KNOWLEDGE MANAGEMENT PRACTICES AND PERFORMANCE OF KENYA BUREAU OF STANDARDS

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DECLARATION

I declare that this is my original work and it has not been presented for award of degree in any other university.

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This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

Specially dedicated to my family.

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ABBREVIATIONS

BSC   Balance Score Card

CSF   Critical Success Factors

GoK   Government of Kenya

ISO   International Organization for Standardization

KBV   Knowledge Based View

KM   Knowledge Management

KMI   Knowledge Management Infrastructure

KMC   Knowledge Management Capabilities

KMP   Knowledge Management Practices

KEBS   Kenya Bureau of Standards

KRA   Kenya Revenue Authority

NBS   National Standards Body

NSC   National Standards Council

OKM   Organizational Knowledge Management

PC   Performance Contract

RBV   Resource Based View

ROA   Returns on Assets

SME   Small and Medium Enterprises

SI   International System of Units of Measurement

ABSTRACT

The main objective of the study was to determine the influence of Knowledge Management (KM) practices on performance of Kenya Bureau of Standards (KEBS). The study adopted a descriptive design and data was collected from primary sources using questionnaires. The population of the study comprised of 22 employees at KEBS from the various departments and regional offices. Census was employed and thus the sample size was 22. Primary data was collected by questionnaires, which was coded into Statistical Package for Social Sciences (SPSS) for analysis using descriptive and inferential statistics. The study found out that the key KM practices at KEBS included knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval and knowledge dissemination. Knowledge creation had a positive and significant influence on performance of KEBS; knowledge sharing had direct and significant influence on performance of KEBS; knowledge storage had positive and significant effect on performance of KEBS; knowledge retrieval had a positive and significant relationship with performance of KEBS; and knowledge dissemination had positive and significant influence on performance of KEBS. The study concludes that KEBS embraced knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval and knowledge dissemination. Knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval and knowledge dissemination all had positive and significant influence on performance of KEBS. The study recommends the inculcation of a KM culture as well as adoption of technology as an enabler in KEBS. Due to the nature of KEBS operations that interfaces a lot with external stakeholders, an expert locater system for internal and external knowledge holders would be vital. Knowledge should be considered an input and a critical resource for operations, enhancement of customer satisfaction and realization of strategic direction of KEBS. A risk-based approach in KM is also recommended to ensure risks relating to KM practices are identified and managed as well as harnessing on available opportunities.

CHAPTER ONE: INTRODUCTION

1.1   Background to the Study

Due to the advancement of technology, diverse organizational environment and high complexity in the economy, there has been need for organizations to adopt Knowledge Management (KM) practices in order to be at par with organizational change and development. Knowledge is at the center of effectiveness and efficiency of organizations, which ultimately influences the overall performance of a firm (Murthy & Nayak, 2007). Knowledge has been recognized as a resourceful asset in the operation of a firm, as stipulated by Uriate (2008), as important as capital in an organization, as it influences organizational performance and sustainability of the organization in a competitive environment.

This research is anchored on the knowledge spiral theory, organizational epistemology theory and resource based view of the firm theory. The knowledge spiral theory that was put forth by Nonaka (1996), which recognized individual knowledge of the personnel in the organization as the interaction between the tacit, dynamic interaction and explicit knowledge. The theory of organizational epistemology which was developed by Von Krogh and Roos (1995), which was the first theory on KM that distinguished the social knowledge and individual knowledge. The theory stipulates that knowledge resides in both the individuals of the organization and the social level of the individual working in the organization. Resource based view of the firm was developed by Wernerfelt (1984) and Barney (1991), while Nonaka and Takeuchi (1995) advanced this and developed the knowledge based view of the firm. Resource based view describes the role of resources

and dynamic capabilities in an organization's value creation process and achievement of sustainable competitive advantage that is critical in superior performance and better economic returns. Based on this principle of resources based view, knowledge based view declared knowledge as one of the most important resource that assists an organization in creating and enhancing competitive advantage, a prerequisite for superior performance.

National Standards Bodies (NSBs) are knowledge driven organization, hence KM practices will provide an opportunity to enhance the performance of the firms (Mason &Pauleen,2003). The KM practices is, thus a critical input in organizational operations that ensure effectiveness and efficiency. The KM practices has been identified as an important asset for standards organizations in their endeavor to strengthen their operation. Thus, this study sought to establish the impact of KM practices on the performance of the Kenya Bureau of Standards (KEBS).

1.1.1   Knowledge Management Practices

The KM refers to acquisition, application and storage of the intellectual capital of the organization (Wickramasingle, 2003). It is also referred to as creation, sharing, retrieval and application of the organization information in order to enable the organization to be competitive and sustainable in the industry (Liew, 2007). The creation and transfer of knowledge in an organization is very critical as it enables the organization to achieve its objectives and to be sustainable in a competitive environment (Kouzmin & Kakabadse, 2001). Knowledge has become one of the most crucial factors for the success of the firms.

In order to achieve high performance level in an organization, there has been need for the organization to develop effective means that will enable creation, transfer and integration of knowledge in the operations of the organizations. The KM practices have been identified as a major contributor in the enhancement of an organization's performance and sustainability (Jashapara, 2004). The KM is concerned with the development and exploitation of the information at the disposal of an organization in order to achieve its objectives.

The key elements of KM practices include how the firms creates, retains and disseminate knowledge as well as how it contributes to the overall performance of the firm. According to Bahra (2001), an effective KM practices will lead to high organizational performance, innovation and creativity, efficiency and effectiveness in its operations and customer satisfaction levels. Thus, KM practices are a key determinant in the success of the organization, both in short and long-term.

1.1.2   Organizational Performance

Organizational performance has been defined as the aggregate output of the total activities that it undertakes (Shahzad, Bajwa, Siddiqi, Ahmid, & Sultani, 2016). According to William (2002), organizational performance is the measure of the firm's output in terms of the profitability levels, operational efficiency and procedural effectiveness. Superior performance is dependent up on the quality of the "fit" among organizational strategic orientation and its resources. The measure of the organizational performance enables the

firm to know how successful the firm is in terms of the operations, procedures, cost and sustainability (Mohanty, 2008).

Different authors have different ways in the measures of organizational performance. However, there is no unique way to measure organizational performance. The frequently used measure of the organizational performance includes the profitability of the organization, operational efficiency, customer satisfaction index and operational costs. Performance measures are a set of the financial and non-financial indicators which provides information on the degree of the achievement of its set objectives and goals.

This study will adopt the Balance Score Card (BSC) method to measure performance. The BSC has both the financial and non-financial aspects of the organizational performance and retains financial performance and supplements with measures on the drivers of potential. It uses the four perspectives, that is the financial, customers, internal business process and learning and growth. The four perspectives of the BSC have a cause and effect relationship. The results of one perspective have an influence on the outcome of another (Kaplan & Norton, 1992). Employees need to be empowered in terms of knowledge and skills to improve on the way they work (learning and growth) this creates improved efficiency and innovation from new skills acquired (internal business process) which results into meeting customer requirements translating into enhanced customer satisfaction (customer perspective) this results into enhanced business for the firm resulting into increase in revenue generation (financial perspective). The corporate BSC is considered the overall performance of KEBS.

1.1.3 Kenya Bureau of Standards

Kenya Bureau of Standards is a statutory body that has been established through the standard Act Cap 496 of the laws of Kenya. The KEBS has established a quality management system organization that will ensure conformance to the requirements of International Organization for Standardization (ISO) 9001:2015 and is certified by the British Standards Institute. Its headquarter is in Nairobi-Kenya and has six regional offices namely coast, south rift, north rift, north-eastern, Mount-Kenya and lake regions. The KEBS started its operations in 1974 and is governed by the National Standards Council (NSC), which is mandated to develop policies, maintain and control all the administration and financial aspect of KEBS. The KEBS provides standardization and conformity assessment services, provision of calibration and testing, system and product certification, training and educating on the application of standards, dissemination and maintenance of International System of units of measurements.

The KEBS has been structured into five functional divisions, that is finance and strategy; human resources, marketing and corporate communication; metrology, testing and market surveillance; quality assurance and inspection; standards development and international trade. The KEBS is mandated to ensure that all the products and services in the organization conformance to the set standards and guidelines, and this requires the creation and application of KM to ensure that all the products and services are maintained in a certain state that is appropriate for intended use. The KEBS is expected to ensure it create and applies all the relevant information at their disposal to create knowledge to ensure the

conformance to the set requirements on KM as stipulated under ISO 9001:2015 clause 7.1.6. In compliance with performance contract between KEBS NSC and the Government of Kenya (GoK) for the year 2015 and the subsequent ones of 2016 and 2017, the management structurally anchored KM in human resources department and procured a consultant to assist in institutionalization of KM. The extent and impact of KM practices in KEBS therefore becomes an area of scholar's interest.

