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**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
SCHOOL OF INFORMATION SCIENCE**

**FORMULATING KNOWLEDGE MANAGEMENT STRATEGY FOR
PUBLIC ORGANIZATIONS: THE CASE OF THE FEDERAL DOCUMENTS
AUTHENTICATION AND REGISTRATION OFFICE**

Muluken Amare

June 2014

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A Thesis Submitted to the School of Graduate Studies of Addis
Ababa University in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Information Science

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DEDICATION

I wish to dedicate this work to my three sisters who are following me and to all who wish my success in education and always encourage me to learn in my entire life time.

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LIST OF ACRONYMS

- CASM – Complex Adaptive System Model
- CBE – Commercial Bank of Ethiopia
- CMS – Content Management System
- DARO – Documents Authentication and Registration Office
- DMS – Document Management System
- FDRE – Federal Democratic Republic of Ethiopia
- GSS – Group Support System
- HPR – House of People Representative
- IT – Information Technology
- ICAS – Intelligent Complex Adaptive System
- ICT – Information and Communication Technology
- KM – Knowledge Management
- MCIT – Ministry of Communication and Information Technology
- MIE – Mesfin Industrial Engineering
- MOFED – Ministry of Finance and Economic Development
- SNA – Social Network Analysis
- SWOT – Strength, Weakness, Opportunity and Threat
- WFMS – Workflow Management System

ABSTRACT

In recent years, there has been a number of government policies aimed at equipping the public sector to perform more effectively with the help of information technology. In this regard, knowledge management in general and knowledge management strategy in particular have a great role in public organizations. Therefore, the overall objective of this study is to formulate knowledge management strategy that is suitable for public organizations, specifically for DARO.

Besides, all the necessary data is collected using questionnaire and interview from the Head Office and ten Branches of DARO located in Addis Ababa and analyzed by both quantitative and qualitative methods. Based on this, the result of the study revealed that even though knowledge sharing practice of DARO is traditional and not integrated, the overall knowledge sharing practice of the organization is good. Apart from the favorable situations that exist in DARO for the deployment of a knowledge management system, there are barriers that are identified in this research such as lack of time; shortage of formal and informal space in the organization, and lack of physical working environment and layout of the work. On the other hand, willingness, confidence and attitude of employees are the success factors in the individual dimension. Similarly, communications, incentives and management support are also other success factors of KM in the organizational dimension.

In general, the study showed that there is no standard procedure to carry out knowledge management activities in the organization. There is no effort made in managing organizational knowledge. Simply, the knowledge of the organization is dispersed here and there with no centralized approach to achieve the organizational goals. Based on this, the SWOT analysis and SNA were made in order to propose the KM strategy which is more suitable for the organization. Moreover, the Complex Adaptive System Model was proposed since people are at the center of this model. Regarding the KM technologies like DMS, WFMS and Intranet were proposed. In general, in order to make this strategy successful it is recommended that DARO should design detail activities and integrate with organizational strategy. Further researches on other similar public organization are also recommended in order to upgrade the proposed KM strategy.

CHAPTER ONE

INTRODUCTION

1.1. Background

The ability to manage knowledge is becoming increasingly more crucial in today's knowledge economy. The creation and diffusion of knowledge have become an issue and important factors in competitiveness. More and more, knowledge is being regarded as a valuable commodity that is embedded in products (especially high-technology products) and in the tacit knowledge of highly mobile employees (Dalkir, 2005).

Knowledge is becoming a driving force for organizational change and wealth creation. It is also important to sustain a competitive advantage by strategically managing the knowledge creation and sharing process. Organizations can understand what knowledge is and how to create, share and use it effectively to develop and sustain a competitive advantage (Watson, 2003). Hence, such things are essential for every organization. Therefore, organizations should design appropriate methodologies to manage knowledge; to deliver better services for their customers and for making the organizational development sustainable.

Knowledge Management is a process that helps organizations find, select, organize, disseminate, and transfer important information and expertise to gain business advantage (Mathi, 2004). However, the application of knowledge management may face obstacles from different direction within the organization or from the outside environment. For instance, organizational culture, employees' turnover, lack of knowledge sharing among employees, financial constraints and fear of downsizing are some of the major challenges, which make knowledge management implementation very difficult.

Furthermore, the application of knowledge management in the public organizations are very important because most of the decisions made in this area are most of the time relies on the individuals' knowledge level. Similarly, according to the practice of Ethiopia, many cases are encountered every day with regard to notary's service which is currently delivered by the Federal Documents Authentication and Registration Office (DARO) that were not explicitly

mentioned in the law. In such a case, the application of tacit knowledge of individuals is the only way to solve problems or to give a decision in addition to case based reasoning.

As compared to other countries, the services of authentication and registration of judicial acts were introduced to Ethiopia in 1936/37, which was long before the coming into force of the Ethiopian Civil Code which highly required the services indicated.

The Federal Documents Authentication and Registration Office has been reorganized under the FDRE Ministry of Justice so as to carry out its powers and duties which have been enshrined in the proclamation since 2005. DARO has accomplished high capability scheme to satisfy its customers. In doing so, it has opened the Head Office and ten Branches in Addis Ababa and another branch in Diredawa. All of the Branches including the Branch in Diredawa are networked and they use central database system for their day to day activities.

DARO is playing a great role in facilitating smooth operation of the emerging market economy. The service given by the organization endorses the development of the country by protecting the people and their property and facilitating economic exchange and making a prompt change for justice system and finally promoting the supremacy of law. The main purpose of the office is to provide notary service such as authentication and registration of documents. Documents issued by the office serve the public, the government and private organizations as legal evidence to carryout legally reputable transactions.

However, there is sluggish development in the adoption of Knowledge Management Systems in delivering notary service for clients and in the justice sector in general. Thus, there is a need to investigate the knowledge management practice in the public organizations specifically in DARO and propose KM model, technology and strategic directions as a knowledge management strategy.

1.2. Statement of the Problem

The function of knowledge management is to allow an organization to leverage its information resources and knowledge assets by remembering and applying experience. Knowledge, and consequently its management, is currently being touted as the basis of future economic competitiveness (Watson, 2003).

According to Dalkir (2005), tacit knowledge is difficult to articulate and also difficult to put into words, texts, or drawings. Moreover, tacit knowledge tends to reside “within the heads of the knowers,” whereas explicit knowledge is usually contained within tangible or concrete media. Hence, it is important to manage both tacit and explicit knowledge for organizational success.

In Ethiopia, there are organizations which are mainly dependant on tacit knowledge of employees who are working for a long time in a specific organization. In this regard, the success of the organization directly related to the performance and the existence of those experienced employees. So, this is very challenging for such kinds of organizations because those experienced employees may release the organization or retire at the end of the day.

Knowledge is a more subjective way of knowing and is typically based on experiential or individual values, perceptions, and experience (Dalkir, 2005). Likewise knowledge of giving notary service or authenticating complicated legal documents is mostly based on the experiences and individual values of the employees and the authenticator organization in general. Thus, DARO is one of the tacit knowledge intensive organizations.

Surprisingly, there are key employees and leaders who are very critical for the existence of the organization. The rationale behind for this saying is that, the reasoning for different decisions made by the organization in relation to services delivered to customers most of the time is based on the tacit knowledge of those key employees. Even though there are some efforts to manage organizational knowledge, currently the organization is facing a critical problem due to high employee turnover that unexpectedly happened in recent years. Therefore, knowledge management is critical for such kind of organizations, particularly for DARO.

In addition to the above fact, the information acquired from Human Resource Development and Management Directorate of the organization shows, the core competency of the organization which is authenticating and registering legally acceptable documents does not require specific knowledge of a given known profession. The knowledge acquisition for doing the core business is highly dependent on continuous training and knowledge sharing

within the organization. Therefore, from this it can be concluded that most of the knowledge in the organization is tacit. In this regard, capturing knowledge from the experienced employees and managing accordingly has a great contribution for organizational success.

However, to the fact and knowledge of this researcher, there is no research undertaken on formulation of knowledge management strategy for public organizations of Ethiopia, specifically in DARO. Thus, in order to curb the aforementioned set-backs and to render a better service to the public, examining the continuous flow of tacit and/or explicit knowledge that takes place at individual and organizational level is very important. Therefore, in this study the researcher aims to investigate the current knowledge management practice in the organization and formulates KM strategy to manage knowledge created in the organization.

1.3. Research Questions

In accordance with the above statement of the problem, this research aims at answering the following questions:

- What are the existing practices of knowledge management in DARO?
- What are the barriers which impede knowledge sharing in the organization?
- What are the factors that influence the success of knowledge management system?
- What kinds of knowledge management technologies exist or propose?
- What knowledge management model can be in place as a component of knowledge management strategy?

1.4. Objectives of the Study

1.4.1. General Objective

The main purpose of this research is to formulate knowledge management strategy that is suitable for public organizations, particularly for DARO.

1.4.2. Specific Objectives

In order to achieve the general objective of this study the specific objectives that the researcher will accomplish are:

- To assess the existing practices of knowledge management in the organization.
- To investigate the barriers of knowledge sharing in the organization.
- To assess the factors that influences the success of knowledge management system.
- To assess the existing knowledge management technologies and propose a suitable one.
- To assess the knowledge management model that can be in place and propose as an element of knowledge management strategy.

1.5. Significance of the study

This study will attempt to investigate the current knowledge management practice of DARO and to propose a knowledge management strategy so as to manage knowledge of the organization. Hence, the DARO management and employees can make use of the output of this study. In this regard, it is used to solve the existing problem of the organization in relation to the challenge of capturing tacit knowledge and retaining and managing knowledge created in the organization.

The researcher also believes that this study contributes on management of knowledge in the public organization at large. In addition, it helps the organization under study for retaining the tacit knowledge of experienced employees and developing a detail knowledge management strategy in different period of time based on the result of this research. Moreover, the researcher also believes that the study can also be a ground work for other researchers to carry out further work in the area.

1.6. Scope of the Study

This study focuses on assessing the existence of knowledge management practice in DARO and investigating the barriers and risks of the implementation. In this regard, it is also intended on assessing the factors that affect the implementation of knowledge management system and propose knowledge management model and technologies including strategic direction as a KM strategy which is more suitable for public organization at large and specifically for the organization under the study.

Thus, the main intent of this study is to examine the knowledge management practice in DARO including all its Branches in Addis Ababa and propose a general KM strategy.

The result of the research would be more fruitful if it is conducted widely by including several similar public organizations in Ethiopia. However, due to time, labor and money constraints the study is limited to treat the case on the Federal Documents Authentication and Registration Office of Ethiopia. Furthermore, this study is limited on showing the general strategic direction on knowledge management strategy, proposing models and KM technologies based on the result of the analysis for managing knowledge created in the organization. Thus, detail KM activities are left for the organization to be done based on the general strategic direction while studying the business strategy of the organization.

1.7. Organization of the Study

This study is organized into six chapters. The first chapter includes the background of the study, statement of the problem, objective of the study, significance of the study and scope of the study. The second chapter presents review of related literatures in the area of knowledge management and discusses related works in the area. The third chapter deals the methodologies and procedures followed for the research design, sampling size and sampling techniques, data type and data collection methods and method of data analysis and interpretations. The fourth chapter covers the study findings, and presentation of the results. The fifth chapter contains the possible models and technologies that are important for knowledge management strategy of DARO and indicating strategic direction as a general knowledge management strategy in the organization and other public organization after conducting a SWOT and social network analysis. The sixth chapter brings to an end of the study with conclusion and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. General Overview

The primary concern of this literature review is to highlight the key concepts related to KM strategy formulation and adoption from previously conducted researches and related publications. Furthermore, in this review the researcher tried to consult previous works in the area to underscore the factors and variables attributed to the successful development of KM strategy for DARO.

Knowledge Management is defined in different ways by scholars from diverse perspectives. There are likely more than three distinct perspectives on KM, and each leads to a different extrapolation and a different definition (Dalkir, 2005). From the business perspective: Barclay and Murray define Knowledge management as a business activity with two primary aspects: Treating the knowledge component of business activities as an explicit concern of business reflected in strategy, policy, and practice at all levels of the organization; and, making a direct connection between an organization's intellectual assets both explicit (recorded) and tacit (personal know-how) and positive business results. In another definition from Grey, KM is a collaborative and integrated approach to the creation, capture, organization, access and use of an enterprise's intellectual assets (Dalkir, 2005).

Many organization executives would like to implement a suitable KM System for the proper utilization of knowledge and expertise available in their organization. However, most of them especially public organization face difficulties in choosing a strategy that suit their organizational context. This is mostly attributed to the limited understanding of the concept in organizations and the fact that there are no dedicated professionals for this job. It is only recently that KM jobs have started emerging in the field of information management.

2.2. Types of Knowledge

Knowledge can be classified as explicit or tacit. Polyani (1997) defines explicit knowledge as knowledge that is formal, systematic, and can be codified into records such as databases and

libraries (Nonaka, 1994). Choi and Lee (2003) define explicit knowledge as knowledge that can be documented, created, written down, transferred verbally or through some medium of communication such as emails, telephone or information systems. Another definition by Barth (2002) summarizes explicit knowledge as knowledge that can be processed by information systems, codified or recorded, archived and protected by organizations (Jain, 2007).

Tacit knowledge, on the other hand, is informal knowledge that is embedded in mental processes, is obtained through experience and work practices, and can be transferred by observing and applying it (Choi and Lee, 2003). Barth (2002) defines tacit knowledge as knowledge that exists in people's mind and is quite difficult to transfer. Polyani (1997) defines tacit knowledge as knowledge that is highly personal and is embedded in a person's daily work practice (Jain, 2007).

2.3. Knowledge Management in the Public Sector

Servin (2005) states that, in both the private and public sectors, organizations are beginning to take responsibility for managing knowledge as a means to create value. But, the very critical questions are, what does "value" mean in the context of the public sector? Public sector organizations are not usually seeking a competitive advantage. So, why bother with knowledge management? According to Servin (2005), in the definition of knowledge as "the capacity for effective action" then this probably better describes the expectations of government and public services.

Every public service involves a wide range of relationships between policy makers, service providers, local authorities, the general public and various other interested parties such as voluntary and community sector organizations, the private sector etc. If we think about the many interactions within and between these groups, and their impact on policy and service provision, then we begin to see the scope for knowledge management in the public sector (Servin, 2005). The other interesting questions are: How does one of these various parties share an experience and introduce one policy driven initiative with that of another for the benefit of all concerned? How can everyone involved have an awareness of the "bigger picture" as well as their own individual standpoints? How can all parties be better prepared to

act? In recent years, there has been a number of government policies aimed at equipping the public sector to function more effectively in an information society (Servin, 2005). In this regard, knowledge management in general and knowledge management strategy in particular have a great role in public sectors.

2.4. Organizational Strategy and Knowledge Management

There is broad agreement in the management literature that knowledge management has to be solidly linked to enterprise, corporate, business or functional area strategy and therefore ultimately to the creation of economic value and competitive advantage, in order to be a sustained effort. However, this link has not been widely implemented in practice. This is due to the lack of strategic models to link knowledge management efforts on the one hand and strategic management on the other hand (Maier, 2007).

According to Maier (2007), knowledge management provides instruments to build capabilities which can be used in a strategically intended way to provide competitive advantages. Due to the importance of knowledge as the key resource, some authors also suggest that knowledge management has a strategic dimension in its own right. Thus, there is a link between knowledge management and organizational capabilities and competencies.

Knowledge is considered the key resource in the knowledge-based view. A systematic management of this key resource should have its place on the strategic map of an organization. In the literature, many authors discuss knowledge management as an initiative that encompasses the whole organization (Maier, 2007).

As Maier (2007) further mentioned in his book referring Zack (1999), The starting point for a of an organization's knowledge management strategy can be seen in the traditional SWOT analysis (strengths, weaknesses, opportunities, threats) in which strategy is seen as balancing the external environment of an organization (its opportunities and threats) with its internal capabilities (strengths and weaknesses).

An organization's KM strategy aims at capturing, codifying, storing and sharing the organization's tacit and explicit knowledge. Tacit knowledge is knowledge of individuals based on their personal experience and perspective. It is usually difficult to articulate the

entire tacit knowledge of an individual. In contrast, explicit knowledge can be captured; codified and stored in a database and shared in a formalized manner. The two types of knowledge are however not mutually exclusive. Tacit knowledge is embedded in explicit knowledge and the latter is simply created by externalization of tacit knowledge. Explicit knowledge does not thoroughly represent the whole body of tacit knowledge.

For KM strategies to be successful, they should be aligned with the concerned organization's business strategy because organizations always strive to achieve their business strategy as much as possible. KM should not be implemented just because it is nice to have but only because it brings a competitive advantage for the organization (Greiner, 2007). If KM fails to add value to the organization, it is only cost intensive, useless, or even counterproductive. Thus, the strategic direction of the organization should determine the direction of the KM activity. The business strategy specifies the positioning of the organization or subunit with respect to its customers and competitors (Greiner, 2007).

