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RESEARCH THESIS ON

Design of Knowledge Sharing Mechanisms on the Job Learning: The case of Oromia Water and Energy Resource Development Bureau

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Design of Knowledge Sharing Mechanisms on the Job Learning: The case of Oromia Water and Energy Resource Development Bureau

A Thesis Submitted to the College of Natural Sciences of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Science in Information Science

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DECLARATION

I declare that the thesis is my original work and has not been presented for a degree in any other university.

Guta Edea

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Sep, 2020

This thesis has been submitted for examination with my approval as university advisor.

Temtim Assefa (PHD)

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Sep, 2020

Contents

List of Acronyms

OWERDB: Oromia Water and Energy Resource Development Bureau

KM: knowledge Management

SECI: Socialization, externalization, combination, and internalization

CBT; computer based training .

WBT: Web Based Training

EPSS: Electronic Performance Support Systems

DSS : decision support systems

KMS: knowledge management system

KS: knowledge sharing

HR: Human Resource

SMEs: Small and medium-sized enterprises

LIS: library and information science

PA: Performance appraisal

KSEM: knowledge sharing evaluation model

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Abstract

Knowledge is the most important resource in organization. Managing knowledge is important to increase employee efficiency in governmental institutions, non-governmental organizations and private businesses. However, most of the knowledge in Government Organizations are not stored in a structured way and thus not shared effectively with the staff and other stakeholders. Similar to other governmental institutions in Ethiopia, the Oromia Water and Energy Resource Development Bureau (OWERDB) has lack of systems that promote effective knowledge sharing mechanisms. The main objective of this research is to explore the knowledge sharing mechanisms used by OWERDB on the job learning that would help avoid knowledge flows out through various ways such as resignations, retirement and death. The study also investigates how knowledge is gained and captured at OWERDB: how OWERDB's organizational structure facilitates or inhabits knowledge acquisition, sharing and retention: the role that ICTs can play to enable knowledge creation, sharing and retention. The study used Qualitative case study approach for data gathering where purposive sampling was used to select the interview respondents. Primary data were collected from OWERDB head office, Zonal water offices (East shoaw and Arsi) and Town water utilities (Adama and Burayu). The researcher collected data by administering a questionnaire though interviews with Directors and senior staff and observations physical and document review to supplement data and fill in gaps. The main finding of the study is the following First OWERDB has a weak knowledge acquisition and sharing organizational cultures that impedes (hinder) knowledge retention. Secondly OWERDB lacks collaborative and communicative technologies that facilitate the acquisition, sharing and retention of tacit knowledge, third, even though OWERDB has processes and practices in place of human resource management, the organizations have no strategies /polices or systems in place to capture knowledge from experts and experienced "staff members who are approaching their retirement age." Proper introduction is not provided for new hiring employee. i.e High attention is given to material handover not to knowledge sharing and transfer. Fourth, even though OWERDB has institutional knowledge that can be shared and transferred .Knowledge management is relatively a new concept at OWERDB and its practice has not yet been properly embraced to capture and retain knowledge. The findings of this research would help OWERDB to develop policies that are important to preserve both tacit and explicit organizational memory and use mechanisms for effectively acquiring, sharing & transferring knowledge.

CHAPTER ONE: Introduction and Research Background

1.1 Introduction

Knowledge management (KM) is considered as one of the most important parts of any organization and a complement to the organization's business activities. As economy increasingly becoming knowledge-based, knowledge is becoming the most important asset for any organization's success among other assets such as capital, materials, machineries, and properties (Kelleher & Levene, 2001; Fong & Wong, 2005). Many organizations claim to have large savings from the adoption of KM techniques in their companies (Jennex, 2005a). Through successfully knowledge capturing, sharing, and creation, industrial institutions can improve the process of organizational learning to enhance their performance and gain organizational competitive advantages (Li & Gao, 2003; KLICON, 1999; Ahmad & An, 2008). Companies that have successfully adopted KM techniques are considered to have a better competitive business advantage over their peers. This is because organization competitive advantages are highly dependent on the organization's ability to learn faster than its competitors. Similarly, organizational learning process depends on the ability of a given organization to collect, analyze and use knowledge, which in turn further enhance learning and organizational future performance (KLICON,1999). The overall aim of this thesis is to examine the current status of knowledge acquisition, sharing and transfer mechanisms at OWERDB in order to provide some suggestions (recommendations) for improving the implementation of knowledge management applications

1.1.1 Motivation

Knowledge sharing is a process of interchanging knowledge, skills, information, expertise, experience, intelligence and understanding (Janus, 2016; Wang & Noe, 2010). Knowledge sharing in an organization is essential as it will create awareness, facilitate promotion and acceptance of new ideas; increases; coordination and improves response time (Bulchandani, 2015; Amayah, 2013; Jain, Sandhu & Goh, 2015). The main reason that, researcher would motivated to study Knowledge sharing mechanisms at OWERDB are three points.

First Serving as IT expert at OWERDB for more than ten years, it became clear to me that the organization has lack of knowledge sharing mechanisms;

Second Because of the lack of knowledge sharing mechanisms, OWERDB is at risk of losing both tacit and explicit organizational memory; i. e Make sure that you are focusing on capturing Critical Knowledge (Corney (2018)) .

Third Although OWERDB undertakes many medium and large-scale multidisciplinary projects, currently; there is no mechanism in place that would help to facilitate knowledge sharing between different teams and professionals. Thus, my aim in this research is to identify the main gaps in knowledge acquisition, sharing and transfer at OWERDB and provide some recommendations to address the identified problems. The most frequently mentioned problem is personality problem. Personality problem has many dimensions. One dimension is communication skill by which knowledge is shared from its source to its recipient. All respondents mentioned the problem of codifying ones personal knowledge to share for other members of the organization. Codification is not a common practice in the Organization (HR Director of OWERDB, Name soressa).

1.2 Background the selected area

(Background of the Oromia Water & Energy Resources Development Bureau (OWERDB))

Oromia Water and Energy Resource Development Bureau is one of the executive bodies in Oromia National Regional State. The Bureau is mandated to enable the population of the region get sustainable safe water supply and works towards improved and developed renewable energy resources development and contribute towards conservation of natural resources of the Region upon logical and strategic procedures.

In order to facilitate and manage regional development activities, the Regional Government has established several Public Institutions among which Oromia Water & Energy Resources Development Bureau is one. This Bureau was established in 1985 EC. Under the functional name of Natural Resources and Environmental Protection Bureau to perform several activities relevant to its formation. Since establishment, the Bureau has passed some transformations whereby the name of Water, Mineral & Energy Bureau (2003 E.C) has been used for long time before the current name Oromia Water & Energy Resources Development Bureau replaced it in Nov. 2011 EC (2019).

At the very start of its creation, the Bureau had been departmentalized into several functions including the Departments for Resources Management segment, Irrigation, Mineral and Energy, Urban and Rural Water Supply and Sewerage Operation and Maintenance, Project Study and

Design, Project Monitoring and Supervision, Community Participation and Promotion, and all other supporting segments enabling it to fulfill its huge missions

Since establishment, then, the Bureau has been restructured many times including the recent times of Business Process Reengineering (BPR), with the main option of including the phrase "Resource Management" or simply termed as Water Bureau and currently despite there is the Water Resources Management Process, it bears the name "Oromia Water & Energy Resources Development Bureau" accounting for the inclusion "Resources Development " which were ignored for long.Although remarkable achievements were recorded during the past years, the water supply operation of the region has still many issues to be fixed in order to satisfy the ever growing number of the regional population. Urban and rural water schemes, water supply for the large cities and small villages did not gain a momentum as required and wholesome coverage yet to go long distances. In general, the domestic water supply, if not industrial, agricultural, pharmaceutical etc are not of big concern, water for drinking purpose need to be supplied to all citizens in short distance and adequate quantity as a satisfaction and a prevention against any waterborne issues. Water resources management issues of the region is still not well addressed and mapped accordingly, projects creations and managements yet to undergo notable transformations to the level of satisfactory project outputs.Likewise, when Mineral Sector was part of the Bureau, the regional Mineral and Energy issues were the hot areas of high demand but lower supply economies. Promotional works on the energy resources were not well implemented as required. Use of renewable and bio energies not fully transformed and less dissemination activities implemented. Regional data of the energy not fully collected, and properly organized, resource mapping according to types for protection and utility purpose not yet conducted These and many other reasons is forcing the OWERDB to look for an enabling and corrective structural reforms which shall assist in full operation of the urban and rural water supply institutions as well as a timely maintenance of the non-functional schemes in line with preparation and implementation of new urban and rural water supply projects .

Vision of the OWERDB

With respect to the heavy load and big responsibility given to it, the OWERDB has the entire aspiration of seeing a total coverage of the region with sustainable and equitable services of safe and adequate water supply systems, reliably managed and developed energy resources of the region by the year 2026.

Its Mission

The Oromia Water & Energy Resources Development Bureau is committed to provide and implement the necessary regulatory activities and policy framework related to water resources management, provision, developing resources and sanitation, manage and develop the energy resources on behalf of Oromia Regional State in order to enhance the socio-economic development.

ITS Major Mandates

Oromia WERDB is implementing the public duties and responsibilities of developing, managing, controlling, administering, etc the water resources of the regional government. This power of management is given by the Council of the Oromia Regional State (The Chaffe) as stated in the Proclamation for the reorganization and redefinition of the powers and duties of the Executive Organs of the Oromia National Regional State, No No. 213/2011E.C) (2019).

The Oromia Water and Energy Resource Development Bureau has 20 zonal and 300 rural woreda structures. There are 7 grade I, 25 Grade II, 23 Grade III, 24 Grade IV, and 24 Grade VI Water Supply and Sanitation Enterprises/utilities in different cities and towns accross Oromia Region. Currently, there are more than 68,000 various types of rural water supply schemes in the region.In 2011, the Oromia Water and Energy Resource Development Bureau have a total of 399 Employees at the head office level.The Bureau has two sectors such that water and Energy

1.3 Statement of the Problem

Several empirical researches have been conducted to investigate the relationship between KM and organizational performance (Kalling, 2003; Zack, et al., 2009). Lack of effective knowledge sharing mechanisms in most organization, especially in knowledge intensive organizations, make these organization inefficient. (According to Lingling et al. (2005),)

KS mechanisms are also defined as the formal and informal mechanisms for sharing, integrating, interpreting and applying know-what, know-how, and know-why embedded in individuals and groups that will aid in the performance of organizational tasks (Boh, 2007). There are four identified mechanisms for the sharing of individual knowledge within organizations (Bartol and Srivastava, 2002).

Oromia Water Energy Resource Development Bureau functions in knowledge-intensive environments where many interrelated components are working together in a complex manner. In

many circumstances, knowledge in the organization is mostly tacit knowledge and highly based on individuals' experiences and perceptions, which increases the difficulty of capturing and reusing knowledge. These situations call for an improved method of managing and transferring knowledge that can help to achieve higher quality performance in the Water and Energy sectors. Lack of effective knowledge sharing mechanisms in most organization, especially in knowledge intensive organizations, make these organization inefficient. (According to Lingling et al. (2005),) the first barrier to effective knowledge sharing is the nature of the knowledge, which is difficult to clarify and explain in words. The second barrier is transmitter of knowledge, which makes it the knowledge zero cost. The third barrier is the lack of physical environment and knowledge sharing mechanism which are appropriate places, platform and motivation methods. Several empirical researches have been conducted to investigate the relationship between KM and organizational performance (Kalling, 2003; Zack, et al., 2009). In an organization where there is lack of proper knowledge management mechanisms, two main problems are observed: organizational memory loss and brain drain. Organizational memory loss occurs when one part of the organizational brain is oblivious to the knowledge that other parts possess. Memory loss is also noted when the same department or division forgets the knowledge it gained from previous experiences or projects. Thus, organizations tend to reinvent the wheel every time a new, yet in many respects, a similar project is undertaken. This also means the organization will repeat the same mistakes, given that it has not learned from previous experiences. The brain drain happens where invaluable knowledge resources are lost with employees leaving the organization (Al-Ali, 2003).

Moreover, a research conducted on knowledge sharing practices of academic institutions which might be equally important for university-industry knowledge sharing practices. For instance a case study research conducted by the Malaysian public higher learning Institutes revealed that rewards, availability of time, organizational effort, organizational culture and lack of interaction as the five most important barriers for knowledge sharing (Jain, 2007). Why for other organization?

Little research is found on knowledge sharing in Ethiopia context.

Knowledge Sharing On the job learning: Is the way for sharing information, plans, innovation, ideas, goals, and expertise among people and organization to develop good understand for problems, goals and innovation using mechanism to make it easy and reachable

any time on the job learning. Successful knowledge management relay on knowledge sharing (Wang, Noe, 2010). Knowledge sharing on the job learning is the organizational process and technique which many channels of communication are used to connect people to follow up and complete organizational goals using social networks, meetings on the job learning (Yang, 2009). Gibbert and Krause (2002) argued that motivation is the best practice for enhancing knowledge sharing among employees on the job. Moreover (lin & lo, 2015) Found that the rewards, social interaction facilitators of individuals knowledge sharing among employees on the job learning.

Tacit knowledge is valuable for the organization to be sustainable on the job learning .It also the knowledge in human mind can't know what is it without emotion or writing it or observing on the job learning. (Polanyi, 1967)

Knowledge sharing on the job learning depends on trust among employee and influence by the organization culture (Hu, 2012). Knowledge sharing on the job is useful tool to enhance learning and achieve effectiveness inside communities (Leng, 2009).

Lindblom and Tikkanen (2010 p. 181) define it as "a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that will improve organizational competitiveness" . This is applicable only on the job learning.

The primary goal of Knowledge sharing mechanisms initiative is to sharing knowledge more efficiently inside an organization. Bartholomew (2008).Absence of knowledge sharing mechanisms and policy/strategy to guide knowledge sharing challenges the success of knowledge sharing initiatives. Al-Ali (2003) pinpointed that strategy is the mind of an organization; without it, the organization's actions will lack direction, consistency, and hence impact. It is highly probable that leadership's failure to adopt knowledge strategies suited to their business needs is the cause of the setback of many KM initiatives. Knowledge strategies define how KM will be used to sustain the organization's competitive performance by creating new knowledge. Studies that have been conducted previously on knowledge sharing at Jordanian Universities revealed that "academic staff have fewer mutual relationships, team working opportunities, intentions and motivations to share their knowledge" and younger staff are not motivated to be "creative" (Alhammad, Faori, & Husan, 2009). Basu and Sengupta (2007) also identify "integrated technical infrastructure,

organizational culture, motivation and commitment of users and senior management support" as the four most critical success factors in their study conducted in the Indian Business School. Moreover, a research conducted on knowledge sharing practices of academic institutions which might be equally important for university-industry knowledge sharing practices. Example, a case study research conducted by the Malaysian public higher learning Institutes revealed that rewards, availability of time, organizational effort, organizational culture and lack of interaction as the five most important barriers for knowledge sharing (Jain, 2007). Cao and Zhang (2011) cited in Mindahun (2016) considered inter-organizational knowledge sharing as the strategic means in attaining competitive advantage in a fast-changing business environment. In relation to university and industry knowledge sharing practices, Gulenc and Araci (n.d) state that due to the reason that firms do not have all knowledge in their internal sources, they need to take up external knowledge sources to reduce risk and environmental uncertainties. In this regard, the existence of knowledge in different forms such as explicit and tacit knowledge demands different mechanisms for university and industry to share knowledge. Hence, plenary meetings, workshops, panel debates, inter-organizational group meetings, peer-reviews, joint research projects, internship experience, best practices, and many others are found to be important means of sharing knowledge between universities and industry (Chen et al, 2017; Rast et al, 2012).

The practice of KM is a recent phenomenon in Ethiopia. So far, only limited local researches were conducted in areas of KM and sharing. Some of the recent studies conducted on KM in Ethiopia include: in the banking industry (see Temtim, 2014; and Habtamu, 2011); in the health sector (see Amezenech, 2014; Betelehem, 2017; Gizew, 2017; Tirualem, 2011; Mulusew, 2014; and Teklit, 2014); and on the Ethiopian Broadcasting Corporation (Yitagesu Desalegn, 2017). There are also other KM studies conducted on academic institutions (Fikru minwalkulet 2018, Elizabeth, 2015; Rahel & Ermias 2011.

For instance, preliminary research conducted by Rahel and Ermias (2011) on "prospects of knowledge sharing among Ethiopian institutions of higher learning" revealed that the status of knowledge sharing practices concerning personal, technical, and organizational factors, and availability of infrastructure. These authors in their research also suggest that organizing annual forums for academic symposiums, problem solving sessions, workshops and conferences for

interaction, communities of practice, IT platforms that enable to share repositories, staff exchange programs as strategies and mechanisms of knowledge sharing among others.

However, there is no research undertaken on knowledge sharing mechanisms in the Water and Energy industry in Ethiopia, specifically in the context of the Oromia Water and Energy Resource Development Bureau. Moreover, though there are researches conducted in the area, the research result can differ due to contextual factors (Abdul-Cader, 2015; Temtim, 2014; Elizabeth, 2015; Abdul-Jalal, 2013). It is also important to study the knowledge sharing mechanisms in a specific context and to extend generalizations of existing findings to different contexts. Hence, this study focus on examining knowledge sharing practices of the OWERDB taking its specific organizational context into consideration. The challenges and barriers for successful management of knowledge require the need for a more coherent and structured approach to utilize knowledge in the Oromia Water and Energy Resource Development Bureau. Therefore, it is essential to identify the knowledge sharing mechanisms in the Bureau to successfully manage organizational knowledge and resources. The main gaps in knowledge sharing mechanisms at the OWERDB include-failure to understand the organization's (Bureau) position, difficulty in acquiring valuable information due to the communication barriers between the upper management and line employees, lack of awareness on what core knowledge the organizations possesses, and the inability by the Bureau to describe or recognize its core knowledge required for competitiveness. The Bureau's knowledge management goal is also not aligned well with the organization's objectives thus it is difficult for transferring the necessary knowledge to the KM plan due to non-standardization, and lack of awareness, comprehension or willingness by employees to share their knowledge. Furthermore, lack of top management commitment to KM, failure to evaluate the results of KM to determine whether or not it meets the organization's expectations, the existence of different perceptions on KM between the upper management and employees due to the differences in position, role, and professional knowledge as the employees at the different levels have a distinct attitude toward planning, responsibility, accountability, and authority. Thus, the main goal of this study is to addresses these problems by examining and identifying the knowledge sharing mechanisms that can help OWERDB to efficiently and effectively implement KSM in all its offices and projects.

Organizational learning is the process of creating, retaining and transferring knowledge within an organization. With experience and time, an organization improves and gains knowledge that can better "increase production efficiency or develop beneficial investor relations (Argote, 2013)." Akdere and Schmidt (2007) noted that organizational learning takes place when members of the organization act as learning agents of the organization and is an ongoing learning experience. According to them it provides a sustainable opportunity for change and a chance for continuous renewal from within. In essence, it adds dimensions to the individual learning process, because what is learned by the individual is shared with the group (Akdere & Schmidt, 2007).

Rudawska (2013) maintains that the purpose of organizational learning from the knowledge sharing viewpoint is to create organizational knowledge for the organization. This knowledge is needed for competitive advantage. The organizational learning process facilitates knowledge development and preserves new knowledge in organizational operations. Moreover, the literature supports the fact that the knowledge management process affects the learning organization because knowledge management practices support organizational learning (Rudawska, 2013).

Knowledge sharing is significant and influential effect to organization consistent with prior study by Mu et al (2008). This finding to previous studies done by Yang (2005), Cheng et al., (2008), Du et al., (2007), Hoffman et al., (2005) were shown that KS is positively influencing organizational performance. The significant standardized coefficient of the direct link of knowledge sharing and organizational performance is supporting the relationship, shows that KS has a direct positive influence on organizational performance with path coefficient of 0.74, t-value 10.951 and significant at $p>0.05$.

According to Ford and Hakansson (2013), there is a great potential of challenges that directly impact tacit knowledge sharing, such as mistrust, different learning styles and inaccurate information. Evidence shows the correlation between positive coworker relationships and improvement in job satisfaction, organizational commitment and communication (Glaman, Jones & Rozelle, 2002). The effects of knowledge sharing on on-the-job learning are profound and wide-ranging. Knowledge sharing accelerates skill development, promotes continuous learning, fosters innovation, reduces errors, and strengthens collaboration. Additionally, it improves employee engagement, boosts organizational agility, ensures knowledge retention, and bridges generational gaps.

The importance of the role of knowledge, from Nonaka and Takeuchi (1995) states that only companies that can produce knowledge sustainably are able to achieve a better position to have a competitive advantage. Hooff and Weenen (2004) define knowledge sharing as the activity of individuals exchanging personal intellectual capital. Competitive advantage can only be achieved if the individual's knowledge source which is the basis of strength is managed and maintained. As also stated by Morling and Yakhlef (1999) that what will determine the company's success is the company's ability to manage knowledge assets. Companies cannot create knowledge without the actions and interactions of their employees. This is where we can see the effect of knowledge sharing on performance.

To this end, this study attempted to answer the following basic research questions:

1.3.1 Research Questions

This research is intended to promote knowledge sharing in the study organization. Therefore the main research question is how to develop a knowledge sharing framework for OWERDB.

The specific research questions are:-

1. *What are the current knowledge sharing mechanisms used in OWERDB to share knowledge among employees and with other stakeholders?*
2. *How existing knowledge sharing mechanisms promote on the job learning?*
3. *What are the knowledge sharing barriers in OWERDB?*

1.4. The Study Objectives

1.4.1 General Research Objective

The main purpose of this research is to identify knowledge sharing mechanisms that are central to effective KM at the OWERDB.

