IMPLEMENTATION OF KNOWLEDGE MANAGEMENT SYSTEMS BY FIRMS IN NAIROBI

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DECLARATION

This is my original work and has not been presented for an award of a degree in any other university.

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This research project has been submitted with my approval as the University supervisor

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This research project is dedicated to God for bringing me this far. I also dedicate it to my parents for their continued support throughout my period in school

ABSTRACT

In the fast changing business environment, knowledge has become the mainstay of every organization in creating sustainable competitiveness. This study sought to investigate drivers of implementing Knowledge Management Systems (KMS), challenges faced during the process as well as the strategies that can be put into place to overcome these challenges. The study adopted a descriptive survey approach with a target population of all ICT consultancy firms established in Nairobi. The researcher took a purposive sample to select a sample of 30 ICT firms that have implemented Knowledge management Systems in various organizations. The targeted respondents were ICT heads and system developers. Primary data was collected using self-administered questionnaires from these respondents. The respondents' gender, age, profession, years of experience and firms' years of operation were analyzed using descriptive statistics (frequencies, percentages, means and standard deviations) and cross tabulation. The drivers, challenges and strategies of Knowledge Management Systems implementation were also analyzed using descriptive statistics and factor analysis. The study indicated that ICT consulting firms in Nairobi conduct KMS implementation as well as other ICT solutions. From the response, the majority of the employees in these ICT consultancy firms are aged between 26-30 years of age with fewer female respondents at 37.5 % as compared to male who were 62.5 %. Further, the study showed that most of these employees were degree and masters holders indicating high literacy levels in the field of KMS implementation. A cross tabulation of level of education respondents & years of firm in consultancy indicates that firms that are new in the industry have employed more degree holders as compared to the ones that have been in the industry for long. The findings also indicated that there are driving factors that lead organizations into implementing KMS. These included the need to create and sustain competitive advantage, presence of Information Technology infrastructure, need to create innovation and leverage best practices as the key drivers. The study also revealed that this procedure faces challenges such as insufficient funding of Knowledge Management projects, knowledge loss through high turnover and lack of a knowledge sharing culture. To overcome these challenges, the findings also indicated that there are strategies that can be put in place which included provision of technical and organizational infrastructure, training the employees on the use information technology, management to provide a work environment where employees meet to share ideas and provision of lessons on the benefits of KMS to the management.

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KMS Knowledge Management Systems

ICT Information and Communication Technology

IT Information Technology

CHAPTER ONE: INTRODUCTION

1.1 Background

Today, knowledge is assumed to be the key asset, the effective exploitation which determines success for the firm (Michailova & Nielsen 2006). In the fast changing business environment, knowledge has become the mainstay of every organization in creating and sustaining competitive differentiation (Cheruiyot, 2011). Knowledge management system (KMS) is one of the systems that will enable a company to harness knowledge and in the long run create and maintain sustainable competitiveness.

Knowledge management refers to the process through which organizations create and distribute internal knowledge. Allee (1997) defines Knowledge Management as managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value. Effective knowledge management is increasingly becoming an important source of competitive advantage and a key to the success of modern organizations (Savvas and Basilliades, 2009).

As organizations face competitive challenges, they have to cope with ever increasing dynamics and complexity through continuous innovation and creativity. As a result, many organizations are developing KMS designed specifically to facilitate the sharing and integration of knowledge. KMS increase the ability of the organization to learn from its environment and to incorporate knowledge into its business processes. Knowledge Management Systems (KMS) refer to the information systems adopted and designed, which efficiently and effectively leverage the collective experience and knowledge of employees to support information

processing needs, as well as enabling and facilitating sense-making activities of knowledge workers (Wickramasinghe et al 2003).

Regardless of the school of thought, core components of Knowledge Management Systems include: people, processes and technology. The Ministry of Environment and Mineral Resources, Kenya (2012) identified that to come up with knowledge management systems you need to integrate processes (efficiency), people, systems and technologies, methods and techniques, holistic approaches, consistency and persistence, innovation, competitive advantage, and transfer of lessons learnt. Efficient use of Information and Communication Technologies (ICT) has become a vital ingredient for survival and profitability in the knowledge-based economy. Consequently, ICT has provided new and advanced tools for knowledge building and sharing such as intranets, E-mails and relational databases. Al-Ain (2007) found out that 500 companies lose at least $31.5 billion a year by failing to share knowledge. According to Alavi and Leidner (2001), Information technologies can play an important role in the knowledge-based view of the firm in that information systems can be used to synthesize, enhance, and expedite large-scale intra- and inter-firm knowledge management. However, on its own, technology does not constitute knowledge management systems (KMS); rather, it facilitates their implementation by providing an infrastructure which in return forms the basis of Knowledge management systems. Hence KMS integrates information Technology, organizational culture and processes.

1.1.1. Implementation of Knowledge Management Systems

Organizations are increasingly realizing the need for knowledge strategies that address factors such as rapid organizational growth, layoffs, turnover, mergers and acquisitions, and internal redeployments (O'Dell and Hubert, 2011). Through capturing, codifying, and disseminating

knowledge, the company reduces the level of required know-how for its managers while improving the effectiveness and efficiency of its operations (Peters, 1994). The popular findings for the impacts of KMS are the ability of organizations to be more efficient and flexible, responding to changing market conditions quickly, and the ability to be more innovative as well as improving decision making and productivity (Stata, 1997; Harris, 1996). Reuters Survey (2001) found that ninety percent of companies, which deploy Knowledge Management solutions benefit from better decision-making and 81 percent notice increased productivity.

Researchers have tried to identify the reasons behind this dramatic growth and some have attributed the growth to supply and demand factors. Organizations have recognized the economic benefits associated with KMS and as a result have implemented these systems. Skyrme and Amildon (2003) identified globalization and competition as drivers for implementation of KMS. Grant (1996) found out that the ability to integrate and apply specialized knowledge of organizational members is fundamental to a firm's ability to create and sustain competitive advantage. Morrissey (2005) indicated advances in communication technologies such as adoption of internet as a supply driver since it enhances knowledge sharing. High turnover has led to loss of crucial knowledge within an organization and has resulted to firms investing in the implementation of KMS. The Bureau of Labor statistics indicate that employees change jobs frequently such that 54 % of all employees have been with their current employer for less than four years..

Other drivers of KMS implementation are competitiveness and innovation as a result of information flow as well as improved customer-care due to streamlined response time

(Morrissey, 2005). According to Grant (1996), the ability to integrate and apply specialized knowledge of organizational members is fundamental to a firm's ability to create and sustain competitive advantage. In their studies, Alavi (1997) and Bartlett (1996) found that companies are beginning to implement KMS to facilitate the codification, collection, integration, and dissemination of organizational knowledge.

The process of KMS creation starts with knowledge creation where new ideas, routines are generated, this knowledge is then shared. The system implementation can be done through in-house Software packages development or a firm can outsource the services from Consulting firms and Application Service Providers.

Studies have shown that most organizations are aware of the importance of knowledge management but are faced by problems in implementing knowledge management systems due to lack of the expertise to capture, codify or transfer of knowledge. Others lack funds for this kind of investment.

Chandran and Raman (2009), found out that in Malaysian medium sized organizations, implementation challenges result from employees' lack of skills in using various technologies and tools. The greatest challenge however, is to identify and capture crucial knowledge that improves the business process (Edvinsson & Malone, 1997).

The success of KMS highly depends on the knowledge culture in place and top management has a duty to create an atmosphere of trust, team spirit and learning climate for improving contributor's productivity (Ray, 2008). The ability to integrate and apply specialized knowledge

of organizational members is fundamental to a firm's ability to create and sustain competitive advantage (Grant, 1996). An effective knowledge culture encourages innovation, from the initial creative idea to the experimentation and sharing of insights with others. Management should encourage flexibility in daily routines and processes as on the hand it encourages people to look for opportunities to work towards creative alternatives (Debowski 2006). This can be achieved through designing rewarding and recognition systems for employees would be a strategy to encourage knowledge sharing hence overcoming the challenges.

1.1.2. ICT Consultancy in Kenya

By 1990, a number of management consulting firms had begun in-house knowledge management programs and several well-known U.S., European and Japanese firms had instituted focused knowledge management programs. In Kenya, there has been much progress in the expansion of telecommunication services has taken place due to the reforms and liberalization of this sector. In addition globalization has brought firms beyond physical boundaries. Increased numbers of fixed and mobile lines has made it easy to communicate and as the number of internet users increase, firms are starting to over rely on ICT. Consequently, the ICT sector in Kenya is still growing and so is its workforce.

Kenya has several ICT consultancy firms and services offered by these firms include: Installation and maintenance of ICT of equipment, acquisition of hardware supplies as well as making routine repairs and change of hardware electronic components. Others perform development of new software packages and networks administration (CCK, 2011).

In Kenya, ICT consultancy has been on the increase and since the country has increasingly engaged in ICT infrastructure, strategies have been put in place to enable it become a world-class provider of IT-enabled services. Firms can implement KMS through in-house application development while others outsource from consultants. The consultants have had challenges during the implementation such as firms not having adequate IT infrastructure as well as lack of management support.