1.2 Statement of the Problem

The KM is essential in the functions of an organization, as it ensures the creation and dissemination of knowledge efficiently in an organization. In order to ensure the organization meets its objective, it must first ensure there are various practices in the organization that enable knowledge in an organization to be more available and ensures all the employees have access to it. Sheffield (2008) identified KM as a complex set of systems and processes. Standard bodies are knowledge-based organizations. Access to information has been the main backbone of the standards organizations. They create knowledge from the information at their disposal (Lettieri, Borga & Salvodelli, 2009). Therefore, KM practices in standards organizations becomes a critical link in achieving operational objectives and targets.

In furtherance of aspiration of Kenya's Vision 2030, KEBS aims to support an export oriented knowledge economy by implementing KM, as part of business continuity management system, that is aimed at enhancement of performance. In pursuit of superiority in performance, information communication technology is a key enabler resulting into

large of amounts of data being generated every day in KEBS. This makes KM increasingly more important to the organization. On this account KEBS recognized KM as a key strategic activity as was stated in strategic plan 2012-2017 and enhanced in the current strategic plan for the years 2017-2022. The KEBS also committed to institutionalize KM as was stipulated in performance contract with GoK, since the year 2015. Further KM has been introduced as a mandatory requirement in the revised standard ISO 9001:2015 to which KEBS is certified to and thus expected to conform to. KEBS engaged a consultant, in the year 2015, to assist in institutionalization of KM practices that resulted in the establishment of a KM policy, documentation of a KM procedure manual and an assessment tool. Monitoring and evaluation of KM practices was embedded in staff BSC with appraisals being undertaken at planned intervals. Thus carrying out such a study at this point in time will be of paramount importance.

Both local and global studies have given insight on KM practices. Globally, Chia-Nan and Huei-Huang (2016) studied KM capability and organizational effectiveness in Taiwanese public entity and the mediator role of organizational commitment. Their study established that KM practices are essential to achieve the organizational effectiveness. Shin-Yuan, Tsai, Lee and Chau (2015) investigated influence of KM effectiveness in the business process of hospitals and financial firms in China, the study established that implementation of KM as part of organizational strategy ensures high productivity levels in business processes. Khuram (2016) studied the integration between knowledge strategy and KM process on organizational creativity and performance of listed firms in India; the study

established that KM is critical to ensure survival and competitiveness in a rapidly changing environment

Locally, Karani (2015) studied the effect of KM practices on performance of mobile telephone companies in Kenya. The study established that KM practices are essential in the operational performance of the mobile telephone companies in Kenya, but identified organizational culture, strategy and leadership as impediments of KM practices. Owino, Cheruiyot and Jagongo (2012) studied KM in manufacturing enterprises, identified that KM fosters innovation, sustainable competitive advantage and quality production. Wanjiku (2013) studied KM practices of selected non-profit organization in the health sector in Nairobi County. The study established that KM related practices are essential in the operation of organizations and the top management plays a bigger role in the implementation of the practices.

The aforementioned studies did not broadly address the relationship between KM practices and organizational performance especially in the standards sector. This study sought to fill this knowledge gap by answering the research questions; what is the extent of the KM practices in KEBS? and what is the relationship between KM practices and organizational performance at KEBS?

1.3   Objectives of the Study

This study sought to determine the level of implementation of KM practices at KEBS and its impact on performance. The specific objectives were to:

1.   Determine KM practices adopted by KEBS

2.   Establish the relationship between KM practices and performance of KEBS.

1.4   Value of the Study

This study will be important to NSBs in identifying the KM dimensions, which they can use to enhance organizational performance. It will also help the organization to recognize the gaps in the operations especially regarding processes that are knowledge dependent, and factors related to this, which hinders the realization of the organization objectives. This study will be essential to other organization regardless of the industry to enable them to gauge the importance of KM implementation, which will help them be able to identify the inefficiency and improvement opportunities. The scholars and researchers will benefit from the study, as the findings will provide comprehensive insights and create new knowledge on the KM practices. The study will also expand the literature on the body of KM and firms' performance

CHAPTER TWO: LITERATURE REVIEW

2.1   Introduction

This chapter presents the theoretical framework on which KM is based, literature on the firms' performance, KM practices and firms' performance. A review of empirical research studies is discussed alongside conceptual framework linking KM practices and organizational performance.

2.2   Theoretical Framework

Several theories have given the rationale on KM. This study is anchored towards the theory of organizational epistemology, knowledge spiral theory and resource based view of the firm theory. It is critical that KM practices is based on a solid theoretical foundation, as stipulated by Dalkir (2011), the theoretical framework provides a significant view on the variable of the study.

2.2.1   Theory of Organizational Epistemology

The theory of organizational epistemology was developed by Von Krogh and Roos (1995). The theory was one of the first theory on KM that distinguished the social knowledge and individual knowledge. The theory stipulated that knowledge reside on both the individual of the organization and the social level of the individuals working in the organization. The theory defined knowledge as everything that is known by the individual in the organization. Unlike the cognitive perspective where the knowledge is viewed as an abstract entity within the organization, this theory provides a clear concept on the tacit knowledge, which is very difficult to abstract out of someone and make more concrete. Theory has also reinforced

on the strong need to maintain a link between knowledge objects and those who are knowledgeable about them such as the experts and experienced users.

Based on the theory of epistemology, it is believed that KM implementation requires a link between the knowledge and those who are knowledgeable about the activities and the functions in the organization, between the knowledge and those individuals in the organization who wish to know about them, and knowers and the need or wish to know. This theory is essential in the research study as is provides the basis of KM practices, distinguishes between the concept of the knowledge based on the individual and organizational perspectives. The discovery of the different forms of the knowledge, relationships that occurs between the knowledge types and objects has created a significant basis on the implementation of KM practices.

2.2.2 Knowledge Spiral Theory

The knowledge spiral theory was developed by Nonaka and Takeuch (1995). The theory focuses on the knowledge spirals that explain on the transformation tacit knowledge into explicit knowledge based on the individuals of the organization, group of the organization and the organizational learning and innovation (Dakri, 2011). The theory established four modes of knowledge conversion from tacit knowledge to tacit knowledge - a process of socialization; from tacit knowledge to explicit knowledge - process of externalization; from explicit knowledge to explicit knowledge - a process of combination and from explicit knowledge to tacit knowledge - a process of internalization (Dakir, 2011). Hence, the acronym coined for this conversion is, the SECI model.

The provision of the four modes of knowledge conversion gives a clear understanding and articulation of the implementation of the KM practices in the organization. Thus, the theory is essential as it provides a clear basis on the transformation and integration of the knowledge that will create a link to foster the implementation of KM practices.

2.2.3 Resource Based View

This study is also derived from the theoretical foundation of Resource Based View (RBV) of the firm and Knowledge Based View (KBV). The RBV describes the role of resources and dynamic capabilities in an organization's value creation process and achievement of sustainable competitive advantage that is critical in superior performance and better economic returns (Barney, 1991; Wernerfelt, 1984). The RBV specifies that it is difficult to imitate resources that are tacit and socially complex and are specific to the organization and not widely shared or distributed among firms. Superior performance of any organization, on the other hand, will be dependent upon how the firm harnesses its resources and utilizes them to the realization of the firm's operational targets and in essence its strategic objectives. Based on this principle of RBV, KBV declared knowledge as one of the most important resource, as important as capital, that assists an organization in creating and enhancing competitive advantage, a prerequisite for superior performance (Nonaka & Takeuchi, 1995). In this perspective the wealth of knowledge that an organization possesses is a crucial resource for competitive advantage and ultimately superior performance, and KM thus focuses on the practices for knowledge creation and

capture, sharing and enrichment, storage and retrieval as well as dissemination of this knowledge for use and re-use.

2.3　Knowledge Management Practices

Despite KM having been extensively studied by scholars and researchers, defining KM is not easy. According to Uriarte (2008), there is no one conclusive definition of KM, but all the scholars and researcher have agreed that KM is the creation, sharing, codifying, dissemination and institutionalization tacit and expect knowledge. The KM entails the conversion of information, intellectual assets and value creation of the stakeholders of the organization through application of the appropriate strategies and processes for the identification, creation and sharing of the knowledge in an organization (Shahzad et al., 2016).

The leadership of an organization is very critical in the implementation of KM practices as human resource are at the center of this practices. The senior managers are mandated to enable implementation of the management system that will enable the interaction and integration of KM practices through the implementation of policies, strategies and structures that will enhance the implementation of KM practices (Jain & Jeppesen, 2013). A guaranteed commitment towards implementation of KM practices is created under the platform of integration of the function of the organization, supportive attitude and commitments of the top management (Davenport & Prusak, 1998; Storey & Barnett, 2000). There are various KM models proposed by different scholars. According to Alavi and Leidner (2001) knowledge creation, knowledge retrieval, knowledge transfer and

knowledge application are considered the framework of KM practices in organizations. The life cycle model by Nissen, Kamel and Sengupta (2009) depicts KM in six phases, that is creation, organization, formalization, distribution, application, and evolution. The model of Dahiya and Jain (2012) considered KM creation, acquisition, sharing, storage, and implementation. Therefore, various models and theories that describe KM practices in different ways have been considered. This study considered Uriarte (2008) model, which he referred to as elements of KM practices, that is creation and capture; information sharing and enrichment; storage and retrieval; and dissemination of knowledge for use and re-use.