1.4.2 Specific Research Objectives

1. *To investigate the current knowledge sharing mechanisms used by the OWERDB*
2. *To identify challenges and bottlenecks for improving the overall effectiveness of knowledge-sharing activities at OWERDB on the job learning.*
3. *To propose a framework for effective knowledge sharing mechanisms that could be implemented by the OWERDB on the job learning.*

1.5 Significance of the Study

The findings of the study would provide bases for effective knowledge sharing mechanisms and improve the performance of the Oromia Water and Energy Resource Development Bureau. Furthermore, the study will provide a foundation for understanding the wide range of knowledge sharing barriers that are hindering effective KM and provide guidance for employees and Directors on how to:

- ✓ *Institutionalize knowledge sharing for effective on the job learning process that influence improvement of policies, strategies, and structures at OWERDB*
- ✓ *Run an effective knowledge management system*
- ✓ *Provide new ideas and perspectives in overcoming existing knowledge sharing barriers.*

The findings of the study would consequently be relevant for policy formulation in water and energy sectors. Indeed, this study would ultimately facilitate efficient and effective utilization of knowledge management resources resulting in enhanced organizational performance. Policy makers in other organizations would equally benefit from the findings of this research. The result of the study provides a pool of knowledge on the role and contribution of knowledge management resources in building and sustaining competitive advantage in an organization.

Furthermore, scholars would also benefit from the study as the findings add to the existing body of knowledge in knowledge management and performance. Moreover, the results of the study would underscore the fundamental role of knowledge management resources utilization in order to leverage on organization's performance. In addition, the study acts as a springing board for future research in KM and organizational performance.

1.6 Scope of the Study

The scope of this study is limited to the Oromia Water and Energy Resource Development Bureau and its umbrellas. The Oromia Water and Energy Resource Development Bureau was chosen because it is one of the main knowledge-intensive (Shih et al., 2010) organizations, and as such, is at the "cutting edge" of KM applications in Oromia. A knowledge-intensive organization heavily relies on its unique knowledge as input and produces innovative products. The variables of the study encompassed knowledge management and performance as the explanatory and explained variables respectively. The units of observation were the five functional areas of human resource, finance, information communication, and operations in each department. The heads of the functional areas that were identified are part of the senior management team that operates at the head office and Zonal office.

1.7 Limitations of the Study

This study sought to propose knowledge sharing mechanisms for the Oromia Water and Energy Resource Development Bureau only. The researcher also encountered a challenge in obtained some data due to the sensitive and strategic nature of some of the information required for this study. Nevertheless, this challenge was mitigated by reassuring the respondents of the confidentiality in handling the research data, which was upheld through the use of codes rather than the identity of individual respondents and water sectors. In addition, the researcher experienced difficulties in reviewing empirical literature owing to the fact the area of focus is not adequately researched in developing countries and more so in the local settings. However, this limitation was mitigated through the review of similar empirical work in other sectors and developed countries.

1.8 Organization of the Study

The study organized in six chapters. The first chapter deals with background of the study, statement of the problem, research questions, objectives of the study, significance of the study, limitation of the study and organization of the study. The second chapter addresses theoretical and empirical literature. Chapter three is about detailed description of the study area and methodology of the study. Chapter four is about Data presentation and discussions; Chapter five is about designing a Knowledge Sharing Mechanisms Framework. Finally, the six chapters present the finding, conclusion, and recommendations of the study. References and annexes are also attached at the end.

CHAPTER TWO Review Literature

Globalization, fierce competition, business crisis and advances in communication and information technology trigger the emergence of a knowledge-driven economy, which force organizations to depart from traditional perspectives on dealing with human resources and adopt a knowledge management approach. Knowledge management (KM) focuses on identifying, sharing, creating and storing of knowledge in pursuit of organizational learning (Rowley, 2000). KM consists of two types of knowledge: explicit knowledge, which can be clearly detected in tangible written or oral forms such as procedures, rules and regulations, and tacit or implicit knowledge, which espouse an intangible nature inherent in employees' values, beliefs, experience and knowhow (Nonaka, 1991). In the relevant literature (e.g. Nonaka, 1991; Rowley, 2000; King 2007), Knowledge Management (KM) has been defined as a process of collecting and identifying valuable information (i.e., knowledge acquisition), enabling employees to recover organizational knowledge (i.e., organizing knowledge), exploiting and beneficially applying knowledge (i.e., knowledge leverage), disseminating it through the whole organization (i.e., Knowledge sharing) and storing the knowledge in a repository (i.e., organizational memory). A rather comprehensive definition of KM has been put forth by Rowley (2000) stressing the importance of identifying, sharing, creating and storing of knowledge in pursuit of organizational learning.

Knowledge sharing mechanisms KS mechanisms can be considered as a means by which individual's access knowledge and information from others. KS mechanisms are also defined as the formal and informal mechanisms for sharing, integrating, interpreting and applying know-what, know-how, and know-why embedded in individuals and groups that will aid in the performance of organizational tasks (Boh, 2007). There are four identified mechanisms for the sharing of individual knowledge within organizations (Bartol and Srivastava, 2002). In DMUL and ASUL, there was not any knowledge sharing model or guide when the study was undertaken.

There are two distinct dimensions of knowledge-sharing models/guides or knowledge sharing mechanisms among individuals (Boh, 2007). These are personalization versus codification and individualization versus institutionalization. and Codification versus personalization, codification knowledge sharing model can be a good mechanism to store large amounts of knowledge and to create a knowledge base, from which all employees can easily access and use knowledge; however during codification knowledge should be carefully codified and stored in databases or documents Boh (2007). DMUL and ASUL provides services for users, therefore codification knowledge sharing mechanism can be used for new employees to easily understand how to do a job without wasting time.

2.1 Knowledge

A notion of consensus noted among different researchers and practitioners that knowledge is more than mere data and information. Knowledge emerges in the context of individuals with his belief and experience (Greiner et al, 2007). As a result, Davenport (2000) defined knowledge as 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. As a source of economic success, knowledge has displaced traditional factors such as land and labor, hence the need for knowledge retention in organizations (Peterson 2012).

According to (Peterson 2012) the organizations lose tacit knowledge when employees leave for other organizations and also due to other forms of attrition. Hamaza (2008:2) argues that "as long as they stay on employment with the organization, they contribute playing a competitive figure through effective decision making, communication and contribution. Once employees leave an 20 organization knowledge in their heads is also gone." On the study carried out by Wamundila and Ngulube (2011) on how to enhance knowledge retention at the University of Zambia, it indicates that knowledge retention challenges do exist in the form of retirements (58.9%), resignations (64%) and deaths (58.9%).

Knowledge is defined as human expertise, which is found in people's mind and gained through experience and interaction [Azad LCAK (2015)]. This definition also substantiates the fact that individual expertise can be gained through experience and interaction, which enables them to perform tasks effectively. Understanding what knowledge is and how to create, share and use it effectively in organizations enables them to develop and sustain a competitive advantage (Richard,

2004). Hence, organizations need to know the importance of knowledge to maintain their competitiveness. In addition, Davenport & Prusak (2000), define knowledge as the result of cognitive processing triggered by the inflow of new stimuli. They interpret knowledge, as an organizational asset constituted of "a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experience and information". Huseman & Goodman (1999) add more depth to the understanding of knowledge. They describe five elements that characterize knowledge and create its value. These five elements are:

- ***Experience*** *- creates a continuum between past happenings and present situation*
- ***Truth*** *- represents the actual state of affairs and helps to relate to things and happenings objectively*
- ***Judgment*** *- describes the capability of apprehending unfamiliar situations*
- ***Intuition*** *- is a strong aid in acting in new and changing circumstances and environment*
- ***Values*** *- which assist in evaluating the importance of actions, processes, pieces of information, operations etc., and help in their testing?*

These characteristics are human-generated and easy to comprehend why knowledge is such great value especially for organizations. From this, it is evident that the quality of knowledge utilization plays a central role in organization's success or failure.

2.2 Types of knowledge

Knowledge can be divided into two types which are ***tacit and explicit*** *knowledge (Polanyi, 1967; Nonaka, 1994).*

Tacit knowledge is developed over a long time period by an individual through their experiences and know-how (Davenport & Prusak, 2000; Bartczak, 2002). According to Nonaka & Takeuchi (1995) .Tacit knowledge as being subjective in nature due to the inclusion of the individual's perceptions. The concept of tacit knowledge is a basis for any organization and covers knowledge that is unarticulated and tied to the senses, movement skills, physical experiences, intuition, or implicit rules of thumb (Nonaka & Krogh, 2009). Tacit knowledge is a know-how and learning rooted within the minds of the people in an organization (Kidwell et al., 2000). Explicit Knowledge a knowledge that can be readily articulated, codified, stored and accessed (Hélie &

Sun, 2010).Nonaka & Takeuchi (1995) describe explicit knowledge as being objective in nature. According to Choi & Lee (2003) , explicit knowledge is a knowledge that can be created, written down, documented ,transferred verbally or through some medium of communication such as emails, telephone or information systems.

2.3 Knowledge management

Different scholars define Knowledge management in different way. According to Robbins (2003), knowledge management (KM) is defined as the process of organizing and distributing the organization's collective wisdom so the right information gets to the right people at the right time. When done properly, KM provides an organization with both a competitive edge and improved organizational performance. According to Sagsan (2006), KM is the processes of storing, collecting, structuring, sharing, controlling, creating, disseminating, codifying, using and exploiting knowledge in organizations. Knowledge management is an approach used to develop a systematic set of processes for the creation, organization and dissemination of knowledge by using different technologies supported by a knowledge creating and sharing culture of the organizations (Omur et al., 2009). In addition, the following definition (Carlisle, 2002) substantiates the fact that KM has a great role in managing individual expertise in organizations.

Knowledge management can be a very valuable tool not only for the executive heads of the organizations, but also for the governing bodies. Knowledge management helps to qualify and identify what the organization knows, where and in what form the knowledge is located, how organized is the access to knowledge and what are the best ways to transfer knowledge to the right people at the right time. Knowledge management will help organizations learn from past failures and successes, redeploy and reuse existing knowledge assets, solve problems or innovate, foster and develop the right competencies, update and remove obsolete knowledge and ensure that knowledge and competencies are not lost.(Joint Inspection Unit in Jeneva 2016(JIU/REP/2016))

Knowledge management is introduced to help organizations create, share and use knowledge effectively (Wiig, 2003). The selection, storage and communication of knowledge are knowledge retention practices which imply that the organizational knowledge is being kept and preserved in the organization (Levy, 2011). This study focused on how each of the three Bureau, Zone Office and water utilities retained the knowledge that is created, organized, stored, retrieved, transferred and shared to enhance continuous competitive advantage in the country and the region at large.

2.4 Theories of knowledge management

Neuman (2006) defines a theory as a system of interconnected ideas that condenses and organizes knowledge about the social world. It is a framework for thinking about a problem and may evolve into a statement of relationships among theoretical propositions (Wilson, 1997). A theory helps people visualize the complexity in the world and explains why things happen (Neuman, 2006). A theory serves as guides and lenses to empirical research of this nature. In this study, theories helped in placing the aspects of knowledge retention under close inspection. Theories provide comprehensive conceptual understandings of issues being studied such as how organizations operate, why people interact in certain ways. Theories give researchers different perceptions through which to look at complex aspects and social issues, focusing their attention on different aspects of the data and providing a framework within which to conduct their analysis (Dewah, Peterson.2012).

2.4.1 The Resource- Based Theory

Edith Penrose (1959) is considered the originator and key contributor of the resource based theory. The theory rests on the premise that an organization is a broader set of resources and the growth of an organization involves the exploitation of existing resources and development of new ones. Penrose, (1959) also points out that human capital is not entirely specialized therefore can be redeployed to allow the firm's diversification into new products and services. This theory points out that an organization's success is due to joint assets, resources and capabilities which it owns and these make the organization different from others. The resources and capabilities enable the organizations to achieve competitive advantage. While a subset of resources enable firms to

achieve competitive advantage, another subset lead to superior long term performance. The valuable company resources and capabilities must be difficult to imitate, not acquired or replaced easily by competitors. Resources that are valuable and unique to the organization enable the enterprises to generate profits and a sustainable competitive advantage (Pesic, 2007). A company's resources include capital, equipment, talent, know-how, skill and knowledge (Kotelnikov, n.d.). In a knowledge based economy, knowledge is the most critical element that determines the success of an industrial undertaking (Ngah and Ibrahim, 2008). However, this theory is silent on how knowledge should be acquired and retained in the organization. Such weaknesses leave Nonaka and Takeuchi (1995)"s organizational knowledge creation theory unparalleled.

2.4.2. The Social Cultural Learning Theory

*Social cultural learning theory largely attributed to Lev Vygotsky (1978). The social cultural learning theory describes learning as a continuous social process and the origination of human intelligence in society or culture. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. The primary focus of this theory is on learning as social participation and participation refers to local events of engagement in certain activities with certain people, being active participants in the practices of social communities (Wenger, 1998). This theory views learning as a continuous phenomenon emerging from the social interactions and practices of individuals. Learning is social and it comes largely from our experience of participating in daily life (Lave and Wenger, 2010). The theory states that through interaction with others individuals learn and integrate the knowledge in their mental modes. A teacher or more experienced peer is able to provide the learner with „scaffolding" to support the student's evolving understanding of knowledge domains or development of complex skills. Collaborative learning, discourse, modeling, and scaffolding are strategies for supporting the intellectual knowledge and skills of learners and facilitating intentional learning. The implications of this Vygotskian theory are that learners should be provided with a socially rich environment in which to explore knowledge domains with their fellow students, teachers and outside experts. ICTs can be used to support the learning environment by providing tools for discourse, discussions, collaborative writing, and problem-solving, and by providing online support systems to scaffold students" evolving understanding and cognitive growth.(***Peterson Dewah**. P (**2012**)) A social theory of learning identifies and integrates meaning,*

practice, community and identity as four components necessary to characterize social participation in the process of learning and knowing (Wenger, 1998). This theory views the Community as a social fabric for learning (Pionke and Browdy, 2008). Learning becomes an ongoing process that takes place through the collaborative practices of individuals whenever they create, communicate, impose, or sustain shared meaning and identity. Communities hold and share collective knowledge. The Organizational members dynamically transform explicit knowledge into knowing through collaborative practice and this makes it a unique feature of the Social Cultural Learning Theory. Within organizations knowledge is seen to arise from different groups of people called communities and these people are involved in shared practice. Through transfer and sharing knowledge in a community of practice knowledge is retained in the heads of workmates and most importantly in the young and new employees. However, this theory places emphasis on the retention of knowledge among the members of a community of practice and not preservation of knowledge in databases, 39 computers, paper records and archives. In other words only tacit knowledge is retained in the organizational system in the minds of the workers and not stored as explicit knowledge. This leaves the social learning theory with some weaknesses.

2.4.3 The Adaptive Structuration Theory

Adaptive Structuration theory is based on Anthony Giddens" (1979; 1984) structuration theory. This theory is formulated as "the production and reproduction of the social systems through members"" use of rules and resources in interaction." DeSanctis and Poole (1989) adapted Giddens (1984, 1986)"s theory to study the interaction of groups and organizations with information technology, and called it Adaptive Structuration Theory (AST). AST criticizes the techno centric view of technology use and emphasizes the social aspects. Groups and organizations using information technology for their work dynamically create perceptions about the role and utility of the technology, and how it can be applied to their activities. These perceptions can vary widely across groups. These perceptions influence the way technology is used and hence mediate its impact on group outcomes. This theory looks at the behavior of humans as they use technology (such as computers) in a social structure. The theory also refers to the nature of group-computer interaction since organizations such as those in the broadcasting industry, now rely heavily on the use of advanced information technology for the purposes of communication and relaying information in a social structure. Since it focuses on communication using information technology the theory highlights the concepts of appropriation and structuration

(Sedera and Zakaria, 2008). The theory draws some 40 links between individuals and organizational learning due to the key concepts that address aspects of group interaction with technology.

2.4.4. The theory of organizational knowledge conversion

The theory of organizational knowledge creation developed by Nonaka and his colleagues (Nonaka 1994; Nonaka et. al. 1994; Nonaka & Takeuchi 1995; Nonaka et. al. 2000; 2001a; Nonaka & Toyama 2003) originated in studies of information creation in innovating companies (Imai et. al. 1985; Nonaka 1988a, 1988b, 1990, 1991b, Nonaka & Yamanouchi 1989; Nonaka & Kenney 1991) and appears to have undergone two phases of development. Initially a two dimensional theory of knowledge creation was proposed (Nonaka 1994: 16-17; Nonaka & Takeuchi 1995: 57-60). The first, or "epistemological", dimension is the site of "social interaction" between tacit and explicit knowledge whereby knowledge is converted from one type to another, and new knowledge created (Nonaka et. al. 1994: 338; Nonaka 1994: 15). Four modes of knowledge conversion were identified (Figure): tacit to tacit (Socialization); tacit to explicit (Externalization); explicit to explicit (Combination), and explicit to tacit (Internalization). After Internalization the process continues at a new 'level', hence the metaphor of a "spiral" of knowledge creation (Nonaka & Takeuchi 1995: 71-2, 89) often referred to as the SECI model.

Nonaka and Takeuchi introduced the SECI model (Nonaka & Takeuchi 1996) which has become the cornerstone of knowledge creation and transfer theory. They proposed four ways that knowledge types can be combined and converted, showing how knowledge was shared and created in the organization.

The model was based on the two types of knowledge outlined above.

- *Socialization: Tacit to tacit. Knowledge is passed on through practice, guidance, imitation, and observation. Socialization involves sharing knowledge in face-to-face interaction.*
- *Externalization: Tacit to explicit. This is deemed as a particularly difficult and often particularly important conversion mechanism. Tacit knowledge is codified into documents, manuals, etc. so that it can spread more easily through the organization. Since tacit knowledge can be virtually impossible to codify, the extent of this knowledge conversion mechanism is*

debatable. The use of metaphor is cited as an important externalization mechanism. Externalization happens when tacit is converted into implicit knowledge. Tacit knowledge is what people carry in their minds and we find it difficult to access. Explicit knowledge on the other hand, is what is documented or codified and can be transferred easily to others.

- *Combination: Explicit to explicit. This is the simplest form. Codified knowledge sources (e.g. documents) are combined to create new knowledge.*
- *Internalization: Explicit to tacit. As explicit sources are used and learned, the knowledge is internalized, modifying the user's existing tacit knowledge*

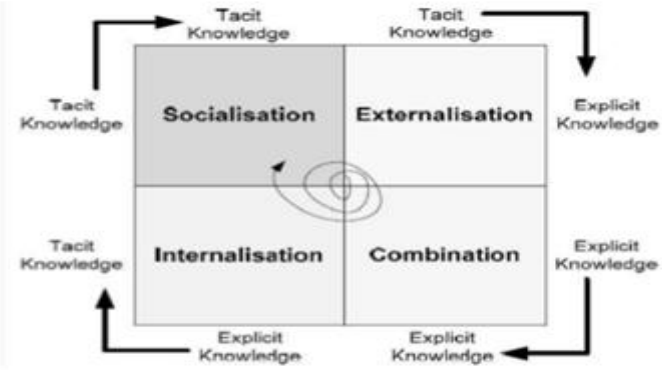

Figure 1 : Models of knowledge sharing (Nonaka, 1994)

2.5. Knowledge Management and ICT

In order to promote effective knowledge management and improve service deliveries, among other factors, the adoption and use of ICT is indisputable (Omona,Weide and Lubega, 2010). The notion of ICT for KM further discussed in Omona et al.paper in that it states that several perspectives of KM share the same core components, namely: People, Process and Technology. With this point of argument the authors tried to show the commonality of Technology (ICT) in effective knowledge management application. In this regard, it has been shown the essence of KM for an organization competitive advantage and the need to understand the knowledge generating activities to be supported with ICT in knowledge-led environment. In similar statements, other researchers and practitioners including Dalkir (2005), Pee & Kankanhalli's (2009) and Kruger & Johnson (2009) stressed the role of ICT as enabler or vehicle for effective KM. Furthermore, according to Dalkir (2005) the ICT platform not only supports the administration and organization of knowledge

resource but also support the interaction among users. To this effect, as shown in Table 1, KM technologies are able to support KM activities with tools that enhance knowledge creation, sharing, acquisition and application .The study of Kruger & Johnson (2009) also showed that KM is strongly entrenched and rests on the foundation of ICT and IM. To this end, the survey result on South African organizations has indicated that ICT and IM are interrelated prerequisites and enabler of KM. Moreover, Kruger & Snyman (2005) KM maturity model exhibited the relevance of ICT at each phases of the maturity and emphasized the close correlation between knowledge and ICT management. Consequently, it is determined that with the evolutionary growth in ICT, increased KM maturity would be realized. Nevertheless, ICT is not the only success path to KM and should not be managed as separate entity. Rather, effective KM needs a healthy coexistence of technology, process and people. In line with this statement Pee & Kankanhalli's (2009) General Knowledge Management Model is developed based on the coordinated key process areas of people, process and technology. The technological aspect in this model characterized from the basic IT infrastructure to the complex integrated technology that support organizational knowledge management systems.

