JIMMA UNIVERSITY

COLLEGE OF NATURAL SCIENCES

DEPARTMENT OF INFORMATION SCIENCE

A STUDY OF KNOWLEDGE MANAGEMENT MATURITY LEVEL IN SELECTED PUBLIC UNIVERSITY LIBRARIES IN ETHIOPIA

BY

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JIMMA,ETHIOPIA

JUNE, 2017

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A THESIS SUBMITTED TO COLLEGE OF NATURAL SCIENCES OF JIMMA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF INFORMATION SCIENCE (INFORMATION AND KNOWLEDGE MANAGEMENT)

BY

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As members of the board of examining of the MSc thesis open defense examination of the above title, we members of the board (listed below), read and evaluated the thesis and examined the candidate.

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To

My beloved elder brother and girl friend

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List of Abbreviations

AAU	Addis Ababa university
DU	Dilla university
G-KMMM	General knowledge management maturity model
HEI	Higher educational Intuitions
HRM	Human resource management
HR	Human resource
KC	Knowledge creation
KPA	Key process area
KS	Knowledge sharing
KM	Knowledge Management
ICT	Information and communication technology
IT	Information technology
WKU	Wolkite university

Abstract

Nowadays knowledge and Knowledge Management has become an important role in the competitiveness of the higher learning institutions. Through an efficient KM implementation organizations can tap the real benefits of knowledge usage. A knowledge management Maturity Model can help organizations identify the progress of Knowledge Management and improvements to be made. This study aimed to determine the level of knowledge management maturity in selected public university libraries in Ethiopia using General Knowledge Management Maturity Model (G-KMMM). This study also involves critical success factors/barriers for implementation of KM. The methodology employed to conduct this study was survey research and the respondents' drawn from Addis Ababa, Dilla and Wolkite Universities, which comprised of library staffs. Simple random sampling method was used to select samples from study population. Data for the study was collected through questionnaire. A research survey method using questionnaire was distributed to 244 library staffs of the university of which 225 (92.2%) were returned and usable for data analysis. The results indicate that, the universities wide KM maturity level for the KM maturity dimension on people was at Awareness level (average score=60%), and on process and technology at Initial level (average score=56% and 58%) respectively. The findings and context of this study indicates that, as a whole, the current knowledge management maturity level at the selected public university is lowest maturity level. This study proposed the roadmaps the three university libraries perspective: roadmaps that allow KM developments to be integrated with KM improvement. This study utilizes G-KMMM in assessing the university libraries KM maturity level through quantitative survey. Analysis of this research shows the different maturity level for each type of university libraries and future study to see the relation with the organization performance and integrated with the information technology.

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Nowadays, knowledge is one of the most important assets for any organization to create and share value and sustainable competitive advantage. Therefore, Knowledge came to be recognized as a key organizational resource (Alavi & Leidner, 2001). They further suggest that knowledge requires different strategies and different type of tools and technologies to manage. Organization could use ICT to support and facilitate knowledge management activities that allow faster and more efficient processing (Mitchell, 2003).

In current information era, organizations should manage their knowledge to be innovative and to gain competitive advantage (Turban et al., 2011). Managing information/knowledge and focusing on the long-term vision, strategies, policies and organizations could solve many obstacles. Many profit and nonprofit organizations are now seeing the meaning of well-managed knowledge. But managing the knowledge is not an easy job. Knowledge initiatives such as knowledge creation, storage and knowledge sharing can be applied to knowledge as a process.

The rapid growth of information and communication technologies and rapid expansion of new tools are said to be changing the way university libraries operate today (Maponya, 2004). In the earlier KM initiative was driven by technologies such as internet, e-mail, etc.nowa days, highly developed world of technology; knowledge creation and sharing are much simpler of the improved brainstorming, internet usage, advanced network system, wireless technologies, etc. Hence, this technology helped knowledge management by facilitating the knowledge creation, storage and knowledge sharing. The role of knowledge management in university libraries will become more important along with the development of knowledge Economy. Therefore; University libraries are the parts of global knowledge economy and are therefore among those organizations that need sound knowledge management plan.

Knowledge management is recognized by the university library firms as potentially important but little has been attempted at a formal level. Knowledge management promotes continuous improvement, getting the right information to the right people at the right time and it helps people to create and share knowledge. Knowledge management has many definition, we can take as representative of the primary goal. Knowledge management can be defined as the systematic coordination of people, technologies and processes in order to add value to the organization through the reuse of knowledge.

The main challenges of the organizations committed to knowledge management is that the implementation of knowledge management has often been ad hoc without a roadmap to follow and in the creation of an organizational context conducive to create and share knowledge (Robinson et al., 2006).University library shall consider some critical factors and issues to maximize the potential uses of their available knowledge within the organization. Therefore, university library should seek Knowledge Management activities to achieve the institutional mission Such as the people, process, technological and organizational aspects of Culture of sharing and collaboration. University libraries agreement with the knowledge and the mission of the libraries is the knowledge management(Chidambaranathan & Bs,2015). In order for universities to achieve their institutional mission, that is, education, research and service to society, they need to be consciously and explicitly managing the processes associated with the creation and sharing of knowledge (Maponya, 2004).Knowledge management helps in the planning, organizing, and controlling of people and systems in an organization in order to make sure that its knowledge-related assets are continuously improved and effectively employed (Rajesh et al., 2011).

In an age of great change in information formats, delivery models and technologies, an important new role emerges for the academic librarian (Crue, 2002).The main goal of KM is to recognize, acquire, store / keep, maintain, and deliver knowledge that could be useful to anyone whenever it is needed (Turban et al., 2011).Therefore, Knowledge management is considered as an appropriate competitive tool for success in knowledge-based economy in such a way that many organizations have used to implement and apply KM.As a result, in recent years knowledge management has important tool that ensures organizations operate at a high level of effectiveness (Hislop, 2013).

To tackle these needs, many researchers have proposed KM maturity model. Maturity model gives a pathway for continuous improvement. The models describe different levels on the maturity evolution path and allow organizations to compare their competence and processes in the area of knowledge management. Maturity Model can also be used as a basis for comparison (Klimko, 2001).

KM Maturity models are concluded by the necessity to have a clear-cut roadmap for organization that is get on knowledge management implementation. A maturity model provides the clear vision with a description of the path ahead. Knowledge Management Maturity Model can be also considered as an application of structured approach to implementation of knowledge management.

In general, today majority of university library create and share knowledge in one or another form. Ethiopia public Universities are also need to create and share knowledge among the employees of the libraries in effective and efficient manner, because nowadays Knowledge management is becoming an important tool in the library environment. Knowledge management is not new to the Ethiopian public university libraries. Because knowledge creation, knowledge storage and knowledge sharing has progressed in the library over the past few years though several initiatives, therefore many of the activities can in some way part of the knowledge management process and technologies. The main limitations of the knowledge management functions in Ethiopia university library are an important gap between the academic research and knowledge management maturity level. Therefore, this study aimed at investigating the knowledge management maturity level in the public university libraries in Ethiopia.

1.2. Statement of the problem

Knowledge is essential for university library and hence knowledge management is a determining factor for survival. KM is any process of creating and sharing knowledge, wherever it resides, to increase learning and performance in organizations. The purpose of knowledge management is to allow an organization to leverage its information resources and knowledge assets by remembering and applying experience. Knowledge management is a complex activities and task involving people, technology, and process, there is increasing need for understandable set of principles to show knowledge management implementations (Pillai et al. 2008; Wong and Aspinwall, 2004).

Knowledge management requires the correct technological tools, organizational culture, organizational structure; KM strategy and human resource practice are the driving force towards a knowledge creation and sharing environment. Still, many universities are not well understood how KM strategy, Organizational culture, ICT infrastructure and organizational culture affect implementation of knowledge management maturity. In fact, study focused on the knowledge management critical success factor in Greek academic library. One of their conclusions was that the study does not provide insight to how specific organizational factor affect implementation of knowledge management strategy, further research should look into this (Koloniari et al., 2015).

According to Chidambaranathan & Bs(2015) Knowledge management present the best possible way promote in managing the tacit and explicit knowledge of employees but the education sector in general and libraries in particular have failed to take advantage of the benefit of knowledge management. The majority of the organizations are actively connected with knowledge management have an issue to identify the effectiveness and maturity of knowledge management plan (O'Sullivan, 2010). The process of assessing the value of knowledge management and knowledge itself is quite challenging in the organization (Jumo, 2011). Knowledge management maturity defines the levels of maturity in which an organization can expect to pass through in its journey to improve knowledge-oriented processes (Jennex, 2010).

Similar to the case with other countries, the Ethiopian university libraries shares many of the problems and challenges the university library is facing in other countries, perhaps with greater severity. Given the critical role the university library plays in Ethiopia and the poor level of performance of the KM in those countries, improving the performance of the library ought to be a priority action. As library staffs are one of the key players in the library, any development and improvement initiatives in the library have to consider ways of improving the capacity and capability of the KM .The concepts of knowledge management is already known by Ethiopian university libraries, Previous studies carried out on Knowledge Management included comparison of KM practices in Ethiopian university libraries. Study established that most challenges experienced are on implementation of KM; however the previous study did not focus on KM maturity level. Based on this, measuring the development of knowledge management is unavoidable and cannot be taken as simple (Chua & Chaudhry, 2008). This research therefore provides new knowledge to guide on effective implementation of knowledge management

maturity. Thus, this study aimed to identify the knowledge management maturity level in selected public university libraries in Ethiopia.

1.3. Research questions

This study was attempted to answer the following general and specific research questions:

3.1. General question

- What is the Level of knowledge management maturity in the selected public university libraries in Ethiopia?

3.2. Specific question

- What are the factors that affect effective implementation of knowledge management in the selected public university libraries in Ethiopia?
- Are any differences regarding KM maturity Level in the selected public university libraries in Ethiopia**?**

1.4. Objectives of the study

1.4.1. General objective

The general objective of this study was to determine the Level of knowledge management maturity in the selected public university libraries in Ethiopia.

1.4.2. Specific objectives

1. To identify the factors that affect effective implementation of knowledge management in the selected public university libraries in Ethiopia
2. To compare the differences regarding KM maturity level in the selected public university libraries in Ethiopia
3. To propose a roadmap to address the KM maturity of the selected public university libraries in Ethiopia and
4. To formulate recommendation to move the selected public university libraries to the required knowledge management maturity level.

1.5. Significance of the Study

The purpose of this study was to determine knowledge management maturity level which can be applied in Ethiopian public university libraries. The finding of the study will have potential implications for Decision Makers in Ethiopian university library, especially the selected public university library in Ethiopia on developing strategies and policy for creating successful KM implementation in library environment and to make the use of resources more efficient and effective. Moreover, this study has aimed to find out what qualities the selected public university library in Ethiopia lack and at which stage/level they are in knowledge management.

Again the proposed road map is useful for developers to provide what are the required aspects to make knowledge management maturity, where they will focus to make them better. In general, the study will have also some positive implications on filling the research gap in the area of Knowledge Management maturity level in Ethiopia public university library. However, the study was act as a good source of information to the decision makers in the selected public university libraries of Ethiopia.

1.6. Scope and Limitations of the Study

1.6.1. Scope of the study

This study on knowledge management maturity level in the selected public university libraries in Ethiopia, to assess these KM implementation, university libraries need to find out their place in the business world and this place will be determined by the maturity level of the university libraries, and by the different types of strategy implementation within the libraries. This study attempts to determine levels of knowledge management maturity in the Ethiopian public university libraries with a model called the general knowledge management Maturity Model (G-KMMM) in order to enable benchmarking. In general, the scope of this research was Addis Ababa, Dilla and Wolkite university libraries and this study was not including other university libraries in the country because of time constraints. The study was also limited to 663 library staff as study population in the selected public university libraries in Ethiopia.

1.6.2 Limitation of the study

With regard to the limitations of my study, Lack of time available to carry out an in-depth study (e.g. randomly selected library staff per university library has answered the questions during the questionnaires but the results clearly indicate that different KM areas have to be assessed by

different people in an organization). So it is recommended that the key process area “people and process” should be assessed by the top management and the area “technology by the IT manager.

1.7. Operational definitions of terms

Knowledge: is awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education.

Knowledge Management: strategies used in an organization to identify, store, Create, organize, disseminate, share and apply knowledge.

KM enablers: KM enablers can be defined as those tools, organizational culture, organizational structure, human resource management and KM strategy that facilitate fruitful implementation of KM strategy within the organization.

KM Barriers: are factors to KM referring to those problematic issues that create obstacles to KM or holdback individual and organizational knowledge management.

Knowledge Management Maturity: as the level of maturity that organizations expect to achieve knowledge management processes implementing within organization

Knowledge Management Maturity models: are model used to explain and evaluate/identify growth life sequences.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter presents the review of related literature for the study by highlighting the concepts of data, information, knowledge and KM; Knowledge management needs, Knowledge management benefits and its impacts, Knowledge management process, Knowledge management principles and systems, Knowledge management enabler/ Infrastructure, Maturity model and Knowledge management maturity level model. The literature was accessed from several databases as Emerald, Science Direct, etc. through the Jimma University website and also by searching through the search giant Google and Google Scholar.

2.2. Data-Information-Knowledge

The definition of the term knowledge is just as difficult as that of knowledge management and the term is commonly used as synonymous to data and information(Tobergte & Curtis, 2013). In today's business world, organizations examine many of data and information. However, as Davenport and Prusak stated (2001), comprehension of data and information results in confusion among management and sometimes this confusion results in the failure of knowledge management projects. The major mistake they fell into is that knowledge is derived from information and information is derived from data and data is a set of papers, documents, facts, etc. without any meaning. The character of and the associations among data, information, and knowledge is the basis for understanding KM theory in organizations (Alavi & Leidner, 2001).It has been common apply to take a hierarchical view of the relationship between data, information and knowledge (Mansorinezhad, 2010). He further stated, data is regarded is the raw material of information and information is the raw material of knowledge. The relationship between data, information and knowledge form a pyramid. The pyramid has data as its base, followed in the hierarchy by information and then knowledge.