1.2 Research Problem

Effectiveness of knowledge based systems has been a common research theme within the academia (Nakayama & Sutcliffe, 2008). Reviewed literature indicates that knowledge is an important asset for competitiveness. Michailova and Nielsen (2006) pointed out that knowledge is assumed to be the key asset, the effective exploitation which determines success for the firm. However, if not harnessed and shared, knowledge is of no value to a firm and to do so, organizations require KMS. The understanding of KMS implementation process is necessary.

There is the need to understand the drivers of successful implementation of KMS and since the organization still existed before such systems are introduced, the processes and the enablers have to be highly considered. This is because successful implementation of KMS has been found to be a strategy for creating and sustaining competitiveness in the market. Hence in order for organizations to succeed in highly dynamic business environment, it is critical to implement KMS in their operations.

Kenya intends to become a knowledge-led economy wherein the creation, adaptation and use of knowledge will be among the most critical factors for rapid economic growth (GoK, 2007).

Mosoti and Masheka (2010), in their study; “Knowledge Management: The Case for Kenya”, investigated the extent to which knowledge management practices are in place in organizations in Nairobi. They found out that the use of knowledge management practice in organizations in Nairobi has increased the knowledge sharing across departments and functional business units. The major challenge they identified was how to create and implement Knowledge Management Practices as part of organizational culture, organizational strategy and organizational leadership.

Maingi (2007), studied on Knowledge Management Readiness Score in a Competitive Economy and his findings indicated that most people are still not aware of what Knowledge Management entails and awareness therefore needs to be created in such areas. Consequently, firms have not yet recognized Knowledge Management Systems as the solution. Kemboi, (2011), investigated the factors affecting institutionalization of Knowledge Management in manufacturing enterprises in Kenya. The study findings showed that there are two critical factors that influence institutionalization of knowledge management. These are organizational practices and technological infrastructure and allocation of resources towards such efforts measurably increase knowledge base, management awareness and promotion, climate of openness, teamwork and trust exists among employees.

Although there were studies in Kenya For example Maingi, 2007; Ogare and Othieno 2010; Kemboi, 2011; Mosoti and Mesheka, 2010; dealing with knowledge management, none of them had addressed the challenges faced during Knowledge management Systems implementation. In addition, since there had not been a prior research on the challenges inhibiting successful implementation of KMS in organizations in Nairobi, this research was worth undertaking. The study was geared towards filling in the knowledge gap by answering these questions: What are the drivers towards implementation of KMS in Nairobi? What are the challenges faced in KMS

implementation? What strategies can be put in place to overcome these challenges in KMS implementation in Nairobi?

1.3 Objectives

1. To establish the drivers of implementation of KMS in Nairobi
2. To establish the challenges facing KMS implementation in Nairobi
3. To establish the strategies used in KMS implementation in Nairobi

1.4 Value of the Study

Since KMS is a relatively new concept in the industry, most organizations may not have achieved the expected outcomes. Literature on Knowledge Management depicts knowledge as a critical asset for any organization to help it sustain competitiveness. This study aimed to establish the challenges that firms could be experiencing during implementation of KMS and also establish the strategies for their success. The motivation for the research was the value that can give firms an upper hand in business, which may however not be experienced due to challenges in the KMS implementation.

ICT consultants

ICT consultants will benefit from the findings as it will give them a better understanding of KMS implementation as well as prepare them to be more alert during the implementation. This will provide a valid foundation to establish successful implementation.

Business Executives

This information will be of value to business executives as they will now be able to identify the strategies to create as well as sustain competitiveness in the market environment. They will also

benefit from the strategies as indicated by findings on how to overcome the challenges facing organizations in attempt to share knowledge.

Academics

This study will form a good source of literature upon which further research can be based. The literature will be valuable for academia and learning on Knowledge Management Systems.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the review of the literature on knowledge management. The main areas covered are, knowledge management System implementation, drivers for their implementation, challenges faces as well as strategies for overcoming such challenges. It also covers the theoretical framework and conceptual framework.

2.2 Knowledge Management Systems Implementation

Knowledge Management Systems (KMS) refer to the information systems adopted and designed, which efficiently and effectively leverage the collective experience and knowledge of employees to support information processing needs, as well as enabling and facilitating sense-making activities of knowledge workers (Wickramasinghe et al 2003). The first step towards the KMS implementation is the designing an implementation strategy to set out a proper goal. This helps to administer a common vision and defining knowledge requirements. Carrillo et al (2002) have suggested that when deciding upon a strategy for implementing KMS in any organization, a basic framework should be followed for the selection of an appropriate strategy.

A knowledge repository serves as the source and flow of knowledge which includes knowledge creation, sharing and application to create and or sustain organizational value and competitive advantage (Liew, 2007). There are some factors that need to be taken into consideration as far as KMS implementation is concerned. Reviewing knowledge management and the organization‘s perspective, Alrawi & Al-Ain (2007) bring the concept of resource-based‘,

where they consider organizational resources and capabilities as the principal source of achieving and sustaining competitive advantage.

As companies support more-complex products and broader product portfolios, the challenges of quickly and efficiently resolving customer issues multiply. The result is that fewer cases are resolved with the first call even with significant technology investments. The Ministry of Environment and Mineral Resources, Kenya (2012) identified that to come up with knowledge management systems you need to integrate processes (efficiency), people, systems and technologies, methods and techniques, holistic approaches, consistency and persistence, innovation, competitive advantage, and transfer of lessons learnt. Beijerse (1999) says that knowledge management systems aid the process of achieving organizational goals through a strategy-driven motivation and facilitation of knowledge workers to develop, enhance and use their capability to interpret data and information through a process of giving meaning to these data and information. Thus, knowledge management systems provide the infrastructure through which organizations generate value from their intellectual and knowledge assets.

Oinas-Kukkonen (2004) argues that much of the innovation created and accumulated in a firm is actually based on tacit knowledge. Malhotra (2001) states that the dominant conception of Information System (IS) based organizational knowledge system, is constrained by the very nature of the knowledge creation process. He further says that knowledge resides in the user and not in the collection of information and it is how the user reacts to a collection of information that matters. The popular claims for the results of KMS implementation in firms include the ability of organizations to be flexible and respond more quickly to changing market conditions,

and the ability to be more innovative as well as improving decision making and productivity (Stata, 1997; Harris, 1996).

2.3 Drivers of KMS Implementation

There has been an increasing interest in this field making it become popular in the recent years and researchers have tried to identify the reasons behind this dramatic growth. Some have attributed this growth to supply and demand factors. For example Morrissey (2005) identifies advances in communication technologies such as adoption of internet as a supply driver since it enhances knowledge sharing. This is because as organizations have their workforces dispersed geographically across the globe; it can make it difficult to communicate and sharing information. Information technology comes in handy to facilitate sharing of information among workers located in different regions.

In their studies, Alavi (1997) and Bartlett (1996) found that companies are beginning to implement KMS to facilitate the codification, collection, integration, and dissemination of organizational knowledge. Organizations have recognized the economic benefits associated with KMS and as a result have implemented these systems. Grant (1996) found out that the ability to integrate and apply specialized knowledge of organizational members is fundamental to a firm's ability to create and sustain competitive advantage. High turnover in organizations has led to loss of crucial knowledge within an organization and has resulted to firms investing in the implementation of KMS. The Bureau of Labor statistics indicate that employees change jobs frequently such that 54 % of all employees have been with their current employer for less than four years.

Other drivers of KMS implementation are innovation as a result of information flow as well as improved customer-care due to streamlined response time (Morrissey, 2005). Grant (1996) adds that the ability to integrate and apply specialized knowledge of organizational members is fundamental to a firm's ability to create and sustain competitive advantage.

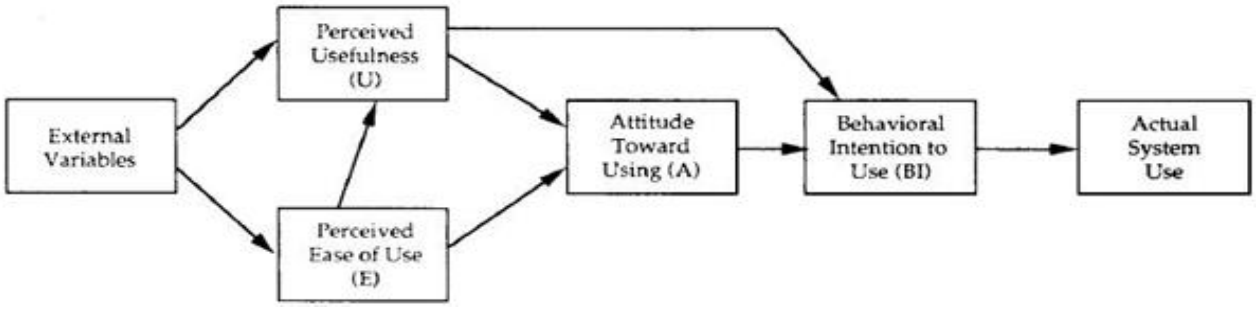
Internet and the World Wide Web emergence have brought a revolution in the way people communicate and interact with each other. According to Leidner (1999), in the absence of an explicit strategy to better create and integrate knowledge in the organization, computer systems which facilitate communication and information sharing have only a random effect at best. Hence as a result as noted by Alavi (1997) and Bartlett (1996), companies are beginning to implement KMS to facilitate the codification, collection, integration, and dissemination of organizational knowledge. Furthermore, it is recognized that Web-enabled tools have transformed work processes in ways that are important and pervasive where large number of software are used in workplace.