Knowledge in organizations is embedded in products and services, people and processes.

- **Knowledge in Products and services:** 'Intelligent' or 'smart' products can command premium prices and be more beneficial to users.
- **Knowledge in People:** People are usually referred to as "Our most valuable asset", by many company executives according to many company reports, although the actual way they are treated and managed often belies this. This indicates that people become valuable assets to an organization because of the knowledge and experience they develop through years.
- **Knowledge in Processes:** In many companies there are often differences in performance levels among different groups performing the same task.

Since knowledge is embedded in all aspects of an organization, design of a KM strategy should be comprehensive enough to acquire and make use of all the knowledge that is available in the organization (Greiner, 2007).

2.5. Knowledge Management Processes

According to Ruggles (1998), KM processes in organizations refer to knowledge-focused activities including generating new knowledge, accessing valuable external knowledge, making knowledge accessible for decision making, integrating knowledge in processes, products and services, representing knowledge in documents, databases, and software, facilitating knowledge growth through culture and incentives, transferring existing knowledge throughout the organization, and quantifying the value of knowledge assets and the impact of KM (Getachew, 2009).

Knowledge Management processes are discussed in detail in Frost's and Ueda's (2010) exploratory research entitled "Knowledge Management and the role of IT". He explained the activities as follows:

- **Knowledge Discovery and Detection** - This step deals with discovering the knowledge that a firm possesses in the organization, as well as the patterns in the information available.
- **Knowledge Organization and Assessment** – Organizations have to assess their knowledge resources to find out what they have at their disposal and to pin point where their strengths and weaknesses are. Management needs to organize the knowledge into something manageable. Knowledge organization involves activities that "classify, map, index, and categorize knowledge for navigation, storage, and retrieval.
- **Knowledge Sharing** – This is the single most important aspect in the whole process. It can be described as either push or pull. Knowledge push is when knowledge is "pushed onto" the user (e.g. newsletters or unsolicited publications). The latter is when the knowledge worker actively seeks out knowledge sources (e.g. library search, seeking out an expert or collaborating with a coworker). Explicit and tacit knowledge have different forms of sharing.
- **Knowledge Reuse** – This happens when someone has to produce the knowledge then someone has to make this knowledge available in a certain format, finally someone has to search for it and use this knowledge.

- **Knowledge Creation** - Knowledge creation is about continuous transfer, combination and conversion of the different types of knowledge as users practice, interact and learn.
- **Knowledge Acquisition** – refers to the knowledge that a firm can try to obtain from external sources (Frost & Ueda, 2010).

There are many factors that influence the effectiveness of KM processes in organizations. These can be barriers or enablers.

2.6. Knowledge Management Strategies: Codification and Personalization

Two different knowledge management strategies have been discussed in the literature for sharing tacit and explicit knowledge: the codification strategy has the objective to collect knowledge, store it in databases, and provide the available knowledge in an explicit and codified form. Such a reuse of explicit knowledge and solutions can save time and money (Greiner, 2007).

According to Greiner (2007), the design of databases, document management, and workflow management can be considered to be part of this strategy. The codification strategy is assumed to be successful for these companies whose business strategy requires re-using existing knowledge. In contrast, the focus of the personalization strategy is not to store knowledge, but to use Information Technology to help people communicate their knowledge. The objective of the personalization strategy is to transfer, communicate, and exchange knowledge via knowledge networks such as discussion forums. If the business strategy focuses on generating new or customer specific solutions or product innovations the personalization strategy should be chosen rather than the codification strategy (Hansen et al., 1999).

2.7. Success Factors, Barriers and Risks of KM Initiatives in Organizations

Knowledge Management initiatives in an organization often involve one or all of the aspects called, managing explicit knowledge, managing tacit knowledge, creating new knowledge and transferring knowledge. According to Agrawal (2005), every organization needs a very good system integration to make Knowledge Management successful. Tacit knowledge is highly

complex as compared to qualitative form it usually takes and is hard to extract, as opposed to explicit knowledge.

According to Maier (2007), goals and strategies show that implementing a KM strategy represents a comprehensive initiative, a fundamental intervention into one of the prime factors of organizational design and culture, namely the way an organization handles knowledge. From a management perspective, ensuring success of such an initiative requires the systematic consideration of success factors and barriers to KM. Management of knowledge risks is the most important factors in governance of knowledge risks that avoid negative consequences resulting from either sharing knowledge too freely or from overprotection.

2.7.1. Success Factors

The following are factors influencing success of a KM initiative in general and the implementation of KM strategy in particular.

- **Holistic, integrated and standardized approach:** KM should not be interpreted as a one-sided technology, culture, coordination, leadership or reorganization problem. On the contrary, all these components as well as the relationships and interdependencies between them have to be considered in order to turn potentials into profits. Isolated solutions, e.g., incompatible communication systems, no standards, different knowledge processes, should be avoided. Rather, knowledge processes and ICT platforms for KM should be standardized throughout the organization and integrated with the existing business processes.
- **Knowledge-oriented culture:** a supportive organizational culture is one of the most important factors for a successful KM initiative. An open and communicative atmosphere can thrust the sharing of knowledge, the identification, creation and acquisition of new knowledge by employees. KM initiatives have to take the organizational culture into account and have to support a knowledge-oriented culture through e.g., communication of success stories and best practices, through the acceptance of errors as well as through stressing that every employee is responsible for his or her own learning processes.

- **Management support:** as in all efforts of organizational change, it is important that top management sets strategic knowledge goals, allocates sufficient budgets to the initiative and gives a good example for the change of behavior required to improve the handling of knowledge. A knowledge champion can act as a coordinator for management support as well as key speaker and motivator for the initiative.
- **Clear economic benefits:** the establishment of a “knowledge controlling” is required that coordinates goal setting and goal assessment, e.g., on the basis of the intellectual capital approach in order to show that a KM initiative really is worth the investment.
- **Exact vision and language:** terms such as knowledge, information, learning, knowledge base or organizational learning are subject to interpretation. A KM initiative should define these terms with respect to the organization’s knowledge related goals so that the perspective on what is and what is not knowledge management is clearly communicable within the organization.
- **Effective aids for motivation:** incentive systems have to be installed that reward an improvement of the organizational knowledge base. This is especially true for immaterial incentives, such as additional training for effective knowledge providers or “elite” communities for the organization’s experts.
- **Appropriate process orientation:** the integration of KM activities into the organization’s business processes is an important factor as an effective and efficient handling of knowledge requires it being part of the organization’s daily routine. However, as mentioned in Getachew (2009), Davenport and Prusak warns not to exaggerate the definition, description and standardization of knowledge processes as one might miss the essence of knowledge: the creativity that generates ideas and inventions.
- **ICT and organizational infrastructure:** ICT can be the enabling factor in a KM initiative. There are also limits to its use and the installation of a good platform does not guarantee success. A good organizational infrastructure is regularly connected with a separate organizational unit or position that coordinates the initiative.

- **Stable knowledge structures:** knowledge structures are required to enable participants to search and navigate the abundance of (documented) organizational knowledge. Successful KM initiatives thus require a well-documented and stable knowledge structure. Knowledge itself is not stable, but dynamically evolves. Therefore, organizations have to allow a certain amount of flexibility in the evolution of their knowledge structures in order to avoid rigid and outdated knowledge structures.
- **Redundant channels for knowledge transfer:** knowledge is shared and distributed with the help of multiple channels, e.g., personal interaction in the cafeteria, telephone, email, newsgroups, bulletin boards, business TV, video conferences, documents. The transfer of redundant knowledge with the help of several channels supports the learning process. New communication channels introduced with KM strategy should not be seen as replacements for existing channels, but as aids to improve the effective and efficient use of the existing channels.
- **Continuous participation of employees:** as with the implementation of most organizational and ICT instruments, participation of employees helps that the solutions are well received by the employees so that motivation to cooperatively use the new ICT and organizational instruments is high. In the case of KM, several initiatives seem to show a pattern of “emergent” strategy where employees generate KM related ideas, develop an initial solution (e.g., within a community that discusses KM) which in turn gets management attention and support.

In general, as mentioned in Getachew (2009), Davenport and Prusak identified a comprehensive set of factors that affect the success of KM in organizations’ efforts to manage their knowledge in their exploratory research. Nine factors were identified in that research.

1. Knowledge –oriented culture (positive outlook towards knowledge)
2. Technical and organizational infrastructure (establishing roles and providing skills from which individual projects can benefit, technological capability to establish successful KM projects)
3. Senior management support (KM process facilitator and project champion)

4. Link to economics or industry value (cut cost and generate revenue)
5. Modicum of process orientation (avoiding excessively detailed KM processes)
6. Clarity, vision and language (establishing clear KM goals and concepts)
7. Non-trivial motivational aids (long-term incentives tied to compensation for sharing relevant knowledge)
8. Some level of knowledge structure (structured and easily assessable knowledge repository)
9. Multiple channels for knowledge transfer (KM Systems and face to face meetings)

As can be referred from the above mentioned points it is possible to categorize the factors as individual, organizational and technical. However, most of the factors do not fall into exactly a single category. These organizational factors include how the business is structured (the corporate structure itself), the company's formal business processes, as well as its hierarchies. These individual factors point out interpersonal relationships, personal experiences, the motivation and expertise of employees, and the personal and professional backgrounds of employees. The leadership factor refers to the process of influencing others, aiming towards a specific goal, and helping define an organizational reality (Getachew, 2009).

2.7.2. Barriers

According to Maier (2007), successful KM initiatives also focus on lowering barriers to knowledge management. In addition to barriers negatively affecting individual learning, there are numerous barriers to an effective organizational learning and consequently to an effective KM. The following are the most important barriers:

- **Knowledge providers:** lack of motivation, provider not perceived as reliable, ignorance, lack of skills to explicate knowledge, and skilled incompetence.
- **Knowledge seekers:** lack of motivation, limited absorptive, processing and learning capacity, limited retentive capacity, and lack of knowledge about what knowledge already exists in organization, conservative tendency to avoid innovative learning due

to an orientation towards the individual history, role-constrained learning, and superstitious learning and so on.

- **Transferred knowledge:** causal ambiguity, unproven knowledge, inadequate context, inadequate framing/problem representation, inadequate temporal context etc.
- **Infrastructural context:** unproductive organizational context, e.g., inflexible power structures, lack of management support, vertical, horizontal and lateral information filters, specialization and centralization, lack of resources and time, lack of ICT support, problems with the use of ICT etc.
- **Cultural context:** lack of social relationships between knowledge provider and recipients, group think, exaggerated unified culture and inward-orientation and so on.

2.7.3. Risks

According to Maier (2007), risks can be analyzed on a strategic or on an operational level. Compared to operational risks, strategic risks are characterized by long-term impact, more interacting variables, and higher degree of abstraction and are thus harder to identify, assess and manage. Risks on an operational level are focused on day-to-day business and can be defined as the “risk of loss resulting from inadequate or failed internal processes, people and systems or from external events”

KM initiatives certainly should be regarded as strategic interventions. Thus, it is worthwhile thinking about (1) strategic risks involved in the organization’s (core) competencies and strategic knowledge assets as well as (2) strategic risks involved in the KM initiatives and the planned measures, instruments and systems themselves.

Maier further mentioned that, knowledge risks are a subset of operational risks, i.e. risks of loss resulting from inadequate or failed internal processes, people and systems or from external events, that are caused by (i) a dependency on, (ii) a limited quality, (iii) insufficient transfer, (iv) loss or (v) diffusion of knowledge assets and result in a lack or non-exclusivity of these assets.

- i. **Dependency on knowledge assets** can result in a lack of these assets during the execution of business processes that can be characterized as shortage or non

- availability. Dependencies can for example concern key employees or key skills of these employees as well as services of an alliance or outsourcing partner. Also, problems with IT infrastructures that administrate documented knowledge, e.g., insufficient availability, inconsistency or data loss can lead to a lack.
- ii. **Limited quality of knowledge assets** can be assessed according to the four aspects content, i.e. e.g., correctness or timeliness of knowledge, the community in which knowledge is created and used, the development and deployment processes that provide the knowledge as well as the quality of the IT infrastructures used to provide access to documented knowledge or meta-knowledge about the knowledge sources. Consequently, limited correctness, low applicability of knowledge or restricted accessibility of the supporting IT infrastructure can result in a lack of knowledge assets during execution of business processes.
 - iii. **Insufficient knowledge transfer** in this case primarily refers to processes in which organizations attempt to get access to external knowledge that they cannot create internally for reasons of time or cost which is an important means to extend the organizational knowledge base. This is especially the case in knowledge cooperation. The very reasons for their establishment are to overcome specific knowledge problems and to develop new applicable knowledge by a combination and integration of existing, possibly secured knowledge or by joint knowledge development which therefore requires uninhibited knowledge transfer between the partner organizations. An attempt to transfer knowledge that cannot be carried out sufficiently can be caused by too rigid rules for knowledge transfer, also called overprotection, but also by vague rules. The latter leave employees hesitant about freely sharing knowledge because they are not aware what is expected from them and what would be considered an act against the interests of the organization. This can result in a lack of the required knowledge assets.
 - iv. **Loss of knowledge assets** is unrecoverable and also leads to a lack at the level of operational business processes. Examples are fluctuation of employees with unique knowledge, skills, social networks or experiences to other jobs within the organization (intra-fluctuation), to other organizations (inter-fluctuation) or due to

their retirement (extra-fluctuation), non-documentation of knowledge, deletion of documented knowledge or malfunctioning of IT infrastructures including backup services.

- v. **Diffusion** means access to sensitive or competitive knowledge by non-authorized persons. Contrary to knowledge loss, diffusion means that knowledge is still available, but not exclusively to the organization. Some authors stress this risk and the possibly resulting dilution of competitive advantages, especially in inter-organizational settings as strategic alliances, clusters, joint ventures, virtual networks and professional communities. Examples for knowledge diffusion risks are access to unauthorized persons, social or reverse engineering, loss or theft of unsecured, especially mobile devices with replicated documented knowledge or unsecured access to IT infrastructures. Causes are not isolated from each other, but can also interact. For example, fluctuation of employees on the one hand leads to knowledge loss for processes, routines and practices in which the employees participated. On the other hand, fluctuation bears risks that knowledge diffuses and its exclusivity is lost by re-applying firm-specific knowledge at a competing organization (Matusik and Hill, 1998).

2.8. Management of Knowledge Risks

As Maier (2007) states, risk management typically comprises identification, assessment, control and evaluation as core processes or basic steps that are executed in a life cycle that targets and revolves around the main media of knowledge assets.

- **Identification:** the starting point for the knowledge risk management process is the identification of knowledge risks that can use different sources such as review of contracts, policies and their compliance, penetration tests for IT systems or analysis of dependencies on different knowledge assets.
- **Assessment:** identified knowledge risks have to be assessed concerning their probability and severity of the resulting losses. This assessment has to be based on the value of the knowledge assets and also interactions between knowledge assets have to

be considered. However, the valuation of knowledge assets is still in its infancy and consequently the assessment of knowledge risks is still challenging.

- **Control:** governance measures have to be selected to control knowledge risks. Governance means the set of processes and policies affecting the way handling of knowledge is directed, administered or controlled. Examples are using intellectual property rights, measures to reduce dependencies, retention planning for leaving employees, organizational conception of access rights and their technical implementation and maintenance as well as insurance policies.
- **Evaluation:** finally, treatment of knowledge risks is an ongoing process since risks, probabilities, severity as well as the efficiency of governance measures change over time.

2.9. Tools for Analyzing the Knowledge Context

According to Singh (2005), there are two key tools for developing the knowledge strategy: a knowledge “SWOT” and social network analysis. These two tools complement each other in their usage. The knowledge SWOT is a useful tool to analyze how an organization deals with knowledge. Social network analysis (SNA) techniques can analyze what knowledge sources the organization has access to, as well as what gaps exist. Used together, these two tools can provide a comprehensive understanding of the knowledge context of an organization.

2.9.1. Knowledge SWOT

A knowledge strategy should support the business strategy. To do this, Zack (1999) proposes four steps: (1) defining a business strategy, (2) determining what knowledge is needed to achieve the business strategy, (3) assessing what knowledge it has, and (4) comparing these two to find out what “knowledge gaps” there are. One method Zack proposes to achieve this is a “knowledge-based SWOT analysis.” (Singh, 2005).

2.9.2. Social Network Analysis

As Singh (2005) states, the knowledge management strategy will need to address the weaknesses and threats identified through SWOT which form the knowledge gap. However,

it is also important to audit the knowledge flows within the organization. Singh (2005) referring to Cross and Prusak (2002) contend that analysis of the social networks in an organization can show both where the concentrated flows of information are and, importantly, what flows may be missing. While Cross and Prusak, concentrate on flows within and between the informal networks that exist within an organization, for public organizations such as DARO it is also necessary to focus on the flows of information to an organization from outside.