Table 1. Major KM Techniques, Tools and Technologies Dalkir (2005)

Knowledge creation and apture phase	*Knowledge Sharing and Dissemination phase*	*Knowledge Acquisition and Application Phase*
Content creation • *Authoring tools* • *Templates* • *Annotations* • *Data mining* • *Expertise profiling* • *Blogs*	*Communication and Collaboration technologies* • *Telephone* • *Fax* • *Video conferencing* • *Internet telephony* • *E-mail* • *Dicussion forums* • *Workflow management*	*E-Learning Techonologies* • *CBT* • *WBT* • *EPSS*
Content Management • *Metadata tagging* • *Classification* • *Archiving* • *Personal KM*	*Networking technologies* • *Intranets* • *Extranets* • *Web server,browser* • *Knowledge repository* • *portal*	*Artificial intelligent technologies* • *Expert system* • *DSS* • *Customization-personalization* • *push/pull techenologies* • *Recommender system* • *visualization* • *knowledge maps* • *intelligent Agents* • *Text-analysis summarization*

2.6. Knowledge management process

According to Alavi & Leidner (1999), knowledge management is mostly considered as a process. Serrat (2008) defines that there are five basic activities of knowledge management processes: identify, create, store, share and use knowledge. Gold (2001) on his part grouped KM process into four broad dimensions of process capability – acquiring knowledge, converting it into useful form, applying or using it and protecting it. In practice, KM process has major common tasks namely knowledge creation, acquisition, codification, sharing and application. Figure2 : Knowledge Management Cycle

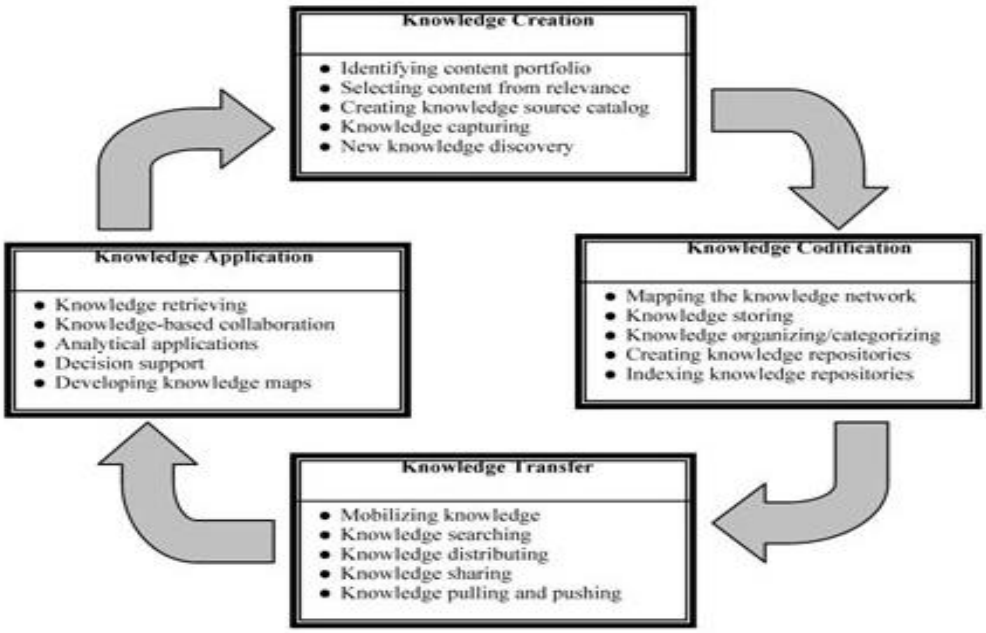

Figure 2: Knowledge Management Cycle

2.6.1 Knowledge Creation

The most important task performed in implementing KM in any organization is Knowledge creation (Paween (2006)). According to Paween (2006) , knowledge creation involves the collection and organization of raw information which is stored in tacit and explicit format and will achieved primarily by creating a repository of relevant information and creating a repository of learning which can be converted into knowledge. Knowledge is created by applying tacit knowledge into the problems faced. The tools and techniques that support knowledge creation are ways of managing people and the way in which they interact (Payne & Tony, 1994).

2.6.2 Knowledge Acquisition

According to Alan (2011), knowledge acquisition refers to the knowledge that an Organization to obtain from external and internal sources. The external sources include suppliers, competitors, partners, alliances, customers and external expert's .Whereas, internal sources includes experts and other employees of the organization (Alan, 2011). Therefore, this can be performed by selecting and capturing relevant knowledge to the organization.

2.6.3 Knowledge Codification

Knowledge Codification is the process of transform knowledge into a coded form to make knowledge structured, explicit, transferable and easy to understand as possible (Paween, 2006). Knowledge codification is stored and retrieved through information retrieval systems. Ontology enables knowledge concepts are arranged in hierarchical structures, typically related by relationships. Therefore, ontologies are intended to provide an understanding of the static domain knowledge that facilitates knowledge retrieval (Karadsheh et al, 2009; Alavi & Leidner, 2001).

2.6.4 Knowledge Sharing

Knowledge Sharing As Payne & Tony (1994) explained, knowledge sharing can be carried out through some kind of knowledge base which is technical or through the direct exchange of people. Knowledge sharing is undertaken when best practices can be shared through organizational processes and standard procedures (Payne & Tony, 1994).

Knowledge sharing, an important element of KMS implementation, is the behavior of disseminating an individual's acquired knowledge to others within an organization (Ryu et al.

2003) .Ipe (2003) states that more knowledge is shared informally within organizations and knowledge sharing depends mostly on social relationship between employees and organization culture. Previous research on knowledge management has indicated that information systems, such as KMS, can be used as an important facilitator for knowledge sharing (Song 2002; Lin and Lee 2004). Knowledge sharing is often different from knowledge transfer and knowledge exchange. Knowledge transfer is concerned with the sharing of knowledge by the knowledge source and the acquisition of knowledge by the recipient. Knowledge transfer is usually used to describe the movement of knowledge between teams, divisions, or organizations, instead of individuals (Szulanski, Cappetta, and Jensen 2004). Knowledge exchange and knowledge

sharing have been used interchangeably; however, knowledge exchange often refers to both knowledge sharing and knowledge seeking. In this study use the term "knowledge sharing" because this study is concerned with the movement of knowledge from experienced professionals to other members of an employee in the organizations. Studies on knowledge sharing have documented that to gain a competitive advantage, organizations need to understand how to transfer expertise and knowledge from experts who have the knowledge to novices who need to know the knowledge (Hinds, Patterson and Pfeffer 2001; Wang and Noe 2010). Knowledge sharing literature has also shown that knowledge sharing is positively related to reduction in production costs, firm innovation projects, faster completion of new product development, team performance, and firm performance (Arthur and Huntley 2005; Collins and Smith 2006; Cummings 2004; Hansen 2002; Wang and Noe 2010). Knowledge sharing literature has also examined the difference between knowledge sharing via KMS and face-to-face interactions (Bordia et al. 2006). The factors influencing the decision to share knowledge in face-to-face versus KMS are different. For example, employees who are high in extraversion are more likely to share knowledge in face-to-face interactions over technology aided interactions because sharing knowledge in a face-to-face interaction is more relationship based (Wang and Noe 2010). Unlike face-to-face knowledge sharing, when individual shares knowledge with the firm's KMS, the KMS will be able to capture, store, and disseminate the knowledge to other members. More members in the firm will be able to access and use such knowledge to improve performance. That is to say, knowledge sharing with KMS enables the movement of knowledge that resides within individuals to the organizational level. Gibbert and Krause (2002) suggest that knowledge sharing cannot be forced but can only be encouraged. Therefore, this study examines whether behavioral interventions can be used to encourage auditors' knowledge-sharing behavior with KMS. Szulanski (1996) suggests that there are two motivational forces that could influence knowledge sharing: employees' personal belief structures and institutional structures. Personal belief structures refer to one's belief about the benefit and cost related to knowledge sharing. On the one hand, an individual who chooses to share knowledge may lose his or her expertise or value within the firm. On the other hand, any knowledge shared that is judged to be unsound could damage his or her reputation. As a result, one of the major reasons that prevent employees from sharing knowledge is the lack of sufficient extrinsic and intrinsic rewards to compensate employees for the costs of

sharing knowledge. Studies on knowledge sharing have examined the effects of personal belief factors, including self-interest, personal gain, reciprocal behaviors, relationship with others, group interest, organizational gain, and organizational culture (Constant et al. 1994; Wasko and Faraj 2000; Bock et al. 2005). Institutional structures refer to an organization's culture related to knowledge sharing. Researchers have documented that employees are more likely to share knowledge when they highly trust other employees and the organization and when knowledge sharing is the norm and accepted practice of the organization (David and Fahey 2000; Hinds and Pfeffer 2003; Bock et al. 2005). Bock et al. (2005) identify three categories that influence employees' willingness to share knowledge, based on prior literature and the interviews they conducted with chief knowledge officers and chief information officers in five Korean organizations. The first category is the economic factor, which refers to the anticipated extrinsic rewards. Organizations the authors interviewed indicate that they implemented financial incentives and/or promotions to encourage knowledge sharing among employees. The second category is called social-psychological factor, referring to anticipated reciprocal relationships and the sense of self-worth. Employees' desires to maintain ongoing relationships with other employees can influence knowledge sharing. Next, employees' views on whether they can add value to the organization through knowledge sharing can contribute to their knowledge-sharing behavior. The third category is the sociological factor, which includes fairness, innovativeness, and affiliation. This sociological factor is very similar to the instructional structures from Szulanski (1996) that discuss the importance of social norms, rules, and obligations in terms of knowledge sharing. Kankanhalli et al. (2005) employ social exchange theory to examine the impact of cost and benefit factors and contextual factors on employees' intention to contribute knowledge to a KMS. They show that knowledge self-efficacy and enjoyment in helping others greatly influence the intention to share knowledge with a KMS. Contextual factors, including trust, sharing norms, and identification, moderate the effect of codification effort, reciprocity, and organizational reward on the intention to contribute knowledge to a KMS. However, the loss of expertise and power does not influence knowledge-sharing intention. Husted et al. (2012) believe that knowledge sharing usually does not happen voluntarily and requires Directors to encourage or promote such behavior. Seheult (2016) reviews the literature on knowledge and organizes the barriers to knowledge sharing into six categories. The first category is personal factors. This refers to personal beliefs that

could influence one's willingness to share knowledge. Trust is an important factor that shapes personal beliefs related to knowledge sharing. The second category is technology factors. This often refers to the design of the KMS: whether it is user-friendly. The third category is cultural norms and context, including sharing expectations in the firm, organizational environment. The fourth category is time availability. Employees are typically busy with routine work. Thus, the time available for knowledge-sharing activities can be minimized. The fifth category is personal vulnerability. Knowledge is often viewed as competitive advantage and power. Therefore, employees can be reluctant to share knowledge. The last category is leadership style. Leaders or Directors who only focus on the task but not the employees involved in the task and who lack encouragement and enthusiasm could prevent employees from sharing knowledge. Wang and Noe (2010) review the knowledge sharing literature from several different disciplines. They find that many studies were qualitative studies that used interviews, observations, or document analysis to answer their research questions. These studies measured knowledge sharing using intention measures or self-reported behaviors. Wang and Noe (2010) indicate that few studies capture actual knowledge-sharing behavior using experiments and suggest that there is a need for research that uses direct and objective measures of knowledge sharing behavior. Thus, this study aims to capture and analyze auditors' actual knowledge sharing behavior.

2.6.5 Knowledge Application

According to Payne & Tony (1994), knowledge has no value unless it consistently used or applied in the right way, at the right place and at the right time. According to Bhatt (2001), knowledge application is enabling knowledge more active and relevant for the organizations to create value. As you would expect, knowledge is acquired from all works of every occupation. As a result, employees are required to use their knowledge for making decisions and performing task perfectly for the organizational success. In this regard, it is important to automate knowledge in order to add values to the organization by applying it in the business process.

2.7 Knowledge sharing mechanisms on the job learning

This is a mechanism of transfer knowledge from one employee to other employee during job

On the job knowledge sharing means how to train employees on the job.

Theodore (2006) defines knowledge sharing as a commitment of collaboration to inform, translate and educate the peers. It involves active listening and learning. "

With many institutions, academicians and practitioners (DeLong, 2004; Stovel and Bontis 2002; University of California 2006) underscoring the importance of managing knowledge, several approaches to knowledge transfer have been identified including:

Training and Development
Succession planning;
Communities of practice;
Coaching;
Creating knowledge repositories through documentation;
Story telling;
Orientation, general and job specific;
Mentorship,
Job rotation,
Performance appraisal
Reward and Incentive Systems
Phased retirement.
Handing Over.
Knowledge retention policy

According to (Butler and Roch-Tarry 2002; Gale 2007; Ohio Environmental Protection Agency 2006; Stovel and Bontis 2002), knowledge transfer practices include succession planning, communities of practice, knowledge repositories, mentoring, coaching, phased retirement, job orientation, storytelling and orientation. Meanwhile according to the knowledge retention strategy framework adopted from DeLong (2004), knowledge transfer practices include: job rotation programs, training programmers, mentoring and coaching, standard operations procedure, informal networking and internships.

2.7.1. Training and Development

Fong and Chu (2006) founded internal training courses as a KS practice in the SMEs construction organizations (Fong & Chu, 2006). The LIS professionals from both the public and private university libraries equally agreed with this option as a technique for Knowledge Sharing. HR will organize knowledge management trainings at least twice a year for all OWERDB staff, training will focus on creating awareness on the goal and vision of the organization and the role of knowledge retention, organizational training, learning and culture, in the organization as well as share work and knowledge management processes.

2.7.2. Succession planning;

One of the most common known knowledge transfer approaches is succession planning (Butler and Roch-Tarry 2002). Stovel and Bontis (2002:309) argue that "knowledge management within firms is the heart of succession planning". They stress that knowledge transfer through succession planning represents a proactive step towards the empowerment of new employees and consequently, avoidance of loss of knowledge by the organization.

According to Butler and Roch-Tarry (2002:37), succession planning is an "ongoing, dynamic process" that focuses on the transfer of knowledge necessitated by an ageing workforce, unforeseen loss of knowledge due to deaths and turnover, and ensuring identification of "skills and competencies throughout the organization". They further argue that most organizations fail to exploit the potential of succession planning mainly due to absorption in "day-to-day issues, overly focused on short-term results or unable to adapt to change".

Cardinal to the process of succession planning is talent identification (University of California 2006). The University of California (2006) identified various ways that can be used for talent identification and development for purposes of an effective succession planning programmers.

2.7.3. Communities of practice;

Communities of practice are voluntary groups of people held together by a common sense of purpose, who share a concern, a set of problems, or a passion about a topic and who deepen their knowledge and expertise in a particular area of concern by interacting on an on-going basis with a real need to know what each other knows (Skyme 1999:63; Kim, Lee and Oslon 2008; Albers 2009). Such people have a common sense of purpose and common interests; they

share work related knowledge and experience and engage in a collective process of learning (Jain 2009; Abell and Oxbrow 2001). Peterson (2012) says that in order to retain knowledge, organizations rely on communities of practice for the purposes of identifying, capturing, and transferring knowledge. He continues to argue that communities of practice share experiences and insights but the people are not a formal team. Communities of practice working on company projects and initiatives share both tacit and explicit knowledge by taking information and materials and refining them to a point where they can become corporate positions on topics.

Tacit knowledge is regarded as the most important form of knowledge in any organization because expertise rests on it (Nonoka and Tekeuchi 1995; Irick 2007; Jain 2009) but capturing it remains a major challenge. While no technology or database can capture all knowledge required in an organization, communities of practice have proved the most powerful tools for learning and sharing knowledge for intellectual interaction and experience (Jain 2009). Communities of practice can be used to capture retired and older employees' knowledge. Peterson (2012) argues that while it is generally agreed that tacit knowledge is very difficult to transfer from one employee to another, a community of practice is one strategy of helping knowledge transfer from the experienced, skilled, talented or from old employees to the younger employees. In this way, knowledge can be retained in the organization when those who possess it depart.

Among the virtues for using communities of practice in organizations and universities include: ability to connect professionals, encourages knowledge sharing on a large scale and thus enabling survival of knowledge within the organization and speeding up the learning for new members (DeLong 2004:114-115; Ngulube and Mngadi 2007). O'Dell and Hubert (2011) through their research found out that COPs can: provide the means to translate local know-how into global, collective knowledge; help employees exchange ideas, collaborate, and learn from each other; transcend boundaries created by work flow, functions, geography, and time; enable speed and innovation needed for marketplace leadership; and integrate into the fabric of your organization's core work and value claims and successfully align with formal governance structures.

2.7.4. Coaching;

Coaching is the process of giving the individual trainee specific (task related) guidance and using feedback to develop and consolidate a new skill (Bentley 1995). Coaching helps people use what has been introduced to them; it includes observed practice, in which an expert observes and critiques a novice's performance (Valence 2006).

Coaching can be used to boost team member's performance and develop them. It can be used to help individuals resolve challenges or problems, decide how to best take advantage of opportunities, and develop their potential. When coaching a senior staff member is a partner not the expert. All directorates /departments will develop coaching plans for selected team members that are identified in directorates' annual plan. HR will also support coaching plans and follow-up that coaching plans, ensuring that they are implemented on a quarterly basis.

Coaching is more a 50-50 relationship. The coach still designs how knowledge will be shared, but the novice participates almost equally in the learning activity (Valence 2006). He continues to point out that practicing under the watchful eye of the expert, the novice hands-on, attempting to use the information and ideas that were introduced earlier, and already adopting the style. When knowledge is being shared, this level is likely to be the most exciting to the novice and the most unnerving to the expert. In coaching mode, principles and project Directors can adjust the project delivery process to include "a lessons learned" module. In the process team members share information and insights to benefit their projects in the short term and feed into the firm's learning dynamic, over time (Valence 2006). According to Nitchike (2007), the importance of coaching to the employee and the organization include the improvement of employee performance which results in organizational performance.

2.7.5. Creating knowledge repositories through documentation;

Documenting corporate knowledge has been cited as an approach that supports the transfer of knowledge amid changes in workforce demographics and knowledge attrition (DeLong 2004). According to Padilla (2006:1), most organizations are "loose documenters". With most organizations facing loss of knowledge through attrition and noting that knowledgeable new recruits as replacements is a difficult activity (Hanes, Gross and Ayres 2001; DeLong 2002; IBM Consulting Services 2003), organizations must develop means for documenting organizational knowledge (Hanes, Gross and Aryes 2001:1). Thus, documentation serves as a mechanism for transfer of explicit knowledge, where vital work practices for "local knowledge

needed to perform a task" are captured (DeLong 2004:8). It is most suitable when an important employee is about to leave, although DeLong (2004:89) stresses that it should be an on-going exercise "not a way of catching knowledge just before it walks out of the door". The transfer of knowledge through documentation has been viewed through the use of technology as an enabler (UNESCWA 2003). For instance, Lock head and Stephens (2004), inform that the role of technology in knowledge transfer activities can be viewed to be twofold: 1. documentation, archiving and provision of explicit knowledge; 2. facilitation of a platform for written or graphic content. This enables employees to share knowledge face-to-face. These two approaches may enable the permanent capture of discussions, databases or indeed visual explanations that can facilitate knowledge transfer.

2.8.6. Story telling;

*Storytelling is another mechanism that is used for knowledge transfer. According to Prusak (2001), storytelling in organizations involves useful stories about people, work, the organization, social bonding, signals, the past, and the future and how they relate to organizational operations. With proven benefits, LeBlanc and Hogg (2006) points out that storytelling is a knowledge management technique which enables organizations to uncover tacit knowledge as part of a natural learning process. Storytellers in an organization maintain cohesion and provide guidelines for people to follow (Holbeche 2005). Stories are effective in bridging generational gaps, communicate vital information about an organization's culture, and help employees develop a sense of organizational identity (***APQC*** (American Productivity & Quality Center 2011) ,Holbeche 2005). Storytelling may be used to capture successes, lessons learned and other knowledge explicitly in a university. Stories are instrumental for knowledge sharing and collaboration (APQC 2011)*

2.7.7. Orientation, general and job specific;

Orientation also considered as induction is another technique that is used (University of Reading 2007). It aims at transferring both explicit and tacit knowledge at two levels. These are identified as general and job specific orientation (Carr 2008; CIPD 2008; University of Melbourne 2002; University of Quees land 2006). General orientation is usually conducted to ensure that the new employee becomes knowledgeably equipped in relation to the "corporate goals, policies, procedures and standards" (University of Melbourne 2002). On the other hand, job specific orientation seeks to equip the new employee with actual, operational

knowledge and skills required to carry out tasks effectively and efficiently (University of New South Wales 2007). At present, orientation and induction systems exist but are not rigorously implemented. HR need to enforce staff induction, ensuring appropriate orientation is provided to new staff so they better understand their roles, the organizational strategies and policies and the roles of others on their team and in other directorates/departments. This process must be institutionalized through HR providing a full induction plan that includes one- to- one interactions with key staff, team meetings and an orientation booklet with an overview of all key information at OWERDB.

2.7.8. Mentorship, formal and informal;

Many universities are involved in mentoring and apprenticeship programs including University of Aberdeen (University of Aberdeen 2006). At the University of Reading, the Senate agreed that "all new members of academic staff, regardless of seniority, should have an appointed mentor to assist the induction process". The university passed such a decision as it recognized the fact that "even experienced academics need guidance on the procedures of both the department and university. For new lecturers the need for ongoing support on all aspects of academic practice is particularly important (University of Reading 2007).

Mentoring and apprenticeship can be used as a strategy of transferring tacit knowledge, from an experienced employee (subject matter expert) to a more junior employee (LaMonica 2007; Nonoka 1997; APQC (American Productivity & Quality Center) 2011). Mentorship entails the pairing of an experienced member of staff with a new employee in order to assist the new employee acquire new knowledge and skills to operate (Beazley, Boenisch and Harden 2002). Mentoring and tutoring techniques enable senior employees to transfer their knowledge, wisdom, specific insights and skills to their juniors within a short space of time such that when the experienced employees leave the organizations or die the organization's substantive practice, knowledge, history, stories and culture are preserved (Rusanow 2004; Dubin 2005). Mentors gently transfer subtle and experiences to others as role models thus introducing mentees to their network in an informal setting. Subject matter experts (SMEs) are paired with individuals who have interest and therefore need further training and development in a subject matter area (APQC 2011). The apprentices follow the more experienced employee through their job and the apprentices extract information, write down information about experiences

for future references and for reuse (APQC 2011). The same source continues to state that 'this technique provides unique opportunities for novice employees to share their experiences, thought processes, and decision-making strategies with junior members of the staff.'