2.3.1 Knowledge Creation and Capture

In this stage, an organization identifies critical knowledge and the people in the organization who possess necessary knowledge that need to be captured. Critical knowledge in processes, systems and documents and people who are experts on a subject matter are identified. The priority focus of KM is that many firms often suffer total loss of valuable knowledge when employees who possess critical tacit knowledge exit either through dismissals, redundancies, retirement and natural attrition. There are situations where attempts had not been taken to receive and manage this tacit knowledge and ensure continuity. The risk at this stage is that knowledge of individuals is usually stored in the brains and is always lost if not captured.

The survival and sustainability of organizations most of the time depend on how much new and advanced knowledge is generated, captured, stored and used in order to operationalize processes and achieve the operational objectives and targets. This requires organizations

to be innovative and empower workers. This will in turn result into new products development, efficient processes of production as well as introduction of better designs and functions in order to be sustainable in a competitive environment. This would require tacit management strategies, to harvest the experiences and expertise of individuals and have mechanisms to make it available to those who need it.

According to Nonaka and Takeuchi (1995), explicit knowledge is usually expressed in codified information mainly through documented information maintained and retained, which can be shared easily. Contrary, tacit knowledge, which is in the mind of the worker and acquired over years of experience, is hard to articulate. Tacit knowledge can be shared through strategies like observation, on the job training, demonstration, and experience. Gichuhi (2009) suggested various methods could be used to capture this tacit knowledge; among them being barnstorming sessions, story-telling, feedback tools, data mining, text mining, interviewing experts, learning by observation, use of focus groups, and on the job training. The capture of explicit knowledge is the systematic approach of capturing, organizing and refining information in a way that makes information easy to find.

2.3.2   Knowledge Sharing and Enrichment

Knowledge sharing is the mutual exchange of information and expertise across an organization (Li-Wei & Jwu-Rong, 2013). It portrays a mutual understanding that the person who possesses knowledge willingly provides this information to the knowledge recipient (Zhang, Cavusgil & Roath, 2003). Knowledge sharing entails transferring the

dispersed know-how of the people in an organization more effectively and thus adding value to organization's activities and processes.

Knowledge is refined and enriched at the time of sharing and sharing happens within an organization through avenues like memos, documented information in form of procedure manuals and records. The process of sharing also happens between workers of an organization utilizing avenues like discussions forums, both formal and informal. There is also sharing that happens between workers of an organization with interested parties outside the four walls of an organization, mainly utilizing avenues like seminars and workshops. The process of knowledge sharing should be well established and implemented, it does not just happen in an adhoc manner rather it should be encouraged and nurtured. This requires the inculcation of the right culture that promotes the spirit of knowledge sharing. Therefore, knowledge managers should consider the natural tenancy of people to hoard their knowledge, which they regard as their power, and regard that of others with suspicion.

Knowledge sharing rides on enablers like technologies, operations and systems that kindle cooperation, enables the process of sharing to happen, and reward the workers that share knowledge those that apply the knowledge shared to enhance the performance of the organization and realization of expected results. Sharing practices like communities of practices by members in a common discipline, and who have a common interest, are excellent means to share practices that have been tried and tested. This rides on the concept of improving the wheel rather than re-inventing it. Enablers like information

communication technologies and its avenues like social media usually make this possible. The information shared in communities of practices can range from simple details to complex procedures that have been invented and are successful in accomplishing the complex tasks.

2.3.3 Information Storage and Retrieval

This element encompasses information organization and information retrieval. According to Swierczek and Supyuenyong (2011), information storage and retrieval encompasses aspects of information codification, verification, validation, classification, categorization, storage and retrieval paths. Codification of tacit knowledge need to be done to the extent possible, which most of the time is not easy if not supported by enablers like information communication technology. Upon verification of authenticity and accuracy, explicit knowledge should be categorized, indexed, and stored in an organizational repository. Indexing should be done in a manner that would make it easy to access and retrieve information with ease.

Organizations should design means for people to access the information that is in the various storage points. Most organizations do not have their information in structured formats and the most common formats are information scattered in emails, process output reports, memos, raw data in spreadsheets and documented manuals and procedures. Though they all contain variable information, it is usually scattered and in a format not easy to sieve through. Effective management systems must, therefore, provide enablers like search engines to assist handle the challenges of this unstructured formats. This will

definitely require a lot of information structuring that will enable ease of retrieval and use of this information. This can be achieved by having information sorted out into manageable units and appropriate categorization and indexing mainly by content type.

2.3.4   Knowledge Dissemination

According to Swierczek and Supyuenyong (2011), knowledge dissemination practices comprises mainly of knowledge transfer and sharing. The channel and method of sharing will be dependent upon the type of knowledge, whether it is explicit or tacit. Organizational culture plays a key role here, including other factors like incentives and communication channels. Umunadi (2014) indicated that to be used, knowledge must relate to a perceived need, must be understandable and must be timely. Effective dissemination requires understanding that proper information and communication channels are essential.

The most common channels for dissemination of organizational knowledge are conferences, seminars, presentations, various forms of publications, websites, physical and digital libraries and many more. Forums that provide opportunities for external networks, creating partnerships with other organizations and establishing of knowledge centers and communities of practices are also effective means of disseminating knowledge.

2.4   Knowledge Management and Organizational Performance

Organizational performance entails the aggregate output of the total functions of the activities and functions of the organization. Shin-Yuan et al. (2015) articulated that organizational performance entails the extent at which the organization is able to achieve

the set goals and objectives. The objectives of the firms are discussed into two forms, that is, the operational effectiveness and the strategic positioning in the competitive environment. The KM is the extent of the link between organizational strategy and performance (Khumra, 2016).

The KM strategies working in line with the organizational business strategies may not achieve the intended results in the organization unless the appropriate KM practices are put in place in order to ensure a strategic positioning between KM and organizational performance. This confirms that the organizational performance will not only depend on the right fit of the business, but it will require the appropriate KM practices that it will ensure knowledge creation, sharing retrieval, and implementation in line with the business strategies that will influence performance (Choi & Lee, 2002). Most of organizations are concentrating their resources on the implementation of KM systems and practices, as it has been tangible assets in the achievement of the high performance in the organization (Chia-Nan & Huei-Huang, 2016).

The KM application has been one of the strategic aspects in enhancing the business process rather than directly influencing the profitability of the organization (Shin-Yuan et al., 2015). The KM practices synergize the diverse knowledge of different functions in the organization that enhances the business processes while aligning the organizational strategies that ultimately influences the organizational performance. However, this is an area of scholarly interest that requires further research to determine the relationship between organizational KM and organizational performance. As rightfully stated, "the

effect of KM on organization's performance has not achieved a consensus of opinion; some studies show a clear link between KM practices and performance while others question whether the effect of it may not be fully delivered unless it occurs at the process level" (Shin-Yuan Huang et al., 2015)

Success in KM practices shows the effectiveness of organizational ability in managing knowledge. According to Jennex and Olfman (2005), the assessment of many KM success/effectiveness models, including KM Critical Success Factors (CSFs), indicated very different perceptions between KM in academics and practitioners. KM academics supported KM success measurement as a direct effect from organizational and individual learning. Practitioners perceived that KM success relates to its impact on organizational performance. The KM success is defined as "a multidimensional concept". It is achieved by capturing the right knowledge, getting the right knowledge to the right user, and using this knowledge to improve organizational and/or individual performance. The KM success is measured by four dimensions - impact on business processes, impact on strategy, leadership, and knowledge content (Jennex, Smolnik & Croasdell, 2009).

2.5   Empirical Review

Several researchers both locally and globally have shown interest on KM practices and organizational performance in recent studies, as summarized in Table 2.1. The KM practices has been the new management trend and has attracted the interest of scholars. Among the deliberated areas of KM practices, the relationship between KM practices and a firms' performance is an area that has attracted scholars' interest.

Globally, Chia-Nan and Huei-Huang (2016) did a research study on KM capability and organizational effectiveness in Taiwanese public entity and the mediator role of organizational commitment. The objective of this study was to determine the relationship between KM capability and organizational effectiveness. The study used structural equation modeling to test the research hypothesis. The study used a descriptive research survey to carry out the research on the public entities and the structured questionnaire was employed to collect data from the public entities. The study that had85 percent response rate, established that there was a significant relationship between KM capability and organizational effectiveness in Taiwanese public entities. The study further revealed the top management involvement plays a bigger role in the implementation of KM infrastructure especially through internet-enabled platforms that engages the knowledge workers in "peer-to-peer" knowledge sharing across organizational and company boundaries. However, the main gap in this study is that it did not focus on the relationship between KM and performance.