2.10. KM Models

Many researchers in the field of knowledge management have suggested models for KM implementation organizations. These researchers had looked at various aspects of organizational knowledge when designing models. In this study the researcher reviewed those models that were put together by Dalkir (2005) as they are believed to possess some critical characteristics. The first point is that, they follow a holistic approach by comprehensively considering the people, processes, organizational and technology dimensions of knowledge management. Secondly, these models have been reviewed, critiqued and discussed extensively in various KM literatures by researchers, academics and by practitioners. The models have also been tested for reliability and validity as Dalkir mentioned in his book.

2.10.1. The von Krogh and Roos Model of Organizational Epistemology

The von Krogh and Roos KM model (1995) distinguishes between individual knowledge and social knowledge, and they take an epistemological approach to managing organizational knowledge: the organizational epistemology KM model. In this model the definition of organization has been problematic and it is often confused with information on Krogh and Roos adopt the connectionist approach. In their organizational epistemology KM model, knowledge resides both in individuals of an organization and, at the social level, in the relations between the individuals (Dalkir, 2005).

2.10.2. *The Nonaka and Takeuchi Knowledge Spiral Model*

After careful study of the success of Japanese companies in achieving creativity and innovation, Nonaka and Takeuchi found that this was far from a mechanistic processing of objective knowledge. Instead, they discovered that organizational innovation often stemmed from highly subjective insights that can best be described in the form of metaphors, slogans, or symbols (Dalkir, 2005).

The Nonaka and Takeuchi model of knowledge conversation and knowledge spiral as shown in figure 2.1 and figure 2.2 below respectively, KM has its roots in a holistic model of knowledge creation and the management of “serendipity.” The tacit/explicit spectrum of knowledge forms (the epistemological dimension) and the individual/group/organizational or three-tier model of knowledge sharing and diffusion (the ontological dimension) are both needed in order to create knowledge and produce innovation (Dalkir, 2005). This model is one of the most robust KM models and has proven to be simple for understanding and for applying.

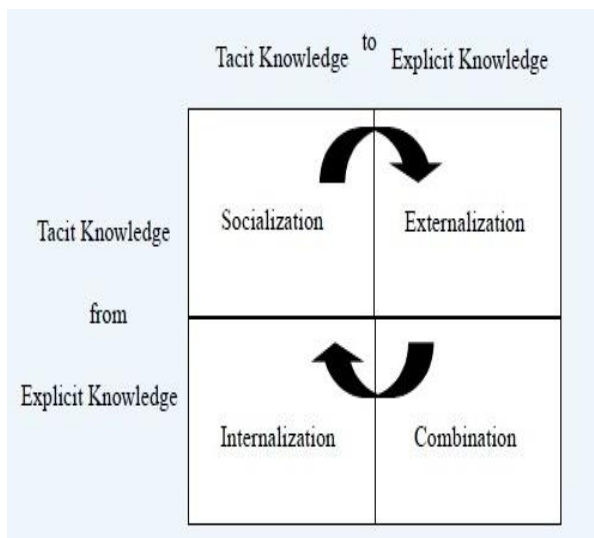


Figure 2.1. The Nonaka and Takeuchi model of Knowledge Conversation

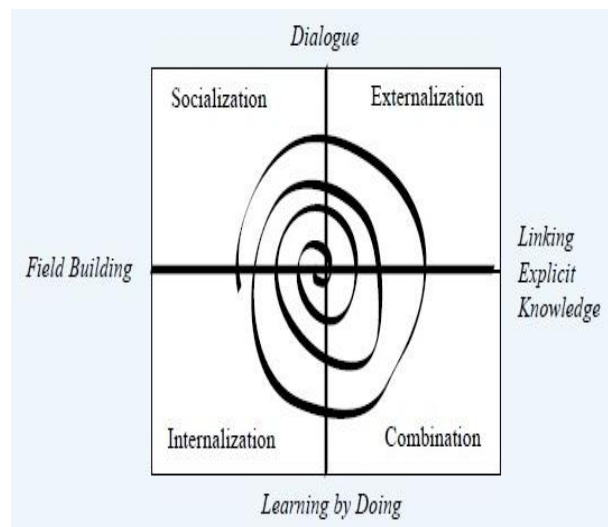


Figure 2.2. The Nonaka and Takeuchi Knowledge Spiral

2.10.3. The Choo Sense-making KM Model

Choo described a KM model that focuses on making sense, knowledge creation and decision making. This model is mainly concerned with how information elements are selected and fed into organizational actions. Organizational action results from the concentration and absorption of information from the external environment into each successive cycle (Dalkir, 2005). The strength of the Choo KM model is the holistic treatment of key KM cycle processes extending to organizational decision making, which is often lacking in other theoretical KM approaches. This makes the Choo model one of the more “realistic” or feasible models of KM, for the model represent organizational actions. The Choo KM model is particularly well suited to simulations and hypothesis or scenario-testing applications.

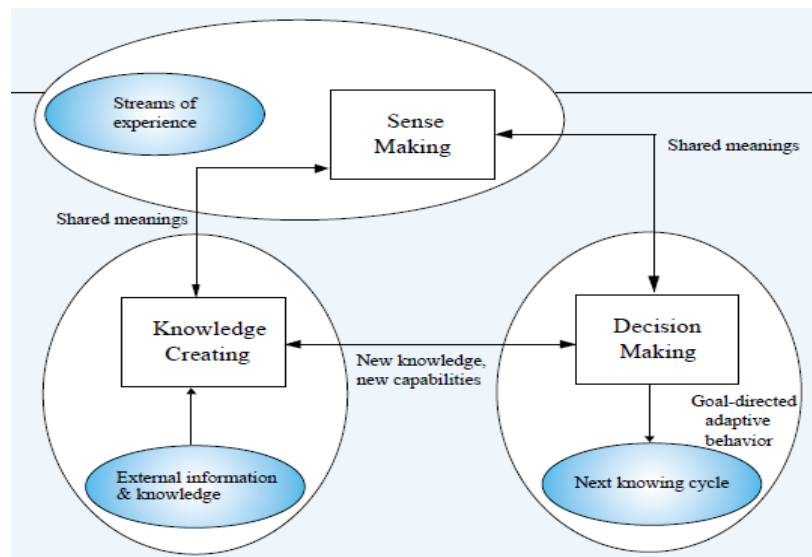


Figure 2.3. The Choo Sense-making KM Model

2.10.4. The Wiig Model for Building and Using Knowledge

Wiig’s KM model goes on to define different levels of internalization of knowledge. Wiig’s approach can be seen as a further refinement of Nonaka and Takeuchi’s fourth quadrant, internalization. Figure 2.4 briefly defines each of these levels. In general, there is a continuum of internalization, starting with the lowest level, the novice, who “does not know he does not know” who does not have even an awareness that the knowledge exists and

extending to the mastery level where there is a deep understanding not just of the know what, but the know-how, the know-why, and the care-why (Dalkir, 2005).

Level	Type	Description
1	Novice	Barely aware or not aware of the knowledge and how it can be used.
2	Beginner	Knows that the knowledge exists and where to get it but cannot reason with it.
3	Competent	Knows about the knowledge, can use and reason with the knowledge given external knowledge bases such as documents and people to help.
4	Expert	Knows the knowledge, holds the knowledge in memory, understands where it applies, reasons with it without any outside help.
5	Master	Internalizes the knowledge fully, has a deep understanding with full integration into values, judgments, and consequences of using that knowledge.

Figure 2.4. Wiig KM Model-Degree of Internalization

Wiig approached his KM model with the principle that knowledge must be organized in order to be useful and valuable. According to Wiig, knowledge is organized differently based on what use will be made of the knowledge. Completeness, connectedness, congruency, perspective and purpose are the dimensions considered in Wiig’s KM model. As it is shown in figure 2.5 below, this model categorizes knowledge into three forms, namely personal, public and shared and four types, namely factual, conceptual, expectational and methodological.

Form of Knowledge	Type of Knowledge			
	Factual	Conceptual	Expectational	Methodological
Public	Measurement, reading	Stability, balance	When supply exceeds demand, price drops	Look for temperatures outside the norm
Shared	Forecast analysis	“Market is hot”	A little water in the mix is okay	Check for past failures
Personal	The “right” color, texture	Company has a good track record	Hunch that the analyst has it wrong	What is the recent trend?

Figure 2.5. The Wiig KM Matrix

2.10.5. The Boisot I-Space KM Model

This model is based on the key concept of “information good” that differs from a physical asset. Boisot distinguishes information from data by emphasizing that information is what an observer will extract from data as a function of his or her expectations or prior knowledge (Dalkir, 2005). According to this model, the effective movement of the information good is dependent on the coding scheme and language used by the sender and the receiver.

Boisot (1998) proposes the following two key points:

- i. The more easily data can be structured and converted into information, the more diffusible it becomes.
- ii. The less data that has been so structured requires a shared context for its diffusion; the more diffusible it becomes (Dalkir, 2005).

2.10.6. Complex Adaptive System Models of KM

The key concept behind this model is that it considers an organization as an Intelligent Complex Adaptive System (ICAS). Complex adaptive systems consist of many independent agents that interact with one another locally. Together, their combined behavior gives rise to complex adaptive phenomena. Complex adaptive systems are said to “self-organize” through this form of emergent phenomena. There is no overall authority that is directing how each one of these independent agents should be acting. An overall pattern of complex behavior emerges as a result of all their interactions (Dalkir, 2005).

In an ICAS, the intelligent components of the organization are people who are empowered to self-organize but remain part of the overall corporate hierarchy. The challenge is to take advantage of the strengths of people while getting them to cooperate and collaborate to leverage knowledge and to maintain a sense of unity of purpose. The key processes in the ICAS model can be visualized as follows in figure 2.6.

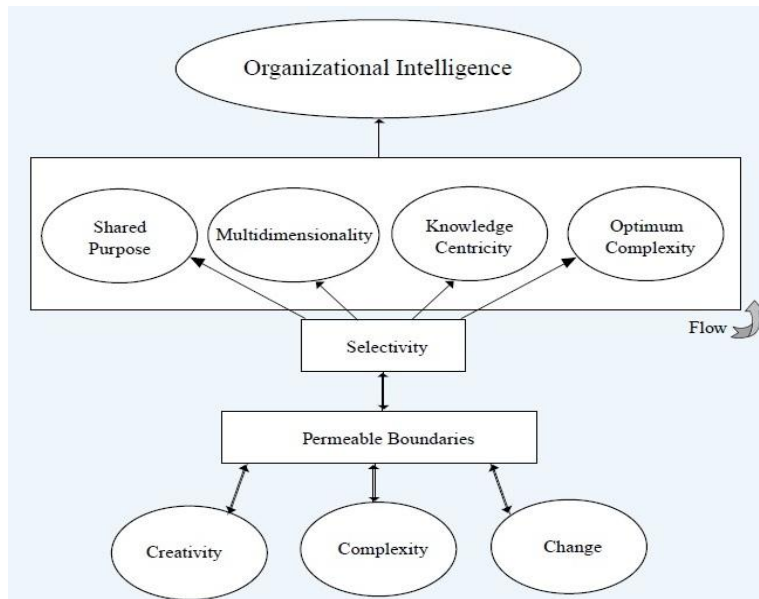


Figure 2.6. The Complex Adaptive System Model

This model focuses on people, their learning and competency as it is only people who can make decisions and take actions at the end of the day. In summary, the ICAS model describes organizational knowledge management in four major steps. These are creativity, problem solving, decision making and implementation.

2.11. KM Technologies

There are certain steps that come with the adoption of a new technology in an organization. These steps include initiation, adoption, adaptation or customization, acceptance and finally infusion. The steps cover the processes from initiating the adoption of the new technology up to adaptation, user training and acceptance by the organization community. The final step that is infusion is the stage where it makes sure that the new technology is helping the organization to achieve efficiency.

Since KM Systems are similar to other information related technologies, the adoption process of KM systems are analogous to that of the other technologies. Based on the needs of the organization there are different KM technologies that can be adopted. After careful study of DARO’s organizational nature, in this study the researcher has reviewed the following literature on KM technologies.

2.11.1. Document and Content Management

The term document management denotes the automated control of electronic documents, both individual and compound documents, through their entire life cycle within an organization, from initial creation to final archiving (Maier, 2007) i.e., creation, storage, organization, transmission, retrieval, manipulation, update and eventual disposition of documents. A document management system (DMS) provides functions to store and archive documents, navigate and search documents, for versioning and to control access to documents.

A content management system (CMS) supports the organization of information and contents and the publication on the Web. Like DMS in the non-Web environment, CMS manages the whole Web publishing process (Maier, 2007). There are standardized templates and layouts where even users with no HTML background can publish content on the web.

2.11.2. Workflow Management

A workflow is the operative, technological counter-part of a business process and consists of activities related to one another which are triggered by external events and carried out by persons using resources such as documents, application software and data. A workflow management system (WFMS) “defines, creates and manages the execution of work flows through the use of software, running on one or more workflow engines, which is able to interpret the process definition, interact with workflow participants and, where required, invoke the use of IT tools and applications”. WFMS functionality can be used in knowledge management, e.g., to support processes such as the publication or distribution of knowledge elements. Several knowledge management systems contain flexible functions for workflow management (Maier, 2007).

2.11.3. Intranet

An intranet represents an organization’s internal network based on Internet technologies. An intranet consists of a bundle of applications and data bases. Access to the Intranet is restricted to a limited group of users.

2.11.4. Group Support Systems (GSS)

GSS is an interactive system that combines communication, computer, and decision technologies to support the formulation and solution of unstructured problems in group meetings. GSS integrate technologies to support the communication in groups, the structuring of processes by which groups interact (e.g., agenda setting, facilitation) and information processing (e.g., aggregating or structuring information) (Maier, 2007).

2.11.5. Communication Systems

Communication systems are electronic systems that support both asynchronous and synchronous communication between individuals (point-to-point communication systems) and collectives (multi-point communication systems). Examples for synchronous communication systems are tele-conferencing systems such as text conferencing (chat), instant messaging, and audio and video conferencing systems. Examples for asynchronous communication systems are email and newsgroups (Ibid).

2.12. Related Works

There are a number of studies conducted in the area of knowledge management especially in the area of assessing the knowledge sharing practice. In this study two different but related works reviewed below. The first one is focuses on knowledge strategy in small organization and the second is deals on knowledge management in Ethiopia as an overview. Therefore, these two studies are more relevant according to the researcher point of view in line with addressing the objective and research questions of this study.

2.12.1. Knowledge Strategy in Small Organizations

This research is titled as: Knowledge Strategy in Small Organizations: The Office of Small Business, Australia. The research was conducted by a scholar, Christena Singh in 2005. The main objective of the study is to assess the importance of knowledge strategy in small organizations. In this regard, exploratory method of study was applied. The study mainly based on the data gathered from secondary sources of small organizations in Australia.

According to the findings, in Australia the small business community is exceptionally diverse. Consequently, the needs of small businesses are disparate, and to effectively advise on small business policy, a large amount of knowledge on a vast range of topics collected from a large number of different sources is required. With timeliness and quality being driving factors for the Office of Small Business, knowledge management will continue to grow in importance. Staff turnover, both inwards and outwards highlighted the need for a more strategic approach to knowledge management.

Within six months from conception, the Office of Small Business had developed a knowledge management strategy and had completed the first phases of implementation, with benefits already starting to accrue to the organization. The researcher further mentioned that the development of knowledge management strategy was strongly supported by the senior management. Overall, the level of support for the development and implementation of this strategy was high throughout the organization. The tools that the organization used for analyzing the knowledge context were: a knowledge “SWOT” and social network analysis.

According to the researcher, the Office of Small Business developed a knowledge strategy which aimed to better utilize the large amount of knowledge that was available to it after studying the results of the knowledge audit.

Moreover, the research mentioned that as the Office of Small Business is heavily reliant on uncodified knowledge; the knowledge management strategy comprises a core personalization strategy to enhance the flows of uncodified knowledge and a supporting codification strategy enabled by information technology to assist in the utilization of knowledge that is able to be codified. To enable effective implementation, the knowledge strategy was broken down into a series of discrete projects, chosen to fit within the flexible nature of the organization.

In conclusion, there are two key messages that the researcher emphasize. The first is the importance of having a sound foundation to build a knowledge strategy. Second, there are many small organizations for which knowledge strategies are essential to be able to effectively leverage their core strengths. Knowledge strategy is not solely the domain of large businesses.

2.12.2. Knowledge Management in Ethiopia Agricultural Sector

This study focuses on knowledge management in Ethiopia Agriculture Sector. It is conducted by Ermias Sehai in 2006 from International Livestock Research Institute. The study mainly intended in assessing knowledge and knowledge management including a rational for agricultural knowledge management in Ethiopia. Moreover, it depicts about a suggested approach in knowledge management implementation.