The selection and adoption of technology is a complex process that is based on a number of alternatives including technological choices, perceived benefits, cost based models and organizational strategies (NAE, 1991). Most MIS researches are pegged upon theories that try to explain causal effect relationship. A theory is an explanation of observed regularities to explain some empirical observation (Bryman & Bell, 2004:7)

Davis (1989) introduced the Technology Acceptance Model (TAM) which depicts that perceived usefulness and ease of use determines an individual's intention to use a system.

Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance job performance (Davis, 1989). People are most likely to use Information systems that they believe will help them perform their job better. He further defines perceived ease of use as the degree to which a person believes that using a system would be free form effort. Hence even if perceived useful, but a system proofs difficult to use; the potentially perceived benefits may be outweighed by the extra effort required to use it.

Figure 2.1 Technology Adoption Model Schema



Source: Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models," *Management Science, 35,* 1989, 982-1003.

2.4 Challenges

Benefits of Knowledge Management Systems will remain an elusive goal until companies overcome barriers encountered during institutionalization (Morrissey, 2005). Despite the fact that many current implementations of Knowledge Management initiatives are based on highly advanced information technologies, there are still challenges to cope with in order to ensure the effectiveness and efficiency of such systems. Several studies and surveys having investigated the reasons leading to their failure, highlighted that organizational culture and others psycho-

social factors play an important role to the KM success (Tuggle & Shaw, 2000). Challenges rely on the identification of crucial knowledge that improves the business process (Edvinsson & Malone, 1997). Thus, it is recognized that companies need to take care of their most important assets which is the organizational knowledge.

Justifying the investment of an Information system is usually a challenge in many organizations and KMS is not an exception of the systems receiving such resistance. In addition, Pollard (2005) argues that the challenges faced today in getting people to share what they know and to collaborate effectively are not caused or cured by technologies, but are cultural impediments. It is extremely difficult to change people's behaviors and so the solutions need to accommodate these behaviors, and these cultures, rather than trying to 'fix' them (Pollard, 2005). Therefore, knowledge in itself without the right strategy for dissemination may not be of much value to an organization. As a result ignoring the organization culture can pose a challenge towards acceptance of a KMS. Above all, as stipulated by Edvinsson and Malone (1997), the greatest challenge is to identify and capture crucial knowledge that improves the business process.

In their journal of Knowledge Management Volume 7 Issue 2, (pp211 - 218), Bechina and Ndlela, (2009) found out that learning and training is essential in the adoption of the systems. As they noted, top management or IT department are asking employee to use specific software without providing adequate training. Therefore, sometimes the systems implementation is proved to be a failure because people do not have the right skills. The penetration of new technologies in the workplace has generated new type of issues and challenges. However technology itself needs adaptation to organizational goals and strategies (Laulmann, Nadler, & O'Farrell, 1991). As organizations invest in the high tech systems based on IT infrastructure,

the lack of technical skills to operate the IT tools hinders the expected benefits from KMS implementation. Some firms however, do not have the technology to provide such knowledge (Alavi & Leidner, 1999). The most important knowledge domain for firms with and without KMS was knowledge on customer service.

Alavi and Leidner (1999) found out that KMS across a variety of industries is very high, the technological foundations are varied, and the major concerns revolve around achieving the correct amount and type of accurate knowledge and garnering support for contributing to the KMS. In addition, the Lack of proper integration of the systems with the already established work practices and social issues poses a challenge towards the implementation. Morrissey, (2005) highlighted the lack of trust among employees as a hindrance from sharing what they know with each other. This culture of evading knowledge sharing poses as a challenge towards creation and dissemination of knowledge required for the development and implementation of KMS. Hence, an organizational culture can be a source of a challenge on its own and therefore firms should develop a culture of sharing. However, this sharing capability may be impaired due to demand for confidentiality (Morrissey 2005)

2.5 Strategies

In recent years researchers agree that the implementation of technological innovation rests largely on readiness for change and that human factors are crucial for this change as change is not always perceived positively (Kanter, 1991). These human factors include knowledge of human abilities and limitations to the design of systems, organizations, jobs, machines, tools, and consumer products for safe, efficient, and comfortable use.

The various dimensions of the problems of productivity and technology cannot be found in technology alone, but rather there are also human factors that either facilitate or constrain the ability of firms and workers to adopt and implement new technologies. Although there are plenty of technical solutions supporting different knowledge processes such as knowledge creation, representation, storage, and sharing, there is still a need to understand the factors impacting not only the acceptance of the knowledge management systems (KMS) by the knowledge worker but also their efficient usage (Bechina & Ndlela, 2007).

Knowledge can bring improvement in performance if captured, organized, disseminated and used appropriately. Many organizations are agreeing that to grow, stay competitive and survive, they have to constantly change their strategies to meet new business demands and this explains the growth of interest in knowledge management over the last decade (Mosoti and Mesheka, 2010). An organization can utilize people's expertise to their advantage to increase returns. Their study showed that most articles continue to focus on developing and implementing Knowledge Management database, tools and techniques. However, how the KMP interacts with existing organization structures and how Knowledge Management can apply to an organization in relation to its goals and strategy has not been taken into consideration

Top management has a duty to create an atmosphere of trust, team spirit and learning climate for improving contributor's productivity (Ray, 2008). Above all, teams at work need to be empowered to create and share knowledge. A regular training on themes like trust building, collaborative building, team building can go a long way in overcoming barriers related to lack of trust, faith and fear (Riege,2005). Knowledge is often associated with learning. Learning and

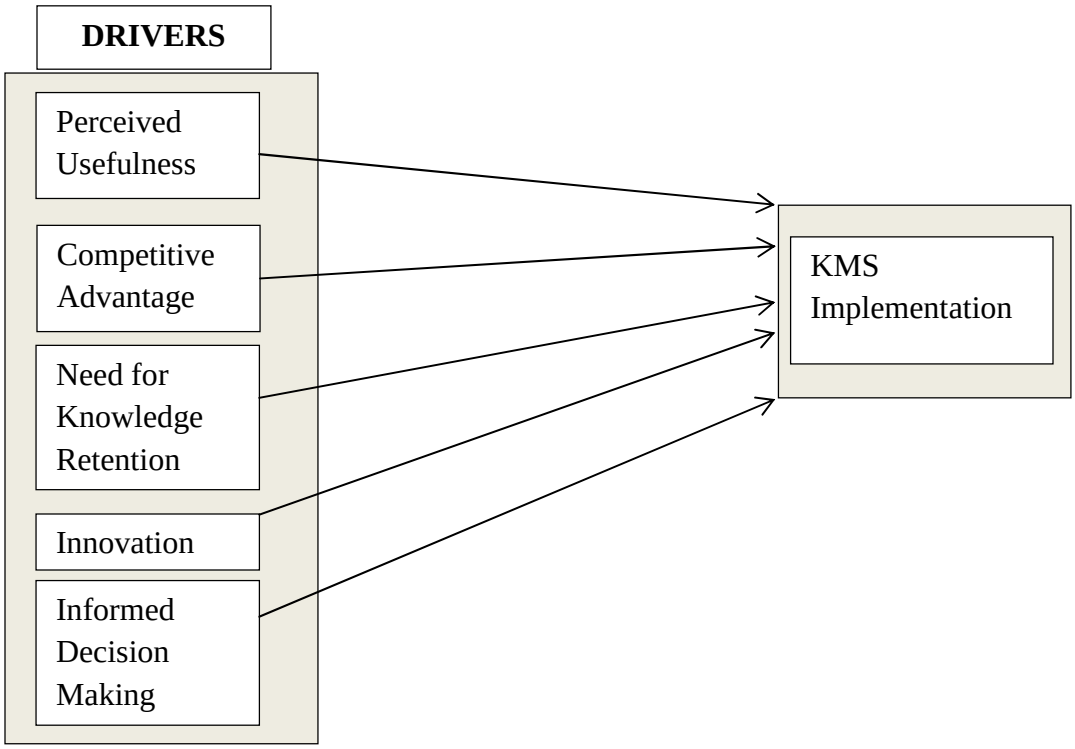
managing knowledge of both individuals and organizations plays a central role in the competitive edge of firms (Pisano, 1994).

Obtaining management support for an investment in KM is crucial. Attempts to quantify the benefits associated with the investment could be a strategy to gain the support. Since the success of knowledge management does not largely depend on the information technology platforms but primarily on the social structure of an organization the organization culture of a firm can therefore not be ignored. As part of organizational culture, trust among people is crucial towards the success of knowledge sharing. Wong (2005) stipulates that without a high degree of mutual trust, people will be skeptical about the intentions and behaviors of others and thus withhold their knowledge.