Shin-Huan et al. (2015) studied on KM enablers, KM effectiveness, and the mediating effect on the business process outcome. The study objective was to determine the influence of the KM effectiveness in the business process of the hospitals and the financial firms in China. The study adopted a descriptive survey research to carry out the research, and structured questionnaire was used to collect data on the financial firms and the hospitals in China. The study with 72 percent response recognized Knowledge Management Infrastructure (KMI) and KM capabilities have a positive influence in the business processes outcome of the survey firms. The study further demonstrated that the KM

infrastructures and Knowledge Management Capabilities (KMC) enhance market relationship through improvement of the business process outcome to deliver the value of KM practices. The main gap with this study is that it did not relate the focus on the relationship between KM practices and performance

Khuram, (2016) studied the integration between knowledge strategy and KM process on organizational creativity and performance of the listed firms in India, in which the study aimed on establishing the relationship between knowledge strategy and KM implementation on the organizational creativity and performance in the listed firms in India. The study employed a descriptive survey research study and semi-structured questionnaire was adopted as the data collection instrument on the population of the study. With 66.67 percent response rate, the study established a significant relationship between knowledge strategy and KM process on the creativity and performance of the surveyed firms. The study revealed KM strategy influences the KM capabilities that lead to the organization creativity and organizational performance, although no significant impact was established on the human-oriented KM strategy and organizational performance. However, the study focused on knowledge strategy and creativity. The scope was on listed firms, whereas this study will focus on a public corporation.

Locally, Karani (2015) studied on the effect of KM practices on performance of mobile telephone companies in Kenya. The main objective of the study was to examine the effect of KM practices on organizational performance of mobile telephone companies in Kenya. The study adopted a descriptive survey research design. The population of the study

entailed all the 21 mobile telephones companies in Kenya and used structured questionnaire as the data collection instrument. The data were analyzed with the use of descriptive statistics, such as tables, frequency, mean and standard deviation. With 86 percent response rate, the study established that KM practices influence organization performance in various ways that lead to better decision making, improved customer service, reduced operational costs and enhancing the competitiveness of the organization. The study further concluded that KM practices are essential in the sustainability, efficiency, and effectiveness of the operations of the organization. The main gap with this study was the focus on mobile telephone firms whose operational context is different from public corporations.

Wanjiku (2013) studied KM practices of selected non-profit organization in the health sector in Nairobi County. The study aimed to establish on the extent of KM practices on selected non-profit organization in Nairobi County. The study employed a cross sectional research design and the population of the study entailed the management of all the non-profit health organization, in which the structured questionnaire was used to collect the data from the population of study. The data were analyzed through the use of descriptive statistics, for example tables, frequency, mean and standard deviation. With 69.18 percent response rate, the research findings established that KM related practices are well established within the non-profit health organization. However, it was also established that the role of leadership in enhancing KM practices was very limited. The study further revealed that KM practices have led to favorable organizational culture, intellectual capital

and improved operational performance. The gap with this study was the focus on the extent of KM practices but not on the relationship between KM and organizational performance.

Owino et al. (2012) in their study on the influence of institutionalization of KM in manufacturing enterprises in Kenya. The study aim was to established the extent of the application of KM practices in the manufacturing enterprises in Kenya. The study adopted cross sectional descriptive research design and the population of the study entailed the manufacturing firms in Nairobi, in which the study used stratified random sampling techniques were 60 managers were selected from the manufacturing enterprises operating in Nairobi. The study used semi-structured questionnaire to collect the data from the sampled population and the data were analyzed by use descriptive statistics, such as tables, frequency, mean and standard deviation. With 64 percent response rate, the research findings established the organizational; practices and technological infrastructures are very critical in the institutionalization of KM practices in the manufacturing enterprises. The study revealed, there was lack of management support for the implementation of KM practices in the organization. The gap with this study was the focus on implementation of organizational KM practices with a skew to manufacturing enterprises. This is contextually different from that of public corporations.

Previous studies show how specific elements of KM practices affect the firms' performance. It is evident that there is a gap according to the best knowledge of the researcher on the organization KM implementation and performance of KEBS. This study

therefore intended to fill the research gap by focusing on KEBS and different dimensions

of KM practices. The empirical literature review is summarized in Table 2.1

Table 2.1   Summary of Empirical Review

Author(s)	Study	Objectives	Methodology	Findings	Gaps
Chia-Nan. and Huei-Huang (2016)	Knowledge management capability and organizational effectiveness in Taiwanese public entity and the mediator role of organizational commitment	Determine relationship between KM capability and organizational effectiveness	Used descriptive research survey and structural equation modeling to test the research hypothesis	There was a significant relationship between KM capability and organizational effectiveness in Taiwanese public entities	Study did not focus on the relationship between KM and performance
Shin-Huan et al. (2015)	Knowledge management implementation, business process, and market relationship outcomes	Determine the influence of the KM effectiveness in the business process of hospitals and financial firms in China	Adopted descriptive survey and inferential statistics to analyse the data. Primary data was collected through a structured questionnaire	Knowledge management infrastructure and KM capabilities have a positive influence in the business processes	Study did not relate the relationship between KM practices and performance
Khuram, et al. (2016)	Integrating KM strategies and process to enhance organizational creativity and performance	Establish the relationship between knowledge strategy and KM implementation on organizational creativity and performance in listed firms in India	Employed descriptive survey and semi-structured questionnaires were used for data collection	There was a significant relationship between knowledge strategy and KM process on the creativity and performance of the surveyed firms	Study focused on the creativity aspect and the listed firms in India which are different from the local firms

Table 2.1   Continued

Author(s)	Study	Objectives	Methodology	Findings	Gaps
Karani (2015)	Effects of KM practices on performance of mobile telephone companies in Kenya	Examine the effect of KM practices on organizational performance of mobile telephone companies in Kenya	Descriptive survey and inferential statistics were used to analyse the data and primary data was collected through a structured questionnaire	Management practices influences organization performance in various way that lead to better decision making, improved customer service, reduced operational costs	Study focused on mobile telephone firms
Wanjiku (2013)	Knowledge management practices of selected non-profit organization in health sector in Nairobi County	Establish on the extent of KM practices on selected non-profit health organization in Nairobi	Adopted descriptive survey and inferential statistics to analyse the data and primary data was collected using a structured questionnaire	Knowledge management related practices are well established within the non-profit health organization, however, it was also established that the role of leadership in enhancing the KM practices was very limited	Study focused on the extent of KM practices but not on the relationship between KM and organizational performance
Owino, et al. (2012)	Institutionalization of KM in manufacturing enterprises in Kenya	Establish the extent of the application of KM practices in the manufacturing enterprises in Kenya	Stratified random sampling techniques was adopted, inferential statistics was used and data was collected by the use of questionnaires	Organizational practices and technological infrastructures are very critical in the institutionalization of the KM practices in the manufacturing enterprises	Study focused on the implementation on organizational KM practices only with a limitation to manufacturing enterprises

2.6   Conceptual Framework

To investigate the research questions, the conceptual framework in Figure 2.1 was adopted. The response variable is organizational performance with the four perspectives of BSC, that is financial, customer satisfaction, internal business processes as well as learning and growth. The explanatory variable is KM practices of knowledge creation, sharing, storage, retrieval and dissemination.

Figure 2.1   Conceptual Framework

Explanatory Variable   Response

Variable

Knowledge Management Practices	→	Organizational Performance
• Creation • Sharing • Storage • Retrieval • Dissemination		• Financial • Customer satisfaction • Internal business processes • Learning and growth
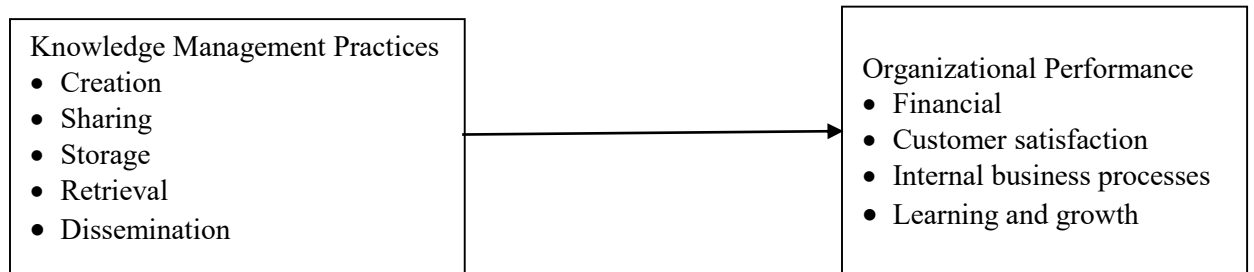
Source: Researcher 2018

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology that was used in carrying out the study. It presents the research design that was used, population of the study, data collection technique and procedures and data analysis techniques that were used.

3.2 Research Design

This study employed a case study, which entailed the collection and analysis of the data from KEBS in order to have a clear and comprehensive qualitative and quantitative data. According to Kothari (2004), a case study involves a commanding form of qualitative analysis that entails a careful and complete observation of a social unit. The case study was appropriate for this research study, as it provided a clear understanding of the phenomenon of study through description of the study variable that will involve both the quantitative and qualitative approaches.