The study shows knowledge management system will have a positive impact on the development of Ethiopian agriculture sector. In order to develop and implement knowledge management system the study shows six steps. These are: First, developing a knowledge management strategy that is aligned with and supportive of the overall organizational strategy. Second, defining the sign posts of where an organization is in terms of its ability to leverage knowledge and where it want to be and thus determine what needs to be done to get there. Third, selecting appropriate knowledge management that is easily understood and realistically applicable. Fourth, selecting appropriate knowledge management tools that serve as enablers to implement the bigger concept. Fifth, understanding and adopting and/or responding to the role of organizational culture to the success of knowledge management. Sixth, appreciation of the value of starting with a pilot implementation.

According to Ermias (2006), in order to develop knowledge management strategy there is one fundamental decision that needs to be made. That is whether the major thrust of KM efforts will be on codification or personalization. In addition the readiness of the organization in terms of cultural, technological, and key operational and business issues that may be impacted by a KM initiative is very critical according to the study. Moreover, mapping the current knowledge and collaboration patterns within the organization is also important since it will help to determine the starting point for the KM initiative. Selecting appropriate KM and KM tool were used by the researcher to develop the KM strategy. Furthermore, assessment of organizational culture is another issue emphasized by the researcher as the most important determinant for the success of a knowledge management initiative. Finally, the study addressed the value of staring with a pilot implementation in order to make the KM initiative more successful.

2.12.3. Knowledge Sharing Practice in CBE

This study is titled as: Evaluation of Knowledge Sharing Practice in Commercial Bank of Ethiopia (CBE). The research was conducted by Habtamu Mohammed in 2011. The main aim of the study was to evaluate the practice of knowledge sharing at Commercial Bank of Ethiopia using Nonaka's SECI model of knowledge creation and sharing. Nonaka's SECI model consists of Socialization, Externalization, Combination and Internalization, which is crucial to assess individual, group and organizational knowledge flow from tacit-to-tacit, tacit-to-explicit, explicit-to-explicit and explicit to tacit, respectively.

To this end, the researcher was collected the necessary data using questionnaire from Commercial Bank of Ethiopia Southern Addis Ababa district and the departments of Human Resource, Information Technology, Procurement and Outsourcing to get the overall picture of the knowledge flow in the banking sector. The result of the study revealed that the bank has relatively in a good position in synthesizing explicit knowledge from the existing explicit knowledge to come up with organizational knowledge. However, the culture of tacit-to-explicit and explicit to tacit knowledge sharing is minimal. The major barrier to share knowledge among employees of the Bank was lack of time for externalizing existing knowledge and internalizing new knowledge. As a result, the researcher recommends for the Bank to arrange appropriate time for enabling knowledge sharing practice among employees.

In general, in this research knowledge sharing practice including the barriers to share knowledge among employees assessed in detail. However, the strategy in managing both tacit and explicit knowledge was not addressed by the researcher.

2.12.4. Knowledge Sharing Among Employees of MIE

This study was conducted by Hareya G/selassie in 2011 in the title called Knowledge Sharing among Employees of Mesfin Industrial Engineering. The general objective of the study was to identify and discuss the factors that affect knowledge sharing in MIE, with the aim of creating awareness for organizations to adapt knowledge sharing for competitive advantage and organizational success. In this regard, the study investigated the knowledge sharing culture among employees of Mesfin Industrial Engineering (MIE). In addition, the study

identified factors that affect knowledge sharing and mechanisms of knowledge sharing in the organization. Finally, the study came up with the possible models of knowledge sharing which could enhance the performance of the organization.

Regarding the method applied, mixed method of data collection, which employs both quantitative and qualitative methods, was used. A self-administered questionnaire was administered for employees in the organization. Based on this, the findings show that males understand and practice knowledge sharing better. And, employees between the ages of 25 and 34 and with an education level of bachelor's degree understand knowledge sharing in the organization better. The result also shows that IT infrastructures, personal benefits, management problems, attitude and willingness of individuals, skills and knowledge storage mechanisms are the critical factors that affect knowledge sharing in the organization.

The study concludes that, since knowledge sharing is very important for organizations to enhance their performance, top managers should give value to it and they have to link it with rewards, recognitions and some benefits that motivate the employees to share their knowledge. However, the study was not addressed the mechanisms in managing the created knowledge of the organization. In general, in this study even though knowledge sharing practice among employees assessed, there is a gap in indicating strategic direction based on the business strategy of the organization.

Table 2.1: Summary of Related Works

S.N	Author	Objective	Method (Techniques)	Key Findings	Remarks
1	Christena Singh (2005)	To assess the importance of knowledge strategy in small organizations of Australia.	Exploratory method of study	<ul style="list-style-type: none"> Importance of having a sound foundation to build a knowledge strategy Knowledge strategy is not solely the domain of large businesses. 	<ul style="list-style-type: none"> There is a gap in indicating the mechanisms to manage organizational knowledge.
2	Ermias Sehai (2006)	To assess knowledge and knowledge management including a rational for agricultural knowledge management in Ethiopia.	Explanatory Method of study	<ul style="list-style-type: none"> KM systems have a positive impact on the development of Ethiopian agriculture sector. In order to develop and implement KM system the study shows six steps The value of pilot implementation 	<ul style="list-style-type: none"> Only focuses on agricultural knowledge not in the public organization context.
3	Habtam Mohammed (2011)	To evaluate the practice of knowledge sharing at Commercial Bank of Ethiopia using Nonaka's SECI model of knowledge creation and sharing.	<ul style="list-style-type: none"> Quantitative and qualitative method Questionnaire Interview Observation 	<ul style="list-style-type: none"> CBE has relatively in a good position in synthesizing explicit knowledge to come up with organizational knowledge. Lack of time for externalizing existing knowledge and internalizing new knowledge is the major barrier. 	<ul style="list-style-type: none"> Only focuses on knowledge sharing. There is a gap in the knowledge management context.
4	Hareya G/selassie (2011)	To identify and discuss the factors that affect knowledge sharing in Mesfin Industrial Engineering, with the aim of creating awareness for organizations to adapt knowledge sharing for competitive advantage and organizational success.	<ul style="list-style-type: none"> Quantitative and qualitative method Questionnaire Interview Observation Document analysis 	<ul style="list-style-type: none"> IT infrastructures, personal benefits, management problems, attitude and willingness of individuals, skills and knowledge storage mechanisms are the critical factors that affect knowledge sharing 	<ul style="list-style-type: none"> Mechanisms in managing the created knowledge of the organization not addressed in the study

CHAPTER THREE

METHODOLOGY OF THE STUDY

In this part, the two broader categories of methodology: Research Design and Methods are presented. First, the chapter deals with a brief summary of research design of the study which includes: research approach, study area, target population and sample size with its techniques. Following this, there is brief description of the data type and data collection methods which have been used in the study. It includes questionnaire and semi-structured interview. Finally, the methods that were used to analyze the data are presented.

3.1. Research Design

In this research, exploratory type of study is used while using qualitative and quantitative research substantiating it to be an appropriate approach to the research questions of the study. It is preferred to focus on these approaches of qualitative and quantitative design to gather well-organized information on the research questions, to get new facts and give suggestion as well as its conformity to describe research questions in a better way. Thus, respondents' perceptions on the existence of knowledge management practice in the organization were studied on the basis of data gathered in the form of words in oral or written modes to be generalized.

In addition, this method is selected for the reason that it enables the researcher to obtain information concerning the current status of the phenomenon and to describe "what exists" with respect to variables or conditions in a situation. In addition, it yields rich data that lead to important recommendations.

3.2. Study Area

This study has taken place in Addis Ababa, Specifically, in the Federal Documents Authentication and Registration Office. The researcher preferred to conduct the research in this particular area due to two reasons. In the first place, it has been a common phenomenon to see the organization in providing services to large number of customers and mainly based on rules and regulations and the tacit knowledge of experienced employees. Hence,

managing knowledge in the organization is very crucial. In the second place, it is one of those government organizations who provide the e-based service delivery and strives to be the first public organization in Ethiopia in delivering quality service based on ISO 9001:2008 standards (Capital, 2013). Thus, it is such a situation that finally triggered the researcher to conduct a research on formulating knowledge management strategy through assessing the existing knowledge sharing practice of the organization which is to be the effective vehicle of enhancing the opportunities and reduce the challenges related to organizational knowledge.

3.3. Target Population

DARO has been structured with twelve directorates and ten Branches in Addis Ababa and one branch in Diredawa. The organization has about 402 employees in Addis Ababa. Thus, all the employees in the head office and branch offices of Addis Ababa have been taken as a target population for the research.

3.4. Sample Size and Sampling Method

3.4.1. Sample Size

The sample size is an important feature of any empirical study in which the goal is to make conclusion about a population from the sample. Larger sample sizes generally lead to increased precision when estimating unknown parameters (Kumar, 1996). Sample size calculation is concerned with how much data require to make correct decision on particular research. If we have more data, then our decision will be more accurate and there will be less error of the parameter estimate. This does not necessarily mean that more is always best in sample size calculation.

A statistician with expertise in sample size calculation is needed to apply statistical techniques and formulas in order to find the correct sample size calculation accurately (Bartlett et al., 2001). For this study, the sample size is determined by three factors: the level of confidence the researcher wants to test the results; the degree of accuracy the researcher requires to estimate the population parameters; and the estimated level of variation with respect to the main variable being studied (Creswell, 2009). In this study, the use of a

questionnaire required survey type sample size calculation meaning that a sample error formula is used.

When the researcher has set the alpha level at 0.05, plans to use a proportional variable, has set the level of acceptable error at 5% and has estimated the standard deviation of the scale as 0.5. Cochran's sample size formula for categorical population is used.

$$n_0 = \frac{(t)^2 * (p) (1-p)}{(d)^2} , \quad n_1 = \frac{n_0}{(1+n_0/\text{Population})}$$

Where:

- t = value for selected alpha level of 0.025 in each tail = 1.65 (The alpha level of 0.05 indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error).
- Where (p) (1-p) = estimate of variance = 0.25. (Maximum possible proportion (0.5)* 1-maximum possible proportion (0.5) produces maximum possible sample size).
- d = acceptable margin of error for proportion being estimated = 0.05 (error the researcher is willing to accept).

$$n_0 = \frac{(t)^2 * (p) (1-p)}{(d)^2} = \frac{(1.65)^2 (0.5) (0.5)}{(0.05)^2} = 272$$

Therefore, for a population of 402, the required sample size is calculated as:

$$n_1 = \frac{n_0}{(1+n_0/\text{Population})} = \frac{272}{1+ 272/402} = \underline{\underline{163}}$$

Hence, the study was considered 163 employees of the target population as a sample size. This sample size classified for Head Office including all Directorates and each Branch Office of Addis Ababa based on proportion. See Table 3.1 below.

Table 3.1: Target Population and Estimated Sample Size for the Study by Location.

No	Location Name	Total Employee	Sample size
1	DARO Branch office one	20	8
2	DARO Branch office two	25	10
3	DARO Branch office three	29	12
4	DARO Branch office four	43	17
5	DARO Branch office five	21	9
6	DARO Branch office six	20	8
7	DARO Branch office seven	17	7
8	DARO Branch office eight	19	8
9	DARO Branch office nine	16	6
10	DARO Branch office ten	41	17
11	DARO Head office	151	61
Total		402	163

3.4.2. Sampling Method

Regarding the sampling method, systematic random sampling method is applied to select respondents from each location for questionnaire because this method reduces the potential for human bias in the selection of cases to be included in the sample. And it is also simple and convenient to adopt.

An interview is conducted with the Head of the Office and four selected key informants purposefully. The rationale behind choosing purposive sampling method for interview to select key informants: purposive sampling can be very useful to reach a targeted sample quickly and with a purposive sample, it is likely to get the opinions of the target population.

As a result, together with the systematic sampling method for questionnaire, this sampling method provides the researcher with a sample that is highly representative of the target population that had been studied.

3.5. Data Type and Data Collection Methods

After proposing research designs suiting the objectives of the study, the method for data collection is determined. In collecting the data, it is pivotal to employ methods which tend to generate high quality data since the quality of any research study depends highly on the quality of the data collected and the data collection methods (Seliger, 2009).

Thus, in this study primary and secondary data were used. In case of primary data questionnaire has been chosen as a data collection method because questionnaire is extremely flexible and can be used to gather information on almost any topic involving large or small numbers of people. And also very cost effective, reduce bias and familiar to most people. Moreover, the researcher is administered interview to get relevant and appropriate information through face-to-face surveys and discussion because interviews are particularly useful for getting the story behind a participant's experiences. In using these data collection methods, the researcher pursued in-depth information around the topic. To gather secondary data the researcher collected documents related to capturing knowledge and sharing knowledge in the organization including information technology infrastructure which is relevant to knowledge management technology. Thus, in consideration of the above perspectives the following research tools were used in the study.

3.5.1. Questionnaire

In designing the questionnaire the researcher used extensive review of literature in line with the specific objectives of the study. Based on this, it is designed by grouping in to three parts. The first part deals with the background information of each respondent. The second part deals about current practices of knowledge sharing in the organization at an individual and organizational level. The third part is about organizational support as enablers or risks and also a question deals about the barrier of knowledge sharing which is presented in the form of ranking the identified barriers from literatures. The last part is about the existence and application of knowledge management technologies in the organization.

A pilot test was conducted and based on its results the data collection instrument was refined before applying to the targeted respondents in the organization. Finally, the questionnaires were distributed to 163 employees of the organization and each respondent was instructed to complete the questionnaire and to provide additional comments if they have any.

3.5.2. Interview

Interview can be enabled the researcher to be aware of what is actually going on and how things are proceeding so as to recognize and elaborate why things occur in a particular situation. Based on this, semi-structured interviews were conducted to understand the process used for managing knowledge during daily operation of the organization and the interviewees' perceptions of how to manage knowledge while performing their duty. The interview questions primarily focused on the current practice of knowledge sharing in DARO based on four elements. The elements are namely types of knowledge, culture for sharing knowledge, knowledge sources and knowledge management systems.

The main purpose of these interviews is to collect qualitative data that will complement and triangulate by the results to be collected from the questionnaire. Moreover, it will help the researcher to cross-check with documents and vice versa with each other. In this regard, the interviews were made with four key informants i.e. the Head of the Office, two selected Directors in the organization; and one senior IT Officer as a key informant from Information Technology Directorate of the organization. Each key informant was interviewed independently and the researcher took down notes.

The interviews were conducted at suitable times for participants, with the duration ranging 45–60 minutes. Each participant was informed about an overview of the research, and detailing the participant's rights and responsibilities. Each participant was then asked a series of questions, with both the researcher and participant seeking clarification or more information whenever required.

3.6. Methods of Data Analysis

The data collected from respondents were analyzed using quantitative and qualitative methods. As far as the quantitative method is concerned, questionnaires administrated from

employees were processed, coded and analyzed using descriptive statistics (such as frequency, percentage, and mean value) with the help of SPSS 20 software and Gephi 0.8.2 was used to understand the knowledge flows in the organization.

The textual data gathered through the interview and open ended questions of the questionnaires were analyzed qualitatively on the basis of Milles and Huberman (1994) method of qualitative analysis, which is comfortable for various social issues. As to these scholars, it is important to describe, analyze and interpret performance of institutions and drawing out generalizations which are either helpful to solve the problem directly or to guide for further investigations.

In cognizant of this method, first the researcher prepared contact summary sheet that contain a set of questions to respondents. Then, coding followed for categorizing or classifying texts. Next to that, summarizing followed on the ideas of codes and their relationship to each other. Finally, the collected data was described as of its representativeness.

3.7. Validity and Reliability

Validity means that we are measuring what we want to measure (Marshall, 2006). There are different types of validity measurements including, face validity - whether at face value, the questions appear to be measuring the objective of the study. The researcher had undertaken a pilot-test on selected employee to check the validity of the questionnaire. The content validity also assured when the questionnaire was prepared based on extensive reading of literature review. So, the validity of each question to collect data that focused on the present research objective was discussed with 6 participants by selecting purposefully from the organization based on their level of awareness in conducting research. The feedback also led to minor modifications aimed at increasing the questionnaires validity and clarity.

On the other hand, Cronbach's alpha was used to measure the reliability of the questionnaire. Cronbach's alpha is a model of internal consistency based on the average inter-item correlation. Measures in this study are judged to be reliable if Cronbach's coefficient alpha is 0.7 or greater (Sekaran, 2000). In this regard, the Cronbach's alpha for this study is 0.79 this shows the items are reliable and the entire test or questions are internally consistent.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1. Demographic Analysis

In conducting this study, 163 questionnaires were distributed for respondents. Among them, 160 respondents participated in filling questionnaires and 3 questionnaires were not returned. Accordingly, the following Table 4.1 shows the sex and age of the respondents who are currently working in Documents Authentication and Registration Office and participated in this study by filling questionnaires. In addition, the table contains educational level and working experience of the respondents in the organization.