Technology itself, even when it is not intended as a communications product, serves as communication medium between the users (Adler & Winograd, 1992) and therefore technology has communication embedded on it. However, organizational level factors that significantly contribute to the KMS effectiveness are related to leadership, training, clear business strategy, aligning business goal with the technologies, collaboration, and adaptive culture. According to Alavi and Leidner (2001), Information technologies can play an important role in the knowledge-based view of the firm in that information systems can be used to synthesize, enhance, and expedite large-scale intra- and inter-firm knowledge management. In today's competitive markets, firms need to utilize and strengthen knowledge advancements. Technology has enabled dramatic improvements of this concept through improved capturing,

storage, transfer and retrieval of knowledge within and across firms. This has led to integration of systems providing the flow of knowledge among all stakeholders.

Figure 2.2: Conceptual Model



2.6 Summary

This chapter provided a summary of KMS implementation where Knowledge management as a concept is not directly tied to technology; rather emerging technologies provide a means of enabling more effective implementation of knowledge management systems. Since many organizations have recognized the economic benefits associated with KMS, factors such as perceived usefulness, competitiveness, innovation, advancements in technology have contributed as drivers towards implementing KMS. As a result, there is information flow as well as improved customer care due to streamlined response time. However, some companies still have not yet experienced such benefits of KMS as the study aims to establish. This is due to

some challenges experienced during implementation of KMS. As a result, the study aimed to identify the probable strategies that are geared towards a success in KMS hence the achievement of the effectiveness and efficiency of such systems. From the study it was discovered that different challenges exist though many researches have been performed and strategies have been suggested to overcome these challenges.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The study adopted a descriptive survey approach to gain more information about the independent variables such as competitiveness, innovation, need for informed decision making as well as the dependent variable which is KMS implementation. The design approach was chosen because it enabled to generalize the findings to a larger population with standardized questionnaires. Data collected was used provide an insight on the drivers towards organizations implementing KMS in Kenya, challenges faced as well as success strategies towards implementation of such systems.

3.2 Study Population

The study adopted a descriptive survey approach with a target population of all ICT consultancy firms established in Nairobi. This is because these firms make up a source of Knowledge Management Systems Specialists as they specialize in creation and implementation of Applications such as KMS for different firms. The researcher took a purposive sample to select a sample of 30 ICT consultancy firms that have implemented Knowledge management Systems in various organizations. The targeted respondents were ICT heads and system developers.

3.3 Data collection

Primary data was collected from the respondents where the informants were ICT experts (ICT Managers and System developers). This is because they have the experience and knowledge in KMS implementation. The study adopted a purposive sampling technique to identify the respondents from a list of the ICT consultancy firms in Nairobi area. The data collection

instrument used was questionnaire which was divided into four sections. Section one comprised of demographic and operation information of both the respondents and the firms they worked for, while section two collected data on the drivers that lead to KMS implementation in firms. Section three of the questionnaire captured data on likely sources of implementation challenges of KMS while section four looked at the strategies that if put in place, they will counter these challenges.

3.4 Data Analysis

Upon reception of the filled in questionnaires, the data collected was coded and keyed in using Statistical Package for the Social Sciences (SPSS) software. Data relating to demographics was analyzed using descriptive statistics (frequencies, percentages, mean and standard deviations). Data were presented using Cross tabulations to establish any possible relationships between some demographic factors. Data relating to drivers, challenges and strategies of KMS implementation were analyzed using both descriptive statistics and factor analysis. Factor analysis describes variability among observed correlated variables in terms of potentially lower number of unobserved variables (Bartholomew et al, 2008).

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of results of the study. The research targeted ICT Consulting firms in Nairobi. A sample of 30 firms was targeted from which data was collected using self-administered questionnaires. The targeted respondents were ICT managers and System Developers. The purpose of this study was to determine the drivers of implementation of Knowledge management systems in firms, investigate the challenges that are faced during the process as well as the strategies that can be applied to overcome those challenges. The study was geared towards filling in the knowledge gap by answering these questions: What are the drivers for implementation of KMS in Kenya? What are the challenges faced in KMS implementation? What strategies can be put in place to overcome these challenges in KMS implementation in Kenya? Data collected was coded and analyzed using SPSS software and findings presented using frequency tables and percentages which formed the basis for discussions, conclusions and recommendations.

4.2 Demographics

This section covers the background information of the respondents. It deals with the demographic and educational factors that determine the drivers of KMS implementation. These factors are: Age, gender, Years of experience, educational level and duration of organizations operations.

4.2.1 Age distribution of respondents

The respondents were asked to indicate their age. The data findings are presented in Table 4.1

Table 4.1: Age distribution of respondents

Age in years		Frequency	Percent
Valid	18-25	5	15.6
	26-30	16	50.0
	31-35	6	18.8
	36-40	4	12.5
	Over 40	1	3.1
	Total	32	100.0

From the study, it was revealed that majority of the people involved in KMS implementation range between 26-30 years of age. This implies that these firms have relatively young employees and therefore they require KMS to capture tacit knowledge in terms of experience, learning, interaction and technical knowledge for references in future.

4.2.2 Gender distribution of respondents

From the findings, both genders were represented in the respondents chosen. As indicated by Table 4.2, there were fewer women respondentsindicated by 37.5 % as compared to men who were 62.5 %.

Table 4.2: Gender distribution of respondents

Gender		Frequency	Percent
	Male	20	62.5
Valid	Female	12	37.5
	Total	32	100.0

4.2.3 Level of education of the respondent

The results from Table 4.3 indicate that most respondents were degree and masters holders with 46.9 % and 37.5 % respectively. This indicates high literacy levels in respect of the respondents in the field of KMS implementation.

Table 4.3 Level of education respondents

Level of education		Frequency	Percent
Valid	PHD	1	3.1
	Masters	12	37.5
	Degree	15	46.9
	Diploma	4	12.5
	Total	32	100.0

4.1.1 Cross tabulation of level of education respondents & years of firm in consultancy

Table 4.4 shows a cross tabulation between the level of education respondents & years of firm in consultancy. It indicates that firms that are new in the industry had respondents with degree as compared to the ones that have been in the industry for long.

Table 4.4: Cross tabulation of Level of education and firms years of operation

		Level of education of the respondent			
		PHD	Masters	Degree	Diploma
Years the firm has been in consultancy	0-5	1	1	5	
	6-10		3		2
	11-15		1	4	
	16-20		2	3	
	Over 20		4	1	2

4.3 Drivers of implementation of KMS

The respondents were required to indicate the extent to which these drivers influence the decision towards implementing Knowledge Management Systems by organizations. The responses were rated on a five point Likert scale where 1-No extent, 2-Small extent, 3-Moderate extent, 4-Large extent and 5-Very Large extent. The Means and standard deviations were calculated from the responses and means were interpreted using the same scale as the responses so that means of 3 would be taken to mean moderate extent and 4 to mean Large extent.

From the findings as shown in Table 4.5 most of the respondents pointed out that the need to create and sustain strategic competitive advantage and presence of Information technology infrastructure have influenced the decision towards implementing Knowledge Management systems to a very large extent as indicated by the means of 4.23 and 4.13 respectively. The need to create innovation, need for 24/7 Access to Information as well as Aim to leverage best practices are also key drivers to a large extent as indicated by the means of 4.00, 4.00 and 4.03 respectively.

The need to make of informed decisions, business Continuity, need to capture and retain employee knowledge as well as improving collaboration in production have also influenced the decision but in a moderate extent as indicated by the means of 3.53, 3.87, 3.60 and 3.50 respectively. This indicates that firms in Kenya have been able to overcome the dynamism of business environments which has a mean of 3.17. The need to create a learning organization has not triggered the need for KMS implementation as it has a low mean of 2.97

Table 4.5: Descriptive statistics of KMS implementation

Drivers of KMS implementation in firms	Mean	Std. Deviation
Need to create and sustain strategic Competitive advantage	4.23	.935
To capture employee knowledge	3.70	1.088
To retain employee knowledge	3.87	1.008
Key to company's business strategy	3.53	1.224
To create innovation	4.00	1.114
Knowledge creation	3.87	.937
knowledge transfer	3.83	1.020
Improving quality in production	3.20	1.064
Dynamism of business environment	3.17	1.147
Aim to leverage best practices	4.03	.999
Improve collaboration in product development	3.50	1.042
Need to make of informed decisions	3.53	.937
Growth of the business and retention of market share	3.90	1.125
Need for 24/7 Access to Information	4.00	1.114
Business Continuity	3.60	.932
Better customer service	4.00	.871
Presence of Information technology infrastructure	4.13	.900
Need to create a Learning Organization	2.97	.850
To create Efficiency and Ease of Operations	3.43	1.006

4.3.1 Factor Analysis

Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables (factors). Factor analysis attempts to bring inter-correlated variables together under more general, underlying

variables. More specifically, the goal of factor analysis is to reduce “the dimensionality of the original space and to give an interpretation to the new space, spanned by a reduced number of new dimensions which are supposed to underlie the old ones”; or to explain the variance in the observed variables in terms of underlying latent factors”(Habing 2003: 2). Thus, factor analysis offers not only the possibility of gaining a clear view of the data, but also the possibility of using the output in subsequent analyses (Field 2000). The drivers of Knowledge Management Systems were analyzed as the factors using SPSS version 17. The results are as follows;

4.3.2 Correlation Matrix: Drivers of KMS Implementation

A correlation matrix of variables was conducted where the existence of large correlation coefficients between subsets of the variables suggest that the variables could be measuring aspects of the same underlying dimensions.