OWERDB will provide special guidance for line Directors and individuals that request mentoring. Mentorship is a relationship in which a more experienced person in a field helps to guide a new or mid-career colleague.HR needs to facilitate mentorship processes and help directorates/departments identify certain areas of expertise. This will create a long-term partnership between senior staff with vast experience and more junior-level staff, through which the latter can receive critical support in their role, career guidance and role modeling. HR can request critical experienced staff to mentor junior staff during their phased retirement period, but also request for mentorship come from individual staff or their line Directers during annual performance reviews.

2.7.9. Job rotation

Job rotation gives possibility to the employee to become familiar with the specificity of other positions that can improve the understanding of organizational characteristics and objectives (Jinchveladze 2009). New ideas emerge when people are well aware about the organization, its products, production processes and the market (Mumford 2000).

While rotating on the jobs employees establish trust and social contacts with other units of the organization (Jinchveladze 2009). Thus, transferring of knowledge takes a broader spectrum. Employees acquire shared understanding values and common vision (Lam 1998). This way bridging firm-specific knowledge with organization strategy is facilitated.

Organizations use different forms of job rotation, some utilize cross functional teams for certain projects to ensure that knowledge is exchanged, and at the same time providing space for learning from shared experience (Jinchveladze 2009). He continues to argue that jobs can be shifted between different departments. Shifting jobs between the same areas of specialization can refine the level of expertise between employees since they will share their professional insights and experience with other people in the same specialization and support mutual learning. It has been proved that informal job rotation supports development of unique practices and processes that can be very hard to be imitated by competitors (Krogh, Ichijo and

Nonaka 2000). Besides, it can support creation of overlaps or redundancy of information which is argued to be a prerequisite for knowledge creation (Nonaka 1994).

Lauren and Foss (2003) argue that "job-rotation among different engineering offices, as well as between engineering jobs supervisory jobs at the factory, facilitates the knowledge-sharing needed for horizontal coordination among the different phases of development".

In addition the authors argue that job rotation can support broadening the firm specific knowledge and skills of an employee. It can help employees experience new responsibilities, learn new skills and link them with the previous tasks. Consequently, this type of job rotation might be beneficial for generalist knowledge development and double-loop learning (Jinchveladze 2009). The same author argues that employees rotate to different positions which are divergent from their existing occupation and knowledge domains; they can acquire completely new understanding and question existing ones. Besides, bringing new experience to other knowledge domains will ensure the concept of lack of shared experience. So employees rotating in other areas of specialization acquire new perspectives of existing knowledge domains, but at the same time bring their experience there (Jinchveladze 2009).

2.7.10. Performance appraisal (PA)

For the learning organization where knowledge creation and diffusion is vital development of employees is decisive. One major purpose of PA is to aid employees in improving organizational performance (Cummings and Schwab 1973). According to Jinchveladze (2009) PA can lead to rewards, training or even transfer for improving certain skills or even sanction. Hence, proper evaluation might be crucial determinant for further decisions in the employment issues. On the other hand, it can also be a follow-up activity of a training program to measure its effect on the performance of employee (Jinchveladze 2009). PA may also give possibility to clarify the level of responsibility (Shipton 2006). PAs can create incentives to stimulate certain behavior. For instance, evaluating how employees used knowledge assets in a firm during performance reviews can encourage employees to actively acquire knowledge from codified sources (Hansen, Nohria and Tierney 1999).

PA can stimulate communication between an employee and supervisor and ensure that the target goals are achieved. PA can be a two way process, on the one hand providing internal

(employees) and external (customers) feedback (Yahya and Goh 2002); on the other hand, acquiring feedback from the employee being evaluated. This feedback will help to, first, understand what knowledge reservoir the organization has in order to try to keep it if required

and, second, to know what skills the organization lacks (Guzzo, Jetter and Katzell 1985) so that they are acquired through knowledge retention activities.

PAs focused on process evaluation and error avoidance can be beneficial for single-loop learning (Jinchveladze 2009). Jinchveladze (2009) argues that concentration on the process of accomplishing results in order to clearly see what actions facilitated and what hindered the achievement of objectives is essential for exploitative learning. PAs based on process evaluation might help provide more information to explain the results an employee achieved, e.g. by "behavioral observation scales" (Kang and Snell 2009:81). This type of evaluation will be based on details and quality performance. This kind of PA might be beneficial for specialist knowledge holders since they are focused on specific knowledge domains and are required to be precise and organized in performance (Kang and Snell 2009). Simple-loop learning or exploitative learning is based on refinement, efficiency and extension of existing competencies and knowledge (March 1991). Evaluating the process, the road that an employee passed to achieve outcomes can stimulate them to refine existing knowledge constantly (Jinchveladze 2009). The same author continues to argue that this can give the employee incentives to carry out existing responsibilities with increased diligence and attention. Hence, the concentration will be placed on existing knowledge domains and on their efficiency. This attitude can encourage employees to focus on the quality of performing certain tasks and try to improve and brush-up the skills needed for this process. Besides, the focus on error avoidance during the evaluation might ensure preciseness of performance and more responsibility (Kang and Snell 2009).

Motivation for further development is crucial for employees in learning organizations. Hence, during evaluation, focus should be placed on progress and positive achievements rather than critique of the outcomes (Mumford 2000). Criticism might hinder the motivation of an employee to be creative, generate new know and share it. PAs focusing on already achieved outcomes without stressing the ways, tactics, methods and tools used to achieve those results can support different purposes of performance (Jinchveladze 2009). These purposes can be

stimulation of employee flexibility to use their own ways in order to achieve results. This attitude can support employee autonomy and can encourage them to search for divergent ideas and new ways for achieving better results. This type of PA can be beneficial for developing generalist knowledge

Since they're possessors of knowledge from diverse knowledge domains and more able to absorb new information, digest and create into something different (March 1991). Hence, PAs based on result evaluation can stimulate double-loop learning, the process when employees question existing norms and practices and search for new possibilities, new ways of thinking to change the status quo, to experiment with new alternatives (March 1991). Thus, not focusing on the process of performance can encourage employees to use other alternatives rather than existing knowledge norms, be free to diverge from existing knowledge domains, and thus generate new ideas.

PA as one of the HR practices can be regarded as a mechanism of linking employee interests, motivations, capacity and expertise with organization objective (Jinchveladze 2009). PA process can act as an effective information exchange tool which might later be transformed into knowledge by the employees. Besides, it can direct KM activities of employees such as rewarding creative behavior, sharing of new ideas but at the same time accepting failures for keeping the motivation mood of employees to learn more (Yahya and Goh 2002). Learning is the part of knowledge transformation and sharing process. Based on the above analysis, it can be argued that performance appraisal which is based on evaluating outcomes of performance, error tolerance and stimulation of teamwork can promote double-loop learning. The reasoning behind is that when employees know that they have a flexibility to use their own ways to achieve results, when their flaws will be tolerated, when their peers will be included in evaluation, they will probably be more flexible to search for new alternatives of achieving results and they will try to collaborate with colleagues or direct team members to share and learn more.

2.7.11. Reward and Incentive Systems

Rewards can follow performance appraisal. Roberton and Hammersley (2000) argue that reward system can be important predictors of knowledge sharing. The reward can take various

forms, such as recognition, promotion, autonomy, empowerment, letter of appreciation etc. Independence is valued in knowledge –intensive organizations (Nurmi, 1998).

Accordingly autonomy helps creative employees to develop new ideas by taking responsibility, benefiting from free time to develop initiatives (Yahya and Goh 2002).

The problem with reward systems might be that they can create dissatisfaction for some people and emphasize rewarded behavior rather than effectiveness (Jinchveladze 2009). Individuals might try to focus and show their own contribution rather than collaborate effectively with other employees (Scarbrough 2003). The similar problem appears with teams. As stated above teamwork is important for knowledge creation, but how to balance rewarding teams and individuals is the question. Gupta and Singhal (1993) offer certain guidelines, when to reward individuals and whole teams. They suggest rewarding whole teams mostly since there is a proof that they outperform those teams where individuals are rewarded within teams. Besides, there is an assumption that team based rewards might contribute to cooperation and belief that shared knowledge will be beneficial for the whole team and overall performance, so that everyone shares knowledge (Bartol and Strivastava 2002). It is essential that the purpose of reward is clear (Jinchveladze 2009). Following the PA it can become vivid who took efforts to develop new ideas and who performed well. For knowledge intensive organizations like higher institutions of learning, rewards can be attached to skill/knowledge development in order to encourage new knowledge generation beyond current knowledge domain (Jinchveladze 2009). This incentive can contribute to generalist knowledge advancement; whereas, incentives attached to good performance and their effort to progress, can in their current job promote specialist knowledge development (Kang and Snell 2009). Providing incentives for generating new ideas can be beneficial for double-loop learning. The incentives, such as granting autonomy, placing more recognition for suggesting new alternatives for existing norms or practices, or even promoting or shifting to another challenging position can stimulate employees to be more proactive and opt to experiment with new ideas (Jinchveladze 2009). Jinchveladze continues to say that on the other hand, rewarding employees for performing well with fixed bonuses or other fixed incentives, for attempting to improve the norms and practices of their current job can contribute to single-loop learnin. From the above analysis it can be argued that financial rewards might be more applicable for specialist

knowledge holders. This is because conducting repetitive work might require tangible incentives so that employees can contribute to improving existing practices of the jobs. In addition, these types of rewards can contribute to retaining the employees with a lot of firm specific experience or specific training. It is essential for the organization to keep the resources that were developed during the years and who possess the capacity which is hard to be imitated by competitors.

2.7.12. Phased retirement.

Phased retirement is also one of the mechanisms for knowledge transfer (Lochhead and Stephens 2004). The practice is mainly used in situations where an organization has experienced or anticipates loss of organizational knowledge due to retirement of employees (Howard Community College 2007). According to Gale (2007) long established organizations, like universities, are the first to experience knowledge loss threats that lead to most of them adopting phased retirement practices. Citing the ability to retain professors at a relatively low cost, Gale (2007) further comments that phased retirement is practiced by universities and has been found to be an effective tool for knowledge transfer. There are many universities that have phased retirement programs (Wamundila 2008). The University of Iowa (University of Iowa 2013) has a phased retirement programs where faculty, professional and scientific staff, and merit system staff members employed by the Board of Regents for a period of at least 15 years and who have attained the age of 15, are eligible to negotiate with their departments a schedule for phasing into retirement.

According to the Department of the Premier and Cabinet, Government of Western Australia (2004), organizations undertake phased retirement programs for the following reasons:

Prevent skill shortage particularly at middle to senior management levels;

Retain knowledge;

Provide a system for effective succession management;

Assist with creation of a flexible responsive workforce;

Maximize the return on investment in human capital;

Increase productivity and efficiency;

Respond to ageing clients and their needs; and

Encourage self-funded retirees.

2.7.13. Handing Over

There are no established strong systems for handover at the OWERDB. Experts should be requested to write handover notes that include key activities in the pipe line, key priorities, key documents, resource materials and contacts before receiving final clearance for departure. HR and all Directers should ensure that this is happening, and handover notes are provided to newly- appointed replacement.

Oromia Water and Energy Resource Development Bureau (OWERDB) is responsible for implementation decentralized to regional, woreda and in some cases community level. The successful roll- out and implementation of the knowledge management system should be monitored by OWERDB. Quarterly progress reports from each directorates/department will include one section on learning and sharing. Reported information can include number of staff trained on knowledge management, documentation collected, case stories written and/or number of documents shared on the knowledge management portal for the future. In addition, a strong monitoring system will review (1) improvement of organizational culture for knowledge sharing and (2) the improvement of business processes and information technology solutions for knowledge capture, storage, and retrieval. OWERDB will also monitor expansion of knowledge sharing, learning and dissemination through external relations and networking.

2.7.14. Knowledge retention policy

Knowledge retention refers to all systems and activities that capture and preserve knowledge and allow it to remain in the organizational system once introduced. It includes all activities that maintain the viability of knowledge within the system (Newman and Conrad, 1999). Kim (2005) defines knowledge retention as the capture of knowledge and expertise from employees before they leave an organization. In situations where broadcasters decide to leave the organization, knowledge retention ensures continuity of knowledge. The present study was a response to growing concern about knowledge loss by OWERDB. Knowledge, expertise and skills are found in organizational employees" heads. When such people leave, the knowledge is lost unless there are measures in place to capture, preserve and transfer it. Staff attrition is inevitable and vast knowledge does accompany retiring or departing workforce out of the

door. Employees retire due to age and in most cases these are the subject matter experts whose critical knowledge needs to be captured (Kim, 2005). Loss of knowledge can result in duplicating work, expensive search for expertise and knowledge, employees not learning from the experienced. When senior employees leave without handing over guidance or organized procedures, the job performance of successors often does not equal that of the retiree or transferee as was the case in most sections of the OWERDB investigated. Knowledge retention is about focusing on the critical knowledge that is at risk of loss and developing actionable plans to retain that knowledge (Dan, 2008). Not all knowledge in the OWERDB is of value and need not be captured and retained but that which is critical and is at risk of loss (White-paper Power Documents, 2007).Through literature searching and observations the researcher realized that OWERDB workers" knowledge could be lost during layoffs, restructuring, retirement, resignations, moving jobs and other situations. Knowledge has appeared as the most strategically important resource for companies (Grant, 1996) and therefore losing it would affect organizational performance. Thomas (2009) insinuates that the awareness of knowledge loss through staff attrition has prompted companies to institutionalize certain processes to capture as much knowledge from their employees as possible.(Dewah, Peterson 2012) .

2.8. Knowledge Sharing Barriers (bottlenecks) in Organizations

An investigation done by Disterer (2001) revealed that individual, cultural and organizational barriers towards knowledge sharing. The researcher further classified the individual barriers into four categories, which are a loss of power, revelation, uncertainty and motivation. Individuals who possess knowledge have some influence towards the organization feel that they might lose their privilege, advantage, respect and job security that they had if they share the knowledge.

Riege (2005) focused on individuals, organizational and technology as limitations on knowledge sharing. The individual barriers that Riege highlighted were lack of time, fear, low level of awareness, differences in experience, poor communication skills, lack of interpersonal skills, education, age and gender differences.

Individual and cultural barriers become the main concentration for Bures (2003). The findings for individual and cultural barriers were similar to Disterer (2001) and Riege (2005) study respectively. Although the organizational and technology plays a vital role regarding

knowledge management, the majority of barriers are concerned with people issues (Barson et al., 2000). Daud and Abdul Hamid (2006) are in line with Barson et al. (2000), as they conclude that individuals and organizational play the important role to ensure the successfulness of knowledge sharing. The researchers elaborated that factors such as motivation, encouragement and stimulation of individuals are vital to capture, distribute, transfer and apply useful knowledge. On the organizational part, it must ensure to have a proper infrastructure which can facilitate the knowledge flows, processes and resources which can provide continuous learning culture. As far as technology is concerned, it is just an instrument to offer knowledge sharing platform so that knowledge could be accessed by everybody from internal or external sources in need of it. Individuals are affected regarding motivation, fear and trust which hoarding them from sharing knowledge (Razmerita, Kirchner & Nielsen, 2016). Organizations should encourage, motivate and reward individuals to ensure knowledge transfer is materialized. As for the technological factors, the usability of the platform, lack of training for using it, overloaded information and low level of understanding towards social media are the barriers.

McLaughlin, Paton and Macbeth (2008) found that individual, culture, technology and organizational are inter-related to ensure knowledge sharing is established successfully.

2.8.1. Individuals

Chilton and Blood good (2010) shed light on the organizations that possess superior knowledge capitals will have a better prospect to achieve a competitive advantage compared to their competitors who did not. Nakano, Muniz and Batista (2013) emphasized that individuals are important asset for organizations as far as knowledge resources are concerned. Even though explicit knowledge sharing has more effects on innovation speed and financial performance, but tacit knowledge sharing gives impact on innovation quality and operational performance (Wang and Wang (2012).)

Internal resistance: This is where knowledge is hidden or its flow restricted in order to protect the interests of the organization.

Self-interest; This is when customers may not be willing to supply information to a supplier for fear that the information will filter through to competitors.

Lack of trust. Trust impacts the way we perceive received information and the value we place on it, and also the manner in which we share information. If an individual does not trust the

recipient of the information to use it wisely, and in the best interest of the organization, it will affect how much information is passed between the individuals.

Risk. Risk is related to both trust and proprietary knowledge barriers. Inter-organizational knowledge sharing inherently involves an element of risk, particularly when proprietary knowledge is being shared.

Fear of exploitation. According to Lucas (2000) a fear of exploitation starts with the premise that ''I will only share my knowledge with you if I think you can give me something in return''. Although Barson et al. (2000) see this as a ''people'' barrier the solution to resolving this problem is very much an organizational one.

Fear of contamination. This barrier refers to when organizations with up-market brand issues are nervous about getting together with people they perceive as more down-market (Lucas, 2000).

2.8.2. Technology

In this current era technology becomes a major tool regarding knowledge sharing. Social media became a platform to share knowledge. However, it would not be effective if individuals have lack of knowledge in technology and do not know how to apply the technology in an organization setting (Paulin & Suneson, 2012). Damodaran and Olphert (2000) criticized that lack of user-friendliness and inadequacy technology also may resulting in low usability and become a strong barrier. The researchers commented that failure to provide training and user support is one of the reasons that lead to low usage of technology. On top of that Ardichvili (2008) claimed that lack of technological expertise and possible averse to using technology could be a major obstacle to knowledge sharing. The author suggested the organization's Human Resource Development professionals should play a crucial role by providing proper initial training and user support in the use of technology specifically.

2.8.3. Organizational

The organizational or corporate culture always refers to their values, beliefs and systems that either boost or obstruct knowledge creation and sharing within organizations (Michailova & Minbaeva, 2012). Organizational culture is known to be an important aspect of the formation of a learning organization. Good relationship among workers and best organizational culture may also form their motivation to contribute their knowledge (Hung, Lai & Chang, 2011).

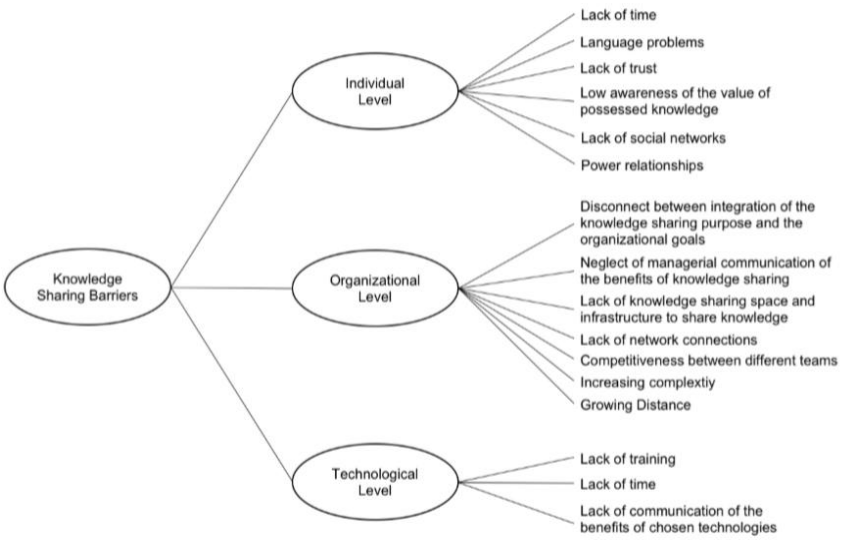

Figure 3 : Knowledge Sharing Barriers (Adapted from Kukko (2013))

The Knowledge Sharing Bottleneck elements for the Social and Artefact network concern barriers for the free flow of knowledge in the organization (Mueller-Prothmann, 2004, Helms, 2007). The absence and/or quality of the networks and facilitating mechanisms were an indicator for potential knowledge sharing bottlenecks. Examples of knowledge sharing bottlenecks in the social network might be people with no or only few sharing relations (Helms, 2007) or a culture that does not foster knowledge sharing (Janz & Prasarnphanich, 2003). The ultimate goal of KM is to optimally use the intangible assets of an organization, i.e. its knowledge embedded in structures, systems, people and relations, in order to achieve competitive advantage (Davenport et al., 1998, Davenport and Prusak, 1998). This thinking about knowledge assets resulted in a shift in strategic management thinking from the resource-based view of the firm to the knowledge-based theory of the firm (Grant, 1997, Grant and Baden-Fuller, 1995, von Krogh and Roos, 1996).

There are different solutions for improving knowledge sharing within organizations and the origin of these solutions can be traced back to the notion of explicit and tacit knowledge from Polanyi (1966) and Ryle (1949). One category of solutions assumes that knowledge can be made explicit and therefore be stored and shared through knowledge bases. Another category assumes that knowledge is tacit, inherently personal, and cannot be codified (Hansen et al., 1999). Sharing of tacit knowledge is mainly done through socialization, which means interaction between individuals to transfer knowledge by means of rules of thumbs, war

stories, or collaborative problem solving through active knowledge transfer techniques (Leonard and Swap, 2004). KM initiatives to improve knowledge sharing typically start with an assessment of the current situation. The problem here is to get a good overview of the current knowledge sharing processes, bottlenecks in these processes that hinder knowledge sharing effectiveness and efficiency, and finally how to prioritize the knowledge sharing bottlenecks (Levantakis et al., 2008).These impacts then help to prioritize knowledge sharing bottlenecks and hence guide knowledge management initiatives that aim to improve knowledge sharing efficiency and effectiveness.