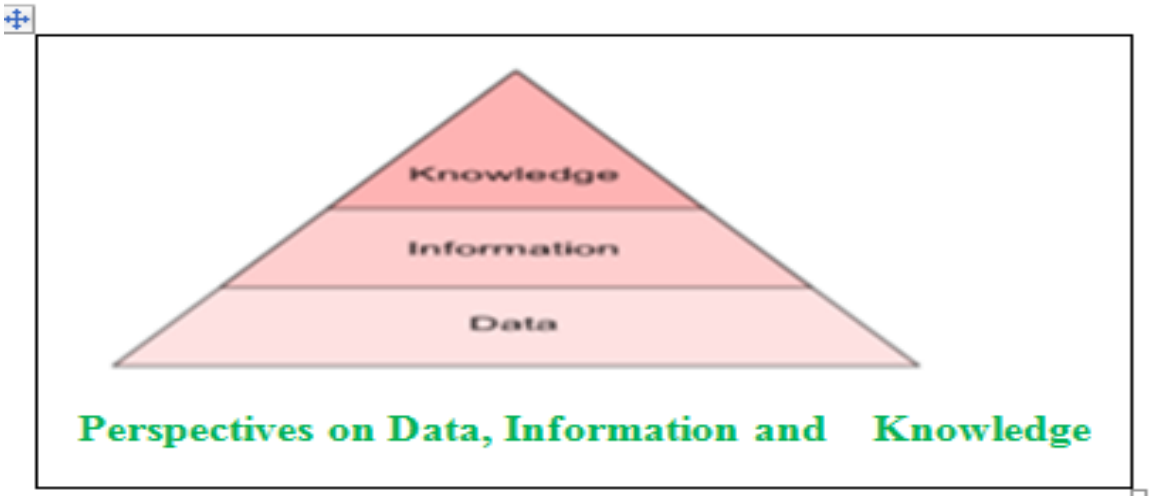

Figure 2.1: Data to knowledge (Nake, 2002)

Data is unorganized, unprocessed numbers, symbols, words or images set that is raw materials. When Data is organized and possessed in a logical, cohesive format for a specific purpose, it becomes information. Information as a concept takes up different meanings, depending on the context in which is discussed. When information put into productive use and made actionable, it becomes knowledge. Knowledge is an intellectual capital when people out of creation, add value to information, generated, classified, indexing and shared (Kumar, 2010). Knowledge is constantly being created by employees as they do their jobs, which therefore makes it difficult to organize. Some of the knowledge can be expressed and therefore made accessible for re-use while much of it is never remains in the mind of the 'knower'. These types of knowledge are known as explicit and tacit knowledge respectively.

2.3. Types of knowledge

Many researchers have divided knowledge into some categories. The most well-known types of knowledge are Explicit and Tacit Knowledge.

2.3.1. Explicit knowledge

Skyrme (2001) defines explicit knowledge as "that which can be codified, such as in documents and databases". Capurro (2004) refers to explicit knowledge as 'information'; which is often found in a digital format. (Nonaka & Toyama, 2003; Grover & Davenport, 2001) also state that explicit knowledge can be expressed through the spoken and written word, as well as by means of drawings and art.

Therefore, explicit knowledge can easily be articulated, communicated and codified (Grover & Davenport, 2001; Kirk, 2002)). Thus as Dillon (2007) maintains, this is the type of knowledge that is found in libraries.

2.3.2Tacit knowledge

Tacit Knowledge is highly personal knowledge. It is hard to formalize and therefore difficult to communicate to others. Tacit knowledge can be shortly described as knowledge which is present in people's minds. It includes cultural beliefs, values, attitudes, experience, mental models, etc. as well as skills, capabilities and expertise (Botha et al., 2008). Sharing tacit knowledge is not easy; often it is a painful process that takes time and systematic methods.

Tacit knowledge also includes cognitive skills such as images, intuition, and mental models as well as technical skills such as craft and know-how. It is deeply embedded in an individual's actions and experience as well as in his/her ideals, values, or emotions (Nonaka and Krogh, 2009). Hence, tacit knowledge is regarded as a know-how and learning embedded within the minds of the people in an organization (Kidwell et al., 2000). It involves perceptions, insights, and experiences. Some of the characteristics of tacit knowledge are personal, context specific, difficult to formalize, difficult to communicate and more difficult to transfer.

2.4. Knowledge management

KM is a broad concept that it is about creation, sharing, storing and using of knowledge. Knowledge management is a process of applying a methodical approach to acquire, structure, and disseminate knowledge throughout the organization to work faster, reuse best practices, and reduce costly rework from task to task (Dalkir, 2005). Knowledge management, according to King (2009), is concerned with the utilization and development of the knowledge assets of an organization with the view of enhancing organizational objectives. Moreover, knowledge management is considered as a deliberate and systematic coordination of an organization's people, technology, processes, organizational structure and organizational culture in order to add value through reuse and innovation. This coordination is achieved through creating, storing, sharing, and applying/using knowledge.

King (2009), the goal of knowledge management is to control and improve the organization's knowledge assets to achieve better knowledge usage practices, improved organizational behaviors, better decisions, improved organizational performance and competitiveness.

Probst (2005) further pointed out that the goal of knowledge management is to improve organizational capabilities through better utilization of the organizational, individual and collective knowledge resources. These resources comprise skills, capabilities, experience, routines, and norms, as well as technologies. The effectiveness of knowledge management is determined by the knowledge infrastructure such as technology, structure and culture along with knowledge process architecture that are acquisition, conversion, application and protection (Gold *et al*., 2001).

2.5. Knowledge management in library

This literature review will be used to consider works that have discussed knowledge management activities in library environment. The fact that there is often a lack of differentiation between the meanings of data, information and knowledge is the reason that the terms are defined in section 2.1 of section two.

According to the empirical study of Jain (2007), whether libraries deal with KM management is often unclear, especially as these are concepts that originate from the business perspective. According to Singh (2007), there are no simple answers to what constitutes KM in libraries because in a diverse and changing environment, its nature is likely to be ever-changing.

Barquin (2001) described knowledge management as a process, with phases and components, embedded in time, and there is more than one approach and different structures and architectures to this process, as well as expected outcomes and performance to be measured. This view further sees the importance of interpreting collective intelligence, that is, a community of participants involved and hence the need for identifying ownership and source of the knowledge, as well as for providing mechanisms and incentives to sharing knowledge. The same point is expressed by Singh (2007) who is of the view that KM "implies the process of transforming information and intellectual assets into enduring value".

Green (2008) suggests the creation of "social libraries" as places where traditional library practices and modern KM technologies operate together for collective social wisdom. He farther stated that "the librarian must be at the centre of managing information, and the tools used must be designed to facilitate this requirement". A good understanding of the meaning of KM application to libraries is therefore essential.

KM is regarded as creating value from knowledge, information and people (Weerasinghe, 2006). Jain (2007), Jashapara (2005), and White (2004) point to the need for a knowledge environment which is based on strategic planning, and knowledge needs to be considered a strategic resource. Information professionals need to develop highly dynamic knowledge management skills and strategies. They should have a clear understanding of various knowledge management processes such as knowledge creation, capture, storage, application and sharing. Giving incentives to individuals for contributing to KM activities has been proved to be an effective way of encouraging staff to participate in KM activities.

According to Wen (2005) an organizational culture for sharing of knowledge and expertise should be established with appropriate rewards and incentives. Koenig (2003) credits the flow of formal and informal information up, down and across the project as the source for improvements in operational productivity. Putting the KM research of Stankosky (2005) in the library perspective, one sees that it is focused on technology (which is a concern of a modern library), leadership (library leadership and where it places KM principles), organization (organizational objectives and how the library goals support them), and learning (the library as a learning department/ organization). These core pillars are interrelated, and are at the heart of most activities within KM. Library practice based on KM principles and practice has the potential to allow for the study of library and information variables, their measurement and evaluation, the creation, retention, and dissemination of knowledge. This literature review has pointed to the fact that to become aware of a KM strategy in a library, an assessment of the current situation needs to be carried out by highlighting KM activities and experience, outlining the benefits, explaining how these can be built upon, and exposing barriers to further progress (April, 2002) Similar to business organizations there are forces that are driving the changes in the way universities library operate (Maponya, 2004). This shows that nowadays economic and technological context is bringing about changes to which universities must also adapt (Crue, 2002).

This, in turn, will help them make a meaningful contribution to the economic, social and cultural well-being of society. However, Parirokh, et.al (2008) advocate those academic libraries should move from playing an informational role to assuming a "resource-based and collaborative" role. Wen (2005) refers to Towley's (2001) view that business, corporate or special libraries are more prone to take the lead in so far as knowledge management is concerned.

Jantz (2001) believes that this can be attributed to the assumed link between the importance of KM and the business value in terms of profits and improved return on investment in such organizations.

2.6. Knowledge management need for university library

Nowadays, any university needs to know their knowledge assets, how to manage and make use of these assets to get maximum benefits. Knowledge management is the most important asset for a organization institution because KM provides access to various aspects like experience, knowledge and expertise that create new capabilities which enable better performance, encourage innovation and enhance customer value(Dyah, 2015).Environmental pressure, strategy, technological advancements and the ability to create and share valuable information and knowledge are responsible to adopt knowledge management. KM needs to be knowledge, improve services to users and enable users to learn, create and share.

2.7. Benefits of Knowledge management and its Impacts

The goal of knowledge management is to improve organizational performance by openly designing and implementing tools, processes, human resource, strategy, organizational structures and organizational cultures to improve the creation and sharing of all kinds of knowledge that are critical for organizational performance. KM can help libraries to develop into more efficient organizations, taking advantage of the new demands of the Knowledge Society leading to the improvement and development of new services to users, in addition to increasing the creation and sharing of knowledge among the library staff(Bem, Coelho, & Reinisch, n.d.) they further explains some other benefits of KM Implementing in university libraries leads to perfecting the ability of these organizations to learn, identify and use knowledge of internal and external resources in their processes and activities. KM in libraries will also lead to the creation of new knowledge, development of new procedures and practices to improve the combination and sharing of knowledge within organizations (Bem et al., n.d.).

A KM program made to order specifically to libraries can reduce costs, increase revenue and staff efficiency, improve the activities, products and services, improving library performance and guaranteeing a position in the knowledge market (porumbeanu, 2009). Dyah (2015)expressed the benefits of KM applications in their research process, curriculum development process, student and alumni services, administrative services and strategic planning.

They further summarized some benefits of KM in academic library are: Enhanced ability to develop up to date and market focused strategic plans, enhanced faculty development efforts, especially for new faculty, Facilitation of interdisciplinary research in libraries, Improved effectiveness and efficiency of administrative services, Improved responsiveness and communication capabilities, Improved services for students, Improved speed of curriculum revision and updating, Improves and service capability of faculty and staff.

According to Becerra-Fernandes et al. (2004) knowledge management has its own benefits impacts on four levels/stages in the organization such as people, processes, products, and overall performance. In the stage of people parts, knowledge management can facilitate employee learning by knowledge processes supported by knowledge management, which causes employees to become more flexible and are likely to adapt when they interact with others.

People tend to transfer knowledge through socialization and education (Roberts, 2000). In the stage of processes parts, knowledge management enables improvement in the effectiveness, efficiency, and the degree of innovation in the organizational processes. Knowledge management processes can also take place in the organization including its creation, storage, transfer, and application. Knowledge reuse and transfer in the organization will take place as most of organizations will use the best practice in always changing environment. In the stage of information and communication technology aspects in the knowledge management system could help organizations to surpass the knowledge management process and practice. In organizations, the transfer of knowledge could be related to strategic knowledge between alliances and partners, best practices, and technology transfer (Joshi & Sarker, 2003).

2.8. Knowledge management process

KM is defined as the process of creating, sharing and application of knowledge. The aim of KM is integrating people, process, technology and organizational issues for best utilization of knowledge that would result in quality service.

KM process is the mechanism of collecting and identifying useful information, transferring tacit knowledge to explicit knowledge, storing the knowledge in the repository, disseminating it through the whole organization, enabling employees to easily retrieve it and exploiting and usefully applying knowledge. According to Alavi and Leidner, KM consists of four processes: knowledge creation, knowledge storage/retrieval, knowledge sharing, and knowledge application (Alavi & Leidner, 2001). Uriarte (2008) argued that a complete knowledge management system must contain four elements. These are: knowledge creation and capture, knowledge sharing, knowledge storage and retrieval, and knowledge application and utilization. These four phases permit the organization to learn, reflect, and unlearn and relearn, generally thought necessary for creating, sharing, and storing and application of core-competencies.

2.8.1. Knowledge creation and capture

Knowledge creation plays an important role in KM. Knowledge creation performance is based on the organizational culture (Baskerville & Dulipovici, 2006). For example, knowledge creation can be supported by organizational policies such as using rewards as motivation for individuals. Knowledge creation can be resulted from process involve communication between individuals who are working or collaborating together (Maponya, 2004). Knowledge can be created in different ways by focusing on finding, innovation, and gaining of knowledge.

Creative thinking enhancing the ability of individuals to solve problems, and having an effective organization infrastructure are the most important elements in knowledge creation (Mavodza, 2010).

According to Nonaka (2008) knowledge creating process consists of four modes of knowledge conversion: socialization, externalization, combination, and internalization. This is known as SECI model:

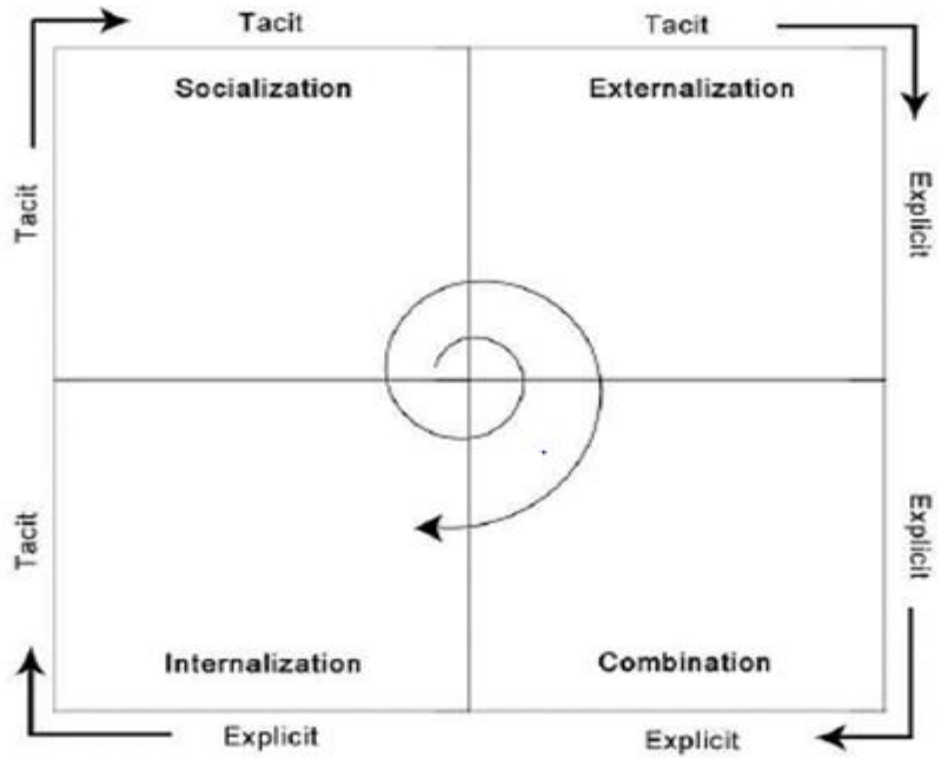

Figure 2.2: SECI Model (Nonaka, 2008)

It starts with socialization of individuals, moving to externalization within groups, combination in organizations, and back to internalization in individuals.

Socialization: In this stage, individual tacit knowledge is shared through shared experiences in day-to-day interaction to create new tacit knowledge. There is knowledge transferring through socialization. There is a process of absorbing knowledge through action and perception in this stage.

Externalization: Externalization refers to the process of making tacit knowledge crystallized (explicit) so that it can be shared easily among the individuals, groups or organizations. Dialogue and reasoning are important actions to support externalization (Whelton et al., 2002).

Combination: The Combination phase is achieved by exchanging, combining and breaking into pieces, and using different techniques to convert existing explicit knowledge (operating procedures, manuals, information bases, etc.) to more explicit knowledge (Whelton et al., 2002).Emails, CAD systems, databases, document management systems and project extranets ease this process.