The findings indicate that need to retain employee knowledge, transfer knowledge and create innovation had high correlation while others such as improving quality in production has low correlation. According to Field (2000), in correlation matrix, variables have to be intercorrelated without extreme collinearity and singularity. This is to avoid difficulties in determining the unique contribution of the variables to a factor.

Table 4.6 Correlation Matrix drivers for KMS implementation

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19
Q1	1																		
Q2	.342	1																	
Q3	.217	.780	1																
Q4	.550	.124	-.052	1															
Q5	.364	.313	.307	.506	1														
Q6	.273	.467	.492	.154	.495	1													
Q7	.331	.637	.682	.074	.425	.842	1												
Q8	.333	.113	.058	.471	.087	.235	.127	1	.										
Q9	.123	.097	.139	.254	.351	.278	.290	.509	1										
Q10	.434	.390	.278	.154	.341	.484	.445	.350	.326	1									
Q11	.301	.289	.295	.162	.683	.388	.308	.093	.216	.381	1								
Q12	.247	.027	.005	-.076	.132	.123	.204	.235	.364	.349	.353	1							
Q13	.416	.285	.231	.466	.688	.314	.255	.277	.468	.371	.603	.150	1						
Q14	.496	.455	.461	.177	.611	.396	.486	.058	.216	.526	.386	.198	.413	1					
Q15	-.047	.252	.272	.012	.365	.292	.290	.327	.548	.274	.319	.213	.454	.365	1.				
Q16	.254	.328	.118	.065	.071	.296	.194	.186	.311	.119	-.038	.084	.176	.213	.212	1			
Q17	.167	.501	.363	.309	.550	.431	.251	.007	.078	.263	.441	-.210	.525	.344	.354	.308	1		
Q18	-.250	.213	.276	-.015	-.036	-.049	.192	.008	.112	-.080	.058	-.063	.068	.036	-.104	-.233	-.174	1	
Q19	.145	-.003	-.247	-.026	-.369	-.266	-.095	.174	-.005	.054	-.214	.149	-.143	-.092	-.250	.197	-.447	.3	1

4.3.3 Communalities: Drivers of KMS Implementation

Table 4.7 shows the communalities obtained through Principal Component Analysis. Communality is the fraction of variance that each item had in common with other items. The findings indicated that the need to create a learning organization had the highest communality an implication that it has a driven to a large extent the decision towards implementing Knowledge Management Systems as it had the highest communality (.915). The need for 24 hours access to Information had the lowest communality (.593).

Table 4.7: Communalities Drivers for KMS implementation

	Initial	Extraction
Need to create and sustain strategic Competitive advantage	1.000	.872
To capture employee knowledge	1.000	.804
To retain employee knowledge	1.000	.800
Key to company's business strategy	1.000	.861
To create innovation	1.000	.841
Knowledge creation	1.000	.649
knowledge transfer	1.000	.794
Improving quality in production	1.000	.683
Dynamism of business environment	1.000	.806
Aim to leverage best practices	1.000	.599
Improve collaboration in product development	1.000	.726
Need to make of informed decisions	1.000	.785
Growth of the business and retention of market share	1.000	.754
Need for 24/7 Access to Information	1.000	.593
Business Continuity	1.000	.768
Better customer service	1.000	.706
Presence of Information technology infrastructure	1.000	.800
Need to create a Learning Organization	1.000	.915
To create Efficiency and Ease of Operations	1.000	.727

Extraction Method: Principal Component Analysis.

4.3.4 Total Variance Explained: Drivers of KMS Implementation

Table 4.8 was extracted through Principal Component Analysis. Out of the possible 19 factors, 6 of them were extracted. These factors had eigenvalues of above one indicating that they are significant to the study under analysis. From the findings it is clear that the first factor had the

greatest impact with a variance of 32.113 %. The lowest factor among the significant 6 had a variance of 6.834 %. Overall, these six factors had a general impact represented by a variance of 61.972%.

Table 4.8: Total Variance Explained Drivers for KMS Implementation

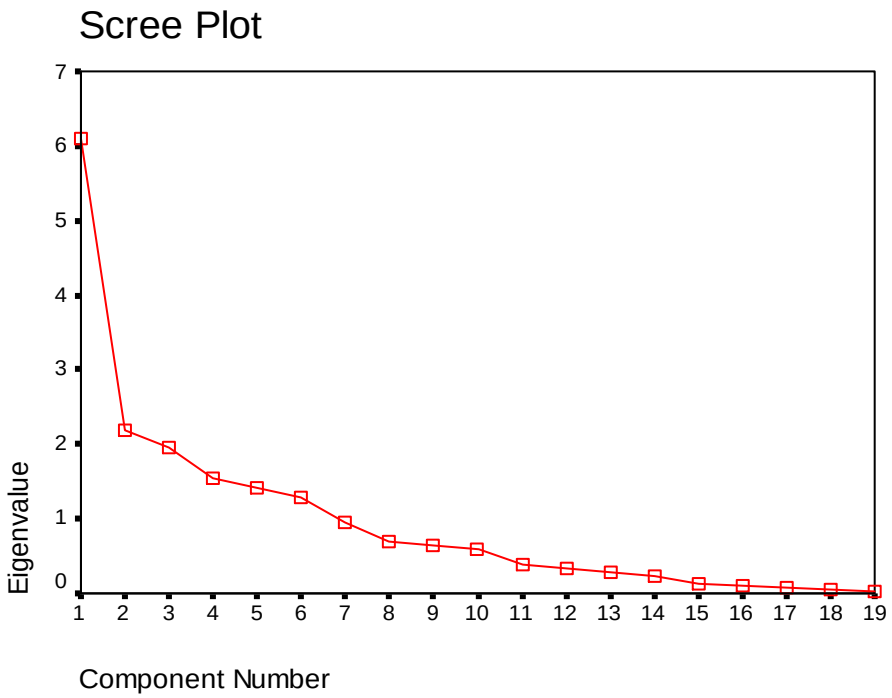
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.102	32.113	32.113	6.102	32.113	32.113
2	2.187	11.509	43.622	2.187	11.509	43.622
3	1.944	10.230	53.853	1.944	10.230	53.853
4	1.543	8.120	61.972	1.543	8.120	61.972
5	1.410	7.421	69.393	1.410	7.421	69.393
6	1.299	6.834	76.228	1.299	6.834	76.228
7	.952	5.013	81.240			
8	.703	3.699	84.940			
9	.649	3.418	88.358			
10	.587	3.091	91.449			
11	.376	1.978	93.427			
12	.336	1.769	95.196			
13	.294	1.545	96.741			
14	.224	1.177	97.918			
15	.141	.741	98.659			
16	.110	.580	99.238			
17	.083	.438	99.676			
18	.041	.216	99.892			
19	.021	.108	100.000			

Extraction Method: Principal Component Analysis.

4.3.5 Scree plot: Drivers of KMS Implementation

The scree plot presents a plot of the factors Eigen values against the components numbers. As indicated by the plot in Figure 4.1, the curve gradually flattens after the sixth component until the 19th component. This implies that the, first six factors have a significant impact. They have radically driven organizations into implementing Knowledge Management Systems

Figure 4.1: Scree Plot Drivers for KMS implementation



4.3.6 Component Matrix: Drivers of KMS Implementation

As Table 4.9 shows, six factors were extracted which had the Eigenvalue greater than 1. The table also indicates the loading activity on each of the six extracted factors.

Table 4.9: Component Matrix Drivers KMS Implementation

	Component					
	1	2	3	4	5	6
Need to create and sustain strategic Competitive advantage	.551	.360	.033	.598	.036	-.280
To capture employee knowledge	.663	-.365	.379	.242	-.056	.162
To retain employee knowledge	.613	-.524	.365	.006	.043	.123
Key to company's business strategy	.408	.422	-.365	.476	.225	.325
To create innovation	.775	-.042	-.415	-.012	.252	-.058
Knowledge creation	.731	-.217	.149	-.011	-.204	-.058

knowledge transfer	.718	-.284	.441	-.009	-.019	-.049
Improving quality in production	.367	.643	.135	-.023	-.082	.331
Dynamism of business environment	.507	.477	.081	-.463	-.082	.308
Aim to leverage best practices	.644	.202	.210	.015	-.013	-.315
Improve collaboration in product development	.650	-.028	-.240	-.195	.366	-.271
Need to make of informed decisions	.278	.453	.277	-.377	.062	-.529
Growth of the business and retention of market share	.718	.211	-.335	-.054	.226	.166
Need for 24/7 Access to Information	.709	-.080	.080	.103	.078	-.246
Business Continuity	.546	.073	-.112	-.589	-.265	.186
Better customer service	.334	.173	.175	.185	-.684	.178
Presence of Information technology infrastructure	.617	-.342	-.449	.143	-.207	.191
Need to create a Learning Organization	.007	-.155	.468	-.133	.665	.461
To create Efficiency and Ease of Operations	-.225	.476	.599	.264	.127	.068

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 11 iterations.