The researcher follows a design science research approach to develop the KSEM technique. In this approach we embedded a case study at a product software developer to evaluate our technique in terms of correctness, completeness, ease of use, and practical value for the organization. Based on the experience from the interviews, we developed the KSEM technique. To evaluate this technique we applied case study research as suggested in Hevner et al. (2004). In the case study the KSEM technique is evaluated on the following four aspects: correctness, completeness, ease of use, and practical value for the organization. Evaluation took place in the same company as mentioned before and is based on interviews with people involved in the project and on experiences of the researchers themselves in applying the technique. In line with these guidelines we used multiple sources of evidence, such as interviews, documents and direct observations. Furthermore, the interviewees checked our analysis and KSEM based on the interviews. External validity is about "establishing the domain to which a study's findings can be generalized" (Yin, 2003). The bottlenecks followed directly from the interviews with the various people in the Customer Support department. The first bottleneck follows from the fact that knowledge on software does not freely flow between departments.

CHAPTER THREE: Research Methodology

Research methodology is interviews with experts, management staff, participation in workshops and staff meetings, discussion with d/t department's case team leaders and personal observations. Secondary data was also collected using literature review of published and unpublished sources to supplement the primary data collected.

3.1. Research Design

This research used both qualitative case study and design science research methods. The case study research method is used to explore the existing knowledge sharing practice among professionals of OWERDB while the design science research method is used to design a knowledge sharing framework that promotes knowledge sharing (March & Smith, 1995; Hevner et al., 2004) .Qualitative research as descriptive research that is focused on observing and describing events as they occur, with the goal of capturing all of the richness of the everyday behavior. Qualitative research takes place in a natural setting of the phenomena being studied (Ngulube, 2009). Its main purpose is to understand the phenomena from multiple perspectives.

The central research question is to assess "why" and "how professionals of OWERDB share knowledge? (According to Yin (2009), In this regard, using a case study approach is appropriate for collecting the data necessary for this research.

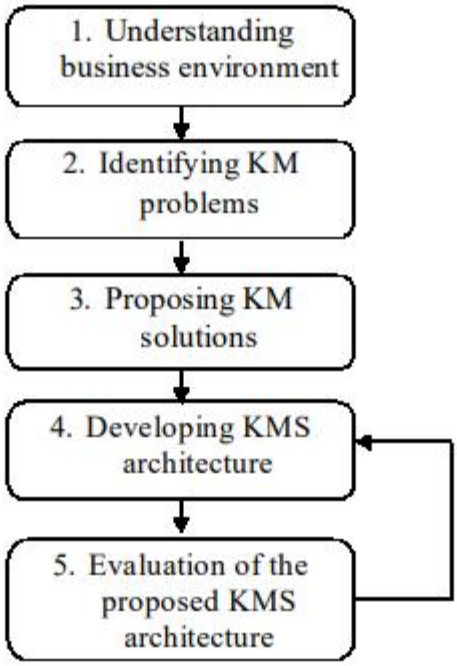

Figure 4. Design science research procedure (Adopted from Hevner et al., 2004.

1. **Understanding of the business process of OWERDB**

step1, the researcher collected data which is relevant to understand the OWERDB's business environment in the water and energy sector knowledge sharing process. This phase provides a detail explanation of the business organization that helps to design an artifact which has high convenience (suitability) to solve the problem.

2. **Identification of Problems**

Step 2, the researcher identified individual and organizational challenges that obstruct (hinder) KS activities to facilitate tacit and explicit knowledge sharing culture through knowledge management system (KMS) in OWERDB. In this stage, literature research and expert interviews are the most common tools that were used to understand the problems thoroughly.

3. Proposing KSM Design solution

Step3, the researcher developed a new KSM design as a solution to the problems identified in phase two. Here, the researcher proposed the KM implementation model. The model is attainable to address the current KM problems and user requirements.

4. Design an Artifact

Step 4, KMS framework design prototype was proposed as artifacts to solve the identified problems in step two. Relevant KMS design options for OWERDB were also identified based on the KMS design goals. Here we translate problem solutions into design solutions. Literature on existing KM theories and KMS tools were reviewed to develop the KMS architecture (Gu et al., 2010)

Evaluation

This study aims at developing a framework. So as to evaluate the design artifact of the framework, the researcher followed Peffers et al, (2012) evaluation methods. These evaluation methods are Logical Argument, Expert evaluation, technical experiment; Subject based experiment, action research, framework, case study and illustrative scenario.

Evaluation According to Peffers et al, (2012), without evaluation, we only have an unsubstantiated design theory or hypothesis that some developed artifact will be useful for solving some problem or making some improvement. This study aims at developing a framework.

The researcher developed an evaluation checklist (attached in appendix II) to evaluate the proposed KMS design framework. The respondents were selected from three departments that represent IT professionals, senior experts from HR and from study and design .The expert feedback is used as an input to check the framework of the proposed KMS design to solve tacit knowledge sharing problems in OWERDB

3.2 The Study Area

This study was conducted interview participants at the OWERDB's regional, zonal, and district offices. OWERD has **399** employees at the regional bureau, more than 700 employees at the 20 Zone level and 4,000 employees at the district level across Oromia.

3.3 Study participants and Sampling Method

The study participants are selected from the technical experts, management, and support staff working at the different OWERDB offices. Purposive sampling technique was used to select the study participants. The rationale behind choosing purposive sampling technique for selecting interview participants is that it permits the researcher to select a case based on features or processes that demonstrates issues of interest in the research and where those features are likely to be present (Silverman, 2005; Denzin & Lincoln, 2000). The interview participants were selected from OWERDB employees at the OWERDB head office, from five zonal offices(Finfine Special Zones, East Showa Zone, Arsi,, West Arsi, and Bale Zone), from four first grade water facilities (utilities) offices(Adama, Bishoftu, Asalla, and Shashamane Utilities), and from four second grade water utility offices (Dukam, Sebata, Burrayyu, and Robe water facilities). Table 2. below provides the summary of study participants.

Table 2. Summary of present's organizations that participate in the interview session.

No	Organization	Position of Interview	Number of interview respondents
1	From head office of OWERDB	Bureau head and D/B/Head	1
2	From head office Advisers	Bureau Advisers	2
3	From OWERDB	Directorates	6
4	From OWERDB	Senior expert	20
5	From OWERDB	Middle class expert	3
6	From selected First grade water Utilities	Senior expert	6
7	From selected Zonal office	Bureau head	2
8	From selected zonal office	Senior expert	5
9	From selected second grade water Utilities	Directors	5
		Total	50

3.4 Data Collection Methods

According to Hopkins (2001), qualitative method allows for more flexibility in identifying factors and practical strategies than the formal, structured quantitative approach and allows for theory development. Qualitative data collection methods include the use of in-depth interviews, document analysis, corporate literature, articles and magazines, which provide a basis for extensive and thorough discussion of the research problem. Moreover, qualitative research approach is one of the main approaches of research methodology. It studies about experiences, behaviors and attitudes from the respondents. Qualitative research approach allows for an in-depth understanding of the research context and enables to obtain qualitative information that are difficult to collect through quantitative research approach. Qualitative research approach helps to get answer to the "how" and "why" research questions. The different qualitative data collection methods are highlighted below.

3.4.1 Interviews

There are different kinds of interviewing techniques: structured, semi-structured and unstructured (Hesse-Biber & Leavy, 2011). Structured interviews involve asking all participants a series of predefined questions and keeping the interview and participant focused on those questions. This method allows for direct comparisons between participants responses. However, it does not allow the participant to elaborate on their own experiences and provide further insights that the researcher may not have considered (Hesse-Biber & Leavy, 2011). Semi-structure interviews involve the development of a set of pre-defined questions that can act as a guide but allow the conversation to remain less rigid. As Hesse- Biber & Leavy (2011) noted, this allows the participants some level of freedom to talk about issues that interest them and additionally allows the researcher to follow topics raised that may not have been considered in advance. Because of its flexibility in allowing the respondents to explain the research questions in more detail while remain focused on the topic, semi-structured interview technique is used as the primary data collection method.

3.4.2 Observation

According to Marshall (2006), observation can be defined as a systematic viewing of a specific phenomenon in its proper setting or the specific purpose of gathering data for a particular study. As Kumar (1996) noted, there are two types of observations. These are: participant observation and non-participant observation. Participant observation takes place when the

observers participate in the activity of the people being observed in the same manner as its member with or without their knowing that they are being observed. Whereas, non-participant observation takes place when the researcher does not get involved in the activities of the group but observes the activity of the respondents passively. This method was also sued in this study to observe how information is handled and shared at OWERDB.

3.4.3 Document Review

Case study research approach often uses many data collection methods. Using two or more data collection methods to collect data from more than one source would help to cross-validate the research findings. Document review would also help to set the research context and formulate the research hypothesis. This study also used document review to provide a basis for extensive and thorough discussion of the research problem. The document review methods used in this study include newspapers, magazines, training manuals, videos, photos, procedure, minutes, reports, organization policy documents, rule and regulations, policy briefs, working papers, and published articles, press releases and Internet websites (Yin, 2003)

3.5 Methods of Data Analysis

Quantitative and qualitative data are analyzed in different ways. For qualitative data, the researcher might analyze as the research progresses, continually refining and re-organizing in light of the emerging results (Catherine Dawson, 2009). According to Yin (2003), Miles & Huberman (1984) and Cresswell, (1998), qualitative data analysis is generally a challenging task. Attride-Stirling, (2001, p. 386) explained that if qualitative research is to yield meaningful and useful results, it is imperative that the material under scrutiny is analyzed in a methodical manner, but unfortunately there is a regrettable lack of tools available to facilitate this task.

Bernard (2000) suggests several approaches to data analysis, including hermeneutic or interpretive analysis, narrative and performance analysis discourse analysis, grounded theory analysis, content analysis, and cross-cultural analysis. In hermeneutics or interpretive analysis, the researcher “continually interpret(s) the words of those texts to understand their meaning and their directives”(p 439).

The standard qualitative data analysis methods including content analysis and narrative analysis are used. The process of qualitative data analysis approach include familiarization with the data collected, identifying a common theme or trends, coding, charting, mapping and interpretation of the result. Coding of qualitative information is done in three steps: initial organization of the raw data in the way that helps to make sense of it, finding a common theme among the different codes, and then formulating a story through connecting the different themes or categories.

3.6 Validity and Reliability

Validity and reliability are the most important issues for qualitative researches. Yin (2003) argues that validity and reliability are not applicable to qualitative research and qualitative researchers' concern should be emphasized towards trustworthiness and encompassing issues like credibility dependability, transferability, and conformability. Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as "real world setting [where] the researcher does not attempt to manipulate the phenomenon of interest" (Patton, 2001, p. 39). Qualitative researchers seek instead illumination, understanding, and extrapolation to similar situations (Hoepfl, 1997).

On the other hand, Patton (2001) states that validity and reliability are two factors which any qualitative researcher should be concerned about while designing a study, analyzing results and judging the quality of the study. To ensure reliability in qualitative research, examination of trustworthiness is crucial. Seale (1999), while establishing good quality studies through reliability and validity in qualitative research, states that the "trustworthiness of a research report lies at the heart of issues conventionally discussed as validity and reliability" (p. 266).

CHAPTER FOUR Data Presentation and Discussions

This chapter explains the existing knowledge sharing mechanisms of employees to share knowledge with one another in the Oromia Water & Energy Resource Development Bureau. The study collected data through interviews, observation and document analysis which was organized into categories and themes in order to answer the research questions described in chapter one. The chapter also highlights the different knowledge sharing mechanisms at OWERDB, factors influencing knowledge sharing and the existing knowledge sharing framework.

4.1. Investigation of Knowledge Sharing Mechanisms

One of the objectives of this study is to investigate the knowledge sharing mechanisms employed at the Oromia Water and Energy Resource Development. Knowledge sharing mechanisms are one of the techniques that the employees should effectively share their knowledge on the job learning. Knowledge sharing activities are set of tasks that are used to share knowledge between knowledge owners and knowledge seekers. This research use Nonaka's SECI(Socialization, externalization, combination and internalization) model to assess knowledge sharing practice. It identifies personification and codification as a main knowledge sharing methods. Personification is a knowledge sharing activities that is used to share knowledge through personal interactions. It is mainly used to share both explicit and tacit knowledge that is resided on codified document and the knower brain that are hard to articulate through one way communication channels.

4.1.1. Personification

The personification method includes formal and informal knowledge sharing methods. Knowledge sharing activities that are used to share knowledge requested by the knowledge seekers are through informal methods. Personification uses informal social networks.

4.1.1.1. Informal methods of knowledge sharing

The two common methods of informal knowledge sharing activities are face to face interaction and telephone conversion. Knowledge sharing through informal methods is undertaken among employees who are colleagues. It helps knowledge seekers to get specific knowledge relevant to the issues that the knowledge seeker is trying to understand.

Face to face interaction

The senior human resource expert at OWERDB explained that *"in our department, we have three one to five (1 to 5 groups' arrangement). It is simple to discuss any issues face to face during 1 to 5 discussions. Without any fear, we can share knowledge freely and voluntarily. If there is a problem in my duty, I will ask one of my colleagues who have the better experience for the problem. We also have a good chance knowledge exchange on coffee ceremony.*

Another respondent also added that *"more than written documents, there are people around you who have an experience in your work. Whenever you chance meeting a problem, you ask them. There are concepts which you cannot understand when you read documents. You also get the chance to ask every concept. But this is depending on voluntarism and friendship".*

The senior monitoring and evaluation expert added that:

When I hired here, I did not get any document procedure, guideline, proclamation, rule and regulations I can't get ant training but simply I got briefing from my senior in the department in clear way. If I read from document it is difficult to understand within a short period of time like that so personal face to face interaction makes it easy to understand my job.

The findings from the respondents show that direct face to face interaction has a great benefit to share the knowledge simply. It is a natural way of sharing experiences and giving solution for problems .This conform the idea of Socialization (tacit-to-tacit) consists of sharing knowledge in face-to-face, natural, and typically social interactions (Dalkir, 2005).

♣ Telephone Conversation

Telephone conversation is a standard communication medium used for personal interaction in the office. OWERDB does not have modern IT based system that facilitates personal interaction for knowledge sharing. Near the past year there is intercom communication in the head office installed by Phillips Company. At this moment it is out of use. Telephone is used to solve distance barriers for knowledge sharing among employees of the bureau Zonal and Utilities for different events.

The Data base Admin of Adama explained: Most used mechanism for communication is telephone call. Most of the service needs communication. Without office phone or mobile phone impossible to communicate with employees. While you serve your customers, you may have a problem on billing system. You pick a telephone and call to consultant to get the information quickly and solve the problems.

As the senior (HRM, Community participation, planning Budget and evaluation, Contract Administration, Drilling supervision) all of them assured and explained:

"*We frequently use phone calls to notify and accept any information and report from zones, water utilities and district. Most of the method of communication our organization bases is a telephone communication. Most of the invitations to the Conferences or meeting and short term training, monthly, quarterly and yearly report is done through telephone calls in addition to Fax and email. To collect simple report from Zones to the bureau, our organization primarily uses telephone calls."*

The bureau adviser explained:

Everything is dependent on telephone. Without telephone difficult to communicate with our leaders, and lower level employee. Not only is this it difficult to communicate with our parents for daily interaction. So telephone communication solve distance barrier from district to head office as well as from bureau head to employees.

Therefore most of the respondent indicated that telephone is the main communication channel that is used for informal knowledge sharing.

4.1.1.2. Formal Methods of Knowledge Sharing

Formal knowledge sharing method includes; on the job training, meetings, team work, email communications, social networking and experience sharing among employees in OWERDB.

According to Nonaka (1994), formal exchange mechanisms, such as procedures, a formal language, and the exchange of handbooks will ensure that people will exchange and combine their explicit knowledge (as cited in Wabwezi, 2011, p.15).

Taminiau et al. (2007) list other examples of formal knowledge sharing as meetings and organized brainstorm sessions. The authors assert that a culture, which makes sure that explicit

knowledge is shared, does not preclude the sharing of implicit knowledge (as cited in Wabwezi, 2011, p.15).

Access to potable water service is now the burning issue in our country. OWERDB is committed to providing better public water services. It motivates employees to use existing knowledge from proclamations, manuals, standards, rules, regulation and procedures. The Bureau organizes different knowledge sharing mechanisms that encourage employees to share knowledge through personal interaction. These formal knowledge sharing mechanisms are used to share standard water service knowledge and personal experiences which are necessary for the task.

4.1.1.2.1. On the Job Training and Development

On the job training is a type of training that is organized to fill the knowledge gap of employees on the task. It is mainly organized to share the experience of knowledge experts within the organization or outside the organization to less experienced or junior employees. OWERDB has a long-standing tradition to organize on the job training to share knowledge from seniors to junior employees through face to face interactions. Respondents mentioned that training is organized to provide basic knowledge, which cannot be complete by other methods of knowledge sharing.

> *Drinking Water, sanitation and Energy Director explained: Detail Training and Capacity building is our mandate every year. Experience sharing without tanning is impossible today; over 1.2 billion people lack access to electricity. At least 2.5 billion and 768 million people remain without access to improved sanitation and water, respectively. Providing these services sustainably requires integrated planning and management, including securing a quality water supply tanning.*
>
> *As OWERDB's senior project design expert explained: "If you do not have basic knowledge on the job in the department, you require formal training .Without tanning difficult to work on water project. For example difficult to use Geophysics instrument for joiner employee. Even after the training, you met a problem that would be solved by discussion with colleagues. However, discussion with colleagues will only help to solve limited knowledge gaps faced by employees at bureau". To avoid accuracy error in using Geophysics instrument on the field training is mandatory.*

It can be understood that training as knowledge sharing method is used to acquire mainly explicit knowledge which gives wider understanding on the job. Training creates amoral and ability to obtain knowledge through personal interactions.

OWERDB training contains both theoretical and practical training especially on how to use Geophysics instrument, Total station , how to use other Engineering equipment and Engineering software's as well as how to supervise project quality. This is useful to share both explicit and tacit knowledge.

Water resource management Director explained: Tanning in this department is mandatory. Because Water is one of the most basic human needs and is indispensable to almost all economic activities, including agriculture, energy production, industry, and mining. With impacts on health, gender equity, education and livelihood, water management is crucial to sustainable economic development and the alleviation of poverty .The other mandatory things to stress on improving capacity of professionals through training is the declining groundwater supplies and water quality issues. Climate change will (degrade) worsen the situation by increasing water stress. Groundwater reserves are depleted in many places, leaving current and future generations with close to no buffer against increased climate variability.so those challenges makes training and development every year in our plan.

The Design Director/ mentioned "the importance of on the job training:" Training on the water contains both theoretical and practical activities. For example, when we look at project study & project Design training, we saw practically how our trainer process study of one project .prepare report and send the data request up to the last point and how to practice water instrument (Geophysics) properly on the field. After training, we will not have difficulty to apply the acquired knowledge in our work". During the training, not only technical knowledge but also water culture is shared with trainees. Training also creates a forum for discussion to share experiences among employees working in different Oromia Zones". From different geographical land structure of Oromia we get different experience.

As OWERDB's drinking water and sanitation works contract administration Director explained: "In the past, HR organizes professional trainings at least one a year in Adama

or Batu town where each department assign staff for training especially technical department gives training on Engineering software :-AutoCAD, Water cad, Arc-GIS, Globe map, Total-station, and other Engineering software. It also trains on how to supervise and control status and quality of construction on water project .How to supervise and control quality of construction material within the given specification standard. These trainings include courses that help the training participants to get basic knowledge related to their work. But it is not going properly at this moment because of different factors like budget and security issues in Oromia. When you try to apply the knowledge you obtain through training, you may still face knowledge gap in properly performing your duties in some other areas".

As the Design Director confirmed "In trainings we share different experiences and then we select one best experience for our future work and use as a model for similar case.

This is to say that training is used as knowledge sharing mechanisms for what is defined in the training module. OWERDB prepares procedure manual for each task. The organization also believes that procedure manuals are not sufficient to share organizational knowledge among employees. Sufficient knowledge about water is not acquired through formal education in universities in the country. Thus, after employees join the institution, the institution organizes different types of on the job training programs to assist employees, acquire basic water knowledge through face to face interaction. Training is purposefully organized to share basic knowledge to employees that gives them a general idea on the task. It is mostly used to share explicit knowledge. Most of the knowledge required for the task is tacit knowledge that requires close mentorship by senior employees.

4.1.1.2.2. Succession planning

Succession planning is a process of mapping a retirement plan and identifies a replacement staff for a particular post. Knowledge transfer through succession planning represents a proactive step towards the empowerment of new employees and consequently, avoidance of loss of knowledge by the organization. As Stovel and Bontis (2002:309) argue "knowledge management within firms is the heart of succession planning". From the interview findings, succession planning as a formal knowledge transfer technique did not appear to exist. Some of

the respondents only indicated that in one way or another, people familiarised themselves with job in their department and as such acquired knowledge through experience. The HR expert at OWERDB stated that" In our organization succession planning is not functioning well".

4.1.1.2.3. Communities of practice

Communities of practice are voluntary groups of people who have a common sense of purpose and common interests that they share work related knowledge and experience and engage in a collective process of learning (Albers 2009). Peterson (2012) indicates that in order to retain knowledge, organizations rely on communities of practice for the purposes of identifying, capturing, and transferring knowledge. Communities of practice that are working on company projects and initiatives share both tacit and explicit knowledge by taking information and materials and refining them to a point where they can become corporate positions on topics.

Regarding the use of communities of practice at OWERDB, the interviewees mentioned that they held meetings where they shared different ideas but never realized that this is a form of a community of practice. Other forms of communities of practice mentioned by respondents include seminars, workshops and conferences. However, the interview respondents indicated that these knowledge sharing mechanism are not purposely implemented to bring staff together for effective knowledge transfer and sharing.