Internalization: The explicit knowledge created and shared in the organization is converted to tacit knowledge during the internalization process. Internalization is the reverse process of externalization. It is related to learning by doing, training or exercising. The reframed explicit knowledge is embodied by individuals to have the tacit dimension.

2.8.2. Knowledge sharing

Knowledge sharing is the process of making knowledge available to users. To ensure that the created knowledge is available for applying in the organization, individual and teams must have to share what they know with other co-workers. Knowledge sharing is the heart of the KM where it shares the knowledge to others (Joshi & Sarker, 2003). Knowledge sharing can be done in many ways: informal, formal, personal or impersonal. The use of e-mail, intranet, newsgroup and bulletin board supports the distribution process. They also permit members to discuss, deliberate and interpret on the information through many aspects (Bhatt, 2001).knowledge sharing is easy to share explicit knowledge within and across the organization by using non-IT tools like face-to-face interaction and IT tools like groupware and multimedia tools are the examples of tacit knowledge sharing whereas searching knowledge base and obtaining stored knowledge is an example of explicit knowledge sharing.

2.8.3. Knowledge storage and retrieval

The storage and retrieval of organizational knowledge refers to the organizational memory (Alavi & Leidner, 2001). It is related to the knowledge in the past, experience, and events that influence organizational activities. This process is essential in order to keep and reapply viable solutions in the documented form of standards and procedures, which could avoid the similar mistakes, reinvent the wheel, or failed to make good use of organizational resources by redoing the work that have been done previously. The organization should ensure that the acquired or shared knowledge is readily accessible to others. This can be done by storing information and knowledge in a centralized location with sufficient provisions for easy retrieval and access.

For example, reports, statistical data on economic, social and environmental areas can be stored in databases while official documents, once approved, should be categorized and stored electronically in suitable file systems.

According to Uriarte (2008) categorized the storing options of information/knowledge that are captured or shared in to these are: file system storage; databases; e-mail; and websites (intranet and external).

2.8.4. Knowledge application

Making knowledge more active and relevant for the firm to create value is the definition of knowledge application made by Bhatt (2001). Knowledge, like information, does not have any value unless it is applied to decisions and actions in a business context having a goal. Knowledge application and use is a complex subject with various aspects (Davenport and Marchand, 2001).

Therefore, if organizations fail to locate the right kind of knowledge in the right form, the firm may have trouble in sustaining the competitive advantage (Bhatt, 2001). Organizations benefit not from the existence of knowledge but from its proper application (Alavi & Leidner, 2001).

Knowledge Application is related to the concept of organizational learning. Regarding the integration of knowledge to create the organizational capability, there are mechanisms can be done: direction and routines. Direction is the process of giving instruction of other individuals. Routines involve the action to utilize the knowledge embedded in procedures, rules, and norms that guide future behavior (Becerra-Fernande et al., 2004).

Knowledge application may take on different forms, such as its elaboration (when knowledge requires a different interpretation than in the original situation), infusion (finding underlying issues), or thoroughness (when different people or teams develop different understanding) (King et al., 2008).

2.9. Knowledge management principles and systems

2.9.1. Knowledge management principles

Many organizations already know that the knowledge of their employees is their most valuable asset. Davenport (2001) the opinion that KM has thus far been addressed at either a philosophical or a technological level, with little discussion of how knowledge can be managed and used more effectively on a daily basis. Davenport, further state that the most appropriate form of dialogue is not detailed tactics, but high-level principles.

When an organization decides what principles it agrees upon with respect to KM it can then create detailed approaches and plans based upon those principles.

KM principles as laid out by Thomas, sited in Davenport, 2001) are: Effective management of knowledge requires hybrid solutions of people and Technology, Knowledge access in only the beginning, Knowledge Management benefits more from maps than model, more from markets than from hierarchies, Knowledge Management is expensive, Knowledge Management is highly political, Knowledge Management means improving knowledge process, Knowledge Management never ends, Knowledge Management requires a knowledge contract, Knowledge Management requires knowledge managers, Sharing and using knowledge are often unnatural acts, and Quantitative and qualitative measurements are needed to evaluate the initiative (Davenport and Prusak, 1998).

2.9.2. Knowledge management systems

Knowledge management system is a type of activity application that can be used in all departments, functions, and levels within organizations. According to Alavi and Leider (2001) knowledge management systems refers to the use of Information Technology to systematize increase, and accelerate intra- and inter firm knowledge management. Becerra-Fernandes et.al.(2004) stated that knowledge management systems is the combination between technologies and social/structural procedures and mechanisms (Becerra-Fernandes et.al.,2004).The KM mechanism in knowledge management system is important for the reason that the training and learning aspects, such as media of representation, multiple perspectives, complexity, user control, online support, and navigation aids are important (Leung, 2004). At the back of the knowledge management systems, there should be procedures that are used to promote knowledge management throughout the organization that includes learning by doing, on-the-job training, learning by observation, and face-to-face meetings (Becerra-Fernandez et a.,2004).

Turban et al. (2011) explained that the information and communication technology can be incorporated to the knowledge management activities and processes in the knowledge acquisition, knowledge selection, knowledge generation, knowledge use, knowledge internalization, and knowledge transfer. Information technology is rapidly changing and becoming more complicated these days. IT is recognized as a useful and effective tool for knowledge management these days.

According to Mitchell (2003) many information technologies can be implemented in knowledge management systems, such as data warehousing, groupware, and client-server systems. Another example of implementation of information and communication technology in knowledge management are document management systems, policies and procedures stored in network (Duffy, 2000).However to be able to implement efficient and effective KM, all library staff should have been trained thoroughly. When the use of information and communication technology is maximized, organization can gain value from the investment (Mitchell, 2003). There are many options of knowledge management systems to support the knowledge management process. Some functionality of e-business and daily operations applications such as Supply Chain Management and Customer Relation Management can also be covered under the umbrella term of knowledge management systems.

2.10. Knowledge management enabler/ Infrastructure

The success of effective KM implementation will not take place without the collective work of various enablers in any organization. KM facilitator refers to the key factors that determine the effectiveness of KM implementation. Enablers provide the infrastructure necessary for the organization to increase the efficiency of KM process and system. Different kinds of facilitator of KM have been introduced in the literature. Koloniari et al.(2015) have examined five key KM critical success factors includes ICT infrastructure, organizational culture, organizational structure, HR management and KM strategy.

2.10.1. Information and communication technology (ICT)

Technology plays an important role in knowledge management, although knowledge management is not only about technology (Al-Hawamdeh, 2002). The advances in ICT, the internet revolution and the move towards the information and knowledge society have highlighted the importance of knowledge and the need for knowledge management (Abell & Oxbrow, 2001). Technology will provides mechanisms, techniques and tools to create structure and effective use of knowledge. Knowledge Management requires technologies to enable the new strategies, processes, systems and techniques to better create, share and apply the best knowledge. When we say technology, it includes bulletin boards, whiteboard, chat rooms and e-mail.

It also cover ups database tools it contains knowledge management systems, data warehouse and lessons learned database ,Network tools it contains network and internet, Collaboration tools it contains asynchronous collaboration includes group ware, web board, workflow, social media, YouTube, document management system and electronic mail and synchronous collaboration includes electronic meeting systems, video conferencing and electronic learning and Intelligent tools it contains decision support tools, artificial intelligence and expert system, search engine and knowledge mapping.

2.10.2. Organizational culture

Organizational culture is believed to be one of the most significant reasons in effective knowledge management (Gold et al., 2001). An effective organizational culture can provide support and incentives as well as encourage knowledge-related activities by creating suitable environments for knowledge creation and knowledge sharing. According to Wen (2005) an organizational culture for sharing of knowledge and expertise should be established with appropriate rewards and incentives. If the existing Organizational culture is not suitable for the implementation of knowledge management and also there is no essential readiness for the cultural change in the organization, the implementation of knowledge management plan will face failure (Gold et al., 2001). So, an organization has to a powerful culture in which values, trust, openness and sociability to stimulate people's interaction and knowledge sharing (Ngok, 2005).

2.10.3. Organizational structure

The hierarchical structure of an organization influences the people with whom individuals frequently interrelate. Claver-Cortés et al. (2007) indicated that the important role of the flexible organizational structures on successful KM implementation. A flexible organizational structure therefore, facilitates knowledge sharing and collaboration across boundaries within the organization (Quinn et al., 1998). Gold et al. (2001) argue that a team-based, non-hierarchical, self-organizing organizational structure is the most effective for knowledge sharing. Hierarchical and inflexible organizational structures which are fragmented into silos, precludes effective sharing, fluid knowledge and cooperation. Groff and Jones (2003) argued very rightly when they said that knowledge flows very poorly in large centralized, hierarchical organizations.

Wang and Ahmed (2003) consider that for the structure of knowledge-based organizations it has to be created in higher levels of structural dimensions. This level comprise trust-based relationship, externally-oriented interactive relationship, emotionally- inclusive relationship.

2.10.4. Knowledge management strategy

According to Henczel (2004) highlights that the lack of a well-developed KM strategy serves as a hindrance towards the development of sound KM implementations. According to Nonaka & Toyama (2005) the 'knowledge vision' of an organization helps to give direction with regard to the creation, sharing and utilization of its knowledge. It also encourages people to create and share knowledge. The KM strategy provide adequate detail regarding the necessary KM infrastructure and tools to ensure the effective flow of knowledge in the organizational well as creating an organizational culture that promotes further knowledge creation and sharing. As Yi (2008) puts it, "one of the most important duties and responsibilities of a university library director is to provide effective strategic planning for long-term operations". He further states that with the rapid changes and advances in technology, university libraries have to institute strategic plans that can manage the change as well as produce plans that will meet the new demands and needs of its clients.

2.10.5. Human resource management practices

The effective management of people, who are both able and willing to share their knowledge, is of vital importance (O'Dell and Grayson, 1999) and HRM practices can be used for the alignment of employee behavior with the organization's knowledge strategy. HRM plays an integral part in the diffusion of knowledge within organizations, by such functions as employee assessment and selection, training and development and the formulation of appropriate communication, reward and recognition schemes (Chivu and Popescu, 2008).

2.11. Maturity model

According to Weerdmeester et al. (2003) refers maturity model as a means of simplifying the description of an organization's level of development, and the stages of development that an organization can be expected to pass through as part of its continuous improvement strategy. Marco (2002) emphasizes that maturity models are designed to be easy to understand and use, thus suitable for presentation to the higher-level decision-makers in an organization.

Similarly, Menayo and Ringach (2006), maturity model is an evolution of an organism from its early beginnings to a final status which is representing the reality and developed with a specific goal. They farther described that maturity model brings advantages to measure the current maturity of the process, set an objective for process design endeavors, guide the evolution of organizational change, and allow comparisons.

2.12. Knowledge management maturity

An organization's knowledge capabilities determine its effectiveness at creating value for the organization through its knowledge processes (Dawson, 2000). The success of the organization depends wholly on its ability to perform each of these processes more effectively (Dawson, 2000). Measurement of organizational knowledge assets and their associated knowledge processes is necessary to determine the effectiveness of knowledge management initiatives (Freeze, 2005). By assessing the knowledge capabilities of the organization and by advancing to higher maturity levels, an organization can fulfill its purposes much more efficiently (Berztiss, 2002).

2.13. Knowledge management maturity level model

Schwartz and Tauber (2009) defined KM maturity model as "a mirror image of the distinct, repeatable, and identifiable stages that an organization goes through as it evolves from an initial stage to a final stage". Kuriakose et al. (2011) viewed knowledge management maturity model as an application of structured approach to KM implementation and engineering of KM.

The KM maturity models clarify on the growth of an entity over time, and this entity can consist of any desired topic, whether humans, or an organizational unit, technology and process. Generally, the maturity models have the following characteristics (Klimko, 2000): Maturity models generally have four to six levels which show evolution of an entity.

Each level must have requirement(s) that the entity has to succeed in that level, Levels are ordered sequentially, from an initial level up to an ending level (the latter is the level of perfection), From the initial level (Level 0 or Level 1), maturity levels are ordered sequentially up to a last level(the bigger level shows more accomplishment).

It is not possible to skip any level during measurement and the entity advances forward one level to the next level (Klimko, 2000).Many Organizations are working different stages in their maturation building regarding the implementation of KM.

According to Pee & Kankanhalli (2009) organizations could use KM Maturity Model to assess and guide the organization with the implementation of KM. Further they explained that KM Maturity should meet the following criteria: Provide a systematic and structured procedure to ensure the transparency and reliability of assessment, provide qualitative and quantitative results for the organization, Comprehensible and allow cross references to proven management concepts and include technology, people, and processes aspects. Figure 2.3 shows a way of G-KMMM KM Maturity Level Model Stages (Pee & Kankanhalli, 2009).

Maturity Level		General Description	Key process area		
			People	process	Technology
1	Initial	Little or no intention to formally manage organizational knowledge	Organization and its staff member are not aware of the need of formal KM.	There is no formal processes to capture, share and reuse organizational knowledge.	There is no specific KM technology or infrastructure in place
2	Aware	Organization is aware of and has the intention to manage its organizational knowledge, but it might not know how to do so	Management is aware of the need of formal KM.	Knowledge related to the routine task is documented.	There is Pilot KM projects in place.
3	Defined	Organization has put in place a basic infrastructure to support KM	-Management is aware of its role to encourage KM. -There is a basic training on KM -There is a basic KM strategy. -KM roles are defined. -There is an incentive system.	-There is a formal KM Processes. -The use of metrics to evaluate the productivity due to KM.	-There is a basic KM Infrastructure -Usage of KM systems is at a reasonable level

4	managed	KM initiatives are well established in the organization.	-Standard approach and Common strategy towards KM in organization. -KM is incorporated in organizational strategy -More advanced KM training.	Quantitative evaluation of KM processes.	-Availability of organization wide KMS -Fair use of KMS. -Integrated KMS and technology with content architecture
5	optimizing	-KM is deeply integrated into the organization and is continually evaluated and improved. -KM becomes automatic component in any organizational processes.	Culture of sharing is institutionalized.	-KM processes are constantly evaluated and improved. -Existing KM processes adapted to meet new business requirements. -KM procedures become an integral part of the organization.	Existing KM infrastructure is continually improved

Table 2.1: G-KMMM (Pee & Kankanhalli, 2009)

This model categorized the organization's maturity into five levels and evaluates the organization's maturity on three performance key process areas: people, processes, and technology. Each area is also separated into smaller parts. Pee & Kankanhalli (2009) model was used for this study because most of the KM Maturity Models cannot suit all the proposed traits above, Pee & Kankanhalli proposed the G-KMMM that can suit all the aspects in knowledge management including people, technology and processes. The model has it has its own criteria such as Provide a systematic and structured procedure to ensure the transparency and reliability of assessment, provide qualitative and quantitative results for the organization, Comprehensible and allow cross references to proven management.

As we looked the Pee & Kankanhalli G-KMMM every area is also divided into smaller parts which are as follows: People: The aspects related to organizational culture, strategies, and guidelines supporting knowledge management ,Sharing knowledge throughout the organization ,Supervising and applying knowledge ,Strategic consistency with the organization's goals ,roles, responsibilities, authorities, and resources motivation and reward.

The aspects related to KM processes in an organization; Learning processes and techniques. The aspects related to the technological infrastructure which supports an organization's knowledge management; Technological empowering.