4.3.7 Factor Rotation: Drivers of KMS Implementation

Using Principal component Analysis, the factors were rotated through Varimax with Kaiser Normalization method. The rotation aims to extract the significant factors by iterating them. It allows for identification of the variables that make up the significant factors. It ascertains that there are six factors that have a greater overall impact. The iterations from the above analysis were performed 11 times as indicated by Table 4.10.

Table 4.10: Rotated component Matrix Drivers of KMS implementation

	Component					
	1	2	3	4	5	6
Need to create and sustain strategic Competitive advantage	.295	-.113	.735	-.106	.374	.284
To capture employee knowledge	.878	.022	.161	.048	-.067	-.006
To retain employee knowledge	.861	.159	-.056	.038	-.028	-.169
Key to company's business strategy	-.035	.099	.895	.181	-.126	-.012
To create innovation	.299	.657	.480	.149	.244	-.092
Knowledge creation	.690	.255	.079	.190	.176	.187
knowledge transfer	.846	.065	.017	.133	.233	-.043
Improving quality in production	.031	-.248	.413	.659	.103	.069
Dynamism of business environment	.100	.054	.121	.856	.211	-.044
Aim to leverage best practices	.426	.035	.249	.178	.551	.137
Improve collaboration in product development	.240	.553	.266	.088	.485	-.222
Need to make of informed decisions	.001	-.112	-.073	.264	.835	.025
Growth of the business and retention of market share	.189	.462	.548	.403	.164	-.123
Need for 24/7 Access to Information	.552	.243	.283	.020	.383	.047
Business Continuity	.211	.420	-.146	.707	.130	.099
Better customer service	.343	-.185	.104	.363	-.133	.628
Presence of Information technology infrastructure	.411	.644	.291	.089	-.254	.243
Need to create a Learning Organization	.262	-.258	-.017	.118	-.157	-.861
To create Efficiency and Ease of Operations	-.038	-.816	.168	.055	.121	-.116

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 11 iterations.

4.3.8 Isolation of activities for each factor

Factor isolation involves isolating each of the variables factors and grouping them to extracted factors based on factor loading. Drivers of successful implementation of KMS were isolated into six factors as shown in Table 4.11

Table 4.11: Isolation of activities for Drivers of KMS Implementation

Factor	Variables
Factor 1	To capture employee knowledge To retain employee knowledge knowledge transfer Knowledge creation Need for 24/7 Access to Information Need to create a Learning Organization
Factor 2	To create innovation Improve collaboration in product development Presence of Information technology infrastructure
Factor 3	Key to company's business strategy Need to create and sustain strategic Competitive advantage Growth of the business and retention of market share Business Continuity To create Efficiency and Ease of Operations
Factor 4	Improving quality in production Dynamism of business environment Need to make of informed decisions
Factor 5	Aim to leverage best practices
Factor 6	Better customer service

Factor 1**:** Indicates that to a very large extent majority of firms implement Knowledge Management Systems due to the need to capture employee knowledge, to retain employee knowledge, transfer knowledge, to create a learning organization as well as the need to access to Information within 24 hours.

Factor 2: Indicates that a few firms implement Knowledge Management Systems to create innovation, improve collaboration in product development and others are driven by the presence of Information technology infrastructure.

Factor 3**:** Indicates that firms to a large extent implement Knowledge Management Systems as a key to company's business strategy, due to the need to create and sustain strategic Competitive advantage, growth of the business and retention of market share as well as to create efficiency and ease of operations.

Factor 4: This factor indicates that a few firms implement KMS to improve quality in production, the need to make of informed decisions and due to the dynamism of business environment.

Factor 5: Indicate that not many firms implement the systems due to the need for better customer service and can be generalized as an organization's Best Practices

Factor 6: Indicate that few firms implement with the aim to leverage best practices.

Further, these factors have been summarized in Table 4.12

Table 4.12: Factor Themes

Factor 1	Knowledge Management
Factor 2	Innovation
Factor 3	Business Continuity
Factor 4	Business Environment
Factor 5	Best Practices
Factor 6	Customer Service

4.4 Challenges facing KMS implementation

This portion of the study required the respondents to indicate the extent to which these challenges face the process of Knowledge Management Systems. The responses were rated on a five point Likert scale where 1 represented No extent, 2-Small extent, 3- Moderate extent, 4-Large extent and 5-Very Large extent. Table 4.11 below represents the descriptive Statistics of Challenges facing KMS implementation in firms. The Means and standard deviations were calculated from the responses and means were interpreted using the same scale as the responses so that means of 3 would be taken to mean moderate extent and 4 Large extent.

4.4.1 Descriptive Statistics of Challenges facing KMS implementation

The findings as shown in Table 4.13 indicated that most of the respondents were in agreement that the key challenges faced in implementing KMS are knowledge loss through turnover and early retirement with a mean of 3.97, insufficient amount of funding for knowledge management projects at 4.16 as well as the lack of a knowledge sharing culture (3.97). Difficulties in defining structures for knowledge creation, lack of motives in knowledge creation and lack of trust and openness among employees were factors that had the least impact with means of 3.31, 3.03 and 3.34 respectively.

Table 4.13: Descriptive Statistics of Challenges facing KMS implementation

	Mean	Std. Deviation
Limited Information technology to facilitate sharing of knowledge	3.88	1.040
Lack of a knowledge sharing culture	3.97	.861
Insufficient skills of the Chief Knowledge Management Officer to identify the key knowledge sources within the organization.	3.72	.991
Lack of trust and openness among employees	3.34	.902
Lack of Management support & commitment	3.59	1.043
Lack of understanding of knowledge management by employees	3.81	1.030
Lack of reward and recognition for knowledge sharing	3.56	.840
Employee Hoarding of knowledge	3.66	1.234
Best knowledge not accessible	3.44	1.162
Lack of time for knowledge sharing	3.63	1.100
Lack of knowledge management team	3.81	.931
Inadequate skill in knowledge management initiatives	3.94	1.105
Lack of motives in knowledge creation	3.03	.897
Unwillingness to rely on knowledge alone	3.38	1.040
Insufficient amount of funding for knowledge management projects	4.16	.954
Knowledge loss through turnover and early retirement	3.97	1.092
Lack of awareness of associated benefits of KMS implementation	3.75	.916
Difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult	3.31	.859
The knowledge management context makes it difficult for traditional systems development and implementation methodologies	3.19	.965

4.4.2 Correlation Matrix of Challenges facing KMS implementation

From the findings, the results indicate that Lack of motives in knowledge creation, the loss of knowledge due to high turnover and early retirement as well as lack of reward and recognition are the key challenges facing implementation of KMS in firms. This is indicated by their high correlations of .0709, 0.655 and 0.535 respectively. This is indicated in the Table 4.14

Table 4.14: Correlation Matrix challenges facing KMS implementation

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	19
Q1	1																		
Q2	.068	1																	
Q3	.215	.405	1																
Q4	.082	.264	.436	1															
Q5	.130	.381	.385	.530	1														
Q6	-.083	.248	.357	.176	.347	1													
Q7	-.139	.337	.390	.418	.122	.275	1												
Q8	-.311	.475	.208	.602	.540	.303	.535	1											
Q9	.447	.272	.222	.375	.205	-.010	.301	.356	1										
Q10	.381	.055	.255	.232	.285	.278	.236	.163	.486	1									
Q11	.208	.475	.535	.387	.251	.400	.304	.251	.347	.433	1								
Q12	.218	.371	.278	.475	.453	.216	.213	.338	.549	.458	.709	1							
Q13	-.169	.001	.119	.305	.221	.356	.104	.359	.110	.045	.316	.327	1						
Q14	.104	.086	.043	.374	.234	.128	.120	.280	.207	.296	.108	.330	.160	1					
Q15	.508	.124	.525	.385	.196	.326	.289	.074	.518	.457	.542	.377	.258	.102	1				
Q16	.536	.239	.379	.470	.413	.253	.266	.088	.443	.581	.406	.586	.067	.352	.655	1			
Q17	.169	.276	.382	.381	.059	.120	.398	.064	.197	.288	.359	.335	-.029	.407	.341	.444	1		
Q18	-.316	.057	.220	.356	.074	.287	.285	.257	-.077	-.248	.358	.157	.405	.009	.214	.011	.226	1	
Q19	-.201	-.420	.124	-.188	-.178	.329	.025	-.215	-.334	-.144	-.175	-.321	.142	-.040	.107	-.117	.055	.355	1

4.4.3 Communalities of Challenges facing KMS implementation

From the findings in Table 4.15, employee hoarding of knowledge and the context makes it difficult for traditional systems development and implementation methodologies have the highest extraction factors of .850 and .794 respectively. This indicate that these factors have great impact in terms of challenges facing KMS implementation

Table 4.15: Communalities challenges facing KMS implementation

	Initial	Extraction
Limited Information technology to facilitate sharing of knowledge	1.000	.765
Lack of a knowledge sharing culture	1.000	.778
Insufficient skills of the Chief Knowledge Management Officer to identify the key knowledge sources within the organization.	1.000	.714
Lack of trust and openness among employees	1.000	.669
Lack of Management support & commitment	1.000	.747
Lack of understanding of knowledge management by employees	1.000	.758
Lack of reward and recognition for knowledge sharing	1.000	.627
Employee Hoarding of knowledge	1.000	.850
Best knowledge not accessible	1.000	.647
Lack of time for knowledge sharing	1.000	.636
Lack of knowledge management team	1.000	.767
Inadequate skill in knowledge management initiatives	1.000	.738
Lack of motives in knowledge creation	1.000	.774
Unwillingness to rely on knowledge alone	1.000	.748
Insufficient amount of funding for knowledge management projects	1.000	.794
Knowledge loss through turnover and early retirement	1.000	.761
Lack of awareness of associated benefits of KMS implementation	1.000	.775
Difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult	1.000	.794
The knowledge management context makes it difficult for traditional systems development and implementation methodologies	1.000	.842

4.4.4 Total Variance Explained: Challenges facing KMS Implementation

As indicated by Table 4.16, there are 6 factors that were extracted as having Eigenvalues greater than 1. This shows that out of the factors shown, six of them had the greatest impact as challenges facing implementation of knowledge Management Systems. Factor 1 had the highest variance percentage of 31.472 while the lowest had 5.705 %. Cumulatively, the extracted factors had 74.654 % impact.