Table 4.1: Demography of the respondents

Indicator and Category		Frequency	Percent	Cumulative Percent
Sex	Female	86	53.8	53.8
	Male	74	46.2	100.0
	Total	160	100.0	
Age	Below 25 years	7	4.4	4.4
	From 26 - 35 years	112	70.0	74.4
	From 36 - 45 years	38	23.7	98.1
	Above 46 years	3	1.9	100.0
	Total	160	100.0	
Educational Level	Masters and Above	3	1.9	1.9
	Bachelor Degree	121	75.6	77.5
	Diploma	34	21.3	98.8
	Below Diploma	2	1.2	100.0
	Total	160	100.0	
Service Years	Bellow 1 year	19	11.9	11.9
	From 1 -5 years	60	37.5	49.4
	From 6 - 10 years	74	46.2	95.6
	Above 10 years	7	4.4	100.0
	Total	160	100.0	

Regarding the sex of the respondents, more than half of them (53.8%) are females while 46.2% are males. As shown in the above Table 4.1, the percentage of female respondents is higher than males. This indicates that most of the respondents are females.

As indicated in the above table, the figures representing age category have shown the highest percent which is 70% being reported by respondents between 25 and 35 age group and followed by 36 - 45 age group respondent which accounted for 23.7% of the respondents. Therefore, the result indicates that, most of the participants of this study are in age groups not greater than 45 years old.

Regarding the educational level of the respondents, Figure 4.1 indicates that 75.63% of the respondents have Bachelor degree. This indicates that most of the participants of this study are first degree holders.

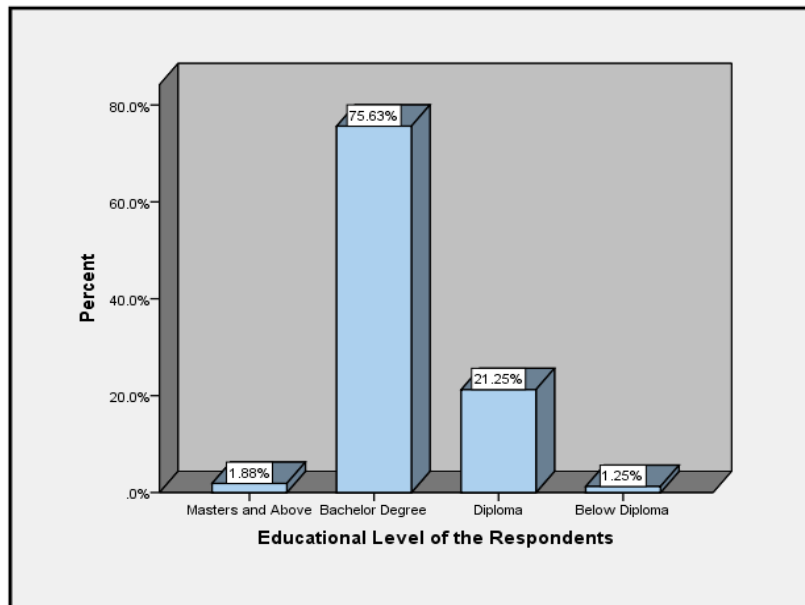


Figure 4.1 Respondents by their educational level

In addition, as it is indicated in Figure 4.2 below, about 46.25% of the respondents were found to be served from 6 – 10 years in the organization and followed by 1-5 years of service group respondent which accounted for 37.5% of the respondents. Thus, from this analysis, it can be concluded that most of the respondents of the organization are experienced in the area of their work and it is expected to have more knowledge acquired through their experience.

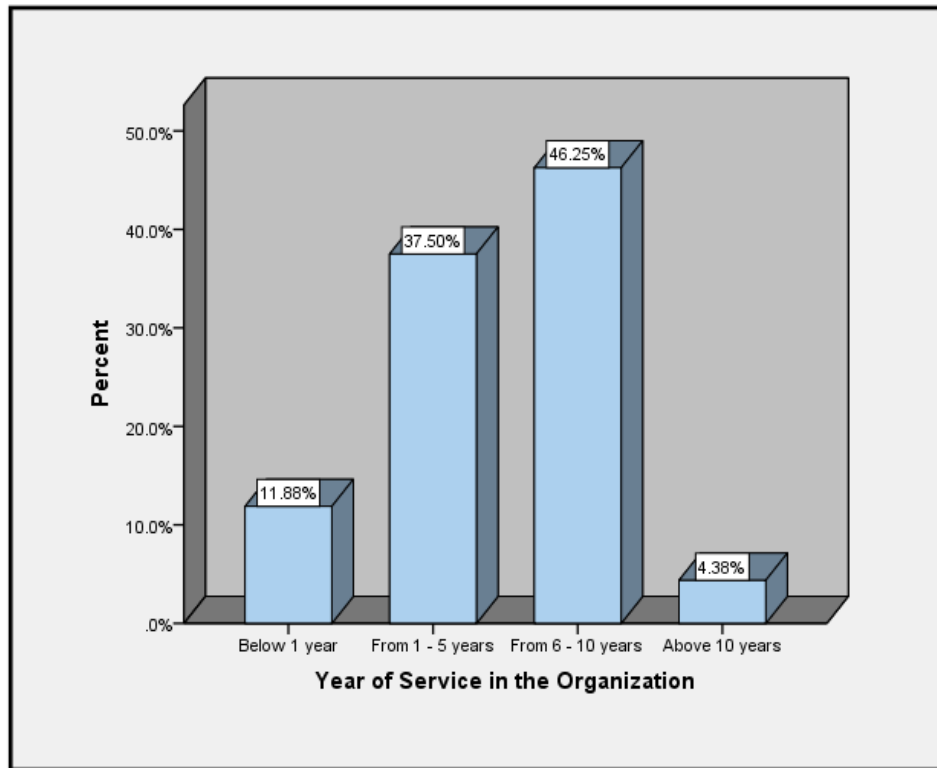


Figure 4.2 Respondents years of service in the organization

Information acquired through interview from the Director of Human Resource Development and Management Directorate of the organization shows, the core competency of the organization which is authenticating and registering legally acceptable documents, are not required specific knowledge of a given known profession. The knowledge acquisition for doing the core business is highly dependent on continuous training, documented materials and knowledge sharing. Therefore, from this information it can be concluded that implementing knowledge management strategy is very crucial for the organization.

4.2. Knowledge Management Practice in DARO

KM practice in DARO is assessed in this section by categorizing into two levels, which are individual level and organizational level. The researcher used different variables in order to investigate the practice at each level. These variables and their analysis are described as follows.

4.2.1. Individual Level

At this level KM practice of DARO assessed by focusing on the data gathered in relation to the practice of documenting the daily work; the frequency of knowledge sharing in daily work; the participation in workshop and seminar within the organization; and the mechanisms of familiarizing job at the beginning of employment.

Practice of documenting daily work is one of the critical factors that contribute to capture and share knowledge that is embedded in work processes. In this regard, as shown in Table 4.2, 36.9% of the respondents have a medium level practice of documenting their daily work. On the other hand, 29.4% and 1.9% of the respondents' practice of documenting the daily work are in a position of low and very low levels respectively. The remaining respondents have a practice of documenting their daily work at high and very high rates.

In general, from Table 4.2 and the conducted interview, it is easily understood that employees of DARO have better practices of documenting their daily works having a mean value of 3.02. However, as per the information gathered from the Director of Change Management Directorate, the main reason for documenting their work is not for sharing the knowledge acquired rather to accomplish one of the procedures of the organization as their daily duty. The organization uses documenting the work as the main criteria on evaluating the performance of employees only in the core business.

Based on the question raised for respondents of the study, as shown in Table 4.2 below, about 20.6% and 5% of the respondents evaluated the frequency of knowledge sharing in their daily work in the organization as high and very high rate respectively. Similarly, 41.3% of the respondents' frequency of knowledge sharing in their daily work is at a medium level. However, a significant number of respondents which is 33.1% of the total respondents are low in their frequency of knowledge sharing in daily work.

On the other hand, as Table 4.2 further stated, 82.5% of the total respondents have a medium and above rate of participation in workshop and seminar within the organization. It is only 17.5% of the respondents that have low and very low practice of participation in workshops and seminars. Hence, employees' participation in workshops and seminars within the

organization are in a better position which is above medium having a mean value of 3.1. However, the frequency of knowledge sharing in daily work is not in a good position which is below average having a mean value of 2.98. This shows, there is a gap in sharing knowledge acquired from workshops and seminars in the organizational staff.

Therefore, this good practice of participation in the workshop and seminar can be utilized in the deployment of a knowledge management system by aligning it with knowledge management strategy in order to enhance the knowledge sharing practice in the organization.

Table 4.2: Knowledge Management Practice at Individual Level

Indicators		Very Low (1)	Low (2)	Medium (3)	High (4)	Very High (5)	Mean
Practice of documenting the daily work	Count	3	47	59	46	5	3.02
	Percent	1.9%	29.4%	36.9%	28.8%	3.1%	
Frequency of knowledge sharing in daily work	Count	0	53	66	33	8	2.98
	Percent	0%	33.1%	41.3%	20.6%	5.0%	
Participation in workshop and seminar within the organization	Count	3	25	86	45	1	3.10
	Percent	1.9%	15.6%	53.8%	28.1%	0.6%	
Aggregate Mean							3.03

Moreover, concerning the knowledge management practice in DARO at an individual level, the mechanisms of familiarizing job at the start of employment has been taken as one indicator in addition to the above three indicators of knowledge sharing practice. As it is depicted in Figure 4.3 below, about 51.25% of the total respondents are familiarized their jobs by training and documented material at the start of their employment. Similarly, about 35.63% of the total respondents are familiarized their jobs by induction training only. A small number of employee which is about 3.75% and 9.38% of the total respondents are familiarized their jobs at the start of their employment by documented materials only and by self-study only respectively.

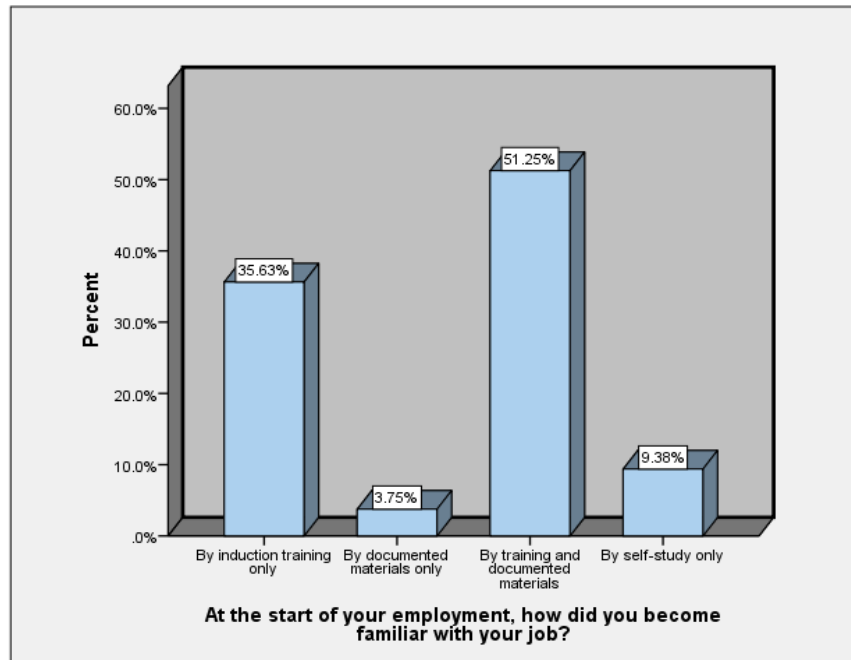


Figure 4.3: Job Familiarization Mechanisms

In general, this fact indicates that the organization used more on the combination of training and documented material to familiarize new employees with their assigned job. Similarly, the organization has used induction training in order to familiarize new employees with the assigned job. Therefore, this can be used as a ground work for knowledge sharing in the organization.

4.2.2. Organizational Level

At the organizational level, KM practice of DARO assessed based on different parameters. In this regard, the intra-team communication; cataloguing and archiving procedures; existence of informal form knowledge sharing; the process of transferring best practice; and existence of knowledge sharing platform in the organization were used as indicators after observing the business strategy of the organization and the practical situation of other public organizations. Moreover, the growing awareness on the benefit of knowledge sharing, and the culture that promotes knowledge sharing have been used to analyze KM practice of the organization at this level.

Communication within and outside the organization was also the critical aspect for the enhancement of knowledge sharing. In this aspect, the intra-team communication and sharing

of knowledge in DARO is in a better position. Because, as shown in Table 4.3 below, 61.3% and 20% of the total respondents agreed and strongly agreed respectively. Thus, there is a good intra-team communication and transferring of knowledge in DARO.

Table 4.3: Knowledge Management Practice at Organizational Level

Indicators		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean
There is good intra-team communication and transferring of knowledge in my organization.	Count	0	15	15	98	32	3.92
	Percent	0%	9.4%	9.4%	61.3%	20%	
There is growing awareness on the benefits of knowledge sharing in my organization.	Count	6	44	48	54	8	3.09
	Percent	3.8%	27.5%	30%	33.8%	5.0%	
The organization develops a culture that promotes sharing of knowledge.	Count	3	51	22	74	10	3.23
	Percent	1.9%	31.9%	13.8%	46.3%	6.3%	
There are enough venues (Hall) within the office where staff can socialize and exchange knowledge.	Count	6	82	0	67	5	2.89
	Percent	3.8%	51.3%	0%	41.9%	3.1%	
Effective cataloguing and archiving procedures are in place for document management in DARO.	Count	0	18	17	82	43	3.94
	Percent	0%	11.3%	10.6%	51.3%	26.9%	
The organization has formalized the process of transferring best practices, including documentation and lessons learned.	Count	0	23	27	108	2	3.56
	Percent	0%	14.4%	16.9%	67.5%	1.3%	
The organization facilitates knowledge sharing platforms (workshops and seminars) on a regular basis.	Count	16	98	22	22	2	2.35
	Percent	10%	61.3%	13.8%	13.8%	1.3%	
Aggregate Mean							3.28

In a given organization, employees' cooperativeness and helpfulness when they are asked to deliver information or to give an advice on issues that rose internally or outside of the organization is basic. Based on this, the above Table 4.3 depicts that 46.3% and 6.3% of the total respondents are agreed and strongly agreed respectively on the issue that the organization develops a culture that promotes sharing of knowledge. Although 31.9% of the

respondents disagreed and 1.9% of the respondents strongly disagreed on the raised issue, according to the overall mean value which is 3.23, it is possible to conclude that DARO developed a good culture that promotes sharing of knowledge in the organization.

The awareness of individuals towards knowledge sharing and its benefits is at a medium level because, as shown in the above table, about 30% of the total respondents are indifferent on this issue. On the other hand, 27.5% and 33.8% of the total respondents disagreed and agreed on the issue respectively. Similarly, the mean value which is 3.09 indicates that the growing awareness of employees in the organization towards the benefits of knowledge sharing is at the medium level which means it is not in a good or bad position.

But, the awareness by itself is not enough to say that there exists a knowledge sharing environment within the organization. Besides, enough venues or halls in the organization should be available for staffs to socialize and exchange knowledge. In this regard, as it is depicted in the above table, about 41.9% of the total respondents agreed on the issue that there are enough venues (Hall) in the office where staff can socialize and exchange knowledge. However, 51.3% of the total respondents which is more than half disagreed in this issue. Thus, it is possible to conclude that the location or halls which are available in the organization are not enough to promote knowledge sharing practice in DARO.

Cataloguing and archiving documents are also basic for an organization to promote knowledge sharing. Regarding this, respondents were asked to evaluate the existence of effective cataloguing and archiving procedures for document management in DARO. About 51.3% of the respondents agreed and 26.9% of the respondents are strongly agreed on the existence. In addition, from the mean value which is 3.94 it can be concluded that most of the respondents assured that effective cataloguing and archiving procedures are in place in the organization.

Similarly, respondents were asked to assure whether the organization formalize the process of transferring best practices, including documentation and lessons learned or not. Based on this, 67.5% of the respondents agreed that the organization formalize the process of transferring best practices.

However, concerning the organizational facilitation in arranging knowledge sharing platform on regular basis, DARO is not in a good position. This is because about 61.3% of the respondents disagreed on the question raised as “the organization facilitates knowledge sharing platforms such as workshops and seminars on a regular basis”. In addition, the mean value which is 2.35 indicates that the organizational facilitation in arranging knowledge sharing platform is below average. On the other hand, in the analysis made earlier at the individual level shows, employees participation in the workshop and seminars were at a medium level. Thus, based on the information gathered through interview from the Director of Change Management Directorate, although there were workshops and seminars in the organization at different time and employees participate in that specific workshop or seminar, these platforms have not been yet arranged to be conducted on a regular basis.