3.3 Respondents

The respondents for this study were 22 staff members of KEBS, in the headquarters and the six regions. The interviews targeted middle managers at departmental level. They were targeted because they played a key role on KM at the operations level and are positioned in the intersection of vertical and horizontal flow of knowledge. Response from other members of staff was sought, through judgmental sampling to gather in-depth details on KM practices at the operational level.

3.4   Data Collection

The study collected the data to address the research question by the use of primary data collected through formal interviews (see appendix II for an interview guide) as well as review of secondary data through document review. Document review was used to gain an understanding of KEBS policies, practices and performance.

The interviews targeted middle managers who are in charge of operations at the departmental level. They were targeted because they played a key role on KM at the operations level and are positioned in the intersection of vertical and horizontal flow of knowledge. The general section of the interview guide collected data on the background of the respondents; section B collected data in line with first objective of the study, which was to determine the extent of KM practices adopted by KEBS. Section C collected data line with the second objective, which is the relationship between KM practices and performance of KEBS.

3.5   Data Analysis

The data collected on the organizational KM was coded by the adoption of the numerical scale in line with the questionnaire structure. This enabled transformation of the quantitative data and analysis using quantitative methods. The interview guide was semi-structured thus the structured section was analyzed using descriptive analysis (like percentages), while the open-ended questions were analyzed using content analysis through specific themes that were organized along the aspects KM practices of knowledge creation, sharing, storage, retrieval and dissemination. Descriptive statistics were also used,

that is measures of dispersion and central tendency and it included the mean and standard deviation. Frequencies were used on the general information since the data was categorical.

Linear regression analysis was used to establish the relationship between organizational KM practices and performance. The dependent variable was performance and it was measured by KEBS corporate score upon appraisal of BSC for a financial year. The independent variable, which was KM practices was measured by creation, sharing, storage, retrieval and dissemination. The results of the linear regression analysis were interpreted using R square, significance of F statistics and the significance of beta values from the coefficients of the independent variables. The regression model was $OP = \beta_0 + \beta_1 KC + \beta_2 KSHA + \beta_3 KST + \beta_4 KR + \beta_5 KD + \varepsilon$ where OP, KC, KSHA, KST, KR and KD were organizational performance, knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval, and knowledge dissemination, respectively. The error term was represented by ε, and and β_0, β_1, β_2, β_3, β_4, and β_5 are the linear regression parameters. The output of the analysis was presented using frequency tables, cross tabulation tables, bar graphs and pie charts as were applicable and appropriate, as summarized in Table 3.2 below.

Table 3.1   Summary of Research Methodology

Objectives	Data Collected	Questionnaire	Analysis Done
Determine level of implementation of KM at KEBS	Qualitative information on KM practices – creation, sharing, storage, retrieval, dissemination	Section B	Descriptive and content analysis
Establish whether there a relationship between KM and performance in KEBS	Qualitative data on performance evaluation based on BSC indicators	Section D	Regression analysis

CHAPTER FOUR: FINDINGS AND DISCUSSION

4.1   Introduction

This chapter presents the analysis and interpretation of the findings to draw inferences and deductions. The purpose of the study was to determine the level of implementation of KM practices at KEBS and its impact on performance. The study collected primary data that was coded into SPSS software for analysis. The findings are presented in subsequent sections.

4.2   Response Rate

A total number of 22 employees from KEBS were sampled out and issued with questionnaires by the researcher. Out of these, 19 of them were dully filled and returned to the researcher. This gave a response rate of 86.4 percent as shown in Table 4.1.

Table 4.1   Response Rate

	Frequency	Percentage
Response	19	86.4
Non Response	3	13.6
Total	22	100

The response rate in Table 4.1 concurred with the stipulation of Mugenda and Mugenda (2003) who noted that response rate of 70 percent and above are sufficient for analysis and interpretation of the findings. Thus, an adequate response rate supported the current study.

4.3   General Information

Respondents were requested to indicate their departments, position and years of experience at KEBS as presented in subsequent sections. The researcher asked respondents to indicate their respective departments that they worked in. From the findings, respondents worked

in various departments that included the National Quality Institute (NQE), KEBS certification body, quality assurance, inspection, testing, metrology, human resources and administration, finance, standards development, information communication and technology, planning and strategy, marketing and corporate communication, market surveillance, audit and risk, procurement, Coast, North Eastern, Mount Kenya, and south rift regions.

The researcher sought to determine the various positions occupied by respondents. Several positions were identified including trainers, certification, standards, metrology, human resources and administration, finance, market surveillance and quality assurance officers and managers, as well laboratory technicians. The number of years that respondents had worked at KEBs is shown in Figure 4.1

Figure 4.2   Years of Experience
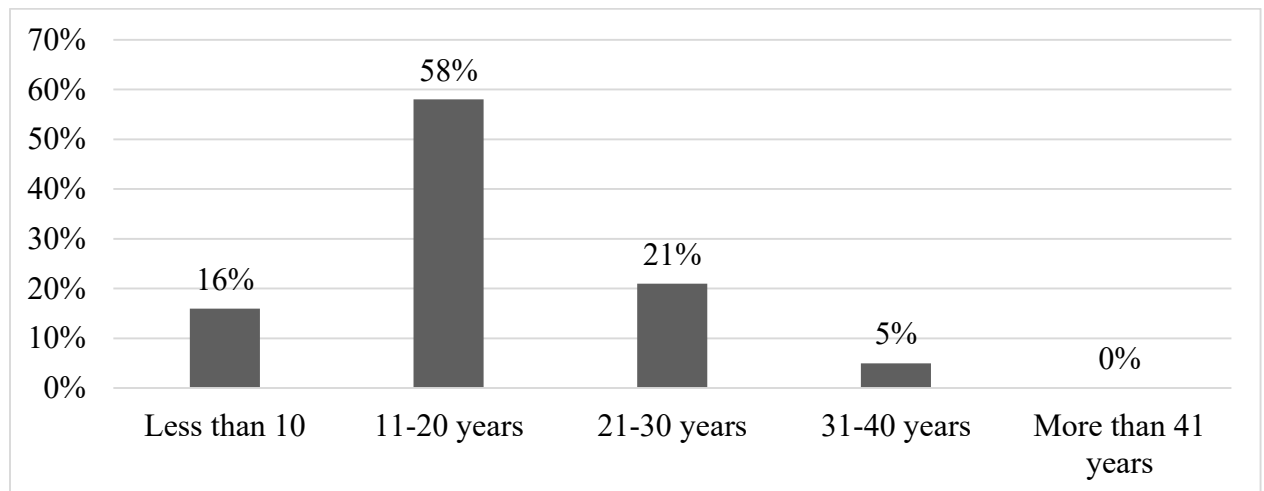
4.4   Knowledge Management Practices in Kenya Bureau of Standards

Respondents were asked to indicate what they understood by KM in KEBS. From the findings, respondents understood KM in common perspectives. Majority of the

respondents defined KM as the ability of an organization to understand key sources of information that would aid in decision making and effective operations of an organization. In addition, the researcher sought to determine if there existed a general consensus on what KM meant at KEBS. The findings are shown in Figure 4.2 below.

Figure 4.2   Consensus on Knowledge Management Practices
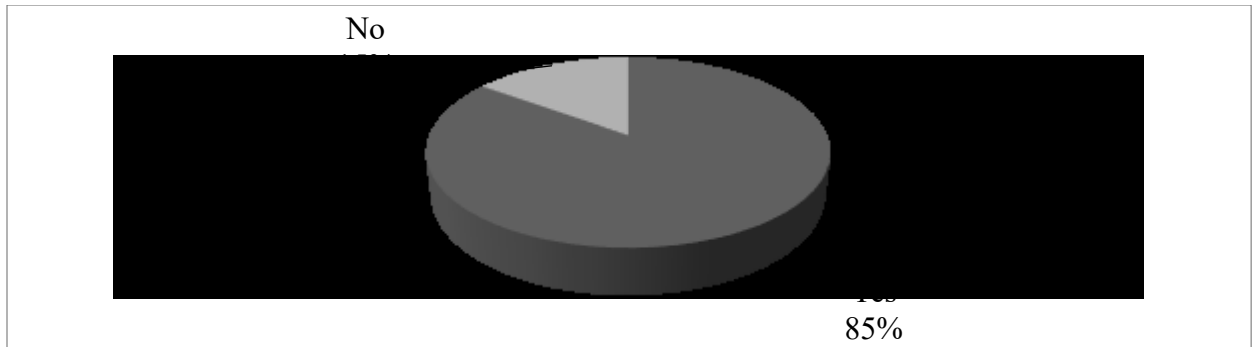
As indicated in Figure 4.2 above, most of the respondents 85 percent agreed that there was a general consensus on what KM meant at KEBS. It was clear that top management had established a KM policy and framework, which was communicated to all staff and interested parties, thus providing a reference point for all. This thus shows that KEBS embraced KM in its operations.

The study sought to examine the department or regional level where roles and responsibilities for KM had been assigned and communicated. From the findings, the study established that KEBS had selected key KM champions at the departmental/operational level to achieve this objective. The study established that all employees at KEBS had KM as one of the targets established under BSC.