2.14. Related works

A number of researchers are conducting a research to investigate KM maturity level in different regions of the world in their organizations. In this regard, identifying the maturity level of the libraries that implement KM is critical. Thus, this section presents detailed previous literatures regarding the implementation of KM done in the area.

2.14.1. KM in organization

There are many studies about the implementation of KM in organizations. Rouhollah et al. (2013) in a study examined and determined the KM maturity levels of Research Organization. The results showed that the KM maturity average score in people domain in the second level of maturity was 69%, average score in process domain in the initial level of maturity was 53% which is the lowest level and average score of technology domain in the second level of maturity was 65%.

Nada et al., (2012) have investigated the readiness and maturity level of knowledge management application and innovativeness over 25 manufacturing in Turkey. The study done by Nada et al. indicated that the low level of maturity of innovativeness and knowledge application are related to the lack of innovation strategic plan, culture, and formal process and assessment approach to measure impact of innovation projects. Nada et al have identified that effective innovation is depends on innovation strategy, innovation process, leadership and culture, collaboration and partnering, business and technology, innovative organization, and learning.

Jafari et al. (2007) have done a research of the implementation of KM over 26 Iranian organizations.

They found that there is no correlation between size of organization and the need of learning factors of KM (training; interactive participation of employees; flat structures in organization. Another finding is that the use of IT in the KM is not considered to have an important role in knowledge management in researched Iranian. Most of the researched see IT as a tool for facilitating some of their works and processes and not as an enabler for knowledge management.

Choy and Suk (2005) in a study identified eleven key factors for the successful implementation of KM on a general perspective. These they quoted as, employee training, employee involvement, teamwork, employee empowerment, top management leadership and commitment, organization constraints, information system infrastructure, performance measurement, egalitarian culture, benchmarking and knowledge structure.

Yeh et al., (2006) in a study on enablers of KM and whose aim was to examine the fundamental role of the enablers for the implementation of KM inside the organizations noted that the enablers they had studied could, develop knowledge, stimulate, share and keep knowledge creation within the organization and enhance or influence activities of KM. After their examination they concluded that, corporate culture, people, IT, strategy and leadership were enablers of KM.

Ajmal et al., (2010) in their study on critical success factors for KM in Project based Content identified six critical success factors namely, familiarity, coordination, inceptives, authority to perform, systems and cultural support. Conley (2007) study on critical success factors for KM identified nine critical success factors which he ranked in order of significance as, sharing, technical infrastructure, top management support, knowledge strategy, training, culture, transferring, creating, and knowledge infrastructure. These review of KM maturity level and factors affecting implementation of KM highlight to show that several studies on KM maturity level and factors affecting KM are in plenty.

2.14.2. KM in library

There are also studies related to the implementation of KM in libraries. Hayes & Kent (2010) submit to Metcalfe's (2006) statement that universities are clear sites" to explore the implementation of knowledge management principles in the public sector due to the connection between academia and the creation of knowledge".

Because universities are seen as knowledge reservoirs and stimulators of the knowledge economy they are therefore required to have KM principles entrenched in their processes and culture.

Pradeepa et al. (2012) in a study examined and determined the KM maturity levels of a university library: a case study from Sri Lanka using Kruger's Knowledge Management Maturity model.

The results showed that ICT Management and Information Management in optimum level was scores of 70% and 69.36 % respectively, Formulation of KM principles, policy and strategy and implementation of KM in managed level was 48.05% and 49.08 % respectively, ubiquitous knowledge in awareness level has was a score of 59.77 % and KM growth in initial level was a score of 14.29 %.

Samy et al. (2016) in a study Measuring knowledge management maturity to enhance performance-an empirical study at Al-Azhar University in Palestine using Asian productivity organization model. The results showed that Leadership score was 24.62, Processes 26.71 ,People 18.82, Technology 15.94 ,Knowledge Processes 12.68 ,Learning and Innovation 16.39 ,KM Outcomes 17.98 and The total score was 133.14 which means that the university knowledge management maturity is in level three (Expansion).

Jain's (2007) study of knowledge management in East and Southern African academic libraries revealed that only a small number of libraries incorporated a knowledge management strategy component in their library strategies. Furthermore, even though all the University Librarians - the target population of the study- who responded, professed that their libraries were learning organizations, half of them admitted to not having a culture of knowledge sharing in their libraries.

Parirokh et al. (2008) agrees with Jain that academic libraries do not generally have specific knowledge management policies and strategies in place.

In general, "University libraries are facing innumerable challenges which are complex and interrelated.

These obstacles can be summarized as follows (Ghosh & Jambekar, 2003; Raja, Ahmad, & Sinha, 2009; Maponya, 2004): No cooperation between senior and junior staff , In general, junior staff will not share their knowledge without getting the benefit , Every library cannot participate in terms of modern technology and its management , Lack of communication skills ,Lack of staff training, Lack of sufficient budget / funds , Lack of incentives, Lack of tool and technologies , Lack of Centralized policy for Library, Changing peoples‘ behavior is a challenge , Part of knowledge is internalized by the organization, while another is internalized by individuals , Financial pressures ,Rapidly evolving technologies , Changing staff roles ,Make sense of information found on websites , university libraries need to offer user-friendly ICT oriented facilities , Applying competencies used in managing information‘ to the broader picture of managing knowledge, Managing the knowhow of organizational members”.

2.14.3. Summary of related works

From the above review of KM maturity level and factors affecting implementation of KM it was revealed that different authors have tried in different ways to identify and determine the knowledge management maturity level and factors affecting implementation of knowledge management. The base to initiate the present study was that on the basis of literature review of available literature, there is almost no research available which tells about the evaluation of knowledge management levels for Ethiopian university libraries. Because knowledge is context dependent, hence, this study aimed to determining a KM maturity level. For this purpose, determining KM maturity level has been applied by using G-KMMM. In this study, knowledge management implementation barriers were also addressed. Identification of contribution of KM maturity level for Ethiopian university libraries was the issue of this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODLOGY

In this section, the research design and methodologies used to conduct the research are presented. The subsections below include the study site, research method, Population of the study, Sample size, Sampling techniques, Source of data, Data collection method, Data collection procedure etc.

3.1. Description of the study site

In Ethiopia, there are 33 public universities established in different parts of Ethiopia that have been authorized by the Ministry of Education. Those universities are classified in to 3 generations based on their establishment period. From which 10 were formerly established and categorized in the first generation, 11 were established somewhat later and categorized in the 2nd generation and 12 were newly established and categorized in the third generation. Therefore, in this study by using Convenience sampling method researcher selected one university from each generation i.e. 1st, 2nd and 3rd generation. Accordingly, the study was conducted on Addis Ababa University from formerly established and categorized in the first generation, Dilla university from somewhat later and categorized in the 2nd generation and Wolkite university from newly established and categorized in the third generation.

Addis Ababa University (AAU) is 1st generation and the largest university in Ethiopia. Since its establishment, 1950 up until 1991, AAU was one of the leading universities in the country which shares its experiences to others. It can be called pioneer for all higher learning institutions in the country. AAU is located in Addis Ababa, the capital city of Ethiopia. Dilla University is 2nd generation university located in South West of Ethiopia in Southern Nation and Nationality regional state, Gedeo zone about 360 km from Addis Ababa. Wolkite University is 3rd generation university is located in South West of Ethiopia in Southern Nation and Nationality regional state, Gurage zone about 200km from Addis Ababa.

3.2. Research method

To conduct this research, the researcher used explanatory design with quantitative method. This method is selected because, Yin (2003) states that the most important of the conditions is the

type of research question being asked. The types of research questions are based on the categorization scheme of who, what, where, how, and why (Yin, 2003). Exploratory study refers to any of the research strategies can be used: for example, an exploratory survey, an exploratory experiment, or an exploratory case study. Since the general objective of this research was to determine KM maturity level of the selected public university libraries in Ethiopia, for this study exploratory survey was employed. Exploratory survey methodology helps to understand a detailed and quantified description with precise measurement to be accomplished. Quantitative research seeks to explain and predict what happens in the social world searching for regularities and causal relationships between its constituent elements' thus providing a general sable holistic view of the field, utilizing larger sample sizes (Creswell, 2003).

3.3. Population of the study

In simple term a population can be defined as any collection of persons or objects or events in which one is interested (Gupta, 2005). Population is the complete set of items which are of interest in any particular situation (Gupta et al, 2008). Population can have sub-populations as well e. g. it can be male population or female population. The population for this study was library staff of the selected public university libraries. The total number of library staff of these public university libraries was about 663 which constitute the population of the study.

Table 3.1: the total population of the study

No	**University**	**Library staff**
1	AAU	354
2	DU	220
3	WKU	89
Total		663

Source: (AU, 2016, DU and WU, 2017 Library administration &HR.)

3.4. Sample size

In any survey research, taking a sample size is usually a serious issue. A great deal of care needs to be taken when taking a sample for a study both in terms of the size as well as the

representation in order to prevent a bias. According to Asika (2006), it is practically impossible to take a complete and comprehensive study of the entire population, because of the nature and pattern of distribution of the elements of the population. So, the sample size is calculated using the formula proposed by Kothari (2004).

$$N = \frac{z\left(\frac{\alpha}{2}\right) 2 * p(1-p)}{d^2}$$

Where

n= the desirable calculated sample size

Z (=1. 96 (95% confidence level for two sides)

p= proportion of population and barriers (50%)

d= degree of accuracy desired setting at (5%)

Therefore the value of n is calculated as follows

$$\underline{n = (1.96)2 * 0.5(1-0.5) = 385}$$

$$(0.05)2$$

$$N = \frac{385}{1+ \underline{385} = 243}$$

663

Sample size allocation (proportional allocation for three selected public universities (Addis Ababa University, Dilla University and Wolkite universities)

$n_1 = \frac{n*N1}{N}$, $\frac{243*354}{663} = 130$ for Addis Ababa University

$n_2 = \frac{n*N2}{N}$, $\frac{243*220}{663} = 81$ for Dilla university

$n_3 = \frac{n*N2}{N}$, $\frac{243*89}{663}$ = 33 for Wolkite university

Therefore, the total sample size for this research was 244 library staffs, a number that is representative of the target population.

3.5. Sampling techniques

Neuman (2006) indicated that Sampling can be divided into two types, namely probability or non-probability sampling. Some scholars also categorized them as random or non-random method. By random sampling is correctly meant the arranging of conditions in such a manner that every item of the whole universe from which we are to select the sample shall have the same chance of being selected as any other item (Gupta, 2005). Simple random sampling refers to the sampling technique in which each and every item of the population is given an equal chance of being included in the sample. The selection is thus free from personal bias because the investigator does not exercise his/her discretion of preference in the choice of items (Gupta & Gupta, 2008). On the basis of the above discussion it was decided to draw the sample for this study simple random sampling technique used to select a total of 244 library staff.

3.6. Source of data used in the study

Data can be obtained from two important sources, namely: primary data and secondary data. Depending on the source, we can have either primary data or secondary data. By Primary data we mean measurements observed and recorded as part of an original study. When the data required for a particular study can be found neither in the internal records of the organization, nor in published sources, may it become necessary to collect original data to conduct first hand investigation (Gupta & Gupta, 2008). Primary data can obtained from observation, interviewing, mailing, questionnaires, focus group, etc. (Alemayehu, 2009).

By secondary data we means an investigator uses the data which has already been collected by others, such data are called secondary data. Secondary data can be obtained from journals, reports, government publications, publications of research organizations and internet, etc. The study used both primary and secondary data. The primary data was collected through field survey and secondary data was collected from journal articles, research reports, websites, etc.

3.7. Data collection method

There are different types of data collection methods used for research studies. The selection of the data collection methods was depending on the research objective and research design. The main way of collecting data includes questionnaires was used to achieve the objective of the study.

3.7.1. Questionnaires

Questionnaires that focus on the area of the study were prepared for the library staff. The questionnaires were close- ended in nature. The reason was the closed ended questions are fixed and limit responses to the stated alternatives. The questionnaire was two parts: part one contains the background of the respondents that could be used for demographic analysis, (university name in which the staff is working, gender, age, education level, and work experience.) Part two contains questions requesting the respondents to state their agreement or disagreement on the issues of knowledge management and its factors in their libraries. Consequently, rating questions were prepared. Such questions were to be scored using a 5- point Likert scale. The staffs were asked to choose from five responses: Strongly Disagree-Strongly Agree. These responses were assigned scores as follows: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5).

3.8. Data collection procedure

After designing the questionnaire and selecting the three university libraries, each and every university library was visited personally for the sake of data collection process. The support letters was taken from the Jimma University information science department and helps to get permission to conduct the research in the selected public university libraries in Ethiopia. When visiting each university library the application was submitted to the concerned person and their approval was taken. Then the questionnaire was distributed randomly to the library staffs.

An amount of 244 questionnaires were distributed to the library staff in three public university libraries. Thus the data collection process was completed within the first week of April which was started on the second week of March, 2017.

3.9. Pre-test of data collection instrument

Piloting was carried out in one Ethiopian public university libraries. This university library was Jimma University. This university was not in the main study. According to Edwin et.al (2011) the pre-test was done in a neutral location that was not used in the actual field work. Purposive sampling technique was used to identify pre-test subjects.10% of the total study sample was used for the pre-test exercise. Mugenda and Mugenda (2003), argue that at least a tenth of the total population is adequate for a pre-test. The questionnaires were distributed randomly for 25 Jimma university library staff. From a total of 25 questionnaires distributed, 15 were returned. The main purpose of the piloting was to help obtain some assessment of the questions' validity and reliability. The pilot study helped refine the instruments to ensure that the main study respondents would have no problems in answering the questions and that there would be no problem in recording the data. Piloting was necessary to ensure that the questions were clearly stated, relevant to the study objectives and could be understood by the intended respondents.

3.10. Data Analysis and Interpretation

The study generated quantitative data obtained through the use of questionnaires schedules respectively. Once all data was collected, it was cleaned, edited and coded for accuracy. The statistical analysis was carried out using SPSS Version 16.0 and Microsoft office excel. All of the quantitative data are then put in the SPSS for the analysis. Data collected in the SPSS are analyzed with statistical analysis resulting descriptive statistics. The initial component of the analysis involves the use of descriptive statistics in capturing respondents and the knowledge management maturity level. Descriptive statistics and one way ANOVA was used in identifying the factors influencing the implementation of KM.

The data for items related to the KM maturity level is analyzed with the universal way of measuring maturity levels. There are rules to be followed in the maturity level analysis. Since, this study use Pee and Kankahalli's model as the base, I do the measurement of maturity levels according to each KPA in their model (Pee & Kankanhalli, 2009).

In the G-KMMM used in this study, there are five levels of Maturity Level (1-5) in three KPAs (Key Process Areas) including KM and People, KM Processes, and KM & Technology. All the questions in the maturity level are using the five-point Likert Scale to reflect the respondent's

answers and associated scores. The survey asked the participants to select a response from a range of Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5). The numbers after the responses represent the numerical weight assigned to that selection. It should be noted that the numerical weights (descriptive statistics) assigned to each response do not appear on the survey instrument. Based on the scores allocated to each question (for 5-point questions 1-5), the total agreement percentage with each question was calculated after inserting the data into SPSS in order to determine the total average score per the three key process area.