Table 4.16: Total Variance explained Challenges facing KMS implementation

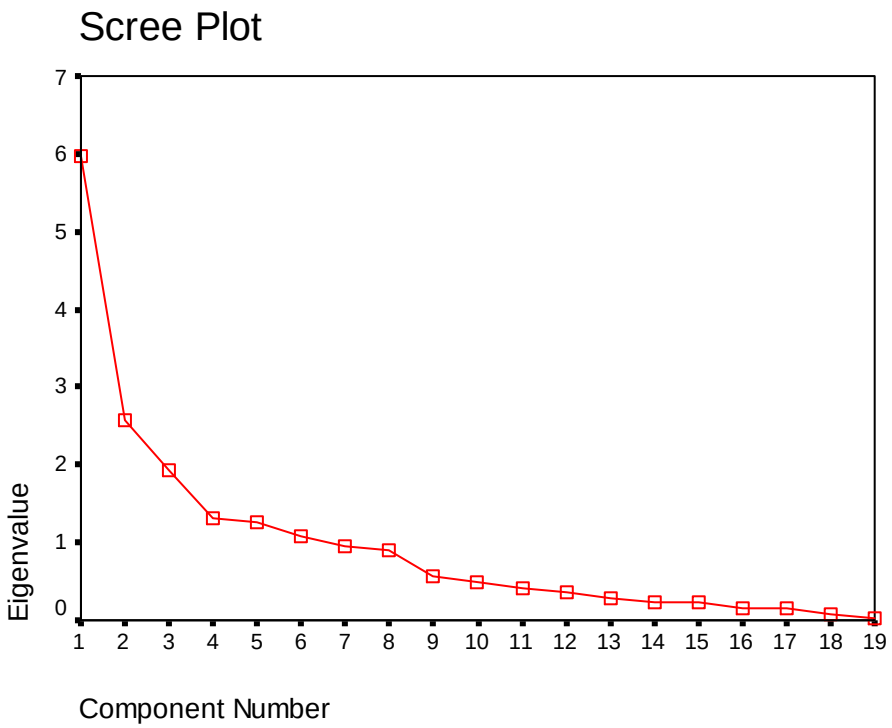
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.980	31.472	31.472	5.980	31.472	31.472
2	2.585	13.605	45.077	2.585	13.605	45.077
3	1.942	10.221	55.298	1.942	10.221	55.298
4	1.323	6.964	62.261	1.323	6.964	62.261
5	1.271	6.687	68.949	1.271	6.687	68.949
6	1.084	5.705	74.654	1.084	5.705	74.654
7	.954	5.021	79.675			
8	.892	4.695	84.371			
9	.560	2.950	87.321			
10	.480	2.526	89.847			
11	.401	2.110	91.957			
12	.354	1.861	93.818			
13	.292	1.535	95.353			
14	.242	1.274	96.627			
15	.229	1.206	97.833			
16	.155	.816	98.649			
17	.153	.804	99.453			
18	.068	.358	99.811			
19	.036	.189	100.000			

4.4.5 Scree plot

The scree plot presents a plot of the factor Eigen values against the components numbers. As indicated by the plot in Figure 4.2, the curve gradually flattens after the sixth component until

the 19th component. This implies that the, first six factors have a significant impact. These are the factors that were felt to have a great impact as challenges facing the implementation process.

Figure 4.2: Scree Plot Challenges facing KMS implementation



4.4.6 Component Matrix

As Table 4.17 shows, six factors were extracted which had the Eigenvalue greater than 1. The table also indicates the loading activity on each of the six extracted factors.

Table 4.17: Component Matrix challenges facing KMS implementation

	Component					
	1	2	3	4	5	6
Limited Information technology to facilitate sharing of knowledge	.325	-.760	.252	.004	-.135	.004
Lack of a knowledge sharing culture	.525	.075	-.436	-.500	-.191	.139

Insufficient skills of the Chief Knowledge Management Officer to identify the key knowledge sources within the organization.	.631	.119	.274	-.390	-.158	.225
Lack of trust and openness among employees	.723	.205	-.186	.096	.230	-.092
Lack of Management support & commitment	.584	.106	-.310	.242	-.196	.450
Lack of understanding of knowledge management by employees	.453	.420	.296	.122	-.256	.456
Lack of reward and recognition for knowledge sharing	.531	.322	-.039	-.385	.302	.016
Employee Hoarding of knowledge	.544	.472	-.557	.086	.065	.096
Best knowledge not accessible	.619	-.381	-.172	.056	-.018	-.293
Lack of time for knowledge sharing	.592	-.418	.116	.220	.035	.217
Lack of knowledge management team	.746	.059	.119	-.165	-.320	-.252
Inadequate skill in knowledge management initiatives	.763	-.117	-.164	.188	-.112	-.260
Lack of motives in knowledge creation	.345	.485	.076	.523	-.237	-.290
Unwillingness to rely on knowledge alone	.408	-.048	-.099	.407	.623	.120
Insufficient amount of funding for knowledge management projects	.685	-.184	.499	-.003	-.154	-.136
Knowledge loss through turnover and early retirement	.736	-.374	.215	.101	.102	.108
Lack of awareness of associated benefits of KMS implementation	.529	-.040	.250	-.319	.571	-.066
Difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult	.268	.705	.273	-.057	.027	-.383
The knowledge management context makes it difficult for traditional systems development and implementation methodologies	-.186	.429	.742	.118	.131	.204

Extraction Method: Principal Component Analysis. a 6 components extracted.

4.4.7 Factor Rotation

The findings showed that six factors have a greater overall impact as represented by Table 4.18. The rotation aims to extract the significant factors by iterating them. It allows for identification of the variables that make up the significant factors. The iterations from the analysis were performed in 9 times.

Table 4.18: Rotated component Matrix Challenges facing KMS implementation

	Component					
	1	2	3	4	5	6
Limited Information technology to facilitate sharing of knowledge	.810	-.107	-.271	-.103	.107	-.052
Lack of a knowledge sharing culture	.054	.520	-.069	.431	.520	-.206
Insufficient skills of the Chief Knowledge Management Officer to identify the key knowledge sources within the organization.	.400	.583	.064	.386	-.107	-.221
Lack of trust and openness among employees	.207	.418	.370	.270	.264	.416
Lack of Management support & commitment	.191	.030	.085	.783	.218	.207
Lack of understanding of knowledge management by employees	.173	.183	.263	.686	-.389	-.056
Lack of reward and recognition for knowledge sharing	.009	.745	.130	.164	.074	.151
Employee Hoarding of knowledge	-.214	.320	.342	.560	.413	.318
Best knowledge not accessible	.567	.126	.159	-.015	.505	.171
Lack of time for knowledge sharing	.683	.021	-.085	.270	.062	.293
Lack of knowledge management team	.517	.393	.451	.205	.228	-.218
Inadequate skill in knowledge management initiatives	.520	.147	.412	.203	.445	.194
Lack of motives in knowledge creation	.050	-.135	.827	.234	-.047	.113
Unwillingness to rely on knowledge alone	.170	.118	.036	.103	.012	.832
Insufficient amount of funding for knowledge management projects	.782	.269	.295	.065	-.121	-.066
Knowledge loss through turnover and early retirement	.766	.227	.003	.196	.047	.284
Lack of awareness of associated benefits of KMS implementation	.328	.716	-.031	-.162	-.084	.347
Difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult	-.154	.431	.727	-.037	-.226	-.059
The knowledge management context makes it difficult for traditional systems development and implementation methodologies	-.082	.074	.176	-.005	-.894	-.007

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 9 iterations.