4.1.1.2.4. Coaching

Some of the interviewees mentioned that coaching is used to ensure that junior staff members receive guidance from more experienced staff on how to perform specific tasks of ongoing projects. One of the interviewees (the water Utility Manager of Burayyu town) revealed that: "*during the weekends and when he got some spare time, together with senior experts, he supervises the projects under his office and those projects managed by independent contractors."* This is one way in which OWERDB's leaders coach contractors and their own staff to make sure that appropriate techniques and guidelines are followed in project implementations. *The HR manager also indicated that sometime she uses coaching for controlling the employee on job.*

4.1.1.2.5. Knowledge repositories through documentation

The researcher aims to establish whether the various Directorates in the Bureau have knowledge repositories. From observations made during the assessment, it was evident that the Bureau has a library and a record office at the head office, which form part of knowledge repositories of the Organization. Among all interviewees, only the Bureau librarian mentioned that the libraries have a knowledge repository where they store all the publications and reports related to water projects. This is one way of storing the knowledge created through publications for future reference by staff professionals, researchers, and university students. These publications were stored only in hard copies.

4.1.1.2.6. Story telling

In regards to this method, some of the interviewees mentioned that they held numerous informal discussions. However, such discussions concerning various tasks were not being viewed as formal knowledge sharing mechanisms. Narratives that constitute operational knowledge have been considered as a knowledge transfer tool (Prusak 2001). From the interview findings, there were discussions held during informal sessions like tea breaks to discuss issues concerning various tasks which can translate into knowledge sharing.

4.1.1.27. Orientation,

Orientation was another knowledge sharing mechanisms that the researcher examined. The human resource manager mentioned that it was a requirement in her unit that new employees in the Organization were oriented. Human resource manager had mentioned by indicating that it was a requirement that every new employee in the Organization be oriented, However, majority of the interviewees, show that no correct induction takes for the new comer before coming to his department. They said that the orientation provided to their employees mainly depended on what each individual employee was required to know about the Origination. In short, no formal orientation programs exist specifically related to activities the employee would be performing.

4.1.1.2.8. Mentorship

Mentoring is a process where knowledge is created through transformation of experience and embedded knowledge into perceptions of the person (Lam 1998; Nonaka 1994).The process of knowledge sharing through demonstration and supervision on the task is called mentoring. It is an intentional one-to-one relationship between employees that involves a more experienced worker teaching new knowledge and skills and providing encouragement to a less experienced worker (Bryant, 2005). Mentoring is effective to share process knowledge that contains different knowledge components to accomplish a task. Such knowledge is tacit in nature and difficult to share outside the task context. It is effectively shared when an employee observes the process from the start to the end while the senior employee does the task. This gives maximum opportunity for knowledge seekers and knowledge owner to interact with each other to know what knowledge the task needs, where and when the knowledge is acquired, what mechanisms and rules apply to process the task and what content and format the final output should contain. A Monitoring Director at OWERDB explained the use of mentoring by saying" We assign new employees to the senior staff to observe and learn the task and work independently. Evaluation process experts also learn from each other."

4.1.1.2.9. Job rotation

This was another aspect where interviewees provided varying responses. For example, the Director for contract Administration stated that it was not possible to rotate job of professional staff due to the difference in field of specializations. However, the same interviewee acknowledged the fact that support staffs are usually rotated to various departments even without being consulted. For instance, job rotation is done among geologist, hydrologist and electromechanical expert. But, the interviewees have indicated that it is difficult to control the accountability of each employee's job. However, in other departments, e.g. the Human Resources, rotation is only done to replace or fill a vacant positions, resulting from an attrition challenge but not necessarily to ensure knowledge sharing.

4.1.1.2.10. Performance appraisal

Performance appraisal is one of the HR practices that can be regarded as a mechanism of linking employee interests, motivations, capacity and expertise with organization objective (Jinchveladze 2009). PA process can act as an effective information exchange tool, which

might later be transformed into knowledge by the employees. The majority of the interviewees stated that performance appraisals are conducted yearly. This is when planning is prepared for the budget year and when consultancy study document appraising is reported.

4.1.1.2.11. Reward and Incentive Systems

Rewards can take various forms, such as recognition, promotion, autonomy, empowerment and letter of appreciation. The majority of the interviewees participated in this study mentioned that among the rewards stated; only recognition and letter of appreciation were being used at OWERDB in the past. However, the HR mentioned that after the performance appraisals, employees would be rewarded by promotion or increasing their salaries. The majority respondents also mentioned that rewards helps to retain employees especially those deemed to be knowledgeable in certain fields. But, the interview respondents indicated that OWERDB do not yet provide rewards and incentives to its employees.

4.1.1.2.12. Phased retirement

Phased retirement is a mechanism to make sure long serving civil servants do not leave suddenly by providing incentives for them so that they can transfer their knowledge over a year or two before their retirement.

The retirement age of public servants shall be sixty (60) years .As the former Director of Human Resources at OWERDB stated that phased retirement programs take advantage of the knowledge and experience of skilled employees and use them as mentors. This can only materialize if retirement is properly planned and managed. If not done properly, the institution will end up losing both explicit and tacit knowledge of the experienced staff on their retirement. Some of the senior managements at OWERDB stated that they have faced staff attrition challenges, either as a result of retirement, death or resignation. When faced with this challenge, OWERDB usually hire back the retired senor experts as consultants to fill the gap in expertise. However, this is not done with support staff.

4.1.1.2.13. Handing Over

There is no established handover system implemented by OWERDB that require the experts/Directors to handover institutional files and documents they have been working on for years before they are allowed to receive a final clearance to leave the institution. Because of this gap, the institution loses both explicit and tacit knowledge of the organizations memory.

As the majority of the interview respondents indicated, the handing over system only require that employees who are leaving OWERDB to return physical materials (e.g. computers, office tables and other similar materials). The OWERDB has given very little or no attention to designing a system that would allow for the transfer of tacit knowledge. When employees working on multi-million projects retire or leave the institution for other reasons, the institution will lose knowledge on the project history and technical knowledge thus affecting the overall success of these projects.

4.1.1.2.14. Knowledge retention policy

Organizational knowledge comprises of both tacit and explicit knowledge that is found in an organization (Peterson 2012:173). OWERDB has no formalized knowledge retention policies.. One of the main objectives of this research was to better understand how organizational knowledge flows in the institution. From the interview findings, both tacit and explicit knowledge are considered important assets in the organization. For instance, the librarian at OWERDB indicated that one needs tacit knowledge when discussing issues with a customer rather than making references to recorded knowledge. On the other hand, the human resource manager indicated that explicit knowledge is important since recorded information is used for reference. Furthermore, the interview participants were asked to describe some of the risks associated with the loss of tacit knowledge in the institution. One of the heads of Water Resource management department highlighted that when such people leave the institution they leave with the institutional knowledge and the risks of losing tacit knowledge is very high particularly if it is not captured and archived. As the librarian at the OWERDB indicated, the risk is mainly related to the deterioration of the quality of work because it is impossible to replace the loss of 30 years of experience within short period. The Audit and Inspection Director also conveyed similar message saying, “The risks of losing tacit knowledge are very high… if you don’t document them properly. When a person leaves the institution, he/she will leave with institutional knowledge accumulated over many years.” He further highlighted that losing tacit knowledge is like moving the whole institution one or more years back. This simultaneously affects the vision and strategic planning of the institution. Knowledge retention aims at capturing critical knowledge and expertise that are at risk of loss when employees leave an organization (Kim 2005; Dan 2008). Knowledge retention is a process of capturing and preserving knowledge in the institution for future use. The knowledge retention

component of the interview aimed at establishing how knowledge was captured and retained at OWERD. Particular attention was paid to how the Bureau determined the knowledge to be retained and how this knowledge was retained. , .Interview participants were asked to state the criteria that are currently used (if any) to determine which knowledge needs to be retained at OWERDB. The majority of the interview participants indicated that there are no formalized criteria that are used for determining which knowledge should be retained. Others indicated that they shared knowledge especially on carrying out tasks that needed consultations with more knowledgeable staff as a way of knowledge retention. From the documents reviewed, the researcher established that although the institution has developed various policies, there is no policy developed on knowledge retention. However, from the BPR document developed in 2013, the Bureau had documented procedures and standards for various tasks requirements in accordance with the organizational strategy.

4.1.1.2.15. Role of ICTs in knowledge retention, transfer, and knowledge sharing mechanisms.

ICT resources can be an important part of any knowledge retention strategy but executives must be careful not to view technology as the solution to their knowledge retention problems (DeLong 2004). ICTs are just enablers. The knowledge-based view focuses on the organization's ability to gather, produce, maintain and disseminate knowledge. In this section, the researcher investigated computer literacy and access to ICT; freedom of access to internet; and technologies used to retrieve, share and disseminate knowledge. Technologies are enablers in knowledge retention, sharing and dissemination (Carisson 2008; Buckman 2004). The respondents were asked to indicate which ICTs they have access to in their institution. Some of the respondents indicated that they have access to internet, libraries, websites, intranet/email, computers, and databases. Very few respondents indicated they have access to discussion forums, cell phone wikis, video conferencing equipment, fax, and telephone.

As the ICT expert of Adama Utilities explained "Majority of our employee had access to internet websites, intranet/email, and computers and access cell phone, fax, and telephone, social media, and access to billing system Database."

Majority of the interviewees in OWERDB also confirmed that they had access to internet and through this they could access social media like Skype, Facebook and Twitter. They said this

was facilitated by the use of smart phones and other gadgets, like IPad. Therefore ICT is an element crucial to the linkage of information and knowledge integration in organizations. ICT removes some of the existing knowledge sharing individual and organizational barriers. ICT has rapidly changed the way organizational staff members communicate. For instance, it has significantly improved a manager's ability to monitor individual's performance, allowed employees to have more complete information to make faster decisions. Besides, ICT has made it possible for people in organizations to be fully accessible, anytime, regardless of where they are (G.O Ofori and R.E Kommey (2013)). So by using ICT better working environment can be achieved.

The presence of ICT services in the organization reduces knowledge sharing efforts and social barriers to access knowledge in the organization. ICT services also promote individual level knowledge sharing by creating communication channels. The services should be designed to be useful to the purpose and easy to use so as to predict knowledge from search engine like google.

ICT services like Internet facilities on the job learning by creating opportunities to access external knowledge sources. It would be impossible for employees to solve new problems unless employees have ICT support to access internal and external knowledge sources.

As the Senior System Admin mentioned the benefit of billing system in their directorate:

Customer service expert does not need to ask other person. He can see all available documents in the online database and download what they customers want with few minute.

The researcher believed that ICT services overcomes both distance and social barriers to access knowledge and promote on the job learning.

4.2. Codification

The Bureau has a practice to codify its empirical knowledge in the form of procedure manuals, policy guidelines, and regulation documents so that new employees can learn about the organization's practices by reading those documents. These documents contain power and duties of the organization, strategy planning, and other knowledge that are captured as an effective knowledge to solve similar problems. Employees are expected to strictly follow the procedure manual to avoid mistake in performing their tasks. They are also fully responsible for any risks if they do their task outside the procedure manual.

Respondents mentioned that they read these documents to obtain new knowledge they need for their task. As a Human Resource expert explained: "The first task you do is check manuals on your hand. They are easily accessible. Then if there are concepts which you cannot understand after reading these documents, you ask your seniors or other professionals."

This respondent explained that reading a bureau's documents is the first step in the knowledge sharing process. It provides a basic understanding about OWERDB work practices for new employees. However, some respondents have mentioned that they were not given any procedure manual and other important documents that help them to better understand about the Bureau's work when they were hired.

The other interview respondents stated that although they were not give procedure manuals and guidelines when they were hired, they learn from their peers and work reports compiled by the current and previous employees of OWERDB. These work report documents contain problems encountered and suggested solutions, which are useful not only for junior employees but also for senior employees. Knowledge is an expandable resource with assimilation of new information and knowledge.

Employees also learn from mid-term review, quarterly and yearly reports as these documents contain evaluation reports and good practices that other employees can learn from.

Many employees also use Internet, websites, email, Facebook, and telegram to acquire and share new information & knowledge outside the bureau. Most of the interview respondents indicated that one of the most limiting factors influencing their job is the frequent breakdown of internet. This is because, having access to good internet connectivity increases knowledge capturing and sharing efforts by serving as alternative channel to access new knowledge which would not be possible without it.

4.3. Factors influencing knowledge sharing mechanisms

There are organizational, individual, and technological factors that influence knowledge sharing mechanisms. Knowledge sharing mechanisms is a set of methods which are exposed to different threats. Interview respondents explained that organizational, individual, and technological factors are the main factors influencing the promotion and knowledge sharing mechanisms at OWERDB. These factors are described in the following sub-sections.

4.3.1. Organizational factors

Organizational factors refer to the organizational variables that affect employees' knowledge sharing behavior. lack of motivational schemes for knowledge sharing; lack of budget to create, acquire and share knowledge; lack of regular plan to share knowledge; lack of knowledge sharing platform; to minimize or alienate these challenges, the OWERDB should provide organizational support by devising motivational schemes to share knowledge, regularity plan to share knowledge and by allocating reasonable budget for knowledge sharing and implement knowledge sharing platforms such as training, workshops and conferences on report regularly; Organizational support with regard to incentives is very relevant to any organization. Therefore, incentives can motivate employees to perform their task including knowledge sharing effectively. Any type of incentive has a motivational factor to encourage employees to engage in extra organizational activities.

The Senior Electromechanical expert interviewed for this research explained about the significance of incentives stating, "For improving achievement of the organization, there should be incentives for those who achieved best performance in their work. If best performing employees are not incentivized and valued, their productivity could decline overtime and thus affecting the institution's overall success."

The Facility Case Team Leader at OWERDB also described that "The organization should create conducive environment and incentive mechanisms to promote knowledge sharing." Providing incentives to the best performing individuals will encourage other employees in the organization. The top management of Oromia water and energy resource development bureau should design a suitable reward system and plan a fair implementation mechanism while also establishing good office layout. Unless the organization supports to create the best organizational culture, there will never be innovative or collaborative culture work.

The Audit and Inspection Director explained that "As to my understanding, there is a loose organization culture which is not yet fully applied. This is because even though the top management has initiations to create innovative and collaborative culture. Turnover rate of leaders is affecting its implementation thus leading to very low organizational knowledge sharing culture." This challenge is observed in many other similar government organizations mainly because of the past politics.

4.3.2. Individual Factors

Individual factors are attributes of individuals that influence personal motivation to engage in individual level knowledge sharing activities. At individual level: lack of time to share knowledge and lack of satisfaction by the existing knowledge sharing mechanisms; hence, to alleviate strategies should be devised in consultation with professionals should diminished the time constraint. The three attributes of individual factors that emerge from empirical data are work experience, personal interest, and educational background.

4.3.2.1 Work Experience

Experience helps effective knowledge sharing between partners when prior knowledge is used in exploring new knowledge in the organization. An employee, however, based on any one of the factors can share knowledge with his colleagues in the intention of improving his job. Skyrme (2002) Experience is the exposure of an employee to a particular task for an extended period. Through experience, an individual employee can retain knowledge on how to properly perform tasks. Most of the senior level interview respondents mentioned that new employee's lack of job experience in the Bureau motivates them to engage in knowledge sharing activities.

As the Senior Water quality expert of Bureau explained that the knowledge that is relevant to do the task is mostly a practical knowledge, which is achieved through experience. Thus, the senior experts who want to see the success of their organization are motivated to share the tacit knowledge they accumulated through work experience to those who have no experience. A senior geologist who participated in the interview also agrees with the above idea. From his more than 30 years of services at OWERDB and as an expert who involved in studying and implementing more than 100 water projects in Oromia region, the senior geologist explained that practical knowledge is very important to solve most problems faced by employees at work. This senior export strongly believes in capturing and sharing tacit knowledge for improving the performance and effectiveness of the OWERDB.

According to the responses from many of the interview participants, senior experts have rich knowledge, which they acquire through working on the task for a long period. Thus, transferring this knowledge to recent hires and junior experts is very important for the success of the organization.

4.3.2.2. Personal Interest/Commitment

Personal interest is defined as employee's intention to acquire new knowledge for self-development and giving support for others to develop themselves. Knowledge sharing activities can be achieved through personal interest.

As a Senior Contract administration and construction directorate expert stated, "If we have no interest to share knowledge for and from others, we can get nothing. Life is about swapping something. You give what you have and accept what you do not have." Therefore, quote from the two senior management interview participants highlights the importance of personal interest as a key factor to knowledge sharing.

A Senior Water Resource Management Directorate expert also added that "Our attitude to share knowledge is very weak. Our lack of personal interest limited us from sharing knowledge among ourselves. Most people are running after their personal advantage and life." The communication case team leader also stated that "Our attitudes develop from our culture. Our culture is not open. We have no good attitude to share for and from others." Negative attitude or lack of personal interest is considered the main constraint that influences the current knowledge sharing practice of the OWERDB. The Bureau should to do awareness creation on the importance of explicit and tacit knowledge sharing mechanisms as well as set protocols/rules for the organization to save institutional memory.

4.3.2.3. Educational Background

Educational background is key to effectively perform a given professional task. Education is the main formal knowledge acquisition method. The Senior Community Mobilization expert pointed out that "Education is a standardized way of knowledge capturing that gives you a general framework and skills for doing your task." But, most of the theoretical knowledge obtained through formal education needs to be supported with hands on practice in order to make it useful knowledge that can be applied in performing actual tasks. Although the Bureau assigns employees to positions on which they relevant educational background, the researcher have observed and talked some employees and leaders who faced problems working outside their qualification.

For instance, the HRM of Burayyu town water utility indicated that employees can temporarily or permanently be assigned to positions in which they do not have relevant educational

background when some critical positions becomes vacant due to manpower turnover or retirement.

The Bureau's HRM Director also confirmed that in the past years many zonal water Bureau head and town utility Directors were mainly political appointees that do have relevant educational background. This kind of assignment can reduce the output of the organization thus affecting the country's overall economic performance.

The researcher also observed that when employees are assigned to new position which they do not have relevant educational background, they will face challenges in effectively performing the tasks assigned to them. This challenge may inspire them to collect new knowledge from other knowledge sources. So, education is necessary to acquire basic knowledge that helps to learn quickly on the task by assimilating new information. Based on the information collected during the interviews, the Bureau also recognizes this fact and organizes different on the job training programs to fill employee's simple knowledge gaps.

The Bureau's HRM director also explained that districts are obliged to provide services as long as it is stated in the procedure manual whether they have qualified professionals to provide the service or not. This gap in technical skill or knowledge, motivate the district offices to acquire or fill the knowledge by contacting specialists at the OWERDB's head office .When knowledge seekers know their knowledge gap and try to fill their gaps, effective knowledge sharing can occur between knowledge seeker and knowledge owner. Individual level knowledge sharing also requires close social relationship between the knowledge seeker and owner. Knowledge is an intangible resource which cannot be monitored once it is shared to other person. As a result, mostly, knowledge owners prefer to share their knowledge to the person with whom they have closer social relationship.

4.3.3. Technological Factors

Technologists used technology theories to promote individual level knowledge sharing by providing tools and communication channels that overcome social and distance barriers (Al-Ma'aitah, 2008; Ali & Ahmad, 2006; Hendriks, 1999; Daft & Lengel, 1984). ICT support in the form of extranet, web service and intranet play major role in bridging gaps of time and space between members of knowledge communities (Hoof, 2004).

Regional Wash Coordinator highlighted that there is a limited ICT infrastructure between the OWERDB head office Bureau, Zonal, and District branches throughout the region. Some zones and many districts have very little internet connection while those closer to the head office Bureau have better internet connection. Although there are some infrastructure is in place, there is very little access to the ICT services.

The challenges of capturing, organizing, and disseminating knowledge in inter organizational contexts can be facilitated by an effective ICT support. ICT does not only provides quick and accurate access to databases and stored data but it also creates a link between organizations by increasing the connectivity between them thus providing internet-based discussion groups or electronic meetings that can facilitate knowledge sharing (Turban, 2006; Hendriks, 1999).

According to the interview respondents, the existence of ICT infrastructure and its accessibility can promote inter organizational knowledge sharing among employees. In this regard, ICT infrastructure highly contributes to the facilitation of knowledge sharing within and between organizations. Moreover, it will also increase the simplicity of sharing knowledge.

4.4. Existing Knowledge sharing mechanisms on the job learning

Technology based knowledge management service can take any form of ICT infrastructure and software that promotes knowledge sharing. These are Knowledge sharing mechanisms include Internet, Intranet/portal, websites, e-mail and so on. The deployment of IT based knowledge management tools in the organization increases efficiency and promotes knowledge sharing activities. According to the interview respondents, OWERDB has no integrated common IT based knowledge sharing mechanisms that facilitate knowledge sharing activities. The benefit of using IT based knowledge sharing mechanisms is to improve the quality of work. Most respondents mentioned that IT based knowledge sharing mechanisms has a great benefited to facilitate the process of tacit knowledge sharing activities. The Database and System case team leader of Adama town explained that he has prepared shared folders for all customers to facilitate knowledge sharing with respect to system and database case team. But, there is no common data sharing system implemented for all departments within the utilities. The shared folders are used to exchange ideas on problems encountered on job and their suggested solutions. Thus, the usefulness of the shared folder system is very high. Almost all the interview respondents described the benefit of having internet access in acquiring

knowledge from a variety of sources and sharing it with their colleagues. They also indicated that internet helps them to overcome distance barrier in acquiring and sharing knowledge.

The water resource management director described that lack of IT tools can reduce efforts of knowledge sharing activities. The responded also indicated the lack of centralized knowledge sharing mechanisms at OWERDB. Furthermore, paper based manuals, procedure, and proclamations are not easily accessible to every staff member and are not very convenient to use or share as compared to digital information. Most interview respondents agree that without a centralized organizational memory and knowledge sharing mechanism, sustainably improving the performance and growth an organization is challenging.

The Senior Energy case team leader explained: "We have no common knowledge sharing system. It is not good for the organization because if the key employees leave the organization, the new employee will starts from the scratch." Thus, having a centralized knowledge management system can serve as a knowledge source for all employees. Implementing an integrated and centralized knowledge sharing mechanism would make knowledge retaining and sharing very effective.