In the G-KMMM used in this study, there are five levels of Maturity Level (1-5) out of this level there is no requirement in the Initial level of maturity. Therefore, if the organization is less than 60%, the organization will automatically get the level 1(Initial). To get the level2 (Awareness) of maturity, practice in the level 2 should be 60% or more than. To get the level 3(Defined), practices in level 2 and 3 should be 60% or more than 60%, and so on.

The same rules applied until the highest level 5(optimizing) of maturity level. The 60% figure is selected from the Rouhollah et al. (2013) or in research organization. To achieve the results, the researcher used Rouhollah formula to follow the rules. The formula used is determining the maturity level from the Initial /level 1 to the Optimizing/level 5. For example, if our statistical population includes 122 library staff for Addis Ababa University and the answers to a 5-point question are according to Table 3.2, then the total agreement with that question can be obtained from the following equation:

$$P_j = \left[\frac{\left(\sum_{i=1}^{L_j} x_{ij} * n_{ij} \right)}{\left(\sum_{i=1}^{L_j} n_{ij} \right) * L_j} \right] * 100$$

Where;
Pj = agreement percentage with question j (at percentage)
Xij = the score of option i of question j
nij = the number of people answered to option i of question j
Lj = the number options of question j

Table 3.2: *Example of opinions distribution regarding the first question*

Option	Option score	No. of people answering to each option (nij)
Strongly Disagree	1	6
Disagree	2	22
Neutral	3	48
Agree	4	29
Strongly Agree	5	17

As example in Table 3.2, the first question (Our organizational/library knowledge recognized as essential for the long term success of the library) in people area for AAU maturity score obtained from the questionnaires shows a 78% agreement which is higher than the acceptance value of maturity level (i.e. 60% which is determined based on Rouhollah et al. (2013) or research organization.

3.11. Data quality control

In order To ensure quality, the collected data were checked out for the completeness and clarity by the investigator and main advisor. This quality checking was done daily during, before and after data collection and adjustments were made before the next data collection measure. Data clean up and cross-checking was done before analysis. Training was given to data collector on the purpose of, objectives and data collection process of the study by the investigator. In addition to the type, contents and intention of the questions, the data collectors was train on how to communicate and convince the respondents in order to enhance the interests of employees which is fundamental to get a valid data.

3.12. Ethical consideration

Ethical considerations have been carefully followed in designing the questions for carrying out the questionnaires. All the study population was requested for oral informed consent prior to enrolment to the study. The purpose of the study was clearly described to the study participants including the importance of the study. Any information concerning the study participant was kept confidential and the data collected from the study were only analyzed for the proposed purposes.

CHAPTER FOUR

Result and Discussions

In this chapter the responses obtained from the questionnaire will be reported on. This chapter presents also the results for the study by highlighting Response Rate and socio-demographic Information, Demographic analysis of the respondents of questionnaire, Distribution of the respondents over three public university, Gender of the respondents, Age group of the respondents, Educational level of respondents, Work experience of the respondents, Analysis of questionnaire data regarding KM maturity level ,discussion ,etc.

4.1. Response Rate and socio-demographic Information

In this study a total of 244 respondents from the three public universities libraries (Addis Ababa University, Dilla University and Wolkite University) took part. Table 4.1 below represents the participation level of the respondents from these three universities. From a total of 244 (100%) questionnaires distributed, 225(92.2%) were properly filled out and returned, giving a response rate of 92.2%.

Table 4.1: Response rates of samples

No.	**Name of the university**	**Number of questionnaires**		
		Distributed	**Collected**	**Percentage**
1	AAU	130	122	94 %
2	DU	81	75	93 %
3	WKU	33	28	85 %
Total		244	225	92.2 %

4.2. Demographic analysis of the respondents of questionnaire

This section of the survey is concerned with the demographic analysis of the respondents to understand the library staff who participate in filling the questionnaire for this study. Respondents were requested to fill their university, gender, age group, their educational level and work experience in terms of years in the three selected public university libraries. Accordingly, the profile of the respondents is presented as follows:

4.2.1. Distribution of the respondents over three public university

Figure-4.1 shows that among the 225 respondents about 122(54.2%) respondents were from the Addis Ababa university libraries, 75(33.3%) were from the Dilla university and 28 (12.4%) respondents came from the Wolkite university libraries.

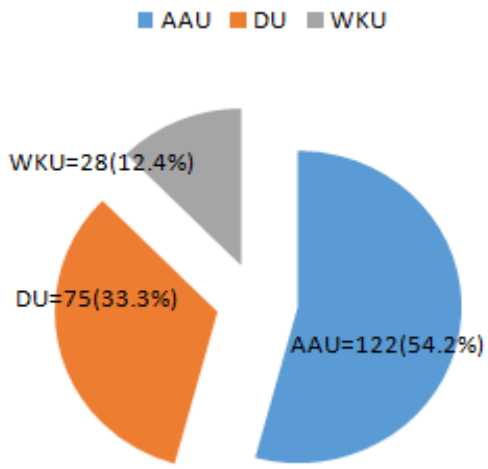

Figure 4.1 Distribution of the respondents over the three universities libraries

4.2.2. Gender of the respondents

Figure-4.2 shows that majority of the study participants in terms of gender 134(59.6%) were females and 91 (40.4%) were males from the selected public university libraries of Ethiopia.

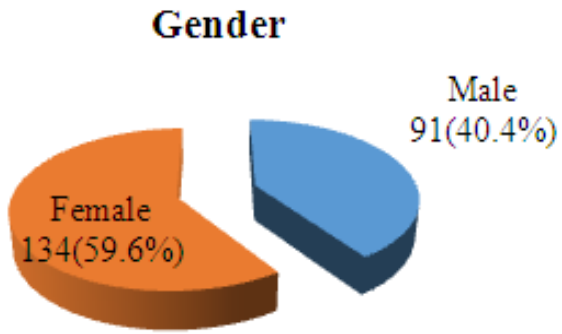

Figure 4.2 Sex of the respondents

4.2.3. Age group of the respondents

Figure-4.3 shows that the highest number of the respondents that is 83 (36.9%) falls into the age group 31-35, followed by the second highest respondents that is 67 (29.8%) were from the age

group Below 30 years, while about 17 (7.6%), 28 (12.4%), and 30 (13.3%) respondents were respectively from the 46 and above years, 31-35 years, and 41-45, age groups.

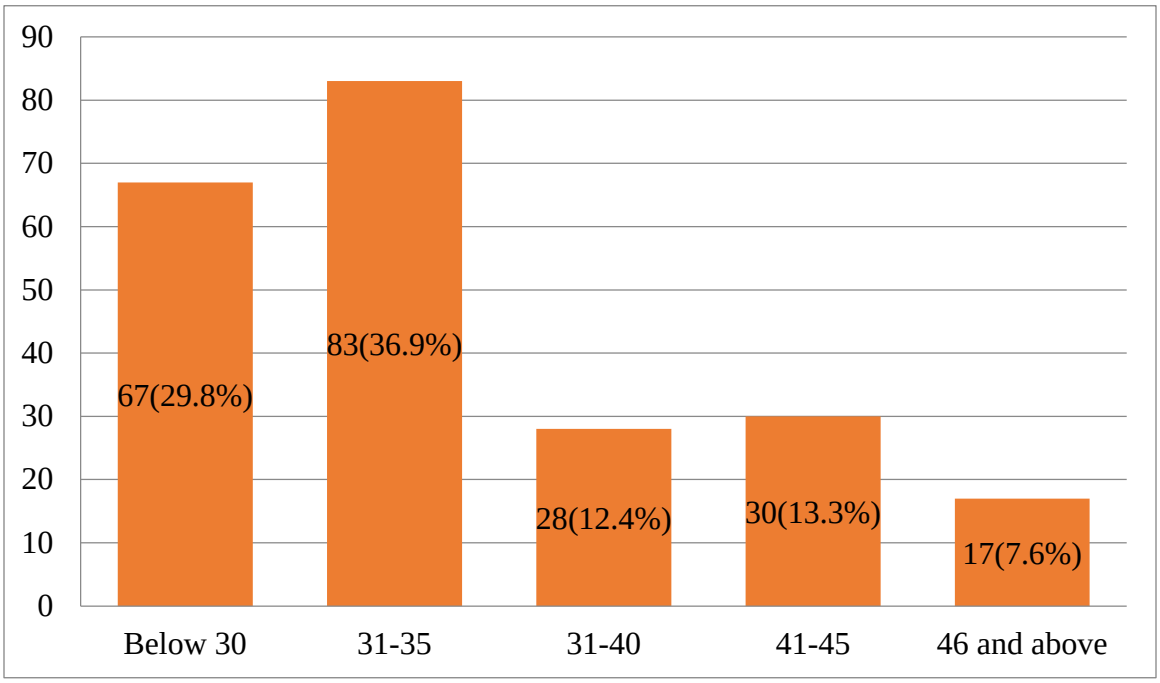

Figure 4.3: Age group of the respondents

4.2.4. Educational level of respondents

Figure-4.4 represents that most of the respondents, that is 137 (60.9%) have Diploma. On the other hand, 42 (18.7%) respondents have BSc Degree, 34(15.1%) have Certificate and 12 (5.9%) respondents have MSc/MA and above.

Figure 4.4: Educational level of the respondents

4.2.5. Work experience of the respondents

Responses were received from the three selected public university library staffs regarding their work experience.

Figure-4.5 focuses that majority of the respondents that is 90 (40%) have 6-10 years of experience while 86 (38.2%) respondents have less than five years and 26 (11.6%) respondents have 11-15 years of experience. However 16(7.1%) respondents have above 20 years of experience and only 7 (3.1%) were found having 16-20 years of experience.

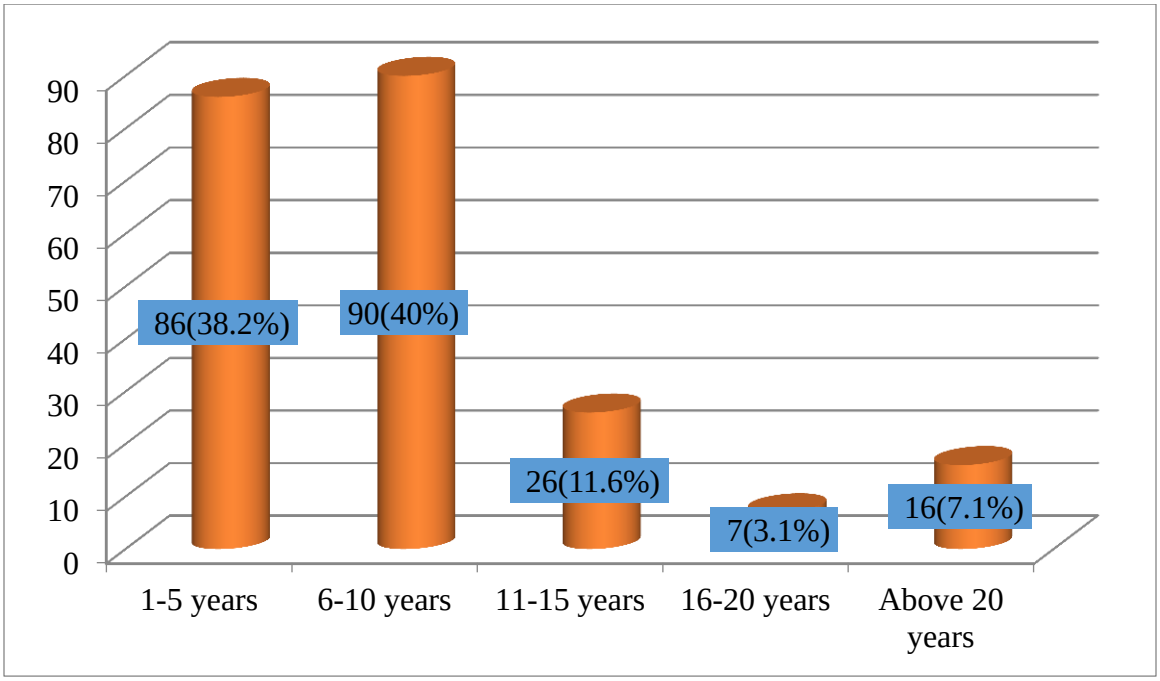

Figure 4.5: Work experience of the respondents

4.3. Analysis of questionnaire data regarding KM maturity level

This section is used to determine the data collected using questionnaire regarding KM maturity level. For simplicity, the questions were three different categories based on the KM components (people, process and technology). A number of questions were raised under each category. The categories are presented as follows. For the first category (Knowledge management and people), for the second category (knowledge management process) and for the third category (KM and technology).The assessment collected data that was used to examine each of the three university libraries which make up the KM maturity to conduct the analysis. The survey participants of each university name were identified by their university symbol.

The university name and their corresponding symbols are as follows:

Addis Ababa University AAU

Dilla University DU

Wolkite University WKU

Table 4.2 lists the average scores that were established for each university in each key process area as a result of the survey responses. In order to determine the KM maturity level, the scores from each university were applied to the following.

Table 4.2 depending on if the survey questions for that particular process area

KM maturity Level in selected public university libraries in Ethiopia			
Maturity Level	**AAU**	**DU**	**WKU**
People maturity Level	**Aware(Level 2)**	**Initial(Level1)**	**Initial(Level 1)**
Level 2	70%	55%	56%
Level 3	56%	40%	46%
Level 4	54%	39%	45%
Level 5	64%	43%	47%
Process maturity Level	**Defined(Level 3)**	**Initial(Level 1)**	**Initial(Level 1)**
Level 2	65%	50%	54%
Level 3	63%	48%	58%
Level 4	58%	44%	48%
Level 5	56%	44%	43%
Technology maturity Level	**Defiened(Level 3)**	**Initial(Level 1)**	**Initial(Level 1)**
Level 2	67%	55%	52%
Level 3	62%	47%	45%
Level 4	56%	48%	46%
Level 5	73%	52%	62%
Over all maturity Level	**Defined(Level 3)**	**Initial(Level 1)**	**Initial(Level 1)**

Table 4.2: KM key Process Areas maturity level

As shown in Table 4.3, AAU libraries KM in people area is at “Awareness” Level, because the figure obtained from the questionnaires shows a 70% agreement which is higher than the

acceptance value of maturity level (60%). It is significant that given that, according to G - KMMM, passing the maturity Levels should be continuous, thus in spite of the fact that the library has obtained 64% at "optimizing" level in the people domain, and it has not yet passed the "Defined and Managed "level (it has obtained less than 60%), thus maturity Level"Awarness" is acceptable for the AAU people domain. Similarly, AAU is at maturity Level "Defined" in processes and technology domain. Overall maturity Level" Defined" because the figure obtained from the questionnaires shows average score for people, process and technology which is lower than the acceptance value of maturity level (60%).

On the other hand, DU and WKU libraries KM in people, process and technology area are at "Initial" Level, because the figure obtained from the questionnaires shows agreement which is lower than the acceptance value of maturity level (60%).

It is not possible to skip any Level during measurement and the entity advances forward one level to the next level (Klimko, 2000). Thus maturity level "Initial" is acceptable for the DU and WKU all domain.