Respondents were asked to indicate the kind of awareness that had been created in KEBS on KM. Respondents noted that there were staff training programs on KM in the organization. The KM policy and framework, which provide a link with strategic direction, had been communicated to all staff by top management. The study noted that the targets under BSC acted as guide in increasing awareness of KM in an organization.

Several statements on knowledge creation were identified. The findings from respondents are shown in Table 4.2.

Table 4.2   Knowledge Creation

Statements	Mean	Standard Deviation
Employees obtain a good extent of new knowledge from external sources (for example, through seminars, conferences, educational courses, subscription journals, expert networks).	4.00	1.01
Employees obtain a good extent of new knowledge from business partners (for example, suppliers, clients).	3.90	0.931
Employees exchange knowledge with our co-workers.	3.95	0.980
Employees rely on written sources (for example, previously implemented projects documentation, organizational procedures, instructions and other documented sources)	3.94	0.913
Employees share knowledge orally at meetings or informal gatherings (for example, during lunch, in the hallway).	4.10	0.814
Employees share knowledge through formal procedures (for example, project reports, organizational procedures and instructions, reports and company publications).	4.00	0.872
Employees in the organization consider their knowledge as an organizational asset and not their own source of strength	4.00	1.02
The general management/leadership motivates employees to engage in formal education systems to achieve a higher level of education	4.01	1.00
The general management/leadership motivates employees to engage in informal education systems (for example, seminars, courses).	3.97	0.952

From Table 4.2, employees obtained a good extent of new knowledge from external sources (Mean (M) = 4.00) = 1.01). Employees obtained a good extent of new knowledge from business partners (for example, suppliers, clients) (M = 3.90). Employees exchanged

knowledge with co-workers (M = 3.95). Employees relied on written sources (for example, previously implemented projects documentation, organizational procedures, instructions and other documented sources) (M = 3.94). Employees shared knowledge orally at meetings or informal gatherings (for example, during lunch, in the hallway) (M = 4.10). Employees shared knowledge through formal procedures (for example, project reports, organizational procedures and instructions, reports and company publications) (M = 4.00). Employees in the organization considered their knowledge as an organizational asset and not their own source of strength (M = 4.00). The general management/leadership motivated employees to engage in formal education systems to achieve a higher level of education (M = 4.01). General management/leadership motivated employees to engage in informal education systems (M = 3.97). In all cases the spread was small as indicated by standard deviation values.

Table 4.3 below shows knowledge sharing responses. From Table 4.3, there was willingness to share lessons learned in groups (M = 3.66). For employees in the department, lessons learned from projects, both successful and unsuccessful, were considered valuable (M = 3.69). Activities associated with lessons learned (from capturing to using) were recognized and/or rewarded in the organization (M = 3.81). Successful instances of sharing lessons learned were consistently publicized throughout the organization (M = 3.95). For employees in the department, lessons learned were shared routinely with fellow teammates and members of the organization (M = 3.89). For employees in the department, there was a general inclination to cooperation and exchange of experience among employees (M =

3.75). General management/leadership of organization promoted knowledge sharing (M = 3.909). In all cases the spread was small as indicated by standard deviation values.

Table 4.3   Knowledge Sharing

Statements	Mean	Standard Deviation
There is a willingness to share lessons learned in my group	3.66	1.08
For employees in this department, lessons learned from projects, both successful and unsuccessful, are considered	3.69	1.11
Activities associated with lessons learned (from capturing to using) are recognized and /or rewarded in my organization	3.81	1.04
Successful instances of sharing lessons learned are consistently publicized throughout my organization	3.95	0.967
For employees in this department, lessons learned are shared routinely with fellow teammates and members of the	3.89	0.913
For employees in this department, there is a general inclination to cooperation and exchange of experience among	3.75	0.992
General management/leadership of our organisation promotes KM practices	3.90	1.04

The findings on knowledge storage are indicated in Table 4.4 below and the table indicates that employees document lessons learned from projects subscription journals, expert networks (M = 3.72). Documenting lessons learned from projects was required in the organization (M = 3.58). There existed a classification scheme exists for categorizing lessons learned by project type, problem type, and subject area (M = 3.76). Employees found it easy to use the classification scheme for documenting lessons learned (M = 3.68). There was a structured format, such as templates/forms, to follow when documenting lessons learned (M = 3.74). The structured format helped respondents to capture the key points of lessons learned that employees documented company publications) (M = 3.86). Training/instruction on using the structured format for documenting lessons learned were available to employees (M = 3.81). The spread was low as indicated by small standard deviation values.

Table 4.4   Knowledge Storage

Statements	Mean	Standard Deviation
Employees document lessons learned from projects subscription journals, expert network	3.72	1.13
Documenting lessons learned from projects is required in the organization	3.58	0.944
There exists a classification scheme exist for categorizing lessons learned by project type, problem type, and subject area	3.76	1.01
Employees find it easy to use the classification scheme for documenting lessons learned	3.68	1.21
There is a structured format, such as templates/forms, to follow when documenting lessons learned	3.74	1.12
The structured format helps me capture the key points of lessons learned that employees documented company publications).	3.86	0.982
Training/ instruction on using the structured format for documenting lessons learned is available to employees	3.81	0.901

Table 4.5 below indicates the findings on knowledge retrieval. Employees looked for lessons learned from similar earlier projects prior to beginning a new project (M = 3.65). In the organization, looking for lessons learned from similar earlier projects was a required part of work practices (M = 3.67). When employees looked for documented lessons learned from similar earlier projects, they were able to find them (M = 3.50). Employees found that the documented lessons learned were available from sources other than the original author (owner) (M = 4.04). The documented lessons learned were stored in a database, or other repository, that allowed direct access by potential users (M = 4.00). Employees could search the lessons learned via database (M = 3.97). Employees believed that the search tool exhibits intelligence (that is, it uses context and personalization to filter out alternatives that were not relevant to employees in a particular problem situation) (M = 4.00). Training/instruction on using the search tools for locating lessons learned was available to

respondents (M = 3.65). The variability was small as indicated by low standard deviation

values.

Table 4.5   Knowledge Retrieval

Statements	Mean	Standard Deviation
Employees look for lessons learned from similar earlier projects prior to beginning a new project	3.65	1.03
In the organization, looking for lessons learned from similar earlier projects is a required part of work practices	3.67	1.03
When employees look for documented lessons learned from similar earlier projects, they are able to find them	3.50	0.897
Employees find that the documented lessons learned are available from sources other than the original author (owner)	4.04	0.910
The documented lessons learned are stored in a database, or other repository, that allows direct access by potential users	4.00	0.914
Employees can search the lessons learned via database	3.97	1.00
Employees believe that the search tool exhibits intelligence (for example, it uses context and personalization to filter out alternatives that are not relevant to employees in a particular problem situation)	4.00	0.942
Training/instruction on using the search tools for locating lessons learned is available to me	3.65	0.831

The findings on knowledge dissemination are shown in Table 4.6 below.

Table 4.6   Knowledge Dissemination

Statements	Mean	Standard Deviation
Training/instruction on incorporating lessons learned into normal work practices is available to employees	3.78	1.54
In this department, looking for lessons learned from similar earlier projects is a required part of work practices	3.56	1.46
Processes for documenting lessons learned are regularly improved updated in my organization	3.80	0.995
Processes for cataloguing / classifying lessons learned are regularly updated	3.65	1.11
In this department, processes for searching for lessons learned are regularly improved and updated.	3.80	1.07

From the findings, training/instruction on incorporating lessons learned into normal work

practices was available to employees (M = 3.78). In the department, looking for lessons

learned from similar earlier projects was a required part of work practices (M = 3.56).

Processes for documenting lessons learned were regularly improved and updated in an organization (M = 3.80). Processes for cataloguing/classifying lessons learned were regular (M = 3.65). In the department, processes for searching for lessons learned were regularly improved and updated (M = 3.80). The variability measure (standard deviation) was low and ranged from 0.995 to 1.54 indicating low variation among respondents.

4.5   Factors Affecting Implementation of Knowledge Management

The study examined the key factors that influenced implementation of KM practices in KEBS as discussed below. The findings on how organizational factors influenced implementation of KM are shown in Table 4.7.