The resource administrator and logistics director explained: Knowledge is an intangible resource which cannot be easily managed like other physical resources .When an experienced employee leaves the organization the attention given to the laptop and tables which have a price of less than 20,000 while the tacit and explicit knowledge resource in the hands of that employee is lost from the organization. That resource is not estimate with simple value. For instance in the past year one of the geologist who has 20 year experience live the organization .The bureau can give him clearance for old laptop and old table which have not estimated to 10,000 EB. But no one can have knowledge about 50 project study document and his 20 year tacit knowledge. One project is study document have at minimum a price of 600,000 to 1,000,000. Therefore OWERDB did not effectively utilize its knowledge resources. Knowledge management activities are not getting attention at all. There is no clear idea how knowledge is shared among employees and used to achieve the overall organizational objectives. Knowledge was managed by people who possess the knowledge only by himself. It is a fleeing of his interest whether share or not.

Summary

This chapter has reviewed the concept of knowledge, knowledge sharing process knowledge sharing mechanisms, knowledge management and factors influencing knowledge sharing and barriers to knowledge sharing in the current literature. Knowledge management is untouched issue in Ethiopian institutions especially nonacademic service giving government organization.

Knowledge sharing is a two-way interaction that requires active involvement of the knowledge owners and knowledge seekers/receiver. The goal of knowledge management is to facilitate knowledge creation, storage, dissemination and application so as to increase organizational capability to convert knowledge into business values.

Knowledge sharing is affected by organizational individual and technological factors. Although there are many literatures on knowledge sharing, individual level knowledge sharing is not well investigated. In addition, research conducted in one context is not directly replicable to other context. This call for case study research to build an integrated theoretical framework from empirical data that will serve as a lens for future study on knowledge sharing mechanisms on the job learning. The next chapter will discuss the research methodology

CHAPTER FIVE: Designing a Knowledge Sharing Mechanisms Framework

This research aims to design a knowledge sharing framework based on the knowledge management implementation model in order to facilitate the explicit and tacit knowledge of employees. This study mainly focused on the design of knowledge sharing mechanisms framework that can retain ideas gathered from literature, and explicit and tacit knowledge of each employee in the OWERDB organizational memory, reduce the turn-over effects to improve the knowledge sharing mechanisms of the explicit and tacit knowledge among all employees within the organization and increase the entire performance of the bureau. The researcher designed the knowledge sharing mechanisms framework based on the information gathered from interviews with the OWERDB employees and management staff and from literature review. The proposed framework has several implications for improving knowledge sharing at the OWERDB. First, the framework provides a basis for directors to map their knowledge sharing mechanisms in order to understand the flow of various types of knowledge in each stage of learning. This enables directors to match desired knowledge flow with proper mechanisms. Second, the framework highlights areas where knowledge-sharing mechanisms are lacking and attention is needed to ensure effective knowledge transfer. Third, mapping knowledge sharing mechanisms on a single chart allows directors to see the "coupling" between various mechanisms. This shows OWERDB may have such kind knowledge sharing mechanisms on the job learning.

Description of the proposed framework

Figure- 5 shows that knowledge is shared between the knowledge owner and knowledge receiver. The OWERDB professionals can act as both a knowledge owner and a knowledge receiver based on their need for knowledge at different times. The knowledge owner is the knowledge holder who shares knowledge with the knowledge receiver when he/she asks him/her for the knowledge required. The knowledge receiver is the knowledge seeker who has need for knowledge which compels him/her to ask the knowledge owner for sharing knowledge. In this process of KS, some components act as the prerequisites for KS, some

components acts as the facilitators and barriers to KS, and some components acts as the consequences of KS.

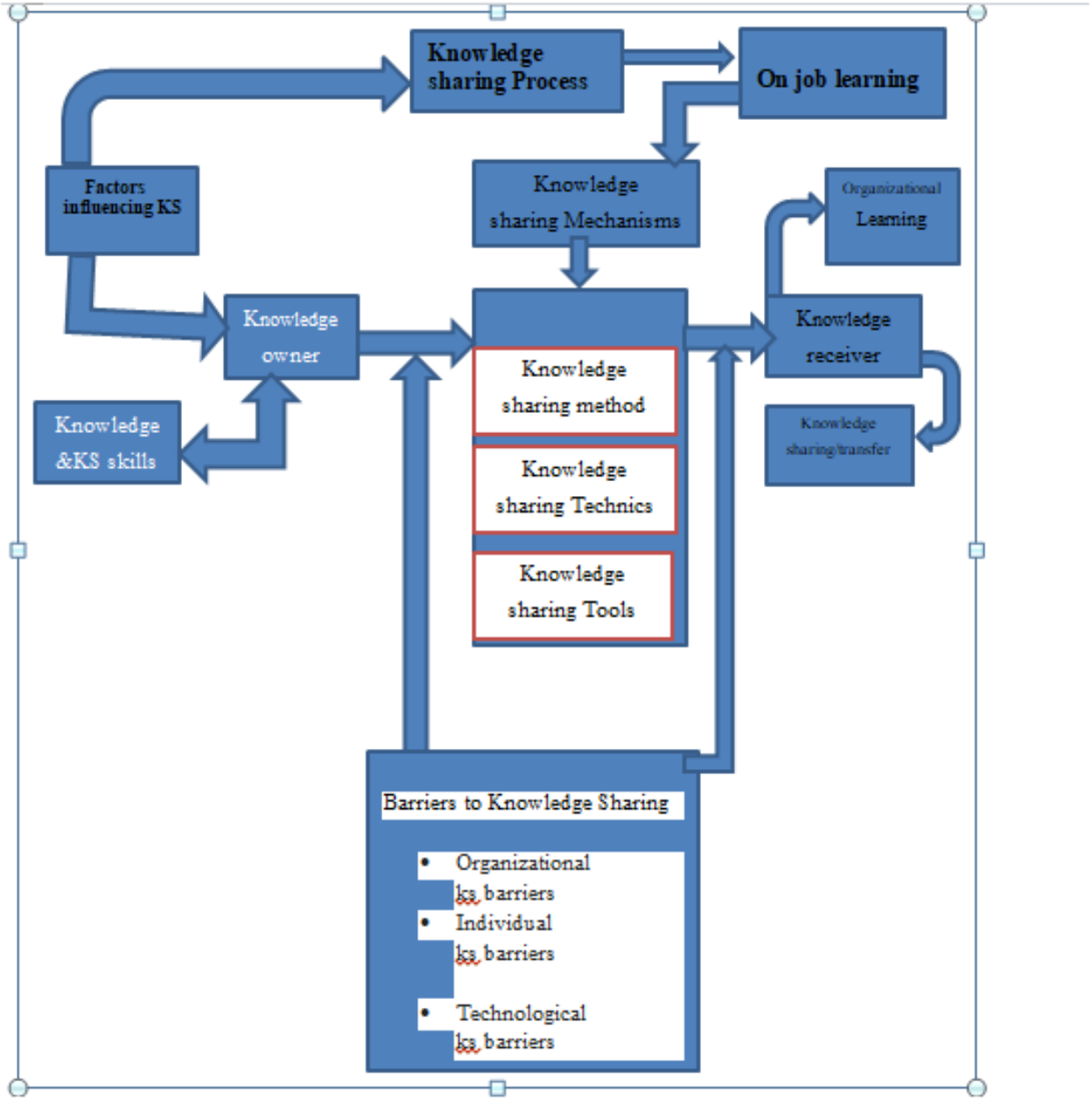

Figure 5; Proposed Knowledge sharing mechanisms theoretical framework for OWERDB

Table 3 Knowledge sharing process on the job learning

Prerequisites for KS	Facilitators of KS	Barriers to KS	Consequences of KS
Intellectual Resources/knowledge asset and professional skills Factor influencing KS	Ks mechanisms • Ks methods • KS techniques • KS tools	Individual Organizational Technological	Organizational Learning KS/Knowledge transfer

Intellectual resource is considered as the knowledge assets of the OWERDB professionals which will make them sharing knowledge with others. There exist some factors in the OWERDB's which are responsible for influencing KS. While sharing knowledge, OWERDB professionals needed to be equipped with some skills devoted to KS.

After meeting those preconditions the OWERDB professionals will be committed to KS by using some methods, techniques and tools based on their suitability to meet the purpose. In this course, some KS processes will take place within those methods, techniques and tools used for sharing knowledge. On the process there will be some barriers to KS which may influence the overall KS process. Once knowledge is shared by overcoming the possible threats then it will result into individual learning which will cover the way for organizational learning and thus ends up with competitive advantages for the Organization. The knowledge receiver should give feedback in anticipation of demand or changing role which will enrich the knowledge of the knowledge owner. The shared knowledge can be further transferred to another department, where implementation of best practices takes place with highest dignity.

Prerequisites for KS

As mentioned earlier the prerequisites for KS are intellectual resource/knowledge and skills needed for KS and factors influencing KS. These prerequisites are characterized by some distinct attributes which are described here on the basis of the findings of previous studies and the outcome of the present study.

Intellectual resource

In the proposed Framework intellectual resource was introduced as a prerequisite for KS. Nahapiet and Ghoshal(1998) use the term "intellectual capital" to refer to the knowledge and knowing capability of a social collective (Nahapiet & Ghoshal, 1998). In the proposed framework intellectual resource is used to represent the Knowledge assets of the OWERDB professionals in the Organization that can be shared with others. Knowledge sharing is important in utilizing knowledge to develop intellectual resource (Hsu & Sabherwal,2012). The framework also shows that by sharing knowledge the OWERDB professionals can increase their knowledge and thus develop the intellectual resource of the organization.

The present study found the following attributes that characterizes IC as a prerequisite for KS.

(i) Knowledge of the OWERDB professionals: Human capital is the knowledge, the experiences, the competencies and the creativity the staff of an organization has (Edvinsson & Malone, 1997).So it can be said that this attribute represents the human capital of the OWERDB.

(ii) Knowledge about the OWERDB systems and processes: Structural Capital is the hardware, software, databases, organizational structure, and everything else of organizational capability that supports those employees' productivity - in other words, everything that gets left behind at the office when employees go home (Bontis, 2000). So it can be said that this attribute represents the structural capital of the OWERDB. The OWERDB professionals from both the bureau and utilities equally conform this attribute of intellectual resource.

(iii) Knowledge about the users: Customer capital, sometimes called relational or reputational capital, is the tacit and explicit knowledge developed about an organization's customer relationships, products and services, marketing channels and market intelligence (O'Sullivan, 2010). so it can be said that this attribute represents the customer capital of the selected organization. The OWERDB professionals from both the bureau and Utilities equally conform this attribute of Intellectual resource.

Factors influencing KS

According to Gupta and Govindarajan (2000), organizational culture involves six major categories: information systems, people, process, leadership, and reward system and organization structure. Each of these categories includes factors that descend from it (Gupta &Govindarajan, 2000). Al-Alawi, Al-Marzooqi, and Mohammed (2007) examined the factors that received strong emphasis from the literature in influencing the success of knowledge sharing (Al-Alawi, Al-Marzooqi, & Mohammed, 2007).

This study discovered the following factors that are influencing KS in the OWERDB.

(i) Education and experience: Employees with a higher level of education and longer work experience are more likely to share their expertise and have positive attitudes toward sharing (Constant, Kiesler, & Sproull, 1994). The OWERDB professionals from both the bureau's and Utilities expert equally conforim this factor.

(ii) Trust: Pan and Scarbrough (1998) assert that environment of trust is a prerequisite to

Knowledge sharing (Pan & Scarbrough, 1998). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

(iii) Collaboration: The only way to enable sharing of knowledge is by bringing people together through collaboration. Therefore developing individual and team competency through collaboration is the key to effective knowledge sharing (Kumaraswamy & Chitale, 2012). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

(iv) . Empowerment: Through empowerment, employers can value their employees' expertise and help them communicate their knowledge by creating ways to capture, organize and share knowledge (Martinez, 1998). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

(v) Team work: A study found that team work enhances knowledge sharing in the public and private sector organizations of Bahrain (Al-Alawi, Al-Marzooqi, & Mohammed, 2007). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

(vi) Good leadership: Srivastava, Bartol, and Locke (2006) studied management teams in hotel properties. They found that empowering leadership fostered knowledge sharing among team members (Srivastava, Bartol, & Locke, 2006). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

(vii) Rewards and incentives: Incentives including recognition and rewards have been recommended as interventions to facilitate knowledge sharing and help build a supportive culture (Nelson, Sabatier, & Nelson, 2006). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

(viii) Availability of useful and current technology: Interestingly, Bordia, Irmer, & Abusah (2006) found a positive influence of benefits on knowledge sharing only for technology-aided sharing but not in a face-to-face context (Bordia, Irmer, & Abusah, 2006). The OWERDB professionals from both the bureau's and Utilities equally conform this factor. (ix) Easy communication: Human resource practices including fairness in decision-making and open communication likely promote an organizational culture that supports knowledge sharing (Cabrera & Cabrera, 2005). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

This study explored the following skills that are required by the OWERDB professionals for sharing knowledge.

Communication skills: Communication skills are required for the sharing and transfer of knowledge (Ajiferuke, 2003). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

Team working skills: Husain and Nazim (2013) mentioned that team working skills are required by OWERDB professionals to involve in KM practice (Husain & Nazim, 2013). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

Leadership skills: Mahmood (2003) has identified leadership skills from academic librarians of Pakistan to involve in KM practices (Mahmood, 2003). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

ICT skills: To help OWERDB professionals to be involved more successfully in KM activities and to maximize their prospects for success in what is a very competitive field, the acquisition of a number of additional competencies in the field of ICT could be considered (Nazim & Mukherjee, 2013). The OWERDB professionals from both the bureau's and utilities equally conform this factor.

Management skills: Todd and Southon (2001) identified management skills are required for KM practice through the viewpoint of OWERDB professionals in Australia (Todd & Southon, 2001). The OWERDB professionals from both the bureau's and Utilities equally conform this factor.

Barriers to KS

Some of the barriers for knowledge sharing are believed to be opportunistic behavior (Nicherson & Zenger, 2004), lack of trust between knowledge senders and receivers (Abrams, Cross, Lesser, & Levin, 2003).Bureš (2003) mentioned the main individual barriers i.e. loss of power, fear from revelation, uncertainty, illusion of reward deprivation, single culture elements, difference between awareness and knowledge, conflict of motives, and the main social barriers i.e. language, conflict avoidance, bureaucracy and hierarchy, incoherent paradigms, underestimating of lower levels, bad appraisal of the coworker knowledge base, emotions, pseudo innovators (Bureš, 2003). However, this study found the following barriers to KS that may encounter in the organization of OWERDB.

(i) Lack of trust: McEvily, Perrone, & Zaheer (2003), claims that the level of trust affects the extent of knowledge sharing (McEvily, Perrone, & Zaheer, 2003). The OWERDB professionals from both the bureau's and Utilities conform with this barrier to KS.

(ii) Lack of collaboration: Jain (2012) reported lack of collaboration as a challenge/barrier to KM in academic libraries (Jain, 2012). The OWERDB professionals from both the bureau's and Utilities conform with this barrier to KS.

(iii) Lack of job security/job satisfaction: Even today, there often is a fear amongst employees that sharing knowledge reduces job security because people are uncertain about the sharing objectives and intent of their senior management (Lelic, 2001).

Studies have found that organizational attitudes including job satisfaction and organizational commitment also foster knowledge sharing (Vries, Hooff, & Ridder, 2006; Lin, 2007). The OWERDB professionals from both the bureau's and Utilities conform with this barrier to KS.

(iv) Lack of technological support: Santos, Soares, and Carvalho (2012) founded that inadequate information technology results as a KS barrier (Santos, Soares, & Carvalho, 2012). The OWERDB professionals from both the bureau's and Utilities equally conform with this barrier to KS.

(v) Lack of rewards and incentives: O'Reilly and Pondy (1980) indicated that the probability that organizational members will route information to other members is positively related to the rewards and negatively related to the penalties that they expect to result from sharing (O'Reilly & Pondy, 1980). The relationship between knowledge sharing and incentives was further supported by studies (e.g., Gupta & Govindarajan, 2000; Quinn, Anderson, & Finkelstein, 1996) finding that significant changes had to be made in the incentive system to encourage individuals to share their knowledge, particularly through technology-based networks in organizations. The OWERDB professionals from both the bureau's and Utilities equally conform this barrier to KS. (vi) Poor leadership: It is also possible that leadership characteristics may affect the level of team knowledge sharing through creating knowledge sharing norms (Quigley, Tesluk, Locke, & Bartol,2007). The OWERDB professionals from both the bureau's and Utilities both conform with this barrier to KS.

(vi) Lack of support from top management: Management should prioritize knowledge sharing. Then it should ensure it communicates its importance well. However, the understanding of the importance of knowledge sharing by management and its subsequent communication seems not to be enough. Management should ensure that the implementation is also conducted properly (Kukko, 2013). The OWERDB professionals from both the bureau's and Utilities equally conform with this barrier to KS.

(vii) Lack of empowerment for decision making: Nonetheless, most organizations, in particular western ones, seem to value individualism and want their employees to make decisions and solve problems on their own (Nonaka & Takeuchi, 1995). The OWERDB professionals from both the bureau's and Utilities equally conform conform this barrier to KS.

(viii) Lack of awareness: According to Riege (2005), lack of awareness is a potential individual factor that hinders people from sharing knowledge (Riege, 2005). The OWERDB professionals from both the bureau's and Utilities equally conform this barrier to KS.

(ix) Lack of training: Sharing was mainly people-related and facilitated by workshops, discussion forums, training, and mentoring (McAdam & Reid, 2001). The OWERDB professionals from both the bureau's and Utilities equally conform this barrier to KS

(x) Fear of loss of power: One major inhibitor of knowledge sharing is that knowledge can be considered a source of power and superiority (e.g., Gupta & Govindarajan, 2000; Kim & Mauborgne, 1998; Szulanski, 1996). The OWERDB professionals from both the bureau's and Utilities equally conform this barrier to KS.

(xi) Lack of network and communication: Knowledge sharing can occur via written correspondence or face-to-face communications through networking with other experts, or documenting, organizing and capturing knowledge for others (Cummings, 2004; Pulakos, Dorsey, & Borman, 2003). The OWERDB professionals from both the bureau's and Utilities equally conform this barrier to KS.

(xii) Lack of skills: Poor verbal/written communication and interpersonal skills is the potential individual barrier to KS (Riege, 2005). The OWERDB professionals from both the bureau's and Utilities equally conform with this barrier to KS.

Facilitators of KS : KS process, KS methods, KS techniques, and KS tools that are responsible for facilitating KS among the OWERDB professionals in the organization This study examined the following KS processes that may take place while sharing knowledge among the OWERDB professionals.

(i) Knowledge is shared directly between two OWERDB professionals: Socialization (tacit-to-tacit) consists of sharing knowledge in face-to-face, natural, and typically social interactions (Dalkir, 2005). The OWERDB professionals from both the bureau's and Utilities equally disconform this process of KS in their organization.

(ii) Knowledge is shared from OWERDB professionals to any medium: Knowledge sharing presumes an act of 'externalization' by those that have knowledge. This externalization can take many forms, including performing actions based on this knowledge, explaining it in a lecture or codifying it in an intelligent knowledge system (Hendriks, 1999). The OWERDB professionals from both the bureau's and Utilities equally dis conform this process of KS in their organization.

(iii) Knowledge is shared through one medium to another medium: The combination phase is structured by three processes: (1) capturing and integrating new knowledge (collecting e.g. public data from inside and outside the organization and combining them), (2) disseminating explicit knowledge (transferring the knowledge by using presentations or meetings and spreading it to the members of the organization), and (3) editing or processing (making the knowledge more usable) (Nonaka & Konno, 1998). The OWERDB professionals from the bureau's and utilities did not conform equally with this process of KS in their Organization. In fact the OWERDB professionals from the bureau were more of them conform to this KS process.

(iv) Knowledge is shared from any medium to OWERDB professionals: Knowledge sharing presumes (believes) an act of 'internalization' by those seeking to acquire knowledge. Internalization, too, may occur in many different forms, including learning by doing, reading books, or trying to understand the codified knowledge in a knowledge base (Hendriks, 1999). The OWERDB professionals from the bureau equally agreed and disconfirm this process of KS in their libraries but the OWERDB professionals from utilities mostly disconfirm this process. Twelve highlighted knowledge management techniques used among large Malaysian construction organizations to share knowledge, namely brainstorming, cross-function teamwork, face-to-face meeting, job rotation and observation, mentoring, post project review, project briefing and review, recruitment, storytelling, technical gathering, threaded discussion, and written report and manual (Abdul-Rahman & Wang, 2010).

This study investigated the following KS methods that can be adopted by OWERDB professionals for the sake of KS.

(i) Assistance from the subject expert: Peer assist is a technique used by a project team to solicit assistance from peers and subject matter experts regarding a significant issue the team is facing (Leask, Lee, Milner, Norton, & Rathod, 2008). The OWERDB professionals from both the bureau's and Utilities equally conform this method.

(ii) Learning lesson by solving problems: After Action Review is a technique to evaluate and capture lessons learned upon completion of a project. It allows project team members to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses (Young, 2010). The OWERDB professionals from both the bureau's and Utilities equally conform this method.

(iii) Telling stories about experiences: Storytelling (narrative) is emerging as an important informal method of communication and is regarded as important to convey experiences of work whilst communicating shared knowledge and learning and maintaining organizational memory (Lehaney, Clarke, Coakes, & Jack, 2004). The OWERDB professionals from both the bureau's and Utilities equally conform this method.

(iv) Sharing experiences with juniors: Mentoring is a learning relationship between two employees. Mentors are experienced employees who share their knowledge, experience and ideas with less experienced employees, or associates (Canadian International Development Agency, 2003). The OWERDB professionals from both the bureau's and utilities equally conform this method.