The comparison between the total knowledge management maturity levels from the three selected public university library participating in the study is presented below:

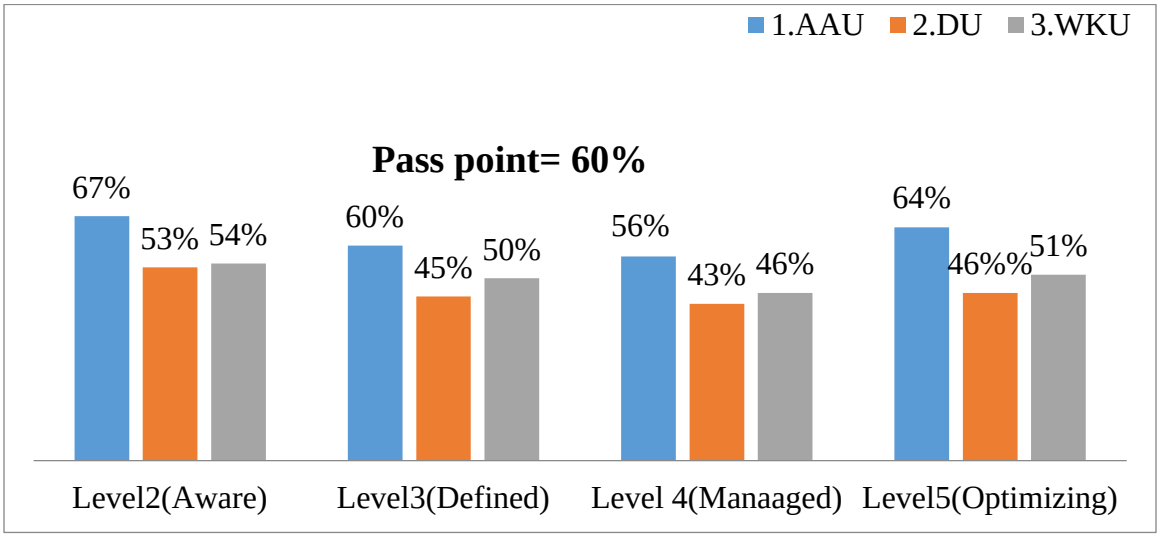

Figure 4.6 Total KM maturity level from the three selected public university libraries

4.4. Analysis of questionnaires regarding factors/barriers

In order to understand the factors affecting effective implementation of KM, respondents were asked questions to scale their level of agreement. The purpose was to identify the factors that affect effective implementation of KM in their university libraries. Summaries of the respondents response is presented in table 4.3 below

Table 4.3 Factors affecting implementation of KM

Questions	**Level of agreements**					**Central tendency**		
	SD	D	N	A	SA	X	SD	Dec
Inflexible Organizational structure	11(4.9 %)	26(11.6 %)	76(33.8 %)	72(32 %	40(17.8 %)	3.46	1.065	A
Lack of communication skill	27(12 %)	58(25.8 %)	37(16.4 %)	53(23.6 %)	50(22.2 %)	3.18	1.355	N
Lack of knowledge sharing culture	28(12. 4%)	30(13.3 %)	31(13.8 %)	86(38.2 %)	50(22.2 %)	3.44	1.309	A
Lack of trust	445(20 %)	43(19.1 %)	53(23.6 %)	43(19.1 %)	41(18.2 %)	2.96	1.385	N
Lack of rewards	22(9.8 %)	35(15.6 %)	36(16 %)	82(36.4 %)	50(22.2 %)	3.46	1.264	A
Lack of tools and technology	16(7.1 %)	43(19.1 %)	36(16 %)	79(35.1 %)	51(22.7 %)	3.47	1.232	A
Lack of collaboration	15(6.7 %)	51(22.7 %)	24(10.7 %)	86(38.2 %)	49(21.8 %)	3.46	1.243	A
Lack of training	14(6.2 %)	37(16.4 %)	44(19.6 %)	89(39.6 %)	41(18.2 %)	3.47	1.150	A
Lake of centralized policy	15(6.7 %)	52(23.1 %)	35(15.6 %)	73(32.4 %)	50(22.2 %)	3.40	1.247	N
Lack of personal motivation to share knowledge	Ā(14.7 %	51(22.7 %)	55(24.4 %)	47(20.9 %)	39(17.3 %)	3.03	1.314	N

SD(1)=strongly disagree, D(2)= disagree, N(3)= Neutral, A(4)=agree, SA(5)= strongly agree

Table 4.3, Shows the descriptive statistics on the factors affecting effective implementation of KM in the Ethiopian public university libraries. The researcher asked the respondents to rate the questions on the base of the five options. To analyze the results the researcher adopted the method used by Gojeh *et al* (2013) by converting the ranked order Liker scale to interval scale using an equal interval of 0.80. Hence, a mean score was considered 1.00 - 1.80=Strongly Disagreed; 1.81 -2.60=Disagreed; 2.60 - 3.40= Neutral; 3.40 -4.20= Agreed; and 4.20 - 5.00= Strongly Agreed. Descriptive statistics presented in Table 4.13 show that respondents agree for Lack of tool and technology, Lack of training, Lack of rewards, Lack of collaboration, Inflexible

organization structure and Lack of knowledge sharing culture with (Mean= 3.47, Mean= 3.46 and Mean =3.44 respectively). On the other hand Lake of centralized policy, Lack of communication skill , Lack of personal motivation to share knowledge and Lack of trust were scaled neutral (Mean= 3.40, Mean=3.18, Mean=3.03, and Mean=2.96 respectively).

Table 4.3.1:summary of One Way ANOVA on factors affecting implementation of KM

		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Inflexible Organizational structure	Between Groups	5.737	2	2.869	2.589	0.077
	Within Groups	246.023	222	1.108		
	Total	251.760	224			
Lackof communication skills	Between Groups	24.853	2	12.427	7.134	0.001
	Within Groups	386.676	222	1.742		
	Total	411.529	224			
Lack of knowledge sharing culture	Between Groups	16.333	2	8.167	4.937	0.008
	Within Groups	367.222	222	1.654		
	Total	383.556	224			
Lake of trust	Between Groups	18.202	2	9.101	4.960	0.008
	Within Groups	407.354	222	1.835		
	Total	425.556	224			
Lake of rewards	Between Groups	20.146	2	10.073	6.622	0.002
	Within Groups	337.703	222	1.521		
	Total	357.849	224			
Lack of tool and technologies	Between Groups	28.718	2	14.359	10.238	0.000
	Within Groups	311.344	222	1.402		
	Total	340.062	224			
Lack of collaboration	Between Groups	15.226	2	7.613	5.112	0.007
	Within Groups	330.623	222	1.489		
	Total	345.849	224			
Lack of training	Between Groups	15.090	2	7.545	5.963	0.003
	Within Groups	280.910	222	1.265		
	Total	296.000	224			
Lack of Centralized policy	Between Groups	21.707	2	10.853	7.394	0.001
	Within Groups	325.876	222	1.468		
	Total	347.582	224			

Lack of personal motivation to share knowledge	Between Groups	25.910	2	12.955	7.978	0.000
	Within Groups	358.871	221	1.624		
	Total	384.781	223			

In table 4.3.1 above a one-way ANOVA was conducted to examine whether there were statistically significant differences among the three selected public university libraries on factors affecting effective implementation of knowledge management. The results revealed that there was no significant difference at p=0.05 for one item: rigid organizational structure (p=0.077). But significant difference was revealed at p=0.05 for nine items. These items include: Lack of tool and technology(p=0.000), Lack of training(p=0.003), Lack of rewards(p=0.002), Lack of collaboration(p=0.007), Lack of knowledge sharing culture (p=0.008) , Lake of centralized policy(p=0.001), Lack of communication skill(p=0.001) , Lack of personal motivation to share knowledge(p=0.000) and Lack of trust were scaled neutral(p=0.008). Based on this result the researcher concludes that there is significant difference among the three university libraries on factors affecting effective implementation of KM.

Discussion

4.2.1. KM maturity level

In the following discussion, findings related to important aspects of KM issues in the organization from the literature review will be the main focus. The quantitative findings provided some material that can serve as a basis to discuss the KM maturity of the selected public university libraries and essential reasons for the obtained maturity level. First, by focusing on KM key process area and secondly by focusing on factors affecting effective implementation of KM .The following KM key process area includes a discussion of each of the KM key process area.

The first key process area is KM and people. This phase of the KM key process includes organizational knowledge recognized as essential for the long term success of the organization ,Knowledge management recognized as organizational competence; staff willingly gives advice or help each other, incentive system to encourage Knowledge management, Knowledge management projects is coordinated by the management, Specific Knowledge management roles (Chef Knowledge Officers/Workers), clearly defined and documented knowledge management

strategies in place, Clear vision for Knowledge management, Knowledge management training programs, regular knowledge sharing and transferring sessions, a budget specially set aside for Knowledge management and Knowledge management initiatives resulted in a knowledge sharing culture (Pee & Kankanhalli,2009).

As a result of the survey outcomes, the universities wide KM maturity level for this process area is rated as "Awareness" maturity level since this is the lowest level achieved in this area by any of the three selected public university libraries.

As shown in Table 4.4, the average scored from each of the three selected public university libraries average score DU and WKU scored the lowest in this process area with average score of 55 and 56% and AAU was the highest with average score of 70%. AAU was recorded at the" Awareness" level of maturity and DU and WKU, which were at the "Initial" maturity level.

Table 4.4 KM key Process Area: KM and people

KM Key process area	KM maturity level University libraries Rating=**Aware/level 2**		
	AAU	DU	WKU
KM and people	70%	55%	56%
	Aware	Initial	Initial

An "Awareness" rating indicates that the selected public university libraries KM and people at this level are Organization is aware of and has the intention to manage its organizational knowledge, but it might not know how to do so (Pee & Kankanhalli, 2009). In the KM and people KPA, AU was at Awareness level for the people KPA.

The library staffs were generally willing to give advice or help each other, knowledge was recognized as essential for the long term success of the library and KM was recognized as organizational competence and they were mostly aware of the need for formal KM.

It was examined that the DU and WKU were at Initial level for the KM and people KPA. In the WKU, although library staffs were generally willing to give advice or help each other, knowledge was not yet recognized as essential for the long term success of the library and KM was not yet recognized as organizational competence and they were mostly unaware of the need

for formal KM. In the DU, although knowledge was considered as a key organizational competence, KM was not yet recognized as organizational competence and library staffs were not willingly give advice or help each others. Hence, they were considered to be at Initial level.

The second key process area is KM process. This phase of the KM key process includes routine task documented, knowledge management systems improve the quality and efficiency of work, formal knowledge management Process, existing Knowledge management systems are actively and effectively utilized, knowledge management processes has measured quantitatively, and existing Knowledge processes are easily adapted to meet new business requirements(Pee & Kankanhalli, 2009).

As a result of the survey outcomes, the universities wide KM maturity level for this process area is rated as "Initial" maturity level since this is the lowest level achieved in this area by any of the three selected public university libraries.

As shown in Table 4.5, the average scored from each of the three selected public university libraries average score DU and WKU scored the lowest in this process area with average score of 50 and 54% and AAU was the highest with average score of 63%. AAU was recorded at the" Defined" level of maturity and DU and WKU, which were at the "Initial" maturity level.

Table 4.5 KM key Process Area: KM process

KM key process area	KM maturity level University libraries Rating=**Initial/level 1**		
	AAU	DU	WKU
KM process	63%	50%	54%
	Defined	Initial	Initial

An "Initial" rating indicates that the selected public universities libraries KM process at this level are Organization is Little or no intention to formally manage organizational knowledge and No formal processes to capture, share and reuse organizational knowledge(Pee & Kankanhalli, 2009). In the KM process Key process area, AU was at Defined level for the process Key process area. The library has routine task documented, KM systems improve the efficiency of work and they were formal processes to capture, share and reuse organizational knowledge. It

was examined that the DU and WKU were at Initial level for the KM process KPA. Both DU and WKU, although they were not yet routine task documented, KM systems improve the quality of work and they were mostly o formal processes to capture, share and reuse organizational knowledge. Hence, they were considered to be at Initial level.

The final key process area is KM and technology. This phase of the KM key process includes Pilot KM projects that support Knowledge management, technology and infrastructure in place that supports Knowledge management, Knowledge management systems support the business unit, knowledge management systems support the entire organization, knowledge management systems integrated with the business processes and existing systems continually improved(Pee & Kankanhalli, 2009).

As a result of the survey outcomes, the universities wide KM maturity level for this process area is rated as "Initial" level since this is the lowest level achieved in this area by any of the three selected public university libraries.

As shown in Table 4.6, the average scored from each of the three selected public university libraries average score DU and WKU scored the lowest in this process area with average score of 55 and 52% and AAU was the highest with average score of 60%. AAU was recorded at the" Defined" level of maturity and DU and WKU, which were at the "Initial" maturity level.

Table 4.6 KM key Process Area: KM and technology

KM Key process area	KM maturity level University libraries Rating=**Initial/level 1**		
	AAU	DU	WKU
KM and technology	62%	55%	52%
	Defined	Initial	Initial

An "Initial" rating indicates that the selected public universities libraries KM and technology at this level are Organization is little or no intention to formally manage organizational knowledge and no specific technology or infrastructure in place that support KM(Pee & Kankanhalli, 2009).

In the KM and technology Key process area, AAU was at Defined level for the technology Key process area. They were project, specific technology in place that supports Knowledge

management and library systems support the business unit. It was examined that the DU and WKU were at Initial level for the KM and technology KPA. They were not yet KM project and specific KM technology in place that supports Knowledge management. Hence, they were considered to be at Initial level. Overall, it was observed that the KM maturity level of the selected public university libraries were at Initial level.

4.2.2. Factor affecting effective Implementation of KM

While there are factors that hinder effective implementation of KM inside the libraries whereas the other factors hinder such activity, based on the analysis result, the following identified factors/barriers of implementation of KM in Ethiopia selected university libraries were found. These barriers include Lack of tool and technology, Lack of training, Lack of rewards, Lack of collaboration, Inflexible organization structure and Lack of knowledge sharing culture.

Other previous researchers also reported related findings. Wamalwa and **(**2016) found that lack of knowledge sharing culture were the critical barriers for implementation of KM in libraries.

A rating average of 3.85 reflects that the majority of the respondents agree that there is lack of knowledge sharing culture among the librarians, posing a challenge to academic librarians in implementing KM.

Koloniari et al.(2015) described these critical factors by categorizing into five dimensions as organizational structure, organizational culture, HR management, KM strategy and ICT infrastructure. Hierarchical and inflexible organizational structures were organizational structure barriers. Lack of incentive, lack of trust, lack of training, lack of rewards, and lack of knowledge sharing culture were among organizational culture and HR barriers.

Lack of centralized policy and strategy were KM strategy barriers. Lacks of insufficient technological tools were considered technological barriers. Generally, all these study reflect as KM can be affected by different factors which have seen in the selected university libraries. So, implementation of effective implementation of knowledge management requires considering these factors and; having strategic plan on how to overcome these barriers.

4.2.3. Comparing the difference regarding KM maturity level according to university

In order to determine if generation plays a role in the maturity score achieved by university libraries, it was decided to Group University into three (3) categories. University were formerly established and categorized in the first generation, established somewhat later and categorized in the second generation and newly established and categorized in the third generation. With reference to Table 4.4, AAU scored total maturity at level3 (60.3%), DU at level1 (53%) and WKU at level1 (54%).This constitutes an overall difference in maturity level between universities.

