implement a well-focused and wide range of training and learning programs to its employees at all level in the hierarchy of the organization. This is almost always expensive, but it can be very useful. Trained employees will easily adopt the KMS and make the most of its benefits.

- ➢ **Investing on Knowledge Retention**

Knowledge retention involves capturing knowledge in the organization so that it can be used later (Lambe, 2011). Knowledge Retention program will give the corporation the capability to identify what knowledge is at risk, what effect it will have and how can it be retained. Knowledge retention program consist wide range of tools; two of them are listed below.

1. Recognition and reward structure: Management has the choice to use it as a motivator to make a job more satisfying for experts so that they will not look elsewhere for jobs. Recognition and reward will make them share their experience constantly.
2. Using a phased retirement system (e.g. leave of absence – part time work – casual rehire) can also help to slowly lose a key employee and to gradually transfer all his key knowledge to the corporation.

➢ **Implementing knowledge exchange protocol for conversion of tacit to explicit**

Knowledge exchange protocol is a structured process that provides information exchange in a focused manner. Rich narratives are used to facilitate tacit knowledge to explicit knowledge. The recall process is structured and detailed, knowledge officers ask experts in detailed about a certain situation. For example when a railway traffic controller is asked on how to manage the traffic system he probably going to give vague answer but ask him to give a step by step account on how to run the system efficiently and codify it in a database in a clear and concise way. It may be often time consuming and problematic but it has great reward in the end.

➢ **Implementing digital work place and mentorship program for the Chinese to share expertise to locals**

Digital work place software will bring together the Chinese and locals to work within a centralized platform. It enables immediate access for locals to expertise possessed by the Chinese. Locals can quickly locate experts to source the insight needed for operations and decisions. The software will allow locals to effectively collaborate access to insight needed from experts from any location.

Mentorship program should be implemented to provide face to face experience and practical demonstration for locals. Locals will get guidance at a work place and ask for help when need arise. Knowledge transfer will take place faster because locals will get familiar with work place routine and possess know how to tackle challenges in a short time.

5.4 SUGGESTION FOR FUTURE RESEARCH

The effective implementation of KM can reap great rewards. Practicing KM will definitely decrease expenses if an increase in revenue does not occur. This study is a starting point for gaining a deeper understanding on KM issues. Issues like on how to implement a successful KMS that best suits an organization, on how to evaluate or assess a KM practice can be analyzed in greater detail. Therefore, more research needs to be conducted in the field of KM in the context of Ethiopia.

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QUESTIONARRIE

This Questionnaire is prepared to collect the necessary data on the current status of knowledge management in LRT and how the knowledge transfer is conducted. This survey is completely confidential and anonymous. No personally identifiable information will be collected and all information will be analyzed and reported in aggregate. Thank you for taking the time to respond to the Questionaries.

If you have any question about the research in general and the question in particular, you may contact me using the following address.

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Section I: Respondent Information

1. SEX: ☐ Male ☐ Female

2. AGE: ☐ Under 25 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55 Above

3. Number of years you have worked in the corporation (in years)?

   ☐ 0-2 ☐ 2-4 ☐ 4 and above

4. Title/Rank

   ☐ Signal maintainer ☐ Train driver ☐ Train dispatcher

   ☐ Railroad mechanic ☐ Switchman ☐ Others

5. Educational Qualification

   ☐ High school graduate

   ☐ College Diploma

   ☐ BA Degree

   ☐ Master's Degree

   ☐ Above Master's Degree

Section II: Knowledge Management in General

1. The Addis Ababa LRT (my department)
   - ➢ Has a formal Knowledge management policy
   - ➢ Engages in knowledge management activities informally
   - ➢ Don't have a knowledge management policy or engage in knowledge management in policy

2. How many years does the Addis Ababa LRT been engaged in knowledge management? If not pass it.

   Less than 1   1-3   3-5

3. How do you describe your level of understanding regarding knowledge management
   - ➢ I have a good knowledge of Knowledge management
   - ➢ I have some knowledge of it
   - ➢ I have no idea about it

4. How knowledge management is considered within LRT?
   - ➢ Effective knowledge management is a matter of survival for the organization
   - ➢ Knowledge management plays an important role for effective operation accomplishment
   - ➢ Knowledge management is believed to be important, but not significant

Section III: Knowledge Management Practice

Please indicate your level of agreement with the statements so that your answer to these questions will enable the researcher what you think about the practice of knowledge management practice in Addis Ababa LRT.