(v) Guiding employees to learn new skills: Dainty, Qin, & Carrillo (2005) mentioned coaching as an approach to KS in large construction organizations (Dainty, Qin, & Carrillo, 2005). The OWERDB professionals from both the bureau's and utilities also equally conform this option as a KS method.

(vi) COPs; Group among the People of Same Interest: Communities of Practice (CoPs) have emerged as one of the most researched and widely praised techniques for KS (Bartholomew,

2005). The OWERDB professionals from both the bureau's and Utilities equally conform to this method. KS techniques like informal knowledge workshops, knowledge exchange seminars, departmental meetings, site visit, project award scheme, coaching and mentoring, (Dainty, Qin, & Carrillo, 2005). Graham and Thomas (2006) conducted a study to explore the knowledge-sharing practices of the leading Irish construction organizations CPD policy, mentoring, performance appraisal, lesson learned, cross audits, workshop and seminars, intranet were identified as the current knowledge-sharing practices (Graham & Thomas, 2006). This study identified the following techniques for KS among the OWERDB professionals.

(i) Workshops: a KS workshop should be supported as a part of a larger learning strategy (Hewlitt & Lamoureux, 2010). The OWERDB professionals from both the bureau's and Utilities equally conform this option as a technique for KS.

(ii) Training sessions: Fong and Chu (2006) founded internal training courses as a KS practice in the SMEs construction organizations (Fong & Chu, 2006). The OWERDB professionals from both the bureau's and Utilities both conform to this option as a technique for KS.

This study revealed the following tools that can be exploited by the OWERDB professionals for KS.

(i) Internet/Intranet/Extranet are tools for KS. At first, it was largely studied within organizational settings, but now Internet scale knowledge sharing is of considerable interest (Adamic, Zhang, Bakshy, & Ackerman, 2008). The OWERDB professionals from both the bureau's and Utilities all conform with these tools for KS.

(ii) Web portals: There is an important role for portals in supporting knowledge sharing and team collaboration, but unless users and their willingness to use the portal are considered from the beginning, the contribution of a portal to knowledge leadership will be limited (Tatnall, 2005). The OWERDB professionals from both the bureau's and utilities all conform with these tools for KS.

(iii) Electronic databases: Knowledge sharing can be supported by the use of information and communication technology (ICT) for example online databases, data warehousing/knowledge repositories and intranets (Hsu, 2006). The OWERDB professionals from both the bureau's and Utilities all conform to these tools for KS.

Consequences of KS The figure visualize another three components as organizational learning, feedback and knowledge transfer which represents the consequences of KS. These components are described here on the basis of the findings of previous studies and the outcome of the present study.

i. Influence of KS on Learning of OWERDB professionals: Knowledge sharing enables director to keep the individual learning flowing throughout the Organization and to integrate it for practical applications (Yang, 2007). The effective learning processes associated with exploration, exploitation and sharing of human knowledge (tacit and explicit) that use appropriate technology and cultural environments to enhance an organization's intellectual capital and performance (Kay, 1993). The study found that respondents conform the statement, 'knowledge sharing influences the learning of OWERDB professionals'. King (2008) mentioned customer satisfaction under the performance measures of organizational learning while comparing the knowledge-related elements of an Effective Knowledge Organization (King, 2008). It was found that the majority of the OWERDB professionals of the organization conform this benefit but the OWERDB professionals' from the bureau and utilities equally conform and not conform this benefit of learning by KS. (e) Career development: King (2008) also mentioned development-focused career paths under the processes of organizational learning while comparing the knowledge-related elements of an Effective Knowledge Organization (King, 2008). It was found that the majority of the OWERDB professionals of the organization conform this benefit but the OWERDB professionals' from utilities mostly disconfirm this benefit of learning by KS.

ii. Transferring Knowledge after KS: According to Nonaka and Takeuchi (1991) knowledge sharing is a critical stage in the process of knowledge transfer (Nonaka & Takeuchi, 1991). Some see knowledge management and knowledge transfer as processes that undertake largely for the purpose of creating a knowledge sharing

culture, fostering collaboration and communication, and so in turn enhancing organizational innovation (Liebowitz, 2002). Majchrzak, Cooper, & Neece (2004, p. 174) opined that knowledge transfer can be subdivided into knowledge sharing and knowledge reuse, where sharing refers to ‘‘the process by which an entity’s knowledge is captured’’. Here, sharing takes the connotation of giving or contributing, and is included under transfer, but does not include the receiving and reuse aspect of transfer (Majchrzak, Cooper, & Neece, 2004). our research argues that transfer has occurred when a contributor shares knowledge that is used by an adopter (Darr & Kurtzberg, 2000). Sie and Yakhlef (2009) found that a expert noted that a constant search for the unknown, you are compelled to learn new things every day, and since being an expert means that you spend most of your time transferring and sharing your knowledge, you are bound to learn from these exchanges with others (Sie & Yakhlef, 2009). The participants of this study conform the statement, ‘after KS the knowledge should be transferred to other medium for further use’. The study also found that there is no significant difference between the perceptions of the OWERDB professionals from the selected organization (OWERDB) in this regard.

Implications of the conceptual Framework in the OWERDB

The proposed Framework will help the OWERDB professionals to understand how they can share their professional knowledge among themselves on the job learning. It also demonstrates the components that will act as a prerequisite for KS among them. The Framework gives them a view about what are the possible methods, techniques and tools for KS. However, the OWERDB professionals would be able to understand the KS process that goes through while sharing knowledge by using different methods, techniques and tools. The Framework also described the barriers to KS which will help the department director to mitigate them in order to ensure successful sharing of knowledge. In fact the Framework explained the most crucial components of KS by delineating the consequences of KS i.e. organizational learning, feedback and knowledge transfer. So this conceptual Framework will give a clear cut view about KS to the organization and professionals in the OWERDB and enable them to put into action the KS practices in their premises more effectively and efficiently.

Limitations of the proposed conceptual framework.

The main focus of the Framework is KS among the OWERDB professionals in some selected department and utilities of OWERDB. As a result it did not take into consideration the whole organizational system i.e. the core department. Moreover, the Framework is supported by the data gathered from the selected department and utilities that are situated in the Addis ababa city but the utilities in the other part of the Oromia was not covered except Adama and Burayyu. Another important limitation of the Framework is that it is only a conceptual Framework and is not justified. In spite of these limitations the Framework is a unique representation in the field that can be taken into consideration for further modification by future research.

Summary

This chapter illustrated the proposed Framework for KS among the OWERDB professionals in the selected department and utilities of OWERDB. The Framework is built on the basis of the literature reviewed and the primary data obtained from the sample OWERDB professionals in the selected department about the building blocks of the Framework that was primarily set up in the mental framework.

CHAPTER SIX Findings, Conclusions and Recommendations

6.1. Findings

The study presented the gaps in knowledge sharing at OWERDB and developed a theoretical frame work for its knowledge sharing mechanisms.

The findings from observation and interviews of Bureau (head office), two zones office and two town water utilities shows how knowledge captured and retained have problems;

Some junior employees found it a daunting task to share knowledge with seniors, there were some individuals who feared for themselves at work and were not comfortable sharing their knowledge because of mistrust and other political reasons instead of his job, sharing knowledge was regarded as a threat to their job security as they would be indispensable (crucial).

So from these findings the researcher suggests it was established that organizational cultural practices of the investigated organizations impacted on sharing of knowledge for the purposes of retaining it.

The method of knowledge preservation and storage used by the organization has problems: The study indicated that knowledge was retained and stored in individual employee laptop, in different desktop organizational computer, archives, audiotapes, videotapes and some of them in databases. Overall, the results show that paper-based records were the most important knowledge preservation method in the organizations. Recording of lessons learned was not so popular, which indicate that capturing of best practices as knowledge retention strategy was not yet common in the organizations.

All of the respondents were computer literate and therefore were capable of using the computer for knowledge creation, transfer, sharing and retention of explicit knowledge. They had frequent access to fax, internet, intranet/email, telephone, cellphone, discussion forums, databases, knowledge directories and computers. However, they need to be equipped with advanced technology.

The findings from the study revealed that there are weak strategies to capture tacit (personalized) knowledge .However; explicit (codified) knowledge is captured in the

organizational computers, documents, records, archives, audio and video tapes despite the low ICT penetration.

There were no coordinated and formalized mentoring programs to ensure that mentees and trainees learn from the experienced through copying and imitation. It was also established that there were no Communities of Practice (CoPs) to facilitate the sharing of knowledge. Sharing and acquiring knowledge in CoPs through collaboration and social networking of experts in the same field retains vital knowledge in the organizational system. The study established that storytelling has not yet been adopted as a way of sharing knowledge in the organizations investigated yet it has been found to be an effective way of transferring personalized knowledge to fellow employees. Furthermore, the study's findings suggest that there is absence of knowledge management system in the OWERDB as evidenced by the senior Geologist and Audit director in the head office.

The other findings indicate that the organizational cultures do affect knowledge sharing and retention. To a certain extent, the study established that employees are not willing to share their knowledge with colleagues and worse with seniors for lack of trust, fear, culture of secrecy, and employee attitude as well as lack awareness and other reasons.

Finally the study established that the organizations had not established proper Knowledge management strategies and policies to facilitate the capture and retention of personalized (tacit) and Explicit knowledge.

From the Observation of two Zonal water office (East showa and Arsi zonal water office) and two water utilities (Adama town, Burayyu town) water utilities and from observation of OWERDB (head office) findings it shows that, senior employees leave without handing over guidance or organized procedures, the job performance of successors often does not equal that of the retiree or transferee as was the case in most sections of the OWERDB investigated.

According to the reviewed literature knowledge acquisition cannot take place in a situation where recruitments of staff are not undertaken, staff is not trained in operational tasks and repositories for operational knowledge are lacking (DeLong 2004).

Considering the findings on knowledge transfer and sharing, the practices that were investigated (training ,succession planning, communities of practice, mentoring and coaching, knowledge repositories through documentation, storytelling, orientation, job rotation, and phased retirement) also had both optimistic and undesirable findings.

The findings from the study have shown that OWERDB had not fully established a knowledge sharing mechanisms. So that it faces with a critical knowledge loss challenges that have implications on the operations as there were notable gaps in the few established knowledge retention practices and lack of good performance.

6.2. CONCLUSIONS

Knowledge is a resource that is used to achieve organizational objectives. Organizations should develop an explicit and tacit knowledge sharing vision and develop the necessary knowledge management infrastructure and knowledge sharing mechanisms to guide and support what knowledge employees should share to improve organizational performance.

The goal of knowledge sharing mechanisms on the job learning is to facilitate knowledge creation, storage, dissemination, and application to increase organizational capability and to convert knowledge into business values through managing both explicit and tacit organizational memory.

Knowledge sharing is a complex phenomenon, which can be affected /influenced by organizational, individual, and technological factors.

This research identified organizational factors as the leading factor that facilitates knowledge sharing on the job learning. This suggests that unless organizations take a leading role to create an environment that facilitates individual level knowledge sharing, employees cannot create a knowledge sharing culture in an organization. Investment in communication technologies is very important to facilitate easy access to existing knowledge resources and to overcome distance and social barriers in knowledge sharing and transfer. Individuals are also the main knowledge creators and users in an organization. Effective knowledge sharing cannot exist unless employees develop an interest to share their knowledge, learn new knowledge, and apply knowledge in their tasks. This research identified work experience, educational background, and learning commitment as personal factors that influence individual's level

knowledge sharing. The third main factor identified in this study that affects knowledge sharing is access to technology. In contemporary digital society, it is difficult to create a knowledge sharing culture without the support of ICT services.

Therefore, organizations take values to shape employees' thinking and belief about the value of knowledge sharing activities thus increase employees' commitment for an on the job learning.

Overall, the findings of this study can be summarized as follows: First, there is a lack of organizational culture on knowledge sharing mechanisms at OWERDB that impede (hinder) organizational knowledge creation, transfer, and retention. Secondly, OWERDB lacks collaborative and communicative technologies that facilitate the transfer and sharing of tacit knowledge. Third, even though the human resource processes and practices are functional, in the bureau, the organization does not have strategies/policies or systems in place to capture the experts' knowledge (tacit & explicit) or the knowledge of experienced staff and those approaching their retirement age. A proper introduction is not given to new employees. Attention is also given to material hand over not knowledge. Fourth, while institutional knowledge may be available and accessible at OWERDB, knowledge management is relatively a new concept and practice and has not yet been properly embraced (implemented) in the organization's system to capture and retain knowledge. Lastly, the study finds that OWERDB produces a critical tacit and explicit knowledge but the organization lacks proper knowledge retention strategies that would help it to capture and retain critical knowledge. The lack of proper knowledge retention strategies undermines OWERDB's performance.

6.3. Recommendations

The study recommends that OWERDB should work out a knowledge retention policy on how to implement mentoring programs, coaching, succession planning, encouraging communities of practice, utilizing retirees and professional experts, recording expert's knowledge and keeping the lessons-learned archives as strategies for capturing and retaining critical personalized/tacit institutional knowledge. Experienced professionals should be identified and encouraged to assist junior employees in knowledge acquisition, sharing, and retention.

Human Resource Directorate should work on strengthening human resource processes and practices including career development programs; performance appraisal reward systems, facilitate on the job learning for technical and non-technical staff, introduce new employees to the activities and expectations surrounding knowledge sharing that include an introduction to subject matter experts within the organization, training on job learning tools, and technology systems. It should be encouraged to hire experienced experts, retirees, and other specialists to train junior staff, provide coaching, and mentoring services to capture, share, and retain knowledge.

Proper briefing and handover of relevant operational materials, organizational documents such as project document, contract documents and agreements, history of deep wells drilling, drawing, and other administrative records should be done.

Encourage teamwork, exchange programs, recruitment of staff development fellows, and knowledge transfer from experienced staff to junior staff.

The human resource department should conduct consultations on explicit knowledge retention strategies, particularly on how critical staff knowledge can be recorded and preserved for future use.

Top leadership needs to realize the importance of managing knowledge and hence be in a position to offer support through the provision of sufficient resources, structures, incentives to employees to encourage knowledge sharing, offer training to employees on KM and its benefits, and identifying employees intellectual capacity.

Invest in a comprehensive ICT infrastructure that supports ICT usage, create policies on knowledge management and sharing mechanisms, and create awareness on the importance of organizational culture, organizational memory, and organizational learning.

The bureau must draft policies that allow the use of professionals to mentor new and experienced employees.

The bureau should create supportive knowledge sharing mechanisms to ensure that knowledge is retained in databases, libraries, and technical training manuals.

The bureau may give incentives or rewards to experienced, skilled, and talented employees to advance staff co-operation, motivation, and encourage them to share knowledge and mentor other employees.

The bureau should facilitate formal and informal group interactions and discussions through email and other electronic communications to encourage knowledge sharing

Introducing communities of practice especially online ones, networks, and forums which allow workers who perform the same tasks to meet and share experiences and best practices.

The bureau should work with other regional, national, and international organizations to establish effective knowledge management and sharing mechanisms and embrace adoption and use of advanced KM technologies that are already in use in other countries.

Create institutional structures that promote knowledge sharing between directorates and provide opportunities for staff to meet with their peers and management to share project level and organizational knowledge.

Bureau should establish internet and intranet services to facilitate access to knowledge acquisition and exchange.

The management should establish team-based work design to increase social interactions among team members, which encourages knowledge sharing mechanisms including training and workshops that facilitate knowledge dissemination and retention.

Creating databases where all critical documents of the organization such as project drawings, study project documents, contract and agreement documents, groundwater and surface water databases are kept in soft copies, and organized based on areas of specification. Encourage documentation handover and retention of official records, and apply the SECI model of knowledge conversion in the institution.

Limitation of the Study

This is a single case study research; research findings cannot be generalizable to other organizations and countries. This research made analytical generalizations to extend and confirm existing knowledge sharing mechanisms. It was challenging to arrange face-to-face interviews with respondents because of the COVID-19 pandemic .The interviews and field observations were conducted only at the OWERDB head office, two Zonal water office, and two town water utilities. In qualitative research, the main limitation of the research finding is the problem of generalizability. Interview discussion was undertaken in Afan Oromo and later translated into English by the researcher.

Since qualitative research approach was used in this study, it is difficult to check the reliability and validity of the information collected. Although the researcher used triangulation in data collection and data analysis methods, the generalizability the study conclusions to other contexts is limited.

Since the study was undertaken on a single organization, respondents may exaggerate or undermine some organizational events due to their own personal biases .The researcher tried to minimize respondent biases by validating some of the exaggerated claims with more respondents. However, it cannot be fully claimed that this research is free from respondents' bias.

Recommendations for future research

In this research, case study research method was used to identify multiple perspectives that affect knowledge sharing mechanisms on the job learning at OWERDB. The study achieved its mandate of developing a Framework for knowledge sharing for OWERDB. Although this research answers the research problems stated in chapter one, there are also other issues that need further investigation by other researchers. The findings of this research may not be applicable to other government and non - government organizations. The established gaps in the actual knowledge sharing practices at OWERDB formed the basis upon which the various reviewed knowledge retention practices have been recommended. The recommended Framework has set a platform that clearly provides a road map on how to tackle knowledge sharing challenges. The recommended knowledge sharing framework could be further adapted

by other government organizations that may be facing the problem of knowledge loss. Further studies can be conducted on measuring KM in government institution. This would be more pertinent if done in government institution that already has a formalized KM initiative in place. The study focused on bureau staff at heads of department and the few utilities. Future research can sample government and non-government institution.

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Appendix A The data collection instruments for knowledge sharing mechanisms in OWERDB

Interview guide with Heads of Department

INTERVIEW GUIDE

Introduction

Good morning/afternoon/evening dear Dr. / Mr. /Mrs /

Respondent/Interviewee……

My name is Guta Edea. I am carrying out a research for my Masters dissertation at the Addis Ababa University. My topic is Exploring knowledge sharing mechanisms on the job learning: The case of Oromia Water and Energy Resource Development.

You have been selected to take part in this research through purposive sampling. I therefore look forward to your support and cooperation in this noble cause.

Please, note that your views in this interview session shall not, in any way be used for any other purpose rather than what has been stated above. You are therefore assured that your views on the content of this interview shall not be used in a way that might cause damage to your reputation as an individual or otherwise. Integrity, emotions, or indeed professional conduct as the information provided will be treated with high level of confidentiality. Your participation is voluntary and you are free to withdraw from the process at any point during the interview process. Please feel free to ask questions where you may need further clarification.

Thank you.

Ms Guta Edea

The data collection instruments for knowledge sharing mechanisms in OWERDB?

Appendix I

Interview guide.

SECTION A

Introduction to Background Information

1 Name of the organization……

2 Your job designation/position ……

3 Department/Directorate……

4a) Your gender male / Female (b) Age group ○ below 30 ○ 31-35

○ 36-40 ○ 41-45 ○ 46 and above

5) What is your highest level of formal education……?

6) How long have you worked for your organization……..?

Section B; Organizational Knowledge

Organizational knowledge is knowledge that is found in documents, papers (explicit) and

in the heads of individual (tacit) workers. Tacit knowledge is that knowledge which resides in the brain of an individual whereas explicit knowledge is that knowledge found in documents, records, databases and objects.

7a). Of the two (tacit knowledge and explicit knowledge) which one do you think is the most important in your organization? Explain.

b) What are the risks of losing strategic tacit knowledge in your organization?

c) Do you think there is need to retaining such knowledge? Explain.

Section C; Knowledge Retention

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

8) How do you determine the important knowledge to be retained in your organization?

9) Do you think knowledge sharing assists in retaining knowledge in the organization? If so how?

10) How do you capture and retain knowledge in your organization?

11) Which critical knowledge do you capture for retention purposes in your organization?

Section D: Knowledge sharing

Knowledge sharing is the exchange of knowledge between the knowledgeable and the receiver.

12) Do you have a culture of sharing knowledge in your organization?

13) Are employees free to share knowledge with their juniors, superiors and colleagues i.e. upward, downward and horizontally?

b) Do employees form or belong to some formal and informal professional groups of their trade?

SECTION E; Organizational culture and knowledge retention

Organizational culture can be referred to as a set of values, beliefs and behavior patterns that form the core identity of organization and helps in shaping the employees behavior.

16) What values, beliefs and behavior patterns support knowledge sharing for retention? Purposes?

17) What cultural aspects do affect knowledge sharing in your organization?

18) How does your dress code (if you have any) at your organization affect knowledge sharing?

SECTION F; Role of Information and Communication Technologies in knowledge retention, transfer and sharing Information technology makes it possible for the connections that enable knowledge transfer, sharing and retention in organizations

19) How do you use ICTs to retain organizational knowledge?

20) If your organization has branches separated by geographical dimensions which ICTs are used by employees to share knowledge with workmates in other Zonal and District branches.

21) Does your organization have a website? If so, what type of knowledge is posted on your website?

Appendix II: Observation Checklist

Manager and subordinate relationship

1. How do Directors and their subordinates relate at work?
2. Are employees freely exchange knowledge in formal way?
3. Are employees managed their document and files properly?
4. The common knowledge sharing mechanisms used among employees within the directorate of bureau head, zones and town water utilities?
5. How juniors and seniors conduct themselves?_____

.....

6. Do seniors and juniors use the same facilities?

.....

.....

7. Do they discuss work issues during tea and lunch breaks?

.....

.

8. Is there a means to promote best practices in the Bureau and town water utility?
9. How could train the hire new staff and leave retired employee?

10. Do they discuss work issues during tea and lunch breaks?

Observe the use of ICT facilities by employees

11. Use of ICTs in offices for sharing storing, transferring preserving knowledge

General Observations

……

…Thanks you very much for your valuable time and contribution to this questioner all respondent will be treated anonymously.