Table 4.7: comparing KM maturity level

Maturity level	**AAU**	**DU**	**WKU**
People maturity Level	Level2 (70%)	Level1 (55%)	Level1 (56%)
Process maturity Level	Level3 (63%)	Level1 (50%)	Level1 (54%)
Technology maturity Level	Level3 (62%)	Level1 (55%)	Level1 (52%)
Total maturity Level	Level3 (60.3%)	Level1 (53%)	Level1 (54%)

In comparing the total KM maturity level forwarded by first generation(AAU), second generation(DU)and third generation (WKU) to one another, it was confirmed that the level forwarded by DU and WKU are similar. This indicates at an over-estimation, or difference regarding KM maturity level score. However, level forwarded by AAU was different. Findings hint that first generation is at an advantage when it comes to the institutionalization of formal knowledge management over all KM key process area.

As a rule first generation do have access to considerably more resources than second and third generation, possibly explaining why first generation obtained higher level/scores over all maturity levels, than second and third generation. Due to mandatory requirements, first generation is more mature with regard to KM implementation. The lower scores achieved by second generation compared to the scores achieved by third generation. Note had to be taken of not only the achievement of university according to generations, but also of the achievements in relation to the different library managers present within organizations.

4.2.4. Proposed Roadmap for Continual KM maturity Improvement

This chapter proposed roadmap for KM maturity for AAU, DU and WKU libraries. The objective of the proposed roadmap is to address the KM maturity in the selected public university libraries of Ethiopia. Finding of the study indicate that there is a reason to believe that knowledge management maturity model should be worked differently depending on the stage of the three university libraries growth.

In general, the current study shows the AAU KM maturity level for KM key process area "people" is rated as "Level 2", for KM key process area "Process" is rated as "Level 3", for KM key process area "Technology" is rated as "Level 3" and DU and WKU KM maturity level for KM key process area "people" is rated as "Level 1", for KM key process area "Process" is rated as "Level 1", for KM key process area "Technology" is rated as "Level 1" since this is the lowest level achieved in all KM key process area by the three selected public university libraries.

All those above KM maturity problem solve by the current proposed roadmap and help for Continual KM key Process area Improvement. The proposed roadmap came after the current result and recommends using this for solving the problem that is found in the study. Therefore, the proposed roadmap will provide them for moving from immature, incompatible knowledge management activities to mature (Initial maturity Level to final maturity Level, the following roadmap is proposed.

Figure 4 .7: Characteristics properties of each level in the model

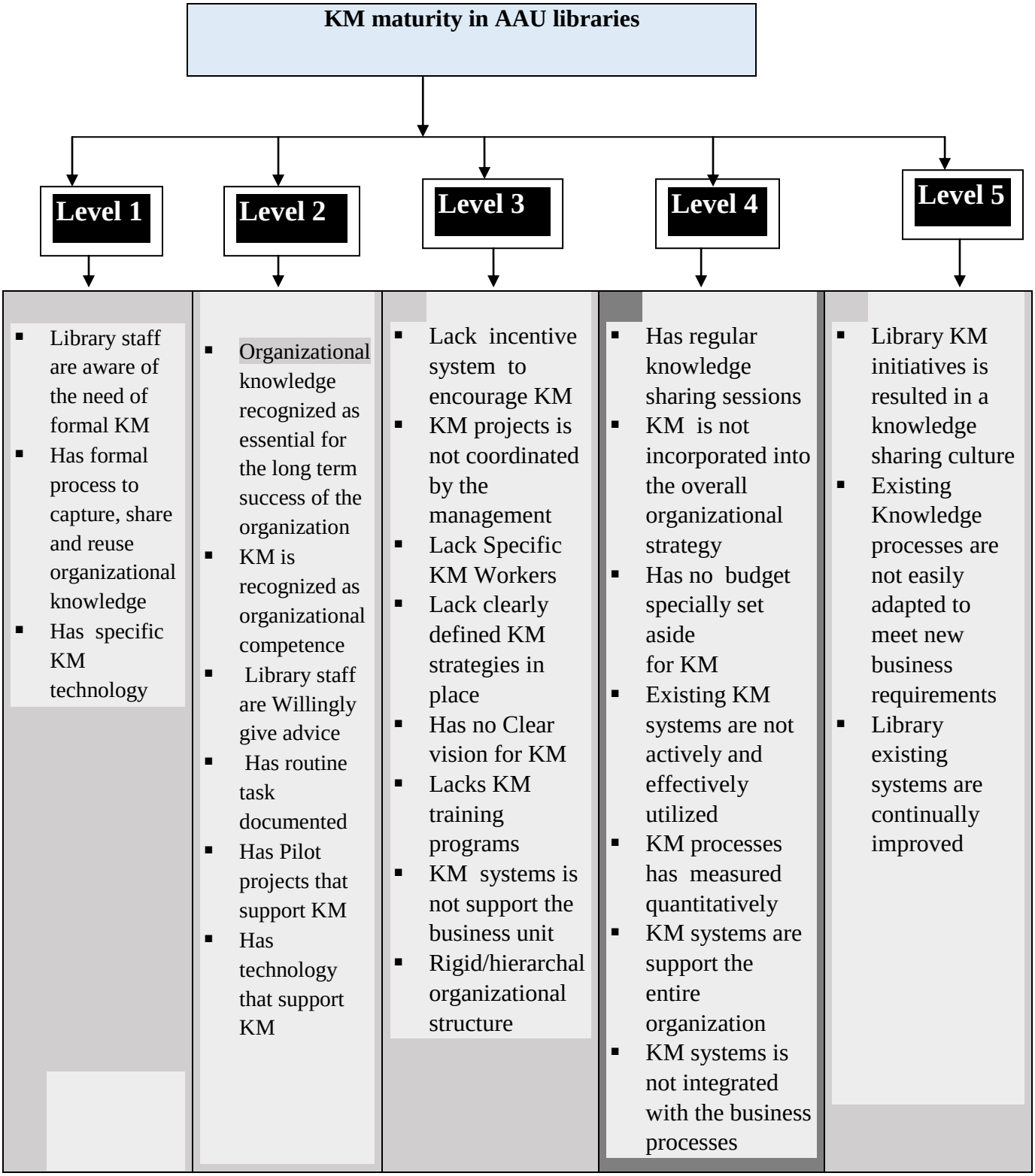

Figure 4.8: gives the roadmap schema for the AAU libraries at different Level

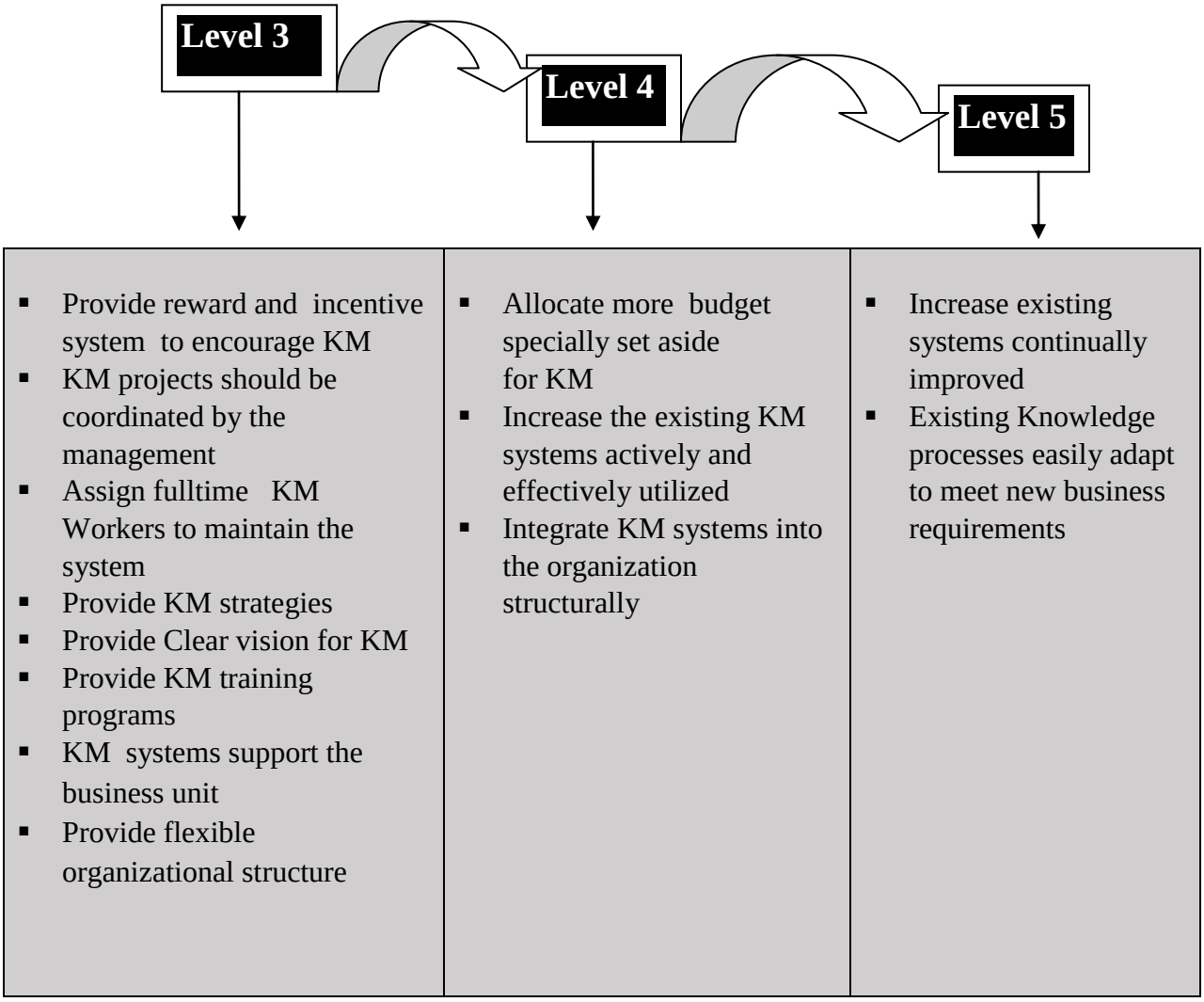

Figure 4.8: Proposed roadmap for AAU libraries

Figure 4 .9: Characteristics properties of each level in the model

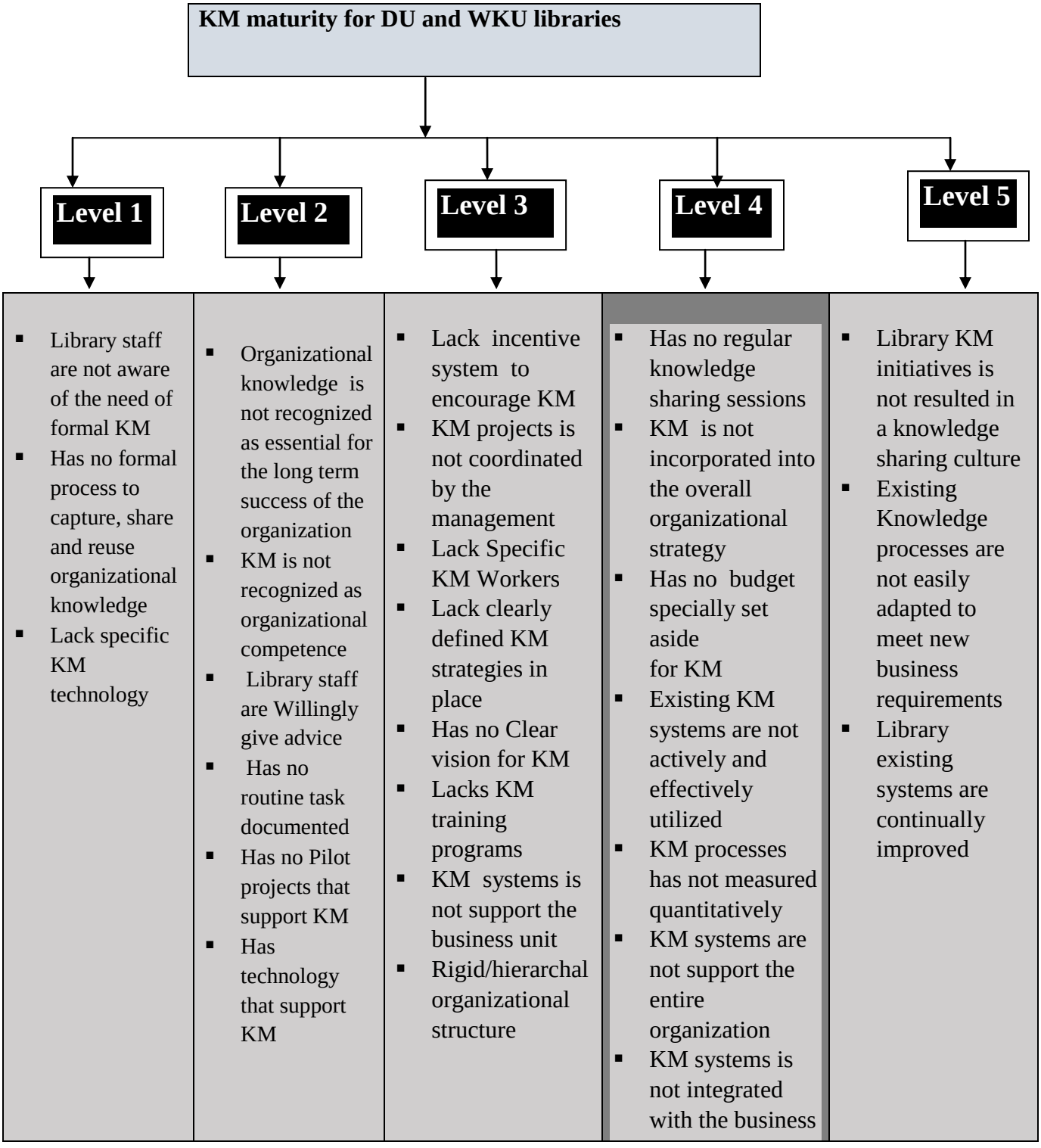

Figure 4.10: gives the roadmap schema for DU and WKU libraries at different Level