Table 4.7   Organizational Practices

Organizational Practices	Mean	Standard Deviation
Employees evaluation for contributing to organizational knowledge	3.90	1.01
Knowledge sharing culture	3.91	0.937
Work environment	3.74	1.07
Management support	3.95	1.00
Management commitment	3.97	0.933
Time reserved for knowledge sharing	3.86	0.994
Level of awareness on importance of KM	4.11	0.950
Availability of avenues for sharing knowledge	3.94	1.06
Adequacy of information communication technology to enable KM practices	3.06	0.922
Rewards and recognition for knowledge sharing	3.58	1.00
Formalized process of transfer of knowledge	3.79	0.980
Availability of methods and procedure to guide on KM practices	3.52	1.13
Provision for opportunities for group discussions and brainstorming to share knowledge	3.50	1.05
Budgetary allocation for KM activities	3.60	1.00
Forums are provided for ex-staff to share knowledge	3.15	0.926

Table 4.7 above shows various organizational practices influencing implementation of KM. These practices included employees' evaluation for contributing to organizational knowledge (M = 3.90), knowledge sharing culture (M = 3.91), work environment (M =

3.74) and management support (M = 3.95). Management commitment (M = 3.97), time

reserved for knowledge sharing (M = 3.86) and the level of awareness on importance of

KM (M = 4.11) were other organizational factors influencing implementation of KM. The

other factors included availability of avenues for sharing knowledge (M = 3.94), rewards

and recognition for knowledge sharing (M = 3.58), formalized process of transfer of

knowledge (M = 3.79), availability of methods and procedure to guide on KM practices

(M = 3.52), provision for opportunities for group discussions and brainstorming to share

knowledge (M = 3.60). Respondents were, however not sure on adequacy of information

communication technology to enable KM practices (M = 3.06) and forums being provided

for ex-staff to share knowledge (M = 3.15). The variation among the respondents was small

as indicated by low standard deviation values.

The study assessed how technical and non-technological infrastructures influenced

implementation of KM as shown in Table 4.8 below.

Table 4.8   Technological and Non-Technological Infrastructure

Infrastructure	Mean	Standard Deviation
Library or resource center	3.84	1.07
Social media	3.61	1.02
Computers	3.55	0.944
Intranet	3.52	0.983
Email platforms	3.67	1.49
Data warehousing or databanks	3.65	0.854
Document management systems	3.60	1.30
KM software	3.85	0.773
Platform for stakeholders and employee interactions	3.77	1.49
Registry	3.70	0.663
Training, workshops and meeting facilities	3.97	1.88

A number of technological and non-technological infrastructures were identified that

influenced implementation of KM. These included library or resource center (M = 3.84),

social media (M = 3.61), computers (M = 3.55) and intranet (M = 3.52). Other factors included email platforms (M = 3.67), data warehousing or databanks (M = 3.65), document management systems (M = 3.60), KM software (M = 3.85), platform for stakeholders and employee interactions (M = 3.77), registry (M = 3.70) and training, workshops and meeting facilities (M =3.97). The variation of responses among the respondents was low as indicated by small standard deviation values.

4.6   Relationship Between Knowledge Management Practices and Performance

The study sought to determine relationship between KM practices and performance at KEBS and the findings are as indicated in Table 4.9.

Table 4.9   Relationship Between Knowledge Management Practices and Performance

Knowledge Management Practices and Performance	Mean	Standard Deviation
Knowledge management has resulted into improved operational processes	3.65	1.41
Knowledge management has resulted into staff being more innovative	3.58	0.786
Knowledge management has led to managers being more innovative	3.53	1.24
Knowledge management has resulted into staff gaining more experience	3.70	0.592
Knowledge management has resulted into managers making better decision	3.63	1.20
Knowledge management has resulted into enhanced team work	3.84	1.36
Knowledge management has resulted into improved learning by individuals	3.63	0.712
Knowledge management has led to enhanced customer satisfaction levels	3.93	1.00
Knowledge management has led to an improved overall performance of the department/region	3.76	0.562
Knowledge management has resulted into a reduction in operating costs relative to income	3.58	1.33
As a result of knowledge management we are delivering high quality services to our clients	3.65	1.76

From the findings, KM had resulted into improved operational processes (M = 3.65). The KM had resulted into staff being more innovative (M = 3.58,) and it has led to managers being more innovative (M = 3.53). The KM has resulted into staff gaining more experience (M = 3.70), has resulted into managers making better decision (M = 3.63), has resulted into enhanced team work (M = 3.84) and has resulted into improved learning by individuals (M = 3.63). In addition, KM has led to enhanced customer satisfaction levels (M = 3.93), has led to an improved overall performance of the department/region (M = 3.76), and has resulted into a reduction in operating costs relative to income (M = 3.58). As a result of KM, the organization is delivering high quality services to its clients (M = 3.65). There was high agreement on these statements among respondents as indicated by small standard deviation values.

Linear regression analysis was done to determine how KM practices influenced organization performance and the findings are reported below. The model summary, as shown in Table 4.10 below indicates that the coefficient of determination R square of was 0.694 and adjusted R square of 0.694. This shows that 69.4 percent (a good fit) change in performance of KEBS was explained by the KM practices in place and the remaining 30.6 percent change in performance was explained by other factors.

Table 4.10   Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833[a]	.694	.643	1.82794

The Analysis of Variance (ANOVA) Table 4.11 below shows that the overall model was significant because the p-value was smaller than level of significance alpha (p = 0.000 < α = 0.05).

Table 4.11   Model Validity

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	131.605	5	26.321	5.896	.000[b]
Residual	58.030	13	4.464		
Total	189.635	18			

The estimated linear equation coefficients and the p-values are shown in Table 4.12 below and indicates that all the variables were significant since the p-values were all less than α = 0.05.

Table 4.12   Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
	B	Std. Error	Beta		
(Constant)	8.262	3.961		2.086	.038
Knowledge creation	.160	.062	.111	2.574	.011
Knowledge sharing	.255	.076	.235	3.365	.001
Knowledge storage	.610	.092	2.079	6.630	.000
Knowledge retrieval	.425	.105	1.222	4.048	.000
Knowledge dissemination	.159	.071	.173	2.252	.026

From Table 4.12, the estimated equation is OP = 8.262 + 0.160KC + 0.255KSHA + 0.610KST + 0.425KR + 0.159KD. Thus, all independent variables had a positive and significant influence on performance of KEBS, with knowledge storage contributing the highest.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

The chapter summarizes the key findings of the study based on objectives. The key findings are used to draw conclusions of the study. The recommendations for policy are also presented in this chapter. Suggestions for further studies to future scholars and academicians are also indicated in this chapter.

5.2   Summary of Findings

The main objective of this study was to determine the influence of KM practices on performance of KEBS. The study adopted a descriptive design and data was collected from primary sources using questionnaires. The researcher distributed 22 questionnaires in total to respondents out of which 19 were dully filed and returned. This gave a response rate of 86.4 percent, which concurred with Mugenda and Mugenda (2003) stipulation that a response rate of 70 percent and above is sufficient to analyze and interpret the findings. The findings were analyzed using descriptive and inferential statistics.

The key inferential statistic used was linear regression analysis. The adjusted R square was 0.694, which implies that 69.4 percent change in performance at KEBS is explained by the adopted KM practices. An ANOVA at 5 percent level of significance indicated that the overall regression model was significant in estimating how KM practices influenced performance at KEBS.

The first objective of the study sought to determine KM practices adopted by KEBS. The study found out that the key KM practices at KEBS included knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval and knowledge dissemination. On knowledge creation, the study established that employees shared knowledge orally at meetings or informal gatherings (for example, during lunch, in the hallway) and that the general management/leadership motivated employees to engage in formal education systems to achieve a higher level of education. With regard to knowledge sharing, the study established that successful instances of sharing lessons learned were consistently publicized throughout the organization. On knowledge storage, the study indicated that the structured format helped to capture the key points of lessons learned that employees documented and that training/instruction on using the structured format for documenting lessons learned was available to employees. In respect to knowledge retrieval, the study established that employees found that the documented lessons learned were available from sources other than the original author (owner). In view of knowledge dissemination, the study indicated that processes for documenting lessons learned were regularly improved and updated in an organization and that in the department, processes for searching for lessons learned were regularly improved and updated.

The second objective of the study examined the relationship between KM practices and performance of KEBS. From the findings, knowledge creation had a positive and significant influence on performance of KEBS. Knowledge sharing had direct and significant influence on performance of KEBS. Knowledge storage had positive and significant effect on performance of KEBS. Knowledge retrieval had a positive and

significant relationship with performance of KEBS. Knowledge dissemination had positive and significant influence on performance of KEBS. The study established that KM had led to enhanced customer satisfaction levels and teamwork.

5.3   Conclusion

On KM practices at KEBS, the study concludes that KEBS embraced knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval and knowledge dissemination. Employees shared knowledge orally at meetings or informal gatherings. Successful instances of sharing lessons learned were consistently publicized throughout the organization. Structured format helped to capture the key points of lessons learned that employees documented and that training/instruction on using the structured format for documenting lessons learned was available to employees. Employees found that the documented lessons learned were available from sources other than the original author (owner). Processes for documenting lessons learned were regularly improved and updated in an organization.

In respect to the relationship between KM practices and performance, the study concludes that knowledge creation, knowledge sharing, knowledge storage, knowledge retrieval, and knowledge dissemination all had positive and significant influence on performance of KEBS. KM had led to enhanced customer satisfaction levels and teamwork.