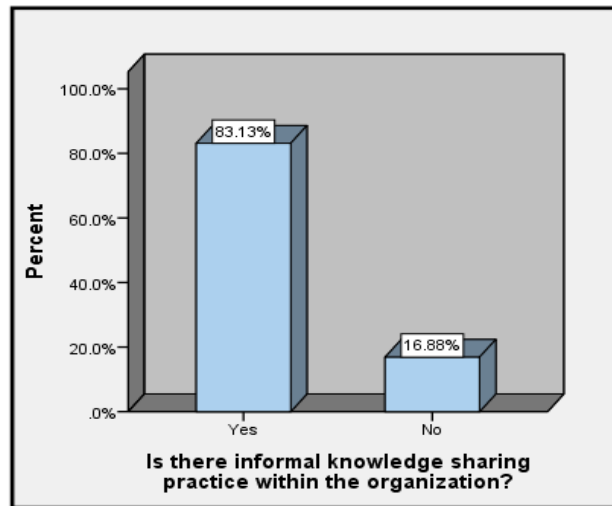


Figure 4.4 Informal Knowledge sharing practice

The other indicator that needs to be assessed is, the existence of informal knowledge sharing practice in the organization. In line with this, as shown in the above Figure 4.4, about 83.13% of the total respondents assured the existence of informal knowledge sharing practice in the organization. From this, it can be concluded that there is informal knowledge sharing practice in DARO such as get-together, informal networks, and informal discussion between peers ... etc as indicated in the questionnaire and assured by the respondents.

4.3. Factors Influencing the Success of KM System

In any organization there are factors that determine the success of technologies deployed. The same is true for knowledge management system implementation. In this regard, it is focused on two dimensions. These are: individual dimension and organizational dimension. The researcher used different variables in order to investigate the practice at each dimension. These variables and their analysis are described as follows.

4.3.1. Individual Dimension

There are a number of factors related to individual dimension that encourage or discourage knowledge sharing. But, for this study willingness, confidence and employees' attitudes towards knowledge sharing were considered.

a) Willingness

The willingness of employees to explain their know-how, experience or skills to their colleagues is critical for sharing of knowledge in the organization. Regarding this idea, as can be seen in Table 4.4., 100% of the respondents are willing to explain their experience or skills. Thus, it can be concluded that DARO is in a better position in relation to employees' willingness for knowledge sharing.

Table 4.4: Willingness for knowledge sharing

Are you willing to explain your know-how and experience to your colleagues?	Frequency	Percent	Cumulative Percent
Yes	160	100%	100%
No	0	0%	100%
Total	160	100%	

b) Confidence

As indicated in Table 4.5, the confidence level of all respondents on the knowledge and skills of their co-workers are above medium. Out of these respondents, 54.4% of them have a high level of confidence or trust in their co-workers. It is also encouraging to have observed that some i.e. 4.4% of the respondents have a very high confidence.

Therefore, from the analysis it can be inferred that there is a great opportunity in DARO for the implementation of a knowledge management system as far as trust between employees concerned.

Table 4.5: Employee confidence in the knowledge of their co-worker

How do you rate your confidence in the skills and Knowledge of your co-workers?	Frequency	Percent	Cumulative Percent
Very Low	0	0%	0%
Low	0	0%	0%
Medium	66	41.2%	41.2%
High	87	54.4%	95.6%
Very High	7	4.4%	100%
Total	160	100%	

c) Employee Attitude

The attitude of employees on personal competitiveness in relation to knowledge sharing is one of the critical factors that have to be investigated. Regarding this issue, as shown in Table 4.6 below, 98.7% of the respondents feel that sharing knowledge would not reduce their personal competitiveness. Similarly, 100% of the respondents do not believe that sharing of knowledge leads to waste of their time or increase of work load. Therefore, from this analysis it can be concluded that employees of DARO have a better attitude towards sharing of knowledge.

Table 4.6: Employee attitude towards knowledge sharing

Indicators		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean
Sharing knowledge would reduce my personal competitiveness.	Count	93	65	2	0	0	1.43
	Percent	58.1%	40.6%	1.3%	0%	0%	
Sharing knowledge would waste my time or increase my workload	Count	94	66	0	0	0	1.41
	Percent	58.8%	41.2%	0%	0%	0%	

4.3.2. Organizational Dimension

Similar to individual dimension, there are a number of factors related to organizational dimension that support or impede knowledge sharing or the implementation of knowledge management system at large. But for this study communication, incentives and management support were considered.

a) Communication

Communications at the organization level have been assessed in two ways. In the first way, as it is stated in the analysis made earlier at the organizational level of knowledge sharing practice, the intra-team communication in DARO is in a better position. However, in the second way, as shown in Figure 4.5 below the assessment made on the experience of employees in communication of new skills and knowledge acquired from procedures, guidelines, trainings and workshops indicates, about 92% of the total respondents were in the position of medium, low and very low rate. Thus, although there is a good opportunity in the organization in order to implement knowledge management system as far as intra-team communication is concerned; the experience of transferring knowledge acquired from procedures, guidelines, trainings and workshops to the organizational staff is identified as a gap which impedes the implementation of knowledge management system.

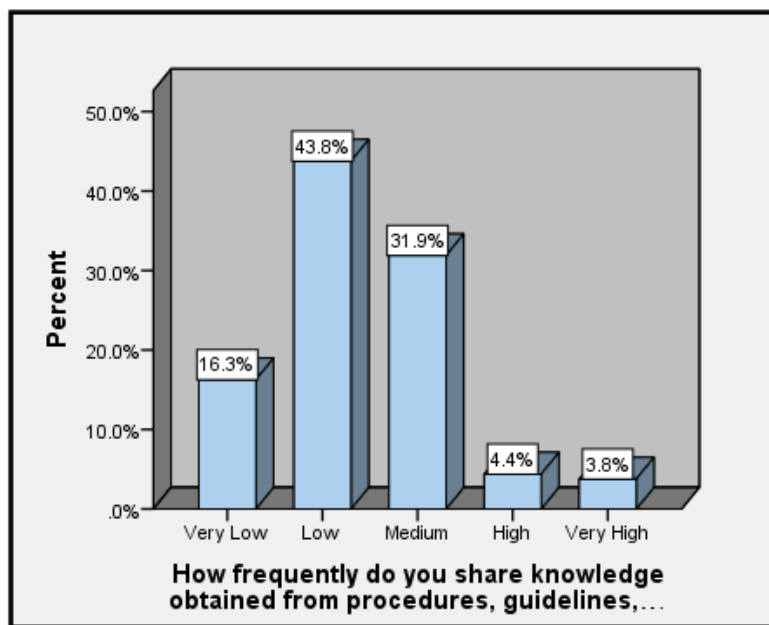


Figure 4.5: Frequency of Knowledge Sharing

However, an attempt has been made to see if there are things that might impede communication and knowledge sharing within a team and the organization. These obstacles and other barriers have been discussed in the new section independently.

b) Incentives

Incentives in the organization have been considered in two ways. Rewards, acknowledgement and other motivational schemes can be in one group and incentives that have to do with career development and good working environment in the other group. As shown in Figure 4.6 below, from the total respondents, those who agreed and those who disagreed on the availability of motivational scheme to encourage staff for their contribution of organizational knowledge are equal in number which is 27.5%. But, about 36.9% of the respondents are indifferent on this issue.

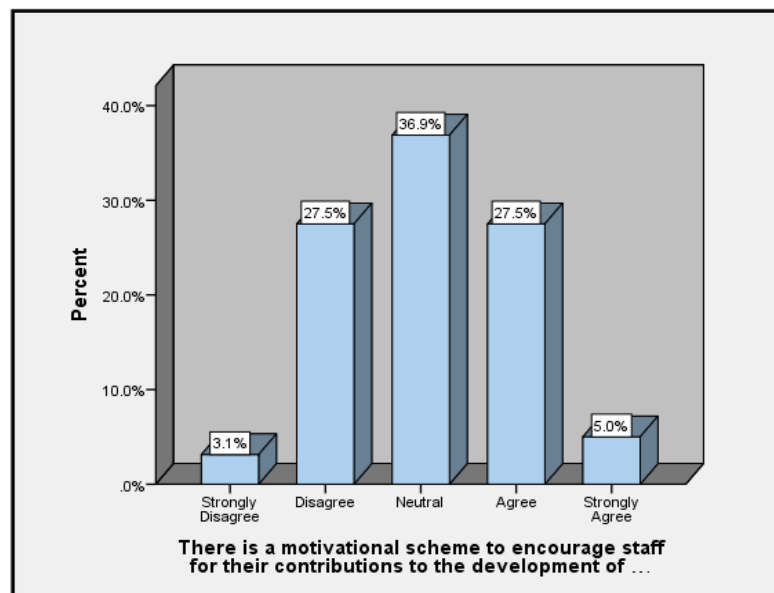


Figure 4.6: Motivational Scheme

Hence, further analysis from interview and secondary sources indicated that there was an experience of recognizing individuals by giving a reward publicly for those who have shared their accumulated knowledge in a formal documentation. As an example, one staff member from the communication and public relations directorate with many years of experience who documented all the procedures to be followed for the task that she and her colleague performs in their daily operations. The document is now considered as one of the standard

operating manuals for the core business of the organization. But, currently this system of recognition is not continued.

DARO's working environment seems to be enjoyed by almost all the employees. This is what the researcher observed and understood from information gathered through interview. In general, there is a good working environment to improve employees' knowledge sharing attitude. However, good working environment by itself is not enough to say there is a knowledge sharing environment in the organization. In this regard, providing incentives or some kind of rewarding mechanisms for individuals who share their knowledge is one of the ways for improving knowledge sharing practice in the organization. Concerning this mechanism, DARO needs to do a lot because the analysis made based on the above figure and information gathered from interview shows the rewarding trend of the organization for those who share their knowledge was not as such enough to motivate others.

c) Management Support

As shown in Table 4.7, about 80% of the respondents reported that there is no specific budget dedicated to acquire and share knowledge in the organization, whereas 13.1% are indifferent and only 6.9% of the total respondents agreed on the availability of specific budget for knowledge sharing. Similarly, 25.6% and 42.5% of the total respondents strongly disagreed and disagreed respectively on the question raised in relation to the existence of periodic plan to acquire and share knowledge. This means, about 68.1% of the respondents reported that there was no periodic plan to acquire and share knowledge, whereas 24.4% of the total respondents were indifferent and only 7.5% of the total respondents agreed on the availability of periodic plan for knowledge sharing in the organization.

Regarding the leaders of the organization in supporting knowledge sharing, two questions were forwarded to respondents. As indicated in Table 4.7, about 42.5% and 18.1% of the total respondents agreed and strongly agreed respectively on the idea that leaders in the organization encourage employees to suggest ideas for new opportunities. But, 24.45% of the total respondents were indifferent and 15% of the respondents reported that leaders of the organization do not encouraged employees to suggest ideas for new opportunities. However, as can be seen from the mean value which is 3.58, it can be concluded that the practice of employee encouragement by leaders of the organization is in a good position.

Similarly, as it is indicated in the table, 87.5% of the total respondents believed that leaders in the organization consult team members to make decision and solve problem. Only 5.6% of the total respondents were indifferent and 6.9% disagreed.

Therefore, from the responses of the two questions related to encouragement and consultation by leaders of the organization and interviews conducted, it appears to infer that knowledge sharing practices in DARO have good support from the leaders of the organization. In this regard, employees believe that their ideas and contributions were appreciated by their managers and they felt that their inputs are valued and used in decision making and problem solving. This was reflected in positive responses in these two questions. However, as far as budget allocation for knowledge sharing and periodic plan is concerned, the organization was not in a good position. This shows management support in this specific area was limited.

Table 4.7: Management support

Indicators		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean
There is a specific budget allocation to acquire, and share knowledge in the organization	Count	49	79	21	11	0	1.96
	Percent	30.6%	49.4%	13.1%	6.9%	0%	
There is periodic plan to acquire, organize and share knowledge in the organization	Count	41	68	39	12	0	2.14
	Percent	25.6%	42.5%	24.4%	7.5%	0%	
Leaders in my organization encourage employees to suggest ideas for new opportunities	Count	10	14	39	68	29	3.58
	Percent	6.3%	8.7%	24.4%	42.5%	18.1%	
Leaders in my organization consult team members to make decision and solve problem	Count	0	11	9	88	52	4.13
	Percent	0%	6.9%	5.6%	55%	32.5%	
Aggregate Mean							2.95

4.4. Barriers of Knowledge Sharing

In order to measure the barriers that hinder knowledge sharing in the organization, the researcher used eight variables which were believed to be more appropriate from the perspective of public organizations and designed based on different barriers mentioned in Maier (2007) by customizing in the context of the organization under study. All the variables reflect the barrier that may hinder knowledge sharing in the organization. In this regard, as shown in Table 4.8, these variables are analyzed in the context of DARO using the mean value based on the ranks given by the respondents. As shown in the table, the minimum mean value implies the higher the priority to be considered as a barrier.

Table 4.8: Rank of barriers of knowledge sharing

Barrier	Mean	Rank
Lack of time	3.09	1
Lack of trust among staff	5.46	6
Shortage of formal and informal spaces	3.39	2
Employees don't share knowledge because they think knowledge is power	6.25	8
Lack of infrastructure to support knowledge sharing practices in DARO	4.19	4
Fear of job security	5.81	7
Physical work environment and layout of work area	3.46	3
Lack of management support	4.34	5

Source: Own survey, March 2014

In this regard, lack of time has been taken as the first barrier that impedes knowledge sharing in the organization following shortage of formal and informal space in the organization. Physical working environment and layout of work is also recognized by the respondents as a barrier at the third place. Similarly, lack of infrastructure to support knowledge sharing practice in the organization ranked by the respondents as fourth and lack of management support as fifth place for impeding knowledge sharing practice. Regarding the other two variables i.e. fear of job security; and the resistances of sharing knowledge due to assuming knowledge is power are ranked at the seventh and eighth places respectively.

Therefore, from the analysis, the researcher is able to infer that at least lack of available time; and shortage of formal and informal spaces for knowledge sharing are the predominant barriers of knowledge sharing that are identified in the organization.

4.5. KM Technologies in DARO

Knowledge management technology is basic to support knowledge sharing in the organization. In relation to this, the researcher gathered information through observation, interview and from written documents. In addition, as shown in Table 4.9, about 48.1% of the total respondents replied as medium for the availability of up-to-date ICT infrastructure that helps knowledge sharing in the organization. But the remaining 51.9% of the total respondents replied as high and very high for the availability of up-to-date ICT infrastructure.

In this regard, it is possible to conclude that DARO has up-to-date ICT infrastructure which helps knowledge sharing. Especially, it is observed that the network infrastructure of the organization is up-to-date. All branches of the organization are networked under WoredaNet and the organization uses the National Data Center for security purpose. In addition, DARO has its own data center located at the Head Office which is interlinked to the National Data Center for mirroring the main database and other related activities.

Out of the knowledge management technologies that are currently available in the organization, the official website of DARO is the main one. The Senior IT Officer of the organization said, the official website of DARO is basically used for sharing knowledge from outside the organization. The IT Officer also further stated that, customers and stakeholders of the organization use the website to look for information on the requirements that they have to fulfill for different types of service that the organization renders. Moreover, the website of the organization uses online application for a few services currently rendered by the office. Although there is a page for frequently asked questions on the website, it is not as such actively used by the public.

As to the officer's information and the researcher's observation, DARO has intranet for its internal communication. On the intranet, all the departments and branches of the organization have their own pages through which they can communicate their ideas. Discussion forum and

other features that are useful for knowledge sharing are also included in the intranet but the overall usage of these features by the organization as a whole is not good. Only the IT directorate of the organization uses the knowledge sharing features of the intranet.

Table 4.9: ICT infrastructure and its application

Indicators		Very Low (1)	Low (2)	Medium (3)	High (4)	Very High (5)	Mean
How do you rate the availability of up-to-date ICT infrastructure that helps knowledge sharing in the organization?	Count	0	0	77	52	31	3.71
	Percent	0%	0%	48.1%	32.5%	19.4%	
How do you rate your use of email, the Web, and social networking to share your ideas within and outside the organization?	Count	0	42	72	36	10	3.09
	Percent	0%	26.3%	45%	22.5%	6.3%	
How do you rate the technical support and maintenance of integrated IT systems which hinders the daily work and communication flows?	Count	0	20	6	96	38	3.95
	Percent	0%	12.5%	3.8%	60%	23.8%	
How do you rate the availability of training regarding employee familiarization of new IT systems and processes in the organization?	Count	10	25	57	62	6	3.18
	Percent	6.3%	15.5%	35.6%	38.8%	3.8%	
Aggregate Mean							3.48

According to the Head of the organization and the actual observation the researcher, some aspects of knowledge sharing practice in the organization are highly dependent on manual system. There is regular meeting that is conducted on every month for sharing of experience between Branch Offices. In addition, when new employees join the organization, they cannot directly involve in the operation. Rather they have been assigned to a mentor to acquire knowledge from the respective experienced employee.