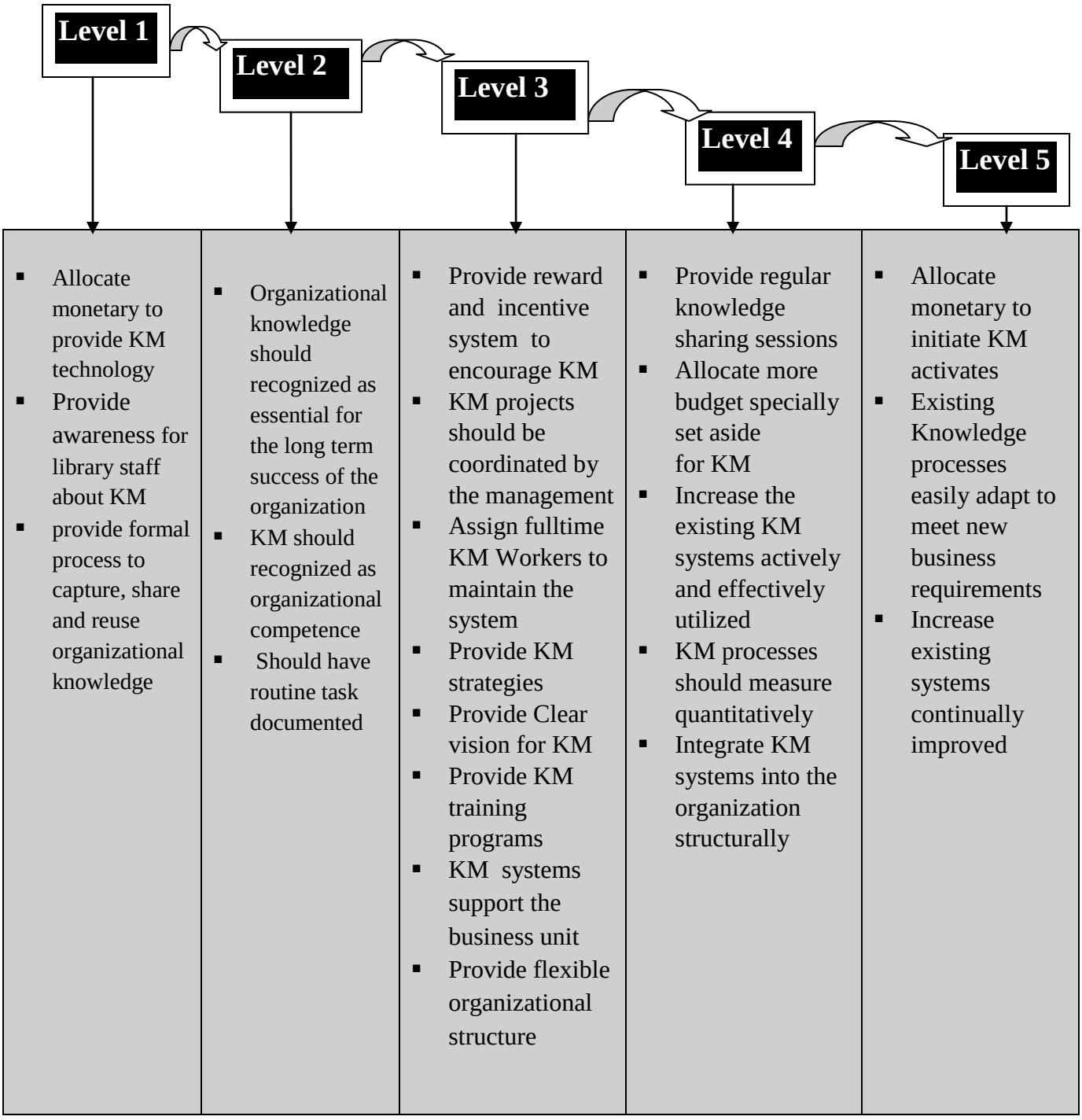

Figure 4.10: Proposed roadmap for DU and WKU libraries

The above table illustrated the roadmap for KM maturity among the library staff in the AAU, DU and WKU libraries.

The proposed roadmap helps for KM maturity continual improvement in the three university libraries of Ethiopia. The roadmap is built on the basis of the G-KMMM and the primary data obtained from the sample library staff in the three university libraries.

Regarding different KM maturity Level, the excellence of created knowledge may vary as well as the extent of practice and the capability of the university to use it. Below there are the descriptions of the five KM maturity Level in regards to move the next maturity Level.

Level 1: is Initial stage; library staffs are little/ no intention to manage KM and there are no formal process to capture, share, reuse organizational knowledge and technology. Usually university libraries at the first level do not work as a KM-base. As a result, success in KM depends on understanding, experiences and competencies of universities library knowledge. In the universities libraries there is no wide KM understanding about practices, processes and technology thus knowledge share and re-usage from individuals are highly important for a low KM mature university libraries to attain higher level of KM maturity. It is especially important in the situation where library staff involved in KM implementation leaves their work in any case and take their experience with those staff. The finishing of the first KM maturity level requires gaining basic knowledge, KM technology, formal process and on the principles of KM.

Level 2: is Awareness stage; at this level library management is aware/understands the benefit and value of using KM key processes, organizational knowledge recognized as essential for the long term success of the library, library Knowledge management recognized as organizational competence and library staff willingly give advice or help each other, library has routine task documented, providing specific technology that supports Knowledge management and library conduct Pilot projects that support Knowledge management. As the level 2 introduces number of initiatives, other library staff learns and practices by taking part in the library management which is the place where knowledge is created, learned and used. Achievement of the awareness stage requires moving from acquiring basic knowledge to standardizing knowledge management key process.

Level 3: is Defined stage; at these level key processes of KM are well understood and providing

Incentive system to encourage Knowledge management, Knowledge management training, formal knowledge management Process, and documented knowledge management strategies. At level 3, the KM standards, key processes are adjusted from the organization's set of standard processes to suit a particular KM. KM process and training regarding KM is formally trained.

Level 4: is Managed stage; at these level KM processes are formally established, measured and provide regular knowledge sharing sessions, more budget specially set aside for Knowledge management, existing Knowledge management systems are actively and effectively utilized, knowledge management systems support the entire organization and knowledge management systems integrated with the business processes.

Level 5: is optimizing stage; at this level; It is the highest stage in KM maturity. At this stage Knowledge management processes are easily adapted to meet new business requirements and starts the Level of library existing systems continually improved. The matter of knowledge sharing culture including experiences and knowledge re-use is the crucial aspect not only for the university libraries at the highest level of KM maturity but also for those starting in building its maturity in KM.

CHAPTER FIVE

CONCLUSION, RECOMMENDATION AND FUTURE WORK

5.1. Conclusions

The overall objective of this study was to determine the Level of KM maturity in the selected public university libraries in Ethiopia. Many studies conducted on knowledge sharing and KM in Ethiopia University, but to the best of this researcher knowledge this is the first study measuring KM maturity concept using a model and no previous empirical studies has been done in the Ethiopian university library environment. Assessing the knowledge Management Maturity Level through the use of the knowledge Management Maturity Assessment tool provides a great opportunity with regard to KM maturity Level in library environments. However, the assessment of the study's result can provide ways for successfully measuring KM maturity in libraries. This study provides and helps the university to have a hint of knowledge management maturity. For this, the Knowledge management maturity Model developed by Pee & Kankanhalli (2009) was used to collect data from the three selected public university libraries in Ethiopia. This study used Quantitative Design; this quantitative data collection was started with a pilot study conducted in one university library staff. The pilot study acted as a preliminary study to enhance clarity and to avoid uncertainty. Questionnaires of the library staff was used to get the findings of the KM maturity assessment.

By analyzing the results of the study the AAU KM maturity level for KM key process area "people" is rated as "Level 2", for KM key process area "Process" is rated as "Level 3", for KM key process area "Technology" is rated as "Level 3" and DU and WKU KM maturity level for KM key process area "people" is rated as "Level 1", for KM key process area "Process" is rated as "Level 1", for KM key process area "Technology" is rated as "Level 1" since this is the lowest level achieved in all KM key process area by the three selected public university libraries.

This shows that knowledge management key process areas were not completely standardized and thus key processes are not applied properly. In order to do so however, it will be necessary for library management to use the assessment results and the proposed roadmap for improving the KM key process area.

In addition to KM maturity Level, it was also observed that, weaknesses of the selected public university libraries in terms of factors affecting implementation of knowledge management were identified. The analysis results showed the lack of tool and technology, lack of training, lack of rewards, lack of collaboration, rigid/Inflexible organization structure and lack of knowledge sharing culture were barriers in Ethiopia selected public University Libraries. This presents KM can be affected by different factors. So, implementation of effective implementation of knowledge management requires considering these factors.

5.2. Recommendation

Based on the finding this part focuses on the knowledge management key process areas for the selected public university libraries and presents KM key process area improvement recommendations for the libraries to be considered in order to move the next maturity Level.

5.2.1. KM and people

The University -wide maturity Level for KM and people was determined to be "Awareness/level 2" based on this was the lowest Level of maturity showed by the survey assessment results of the people key process area for the selected public university libraries. In order to move towards the next higher Level of maturity, and achieve a rating of "Defined, Managed and Optimizing "Level the selected public university should use the roadmap/assessment results and focus efforts to make certain that KM and people activities such as incentive system to encourage Knowledge management, Knowledge management training programs ,Specific Knowledge management roles , clearly defined and documented knowledge management strategies ,regular knowledge sharing and budget specially set aside for Knowledge management.

Provided this information, the selected public university libraries should utilize best practices and knowledge sharing of its more mature the other university libraries, AAU to bring DU and WKU up to the next highest level.

The selected public university libraries management should commit resources to provide focused and specific KM and people activities into its training program to ensure that formal KM are institutionalized throughout all of the public university libraries.

It is remarkable that since the selected university libraries has not yet 100% passed the maturity level "Awareness" of people domains at "Awareness "level and also identifying the weaknesses

which have hindered achieving a 100% people domains (it is fairly higher than 60%), therefore it is essential to define improvement plans for level "2" of people domains, by investigating the road map/questions related to people and success.

5.2.2. KM process

The University -wide maturity level for KM process was determined to be "Initial/Level 1" based on this was the lowest Level of maturity showed by the survey assessment results of the KM process for the selected public university libraries.

In order to move towards the next higher Level of maturity, and achieve a rating of ",Awareness, Defined, Managed and Optimized" the selected public university should use the roadmap/assessment results and focus efforts to make certain that KM and people activities such as routine task documented, knowledge management systems improve the quality and efficiency of work, formal knowledge management Process, existing Knowledge management systems are actively and effectively utilized, knowledge management processes has measured quantitatively, and existing Knowledge processes are easily adapted to meet new business requirements.

Provided this information, the selected public university libraries should utilize best practices and knowledge sharing of its more mature the other university libraries, AAU to bring DU and WKU up to the next highest Level. The selected public university libraries management should commit resources to provide focused and specific KM process activities into its training program to ensure that formal documented KM processes are standardized throughout all of the public university libraries.

5.2.3. KM and technology

The University -wide maturity Level for KM and technology was determined to be "Initial/Level 1" based on this was the lowest Level of maturity showed by the survey assessment results of the KM and technology for the selected public university libraries.

In order to move towards the next higher Level of maturity, and achieve a rating of ",Awareness, Defined, Managed and Optimized" the selected public university should use the roadmap/assessment results and focus efforts to make certain that KM and technology activities such as KM technology and infrastructure in place that supports Knowledge management, Knowledge management systems should support the business unit, knowledge management

systems should support the entire organization and knowledge management systems integrated with the business processes.

Provided this information, the selected public university libraries should utilize best practices and knowledge sharing of its more mature the other university libraries, AAU to bring DU and WKU up to the next highest Level. The libraries management should commit resources to provide focused and specific KM technology activities into its training program to ensure that specific KM technology are standardized throughout all of the public university libraries.

5.3. Future Work

Knowledge management has strong connections with information technology and Software has an important role to play in supporting the application of roadmap in the library environment, however, software alone cannot deliver good roadmaps, and needs to be integrated with the information technology. The further study also should focus on practice work. It is better than taking a deeper, longer research on real university libraries.

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Appendixes

Appendix A: Questionnaires for library staff

Dear Respondents!

As a part of my graduate study, I am presently conducting a research on the study of knowledge management maturity level in selected public university libraries in Ethiopia. The aim of the study was to investigate the knowledge management maturity level in your libraries. Your cooperation is very important to help determine the level of knowledge management maturity through the general knowledge management maturity modal (G-KMMM).

Knowledge management can be defined as a process of creating, sharing, storing and applying knowledge within the organization. For this study Knowledge Management means the set of processes, people and technology, aligned with the objectives of the library. People, process and technology are defined as the soft and hard elements of Knowledge management systems participated in creating, storing and sharing knowledge. These elements should be balanced to have a full advantage of knowledge sharing. People – process focus will lead to lack of Information technology infrastructure, thus lack of knowledge sharing. People – technology focus will lead to repeating the past actions. Process – technology focus will lead to the resistance of people to change.

The purpose of the attached questionnaire is to collect necessary information concerning this. Since, yours genuine and timely responses are valuable in determining the reliability of research outcome you are kindly requested to fill carefully and return the completed questionnaire in the stated manner.

Tank you in advance for your good cooperation!

Muluken Gossaye

Note: If you have any question about this study, you should feel free to ask now or anytime throughout the study by contacting:

E-mail: **mulukengossaye@gmail.com** Phone number: **0916629800**

Part I: General information

Please provide the answer by writing or ticking (√) appropriately in the provided brackets.

1. Which university are you from?

AAU ☐ DU ☐ WKU ☐

2. What is your gender? Male ☐ Female ☐

3. Age group (in years)

Below 30 ☐ 31-35 ☐ 36-40 ☐ 41-45 ☐ 46 and above ☐

4. Please select your academic status

Certificate ☐ BSc/BA ☐

Diploma ☐ MSc/MA and above ☐

5. Year of service /work experience

1-5years ☐ 6-10years ☐ 11-15years ☐

16-20years ☐ above 20years ☐

Part II: Questionnaires to assess level of knowledge management maturity

Please indicate by a tick (√) if you agree or disagree to each of the following, where;

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4=Agree and 5= Strongly Agree.

Knowledge management and people								
Levels	S/N	**Questions**	**Answer**					
			1	2	3	4	5	
2	1	Our organizational/ library knowledge recognized as essential for the long term success of the library						
	2	Our library Knowledge management recognized as organizational competence						
	3	Our library staff willingly give advice or help each other						
3	4	Our library has incentive system to encourage Knowledge management						
	5	Our library Knowledge management projects is coordinated by the management						
	6	Our library has Specific Knowledge management roles (Chef Knowledge Officers/Workers)						
	7	Our library has clearly defined and documented knowledge management strategies in place						
	8	Our library has Clear vision for Knowledge management						
	9	Our library has Knowledge management training programs						
4	10	Our library has regular knowledge sharing and transferring sessions						
	11	Our library Knowledge management is incorporated into the overall organizational strategy						
	12	Our library has a Budget specially set aside for Knowledge management						
5	13	Our library Knowledge management initiatives resulted in a knowledge sharing culture						

Knowledge management process								
Levels	**S/N**	**Questions**	**Answer**					
			1	2	3	4	5	
2	1	Our library has routine task documented						
3	2	Our knowledge management systems improve the quality and efficiency of work						
	3	Our library has formal knowledge management Process						
4	4	Our library existing Knowledge management systems are actively and effectively utilized						
	5	Our library knowledge management processes has measured quantitatively						
5	6	Our library existing Knowledge processes are easily adapted to meet new business requirements						

Knowledge management and technology								
Levels	**S/N**	**Questions**	**Answer**					
			1	2	3	4	5	
2	1	Our library has Pilot projects that support Knowledge management						
	2	Our library has technology and infrastructure in place that supports Knowledge management						
3	3	Our library Knowledge management systems support the business unit						
4	4	Our knowledge management systems support the entire organization						
	5	Our knowledge management systems integrated with the business processes						
5	6	Our library existing systems continually improved						

Part III: Questionnaires to assess factors affecting effective implementation of KM

Put a tick (√) mark on the corresponding box that you feel goes with your judgment/position regarding factors to affect effective implementation of Knowledge management within you library

Identify statements as 1=Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5= Strongly Agree

S/N	**Questions**	**Answer**				
		1	2	3	4	5
1	Inflexible /Rigid organization structure					
2	Lack of communication skills					
3	Lack of knowledge sharing culture					
4	Lake of trust					
5	Lack of rewards					
6	Lack of tool and technologies					
7	Lack of collaboration					
8	Lack of training					
9	Lack of Centralized policy					
10	Lack of personal motivation to share knowledge					