5.4   Recommendations

The study recommends the inculcation of KM culture as well as adoption of technology as an enabler in KEBS. Due to the nature of operation at KEBS that interfaces a lot with external stakeholders, the top management should establish an expert locator system for internal and external knowledge sources. Knowledge should be considered an input, a critical resource for operations, enhancement of customer satisfaction, and realization of strategic direction of KEBS. Monitoring and evaluation initiatives for KM practices should be done for enhanced continual improvement of performance. A risk-based approach in KM is also recommended to ensure risks relating to KM practices are identified and managed as well as identification and harnessing on available opportunities.

5.5   Suggestions for Further Studies

The focus of the current study was on KM and organizational performance. Future studies should assess how KM results into organizational competitiveness. The current study was done using primary data collected through questionnaires. Future studies should employ both primary and secondary data. The focus of the current study was on the parastatals sector and there is need therefore for future studies to focus on the private sector. All this would facilitate comparison of the findings for informed decisions.

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APPENDICES

Appendix I: Questionnaire/Interview Guide

Thank you for participating in this interview. The research is being conducted for academic purposes only and any data and information given will be treated with utmost confidentiality, the results will be analyzed reported collectively, and as such no results will be attributed to any participant individually. Please provide your honest opinion

Section A   General Information

1. Department

   …………………………………………….

2. Position

   …………………………………………………...

3. Number of years in Kenya Bureau of Standards (tick as appropriate)

   Less than 10 [ ]   Between 10 – 20 years [ ]   Between 21 – 30 years [ ]

   Between 31 – 40 years [ ]   More than 41 years [ ]

Section B   Knowledge Management Practices by Kenya Bureau of Standards

Part 1:   Knowledge Management in KEBS

B 1.1 Explain your understanding of knowledge management in KEBS?

   _____

   _____

B 1.2 Is there a general consensus on what knowledge management means in KEBS?

   Yes ☐   No. ☐

B 1.3 At the departmental/regional level how have roles and responsibilities for knowledge management been assigned and communicated?

   _____

   _____

   _____

B 1.4 What kind of awareness has been created in KEBS on knowledge management?

_____

_____

_____

Part 2:   Knowledge Creation

The following are statements reflecting specific aspects of knowledge creation. Kindly indicate your level of agreement with them according to the following scale:

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

Question	Knowledge Creation Statement	1	2	3	4	5
B.2.1	Employees obtain a good extent of new knowledge from external sources (e.g. through seminars, conferences, educational courses, subscription journals, expert networks).					
B.2.2	Employees obtain a good extent of new knowledge from business partners (e.g. suppliers, clients).					
B.2.3	Employees exchange knowledge with our co-workers.					
B.2.4	Employees rely on written sources (e.g. previously implemented projects documentation, organisational procedures, instructions and other documented sources)					
B.2.5	Employees share knowledge orally at meetings or informal gatherings (e.g. during lunch, in the hallway).					
B.2.6	Employees share knowledge through formal procedures (e.g. project reports, organisational procedures and instructions,					
B.2.7	Employees in the organisation consider their knowledge as an organisational asset and not their own source of strength					
B.2.8	The general management/leadership motivates employees to engage in formal education systems to achieve a higher level					
B.2.9	The general management/leadership motivates employees to engage in informal education systems (e.g. seminars,					

Any other? Please state _____

_____

Part 3:   Knowledge Sharing

The following are statements reflecting specific aspects of knowledge sharing. Kindly indicate your level of agreement with them according to the following scale:

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

Question	Knowledge Sharing Statement	1	2	3	4	5
B.3.1	There is a willingness to share lessons learned in my group					
B.3.2	For employees in this department, lessons learned from projects, both successful and unsuccessful, are considered					
B.3.3	Activities associated with lessons learned (from capturing to using) are recognized and /or rewarded in my organization					
B.3.4	Successful instances of sharing lessons learned are consistently publicized throughout my organization					
B.3.5	For employees in this department, lessons learned are shared routinely with fellow teammates and members of the					
B.3.6	For employees in this department, there is a general inclination to cooperation and exchange of experience among					
B.3.7	The general management/leadership of our organisation promotes					

Any other? Please state _____

Part 4:   Knowledge Storage

The following are statements reflecting specific aspects of knowledge storage. Kindly indicate your level of agreement with them according to the following scale:

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

Question	Knowledge Storage Statement	1	2	3	4	5
B.4.1	Employees document lessons learned from projects subscription journals, expert networks).					
B.4.2	Documenting lessons learned from projects is required in the organization					
B.4.3	There exists a classification scheme exist for categorizing lessons learned by project type, problem type, subject area,					
B.4.4	Employees find it easy to use the classification scheme for documenting lessons learned					
B.4.5	There is a structured format, such as templates / forms, to follow when documenting lessons learned					
B.4.6	The structured format helps me capture the key points of lessons learned that employees documented company publications).					
B.4.7	Training/ instruction on using the structured format for documenting lessons learned is available to employees					

Any other? Please state _____

Part 5:   Knowledge Retrieval

The following are statements reflecting specific aspects of knowledge retrieval. Kindly indicate your level of agreement with them according to the following scale:

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

Question	Knowledge Retrieval Statement	1	2	3	4	5
B.5.1	Employees look for lessons learned from similar earlier projects prior to beginning a new project					
B.5.2	In the organization, looking for lessons learned from similar earlier projects is a required part of work practices					
B.5.3	When employees look for documented lessons learned from similar earlier projects, they are able to find them					
B.5.4	Employees find that the documented lessons learned are available from sources other than the original author (owner)					
B.5.5	The documented lessons learned are stored in a database, or other repository, that allows direct access by potential users					
B.5.6	Employees can search the lessons learned via database					
B.5.7	Employees believe that the search tool exhibits intelligence (i.e. it uses context and personalization to filter out alternatives that are not relevant to employees in a particular problem					
B.5.8	Training/instruction on using the search tools for locating lessons learned is available to me					

Any other? Please state

Part 6:   Knowledge Dissemination

The following are statements reflecting specific aspects of knowledge dissemination.

Kindly indicate your level of agreement with them according to the following scale:

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

Question	Knowledge Dissemination Statement	1	2	3	4	5
B.6.1	Training/instruction on incorporating lessons learned into normal work practices is available to employees					
B.6.2	In this department, looking for lessons learned from similar earlier projects is a required part of work practices					
B.6.3	Processes for documenting lessons learned are regularly improved and updated in my organization					
B.6.4	Processes for cataloguing / classifying lessons learned are regularly					
B.6.5	In this department, processes for searching for lessons learned are regularly improved and updated.					

Any other? Please state _____

Section C: Factors Affecting Implementation of Knowledge Management

1.   Organizational Practices

To what extent do the following factors affect knowledge management practices in your department / region?

Tick the appropriate box against each statement. The numbers represent the following levels:

(Scale: 5=a great extent; 4=a large extent; 3=a moderate extent; 2=a small extent; 1=insignificant)

Organizational Practices	1	2	3	4	5
Employees evaluation for contributing to organizational knowledge					
Knowledge sharing culture					
Work environment					
Management support					
Management commitment					
Time reserved for knowledge sharing					
Level of awareness on importance of knowledge management					
Availability of avenues for sharing knowledge					
Adequacy of information communication technology to enable knowledge management practices					
Rewards and recognition for knowledge sharing					
Formalized process of transfer of knowledge					
Availability of methods and procedure to guide on knowledge management practices					

Provision for opportunities for group discussions and brainstorming to share knowledge					
Budgetary allocation for knowledge management activities					
Forums are provided for ex-staff to share knowledge					

Others

2. Technological and Non-Technological Infrastructure

Please indicate the extent to which the statements below describe what happens in your department/region. Tick the appropriate box against each statement.

The numbers represent the following levels:

(scale: 5=strongly agree; 4=agree; 3=neutral; 2=disagree; 1=strongly disagree)

In this department, we have been provided with the following infrastructure (technological and non-technological) to facilitate knowledge acquisition, storage and sharing:

Infrastructure	1	2	3	4	5
Library or resource center					
Social media					
Computers					
Intranet					
Email platforms					
Data warehousing or databanks					
Document management systems					
Knowledge management software					
Platform for stakeholders and employee interactions					
Registry					
Training, workshops and meeting facilities					

Section D: Relationship Between Knowledge Management Practices and Performance of Kenya Bureau of Standards

1. Please indicate the extent to which the statements below describe what happens in your department/region. Tick the appropriate box against each statement.

The numbers represent the following levels:

(scale: 5=strongly agree; 4=agree; 3=neutral; 2=disagree; 1=strongly disagree)

No.	Statement	1	2	3	4	5
1	Knowledge management has resulted into improved operational processes					
2	Knowledge management has resulted into staff being more innovative					
3	Knowledge management has led to managers being more innovative					
4	Knowledge management has resulted into staff gaining more experience					
5	Knowledge management has resulted into managers making better decision					
6	Knowledge management has resulted into enhanced team work					
7	Knowledge management has resulted into improved learning by individuals					
8	Knowledge management has led to enhanced customer satisfaction					
9	Knowledge management has led to an improved overall performance of the department / region					
10	Knowledge management has resulted into a reduction in operating costs relative to income					
11	As a result of knowledge management we are delivering high quality services to our clients					

Any other

_____

_____

Thank you for your participation**.**