Although the organization uses different manual systems such as procedures and forms to be filled after accomplishing a specific task for sharing of knowledge, the Senior IT Officer said, there is an automated Document Management System (DMS) in the organization called DARIS. But currently, the system is not fully utilized.

The above Table 4.9 further depicts, the experience of employees of the organization in using email, the Web, and social networks to communicate with colleagues is in a good position having a mean value of 3.09 which is above average. However, as to the IT officer's information, most of the time employees use these technologies for their personal purpose.

In addition, the IT officer said, there are limited organizational email addresses given to leaders and key employees of the organization for inter organizational communication purpose. Moreover, employees in all branches use the internal mail exchange using their mail box for exchanging ideas in their day to day activity. In this regard, the organization uses the mail box of employees as an organizational memory.

Regarding to the technical support and maintenance of IT system, Table 4.9 shows about 83.8% of the total respondents replied as there is high and very high rate of technical support and maintenance of integrated IT systems which hinder the daily work and communication flows. Concerning this, the IT officer of the organization said that, DARO has enough experienced and qualified information technology experts in different specific areas of IT. Due to this, there was no serious observable problem which can impede work routines and communication flows. Therefore, this shows that there is a good technical support and maintenance of integrated IT systems in the organization.

As it is known, knowledge management technologies cannot work without the required training. Concerning this issue, as shown in Table 4.9 about 35.6% of the respondents rated the availability of training regarding employee familiarization of new IT systems and processes in the organization as medium. Similarly, 38.8% of the respondents rated as high and 3.8% of the respondents rated as very high. Only 21.8% of the total respondents rated the availability of training as low and very low.

Moreover, it is observed that the organization has its own computer training center which is equipped with all the necessary materials. According to the Senior IT officer of the organization, different IT related trainings including training on knowledge sharing technologies have been given for all employees of the organization. However, the trainings were not intensive and continuous due to budget and time constraints.

4.6. Discussion of Findings

Based on both qualitative and quantitative analysis, even though knowledge sharing practice of DARO is traditional and not integrated, the overall knowledge sharing practice of the organization is good. Apart from the favorable situations that exist in the organization for the deployment of a knowledge management system, there are problems that identified in this research.

According to the actual observation and the detail analysis made earlier, the major factors that influence knowledge management system implementation in the organization are communication systems of the organization, the level of participation of each staff member in knowledge sharing including their willingness and trust; incentive and motivational scheme to encourage staffs; and support of the top management.

In this regard, employees' willingness, confidence, and their attitude towards knowledge sharing are in a better position. However, incentives and motivational scheme of the organization in enhancing knowledge sharing practice are very limited. With regard to management support, there is limitation in allocating specific budget for knowledge management; and limitation in periodic plan to acquire, organize and share knowledge in the organization. However, leaders in DARO support employees to suggest ideas for new opportunities; and consult team members to make decision and solve problem.

Concerning the job familiarization mechanisms, DARO used more on the combination of induction training and documented material to familiarize new employees with their assigned jobs. Therefore, this can be used as a ground work for knowledge sharing in the organization. In addition, although there is under utilization of existing technological infrastructure, the ICT infrastructure and its application in the organization are found to be an exemplary.

However, lack of time; shortage of formal and informal spaces; and physical working environment and layout of work area are identified as a barrier of knowledge sharing in the organization.

Communication in DARO can be seen in two ways. The first one is face-to-face communication between employees of the organization. The second one is the communication that is facilitated through technological infrastructure. In the analysis it is depicted that although there is a better ICT infrastructure in the organization, it is not utilized to its full capacity. For instance, some of the knowledge sharing activities have been done manually which in turn makes accessibility of the shared knowledge very limited.

Although there were workshops and seminars in the organization at different time and employees participate in that specific workshops or seminars, these platforms have not been yet arranged to be conducted on a regular basis. However, there was informal knowledge sharing practices in DARO such as get-together, informal networks, and informal discussion between peers ... etc as indicated in the questionnaires. In addition, the cataloguing and archiving procedures in place in the organization are very effective.

It is true that any new system introduced to an organization can only be successful if it is fully endorsed by all members of the organization and most importantly by its top executives. As per the quantitative analysis depicts and further information gathered from interview, DARO's top management has a positive attitude and awareness towards knowledge sharing. The problem in this regard is that despite their awareness on the importance of a knowledge sharing for sustainability of the quality service delivered to customers; there is no any effort towards allocating budget and designing a knowledge management strategy.

From the analysis, there are problems recognized with regard to managing organizational knowledge in DARO. In consideration of those problems, the major ones which are basic for designing knowledge management strategy are identified and listed below.

- No centralized knowledge management system to manage vast amount of knowledge;
- Dispersed traditional knowledge management efforts;

- No conscious measures taken towards managing organizational knowledge;
- Limited corporate memory;
- Not enough motivational scheme for individual efforts to share knowledge;
- Minimum effort to capture tacit knowledge of individual experts on which the organization is highly dependent;
- Underutilization of available technology;

In general, the study showed that there is no standard procedure to carry out knowledge management activities in DARO. There is no effort made in managing organizational knowledge. Simply, the knowledge of the organization is dispersed here and there with no centralized approach to achieve organizational goals.

CHAPTER FIVE

PROPOSED KNOWLEDGE MANAGEMENT STRATEGY

5.1. Tools for Analyzing the Knowledge Management Context

In developing the KM strategy, the results of the analysis made in the fourth chapter have been used to determine the best options for the specific organizational context. Two key tools were used: a knowledge “SWOT” and social network analysis. These tools complement each other in their usage. The knowledge SWOT is a useful tool to analyze how an organization deals with the knowledge it has. Social network analysis technique helps to find out what knowledge sources the organization has access to, as well as what gaps exist. Used together, these two tools can provide a comprehensive understanding of the knowledge context of the organization.

5.1.1. Knowledge SWOT

In order to develop a KM strategy for the organization, doing the knowledge-based SWOT analysis is very important. Therefore, based on knowledge sharing practices of DARO which was analyzed in the fourth chapter of this study and other information gathered from interviews and secondary sources of DARO the following SWOT analysis has been outlined for the development of the KM strategy. (See Table 5.1 below)

In designing the detail activities based on the strategy proposed in this study, there is a need to prepare the knowledge SWOT which is specific to the organization based on the following the steps that Zack (1999) proposed. These are (1) defining the business strategy, (2) determining what knowledge is needed to achieve the business strategy, (3) assessing what knowledge it has, and (4) comparing these two to find out what knowledge gaps there are. However, since the scope and objective of this study is to propose a general KM strategy which is suitable for public organizations, these tasks is left for the organization under study and other similar public organizations according to their business strategy.

Table 5.1: Knowledge-based SWOT for DARO

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Developed culture of sharing information. • Better practice of documenting daily work. • Good practice of participation in the workshop and seminar. • Good intra-team communication. • Better employees’ awareness on benefits of knowledge sharing with colleagues. • Effective cataloguing and archiving procedures are in place. • Better experience of formalizing the process of transferring best practices. • Organizational understanding on the need for a KM strategy. 	<ul style="list-style-type: none"> • Existence of lack of time for sharing Knowledge. • Not enough motivational scheme for individual efforts to share knowledge • Not good at organizing large volume of documents. • No procedure for storing tacit knowledge when employees document their work. • Not enough and continuous employee training on knowledge sharing technologies. • Limited corporate memory. • Not enough venues (hall) within the organization where staff can socialize and exchange knowledge. • Underutilization of existing technological infrastructure.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • New knowledge opportunities through new staff. • New knowledge opportunities through training. • Opportunity for better service delivery by organizational learning from explicitly acquired employee experiences 	<ul style="list-style-type: none"> • Employee turnover might result in lack of corporate knowledge • Increasing workload and shortage of time might further compromise ability to share knowledge • Loss of well experienced employees may result in disruption of service provided to customers

Source: Own survey, March 2014

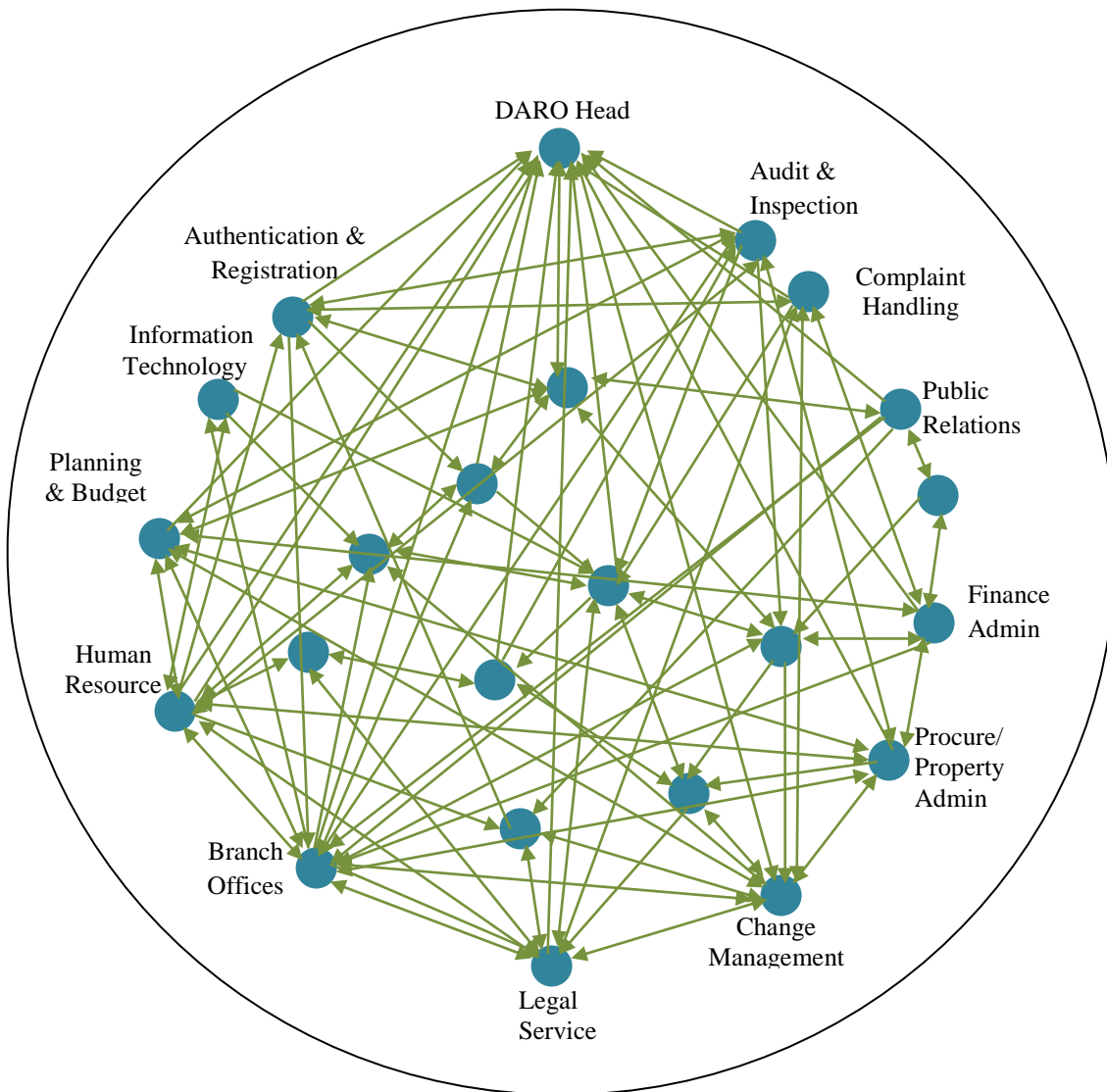
5.1.2. Social Network Analysis (SNA)

A KM strategy is aimed at addressing the weaknesses and threats identified above which are assumed to form the knowledge gap. However, it is also important to audit the knowledge flows within the organization (Singh, 2005). In addition to internal knowledge flow, it is also necessary to focus on the flows of information to an organization from outside.

According to the key informants, the reports of DARO and other documents of the organization, the internal knowledge flows in the organization and knowledge flow with external organization are shown in the figures below. Figure 5.1 shows the internal knowledge flows. As the head of the office obtained knowledge from each person within the

organization, the knowledge flows from these individuals have been removed so that other knowledge flows can be more easily identified. It is also important to note that information or knowledge usually flows more towards the top management rather than the other way down. Thus, the internal analysis shows that another section is required to operate as “knowledge seekers and donors,”

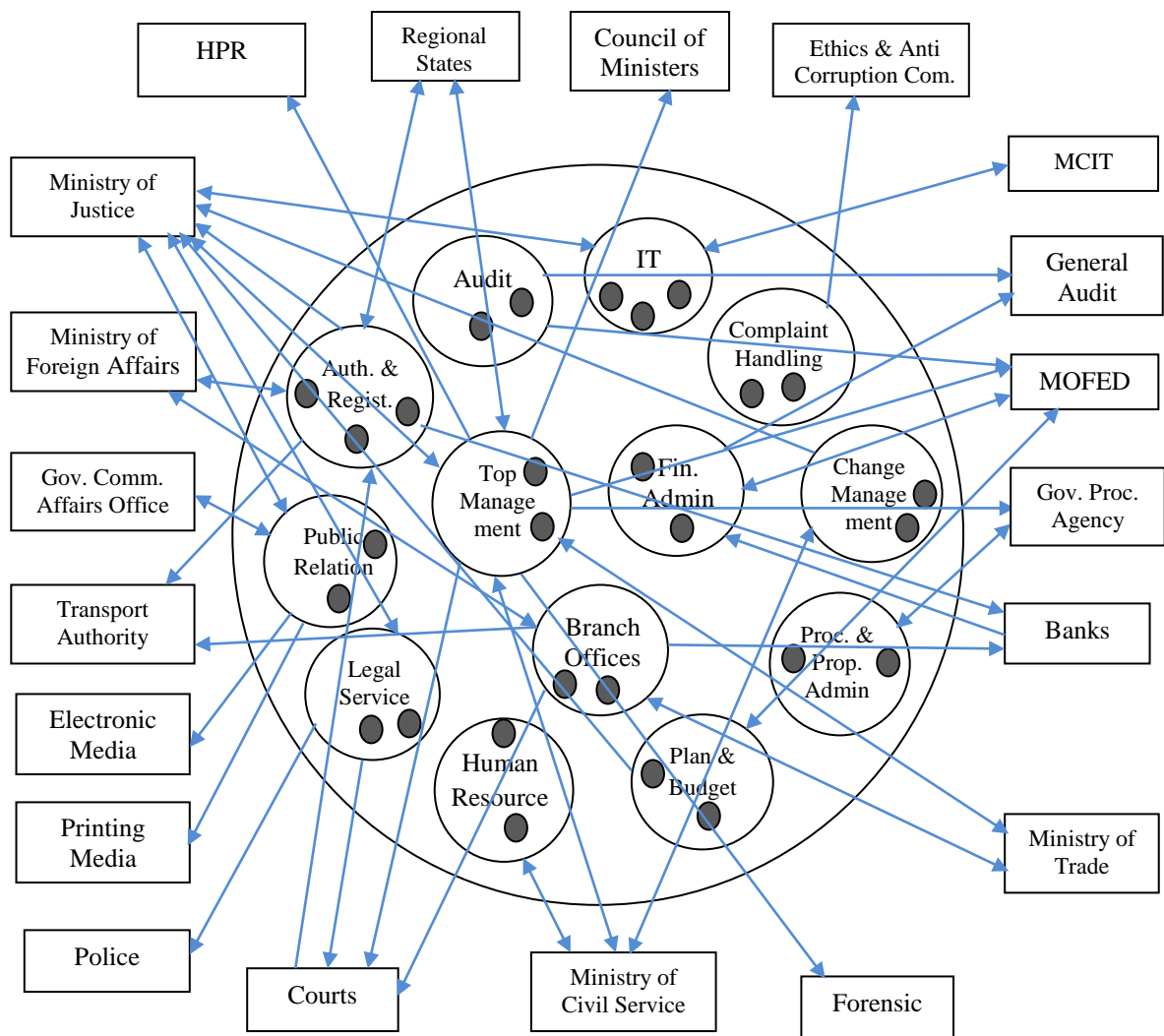
Figure 5.1: Internal knowledge flow in DARO



Source: Own survey, March 2014

Figure 5.2 shows the external knowledge flow which is designed based on annual reports of DARO and other documents used for communication purpose. This diagram gives some idea of the richness of the potential knowledge base available in the organization. But, the external knowledge flow further depicts that there is no central procedure in order to exchange knowledge with external organizations. As shown in the diagram, external organizations are represented by boxes. In general, if the internal and external knowledge flow combined together, it will create the complete knowledge flow of DARO. In this regard, it is easy to conclude that the knowledge flow in the entire organization both internally and externally is very complicated and unmanageable.