Q.no	Questions	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
01	The corporation has a standard process of storing references material such as procedures, manuals, ideas or other practical information					
02	Key experts in the organization are readily identified and contacted					
03	For each activity performed by staffs there is an action review from which lesson can be reviewed					
04	Knowledge sharing is incorporated in staff performance review discussion					
05	The corporation utilizes written documents such as newsletter, pamphlets, or manuals to share best practice from one unit to other					
06	The corporation has resource center or other forums to disseminate information or expertise					
07	The corporation provides training in its knowledge management process					
08	The corporation store knowledge in a form that is readily accessible to staffs					
09	The corporation has a mechanism for converting tacit knowledge into explicit from					
10	Information held in facilities databases, manuals, resource center are updated regularly					
11	The corporation provides training in new ways of doing things and overcoming potential challenge					
12	The organization has a knowledge retention program to ensure experience and expertise is not lost when staff leave					

Knowledge Management Infrastructure

Q.no	Questions	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
01	The corporation provides appropriate resources facilitate knowledge sharing					
02	The corporation utilizes information communication technology to support knowledge sharing among its employees					
03	Social networks are encouraged in the corporation					
04	The physical work environment and layout of work area encourage knowledge sharing					
05	The corporation has database polices to store polices, manuals procedures and other corporation resources					

Section III: Knowledge Transfer Practice

This survey asks for your perception and experience about the practice of knowledge transfer in LRT. Please respond based *on your own judgment*, regardless of what others expect or what is socially acceptable. *Your responses will be held in strict confidence.*

Q.no	Questions	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
01	The corporation has a formal knowledge transfer plan					
02	There is a good knowledge transfer process					
03	The corporation employees exchange ideas & knowledge					
04	The corporation expertise(Chinese) share their knowledge with staff members					
05	Young employees(Ethiopians)gets mentorship from the Chinese experts					
06	The Chinese has a mechanism to store / distribute their skill & experience					

07	The Chinese experts are willing to share their knowledge)					
08	The Chinese experts spend a lot of time interacting with young employees (Ethiopians)					
09	There is a value created by the knowledge transferred					
10	In the cooperation, there is a high acceptance of reusing previously shared knowledge					
11	The cooperation has a history of successful knowledge transfer					

Section IV: Knowledge Transfer tools and techniques

1. After action review
2. Lesson learned system
3. Team work(peer to peer)
4. Training & Education
5. Manual, procedure and other reference material
6. Coaching & mentoring

Section V: Organizational Structure & Culture

Q.no	Questions	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
01	The corporation knowledge management structure (if any) extends to all levels down in hierarchy					
02	The corporation structure facilitates information flow in all direction in the organization(top down, bottom up, and vertical)					
03	The corporation structure promotes team work to facilitate knowledge sharing rather than strict hierarchical structure					

04	Mistakes are accepted as opportunities to learn and develop					
05	The benefits of knowledge sharing are acknowledged from employees as well as organization perspective.					
06	The corporation rewards employees for sharing their knowledge					
07	Great attention is given to the role & importance of knowledge held by experts					

Section VI: Challenges

	What do you think are the major challenges that may impede the effective knowledge sharing in the corporation?	
01	Lack of awareness regarding knowledge management in the corporation	
02	No system and policy to support knowledge sharing	
03	Technology limitation	
04	Lack of reward & recognition	
05	Staff fear that sharing knowledge may jeopardize their job security	
06	The work environment impedes knowledge sharing	
07	Others	

Yours answers are the greatest importance for the success of this study. Thank you once again for your cooperation.

1. Does Addis Ababa LRT have a KM policy, strategy, or any kind of formal document that governs KM in the organization?

2. How LRT is engaging in knowledge transfer activities? Who is in charge of KT in the organization?

_____

_____

_____

_____

3. How do you describe the level of understanding regarding Knowledge management & transfer and how it's in considered in the organization?

_____

_____

_____

_____

4. What do you think the major challenges that may affect, in either positive or negative way, the effective knowledge transfer in LRT?

_____

_____

_____

_____