Figure 5.2: Knowledge flow with External Organizations



Source: Own survey, March 2014

5.2. The Importance of KM to the Organizational Strategy of DARO

The nature of the core business of DARO dictates that the organization needs to manage its knowledge and information for sustainable excellent service delivery. Most of the tacit knowledge that has to do with the organization's business areas possessed by its employees is acquired from their experience of working in the organization. There are a few key employees whose existence in the organization has a very important impact. These people may separate from the organization for a number of reasons. Thus, this is a serious risk for the organization.

In addition, in the assessment of secondary sources such as documents of the organization, the researcher understood that there are special cases that the organization encounters on a daily basis. These cases are almost always taken to the key individuals who are believed to have the experience and knowledge to deal with such cases. So, it is very important to have a scheme to retain this knowledge within the organization and share it with all concerned members of the organization. The organization has to depend on a well-organized and integrated system for its knowledge needs rather than on individuals.

5.3. The Proposed KM Strategy

After studying the results of the knowledge flow and existing knowledge management practices, the researcher developed the following KM strategy which aimed to better utilize the large amount of both tacit and explicit knowledge that is available to DARO.

5.3.1. Strategic Direction

The following strategic direction is proposed to ensure the success of managing organizational knowledge of DARO.

- ***Improving access to DARO's information:*** - In today's business world, while there is an information overload, the ability to use it and access to the relevant information

seems to be difficult and time consuming. One of the objectives of the KM System that will be deployed should be to tackle this challenge.

- ***Translating knowledge into practical use:*** - The new KM System of DARO should not only explicitly store knowledge but also facilitate for sharing and making practical use of the knowledge available.
- ***Sharing and reapplying experiential knowledge:*** - KM methodologies and tools offer new opportunities for sharing and reapplying experiences from others. This can be enforced by designing a platform on the DARO's KM System where staff members can share their new or unusual encounters, how they dealt with the new situation and the lessons learned from this experience.
- ***Fostering an enabling environment:*** - Creating an environment for the effective use of knowledge is vital to achieving DARO's mission and strategy. In addition, it helps the organization to keep delivering quality service despite the change of key employees over time.

5.3.2. Key Features

According to Singh (2005), there are some basic key features that organizations KM System should possess in order to ensure that it is in line with organizational strategy. Having a checklist of the required key features will ensure that the new system will help solve the business problems and meet the very objectives of its deployment.

- ***Secured:*** - The system has to be secured due to the confidential nature of the information that the organization deals with on a daily basis. However, this should not get in the way of users getting all the information and knowledge they need which they are authorized to have access to.
- ***Accessible to everyone:*** - The system should be accessible to everyone who is intended to make use of the system. Accessibility doesn't only mean authorization to access certain information but also how is it easy to get to the information needed. It should be easy and guiding for users to browse through the system and arrive at their intended point within a few seconds.

- **Measurable:** - The most tangible measurements of a knowledge management system involve who contributes or accesses which information (Dataware Technologies, 1998). These measurements give guidance to the quality of information or content uploaded on the KM System and to the corporate population that uses the system. Another measurement can be the effectiveness of technological infrastructure the organization possesses. This particular measurement helps the IT Directorate to point out the bottlenecks and find a solution.
- **Comprehensive:** - The content of DARO's KM System should be comprehensive enough to accommodate all the knowledge and information that may be generated from all the departments or core businesses of the organization.

5.3.3. Major Stakeholders of the Proposed KM System

According to Zack (1999) the major stakeholders that are assumed to have interest in a KM strategy are employees of the organization, a knowledge worker, external organizations the organization interacts with, and the IT Section. Based on this, the role of each stakeholder and how it will contribute to the deployment of the new system has been discussed in detail here focusing on the proposed KM strategy of DARO.

- **People (All employees):** - As indicated in many literatures on knowledge management, people and organizational culture are the driving factors that determine the success or failure of KM initiatives. Therefore, The KM strategy in DARO should make sure that people are included throughout the implementation process.
- **Knowledge worker:** - A knowledge worker is someone who is dedicated for the knowledge capturing and other KM related tasks in the organization. The SWOT analysis shows that although employees are well aware of the need for knowledge sharing, due to lack of time the knowledge sharing practice has been compromised. The SNA also shows that there are many Directorates and areas of knowledge which makes it difficult for the organization to effectively use its knowledge without the help of a KM professional. So it is imperative to have a knowledge worker as part of the KM implementation.

- **External organizations:** - These are organizations that seek information from DARO as part of their day to day service to the public. DARO might also need some input from these external organizations which makes them important stakeholders in the KM strategy development.
- **IT Directorate:** - This is the part of the organization that lays the ground work for a KM implementation in any organizational context. Though KM is not entirely dependent on ICT infrastructure it enables individuals in the organization to create and share knowledge effectively and contribute to the performance of the KM system.

5.3.4. Proposed KM Model and Technologies for DARO

KM can be implemented in various ways using different technology based on the organization's specific needs and nature of the business area. The most valuable source of knowledge in DARO is its people. In addition, the researcher has mentioned in the first chapter of this study that the organization's success is highly dependent on the tacit knowledge of employees. Based on this, DARO should be used the Complex Adaptive System Model (CASM) since people are at the center of this model. This model describes organizational knowledge management in four major ways. These are creativity, problem solving, decision making and implementation. (See Figure 2.6 in the second chapter)

In addition to the model, the following KM technologies are also proposed to implement the proposed KM strategy for organizational intelligence.

i. Document Management System (DMS)

The enormous volume of documents that kept and will keep buildup over the years has to be retained in a DMS that is easily accessible by users. DARO is on the way of implementing a DMS system. In this regard, the researcher recommends that the overall features of the DMS to be implemented have to be studied and upgraded or customized to align it with the entire KM strategy from the perspective of managing documents.

ii. Workflow Management System (WFMS)

A WFMS defines, creates, and manages the execution of workflows through the use of software. Some of the functionalities of WFMS can be used in a KM to support processes that involve production and distribution of information and knowledge elements.

iii. Intranet

DARO already has an Intranet that is used within the organization with knowledge enabling features such as discussion forums. But this Intranet is not being used as it is supposed to be. Intensive user training and uploading updated content as well as motivational schemes for using the platform can facilitate better use of it.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

In this study, the researcher attempted to assess the existence of knowledge sharing practice of DARO; the barriers of knowledge sharing in the organization; the factors that affect the implementation of knowledge management; and the existing knowledge management technologies in the organization. In addition, it is intended to propose knowledge management model and technology as a of knowledge management strategy. In this regard, primary and secondary sources are consulted to get the necessary information for the research. Questionnaires are distributed to DARO employees in the Head Office and ten Branch Offices in Addis Ababa. In addition, interviews were also held with the Head of the Office, appropriate Directors and other key informants.

The study has revealed a number of opportunities for a successful implementation of a KM System as well as some pitfalls. There is a better practice of knowledge sharing both at the individual and organizational levels. With regard to management support, there is limitation in allocating specific budget for knowledge management; and limitation in periodic plan to acquire, organize and share knowledge in the organization. However, leaders in DARO encourage employees to suggest ideas for new opportunities; and consult team members to make decision and solve problem.

Similarly, employees' willingness, confidence, and their attitude towards knowledge sharing are in a better position. In addition, although there is under utilization of existing technological infrastructure, the ICT infrastructure and its application in the organization are in a better position. However, lack of time; shortage of formal and informal spaces; and physical work environment and layout of work area were identified as a barrier of knowledge sharing in the organization.

Generally, from SWOT analysis and SNA the study confirmed that there is no standard procedure for carrying out knowledge management activities in DARO. The efforts are dispersed here and there with no centralized approach to achieve organizational goals. To have a successful knowledge management strategy, organizations have to see it as a whole in a certain system. All the elements have to be considered and analyzed when implementing the strategy. Although technology platforms play an important role in developing and sharing knowledge, without the attention to organizational culture in which people are encouraged to share their knowledge, technology may not be able to stimulate the flow of knowledge. Therefore, all elements such as organizational culture, structure, technology, and people should always be considered together to bring synergy effect.

6.2. Recommendations

The knowledge management strategy plays an important role in realizing the vision and organizational strategy of DARO. The study recommends effective internal and external management of the knowledge of the organization while proposing a general knowledge management strategy which is more suitable for the organizational context. In this regard, based on the findings and the objective of the study the following specific recommendations for practice and knowledge (future work) are made:

a) For Practice

- Support from the top management in allocating specific budget for knowledge management and in preparing periodic plan to acquire, organize and share knowledge in the organization is strongly recommended.
- DARO should arrange consistently a formal knowledge sharing opportunity like regular meeting, seminar and workshop where colleague can share knowledge.
- DARO should provide continual training on knowledge sharing practices among employees and usage of knowledge management technologies which exist in the organization.
- Incentive systems such as acknowledgement and reward mechanisms should be implemented to motivate employees to improve their knowledge sharing practice.

- In order to create knowledge oriented culture in the organization, communication of success stories and best practices through the acceptance of errors as well as through stress that every employee is responsible for his/her own learning process.
- DARO should organize documents, and define standards and procedures for storing tacit knowledge when employees perform their daily operation in order to build organizational memory.
- Lack of time; shortage of formal and informal spaces; and physical work environment and layout of work area to share knowledge are major barrier which are identified for the practice of knowledge sharing in DARO. Most of the employees do not have time to learn from their colleagues or to document the knowledge they have. Therefore, DARO should create suitable knowledge sharing environment and facilities.
- Since the knowledge of the organization more dependent on the existence of key individuals in the organization, knowledge management is vital for the organizational success of DARO. Thus, DARO should strongly work in order to implement the proposed of knowledge management and to create common understanding between employees and leaders at different level in the organization.
- DARO should integrate KM initiatives in to the organization's business process in order to effectively and efficiently handle knowledge requires for the organization daily routine.
- In order to make this strategy successful, DARO should make a pilot implementation.

b) For Future Work

- Based on the strategy proposed, DARO should provide a detail strategy to manage knowledge by preparing a schedule within a specified period of time and to be re-planned continuously.
- Further researches on other similar public organizations are strongly recommended in order to upgrade the proposed knowledge management strategy.

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ANNEX I
QUESTIONNAIRE

Part 1: Demographic Profile

Answer the following questions by putting a tick (✓) mark in the space (boxes) provided

1. Sex: Female Male
2. Age: Below 25 years From 25 – 35 years
 From 36 – 45 years Above 46 years
3. What is your educational Level?
 Masters and Above Diploma
 Bachelor Degree Below Diploma
4. Year of service in this organization
 Below 1 year
 From 1 – 5 years
 From 6 – 10 years
 Above 10 years

Part 2: Current Practice of Knowledge Management (Culture, Documentation, Process)

Answer the following questions by putting a tick (✓) mark in the space (boxes) or write in the space provided.

Individual Level

5. Sharing knowledge would reduce my personal competitiveness.
 Strongly Disagree Neutral Strongly Agree
 Disagree Agree
6. Sharing knowledge would waste my time or increase my workload.
 Strongly Disagree Neutral Strongly Agree
 Disagree Agree
7. How do you rate your practice of documenting your work?
 Very Low Medium Very High
 Low High

8. How do you rate the frequency of your knowledge sharing?

- Very Low Medium Very High
 Low High

9. Are you willing to explain your know-how and experience to your colleagues?

- Yes No

10. If your answer for question number 9 is “No,” what is your main reason?

11. How do you rate your confidence in the skills and Knowledge of your co-workers?

- Very low Medium Very High
 Low High

12. How do you rate your participation in workshops, seminars or panels within your organization?

- Very low Medium Very High
 Low High

13. At the start of your employment, how did you become familiar with your job? You can select more than one choice.

- By induction training only By training and documented materials
 By documented materials only By self-study
Other _____

Organizational level

14. There is good intra-team communication and transferring of knowledge in my organization.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

15. Effective cataloguing and archiving procedures are in place for document management in the organization.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

16. Is there informal knowledge sharing practice within the organization? (Such as get-togethers, informal networks, informal discussion between peers etc...)

- Yes No

17. How frequently do you share knowledge obtained from procedures, guidelines, workshops and training to the organization staff?

- Very low Medium Very High
 Low High

18. There is growing awareness on the benefits of knowledge sharing in my organization.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

19. The organization develops a culture that promotes sharing of knowledge.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

20. The organization has formalized the process of transferring best practices, including documentation and lessons learned.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

Part 3: Organizational Support and Barriers

Answer the following questions by putting a tick (✓) mark in the space (boxes) provided

21. In my organization, there is a motivational scheme to encourage staff for their contributions to the development of organizational knowledge.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

22. There is a specific budget allocation to acquire, and share knowledge in the organization.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

23. There is periodic plan to acquire, organize and share knowledge in the organization.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

24. The organization facilitates knowledge sharing platforms (workshops and seminars) on a regular basis.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

25. Leaders in my organization encourage employees to suggest ideas for new opportunities.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

26. Leaders in my organization consult team members to make decision and solve problem.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

27. There are enough venues (Hall) within the office where staff can socialize and exchange knowledge.

- Strongly Disagree Neutral Strongly Agree
 Disagree Agree

28. Which of the following are regarded as a barrier of knowledge sharing in your organization? Rank as 1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th.

- ___ A. Lack of time
___ B. Lack of trust among staff
___ C. Shortage of formal and informal spaces
___ D. Employees don't share knowledge because they think knowledge is power
___ E. Lack of infrastructure to support knowledge sharing practices in DARO.
___ F. Fear of job security
___ G. Physical work environment and layout of work area
___ H. Lack of management support

Part 4: Technology

Answer the following questions by putting a tick (✓) mark in the space (boxes) provided

29. How do you rate the availability of up-to-date ICT infrastructure that helps knowledge sharing in the organization?

- Very low Medium Very High
 Low High

30. How do you rate your use of email, the Web, and social networking such as Facebook, Twitter, LinkedIn, etc to share your ideas within and outside the organization?

- Very low Medium Very High
 Low High

31. How do you rate the technical support and maintenance of integrated IT systems which hinders the daily work and communication flows?

- Very low Medium Very High
 Low High

32. How do you rate the availability of training regarding employee familiarization of new IT systems and processes in the organization?

- Very low Medium Very High
 Low High

Additional comments if any

ANNEX II

INTERVIEW GUIDE

This interview guide is prepared to collect relevant data to assess the existing knowledge management practice of DARO. So you are kindly requested to provide as accurate and recent information as possible.

Your assistance would be highly appreciated.

Background Information

1. Would you explain your educational background, your position in the organization and also your work experience?

Types of Knowledge

1. To what extent is knowledge made explicit and written down, and is it readily accessible across the organization?
2. Are your experts in key areas known and accessible throughout the organization and do you have mechanisms in place to codify their tacit knowledge into an explicit format?

Culture for Sharing Knowledge

1. Do you have a clear vision of how knowledge helps you achieve your organizational objectives, and is it actively promoted by senior staff?
2. Is knowledge shared effectively across departmental boundaries? Does your working environment encourage informal knowledge exchange?
3. Are staffs clear about their responsibilities for managing knowledge, and are knowledge creation and sharing rewarded?

Knowledge Sources

1. Do you have central repositories for knowledge, with clear responsibilities for coordination, ownership and management of its contents?
2. Would you explain about the knowledge flaws within and outside of the organization in the form of reporting or any other forms?

KM System

1. Do you have effective processes for gathering, organizing and using internal and external knowledge?
2. To what extent are informal and informal knowledge sharing networks encouraged and supported?
3. Can information be quickly found on your intranet, and does your communication infrastructure support effective sharing of expertise across time and space?

ANNEX III

COVERNING LETTER ACCOMPANYING QUESTIONNAIRE

Dear Respondents,

First of all, I would like to express my sincere appreciation in advance for taking a few minutes to fill the questionnaire. The objective of the questionnaire is to study and write up a master's thesis entitled "Formulating Knowledge Management Strategy for Public Organizations: the Case of the Federal Documents Authentication and Registration Office (DARO)" in partial fulfillment of the requirements of the Degree of Master of Science in Information Science.

You are not required to write your name and contact address. I assure you that no information will be given to anybody by any means. Your frank response is greatly appreciated. Please feel free to use a blank sheet of paper for this purpose.

Thank you in advance for your cooperation!

Sincerely,

Muluken Amare
School of Information Science
Addis Ababa University

ANNEX IV

DECLARATION

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

Date

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

Ato Getachew Jemaneh
Advisor