4.4.8 Isolation of activities for each factor

Factor isolation involves isolating each of the variables factors and grouping them to extracted factors based on factor loading. Challenges facing implementation of KMS were isolated into six factors as shown in Table 4.19

Table 4.19: Isolation of activities for Challenges facing KMS Implementation

Factor	Variables
1	Limited Information technology to facilitate sharing of knowledge Best knowledge not accessible Lack of knowledge management team Lack of time for knowledge sharing Inadequate skill in knowledge management initiatives Insufficient amount of funding for knowledge management projects Knowledge loss through turnover and early retirement
2	Insufficient skills of the Chief Knowledge Management Officer to identify the key knowledge sources within the organization. Lack of reward and recognition for knowledge sharing Lack of awareness of associated benefits of KMS implementation Difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult
3	Lack of motives in knowledge creation
4	Lack of Management support & commitment Employee Hoarding of knowledge The knowledge management context makes it difficult for traditional systems development and implementation methodologies
5	Lack of a knowledge sharing culture
6	Lack of trust and openness among employees Unwillingness to rely on knowledge alone

Factor 1: Indicates several ICT consultant firms face challenges in the process of KMS implementation. These challenges are limited Information technology to facilitate sharing of knowledge; the best knowledge is not accessible, lack of knowledge management team, lack of time for knowledge sharing, inadequate skill in knowledge management initiatives, insufficient amount of funding for knowledge management projects as well as knowledge loss through turnover and early retirement.

Factor 2: Indicates that a number of firms face insufficient skills of the chief knowledge management officer to identify the key knowledge sources within the organization, others lack reward and recognition for knowledge sharing, Lack of awareness of associated benefits of KMS implementation. There are also difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult.

Factor 3: Indicates that some firms face the challenge of lack of motives in knowledge creation.

Factor 4: Indicates that a number of firms lack management support & commitment, employee Hoard knowledge and the knowledge management context makes it difficult for traditional systems development and implementation methodologies.

Factor 5: Indicates that a number of firms face the challenge of lack of a knowledge sharing culture.

Factor 6: Indicate that some firms lack trust and openness among employees as well as unwillingness to rely on knowledge alone.

These factors have further been summarized in Table 4.20

Table 4.20: Factor Themes

Factor 1	Limited Resources
Factor 2	Knowledge Management Awareness
Factor 3	Demotivation
Factor 4	Management Support
Factor 5	Cultural Limitations
Factor 6	Employee Perception

4.5 Strategies for KMS implementation

This section required the respondents to indicate the extent to which these strategies if put in place could help overcome the challenges that face the implementation of KMS. Responses were rated on a five point Likert scale where 1-No extent, 2-Small extent, 3-Moderate extent, 4-Large extent and 5-Very Large extent. The Means and standard deviations were calculated from the responses and means were interpreted using the same scale as the responses so that means of 3 would be taken to mean moderate extent.

4.5.1 Descriptive Statistics Strategies for KMS implementation

From the findings, respondents were in agreement that provision of technical and organizational infrastructure, employee training on how to use Information technology tools as well as provision of technical and organizational infrastructure to a very large extent were strategies that can possibly help overcome the challenges faced during KMS implementation. Table 4.21 indicates that these factors had the highest means of 4.22, 4.38 and 4.22 respectively.

Table 4.21: Descriptive statistics Strategies for KMS implementation

	Mean	Std. Deviation
Provision of technical and organizational infrastructure	4.22	.832
Employee training on how to use Information technology tools	4.38	.833
Provision of lessons on the benefits of KMS to the management and other employees	4.19	.821
Encouraging information exchange among employees	4.22	.615
Enhance use of social media as a knowledge source	3.97	.967
Clear purpose and language during system implementation	3.44	1.190
Thorough recruitment of Knowledge Management specialists	4.22	.792
Staff retreats and informal conferences to create trust and openness among employees	4.22	.941
Creating reward systems to recognize those sharing knowledge within the organization.	4.19	.896
Allow access to data warehouses to make knowledge accessible to all	4.34	.701
Companies should offer employee training and development sessions to enhance knowledge sharing among employees	4.50	.622
Employees to be encouraged to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related	4.16	.723
Employees to be encouraged to share experiences	4.00	.718
Employees to be encouraged to share their past successes and failures.	4.06	.716
Management to provide a work environment where employees meet to share ideas	4.34	.701
Inclusion of customers' Feedback during creation of Knowledge repositories	4.13	.751
Provision of procedures for transferring best practices	4.44	.504
Use of multiple channels for knowledge transfer	4.28	.634
Developing a knowledge sharing culture	4.34	.653
Constantly increase professional challenges to enhance more understanding	3.28	1.023
Increase top management awareness of Knowledge Management	4.28	.683
Allocation of resources towards a knowledge	4.63	.609

4.5.2 Correlation Matrix: Strategies for KMS implementation

From the findings, provision of technical and organizational infrastructure has the highest correlation factor of .716 while factors such as management to provide a work environment where employees meet to share ideas and provision of lessons on the benefits of KMS to the management and other employees had high correlations as well.

Table 4.22: Correlation Matrix Strategies for KMS implementation

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22
Q1	1																					
Q2	.716	1																				
Q3	.505	.602	1																			
Q4	.199	.008	.036	1																		
Q5	.490	.296	.089	.076	1																	
Q6	-.067	.090	.178	-.251	.096	1																
Q7	.170	-.031	-.016	.143	.009	-.139	1															
Q8	.266	.468	.238	.343	.469	.142	-.326	1														
Q9	.333	.378	.302	.443	.454	.163	-.151	.524	1													
Q10	.365	.325	-.116	.264	.540	.085	-.082	.371	.459	1												
Q11	.467	.374	.126	.126	.080	-.305	.033	.138	.000	.259	1											
Q12	.370	.221	-.051	.288	.422	-.269	.164	.185	.302	.527	.466	1										
Q13	-.270	-.162	-.164	.365	.139	.302	.000	.286	.201	.192	-.217	.186	1									
Q14	-.132	-.365	-.240	.160	.283	.346	.089	-.021	.031	.149	-.072	.167	.627	1								
Q15	.420	.048	.053	.190	.302	-.186	-.140	.176	.202	.146	.407	.463	-.128	.084	1							
Q16	-.097	-.180	.118	-.183	-.172	.262	.386	-.314	-.228	-.452	-.207	-.215	-.120	.045	-.084	1						
Q17	.149	-.019	.107	.241	.095	-.222	.156	-.004	.241	.017	.411	.337	.089	.011	.291	.106	1					
Q18	.124	-.206	.081	.194	.173	-.211	.195	.002	-.096	-.007	.123	.182	-.071	-.040	.356	.059	.208	1				
Q19	.035	-.067	-.004	.043	-.034	.008	-.275	.136	-.224	-.267	-.040	-.049	.000	.160	.297	.107	.018	.071	1			
Q20	-.150	-.203	-.065	-.034	-.186	.426	.240	-.099	-.200	-.139	-.329	-.236	.175	.151	-.094	.372	.066	.222	.092	1		
Q21	.399	.319	.363	-.281	.111	.241	.002	-.199	.016	.128	.114	-.222	-.197	-.103	-.074	.055	-.088	-.040	-.151	-.025	1	
Q22	.422	.095	.210	.162	.144	-.301	.376	-.302	.074	-.066	.255	.284	-.295	-.019	.236	.106	.342	.031	.010	-.032	.262	1

4.5.3 Communalities: Strategies for KMS implementation

From the findings, respondents noted that provision of technical and organizational infrastructure, as well as provision of staff retreats and informal conferences to create trust and openness among employees had among the highest communality extraction factors of .848 and .828 respectively. This is represented in Table 4.23

Table 4.23: communalities Strategies for KMS implementation

	Initial	Extraction
Provision of technical and organizational infrastructure	1.000	.848
Employee training on how to use Information technology tools	1.000	.817
Provision of lessons on the benefits of KMS to the management and other employees	1.000	.762
Encouraging information exchange among employees	1.000	.700
Enhance use of social media as a knowledge source	1.000	.683
Clear purpose and language during system implementation	1.000	.822
Thorough recruitment of Knowledge Management specialists	1.000	.749
Staff retreats and informal conferences to create trust and openness among employees	1.000	.828
Creating reward systems to recognize those sharing knowledge within the organization.	1.000	.707
Allow access to data warehouses to make knowledge accessible to all	1.000	.808
Companies should offer employee training and development sessions to enhance knowledge sharing among employees	1.000	.577
Employees to be encouraged to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related	1.000	.718
Employees to be encouraged to share experiences	1.000	.774
Employees to be encouraged to share their past successes and failures.	1.000	.852
Management to provide a work environment where employees meet to share ideas	1.000	.738
Inclusion of customers' Feedback during creation of Knowledge repositories	1.000	.638
Provision of procedures for transferring best practices	1.000	.531
Use of multiple channels for knowledge transfer	1.000	.823
Developing a knowledge sharing culture	1.000	.769

Constantly increase professional challenges to enhance more understanding	1.000	.670
Increase top management awareness of Knowledge Management	1.000	.669
Allocation of resources towards a knowledge	1.000	.729

Extraction Method: Principal Component Analysis.

4.5.4 Total Variance Explained: Strategies for KMS implementation

From the findings as represented in Table 4.24, seven factors had eigenvalues greater than one indicating that these factors were the most significant in relation to the strategies. The highest factor had a variance of 20.429 % while the lowest had 5.036%. Cumulatively, these factors had 73.692% variance.

Table 4.24: Total variance explained strategies for KMS implementation

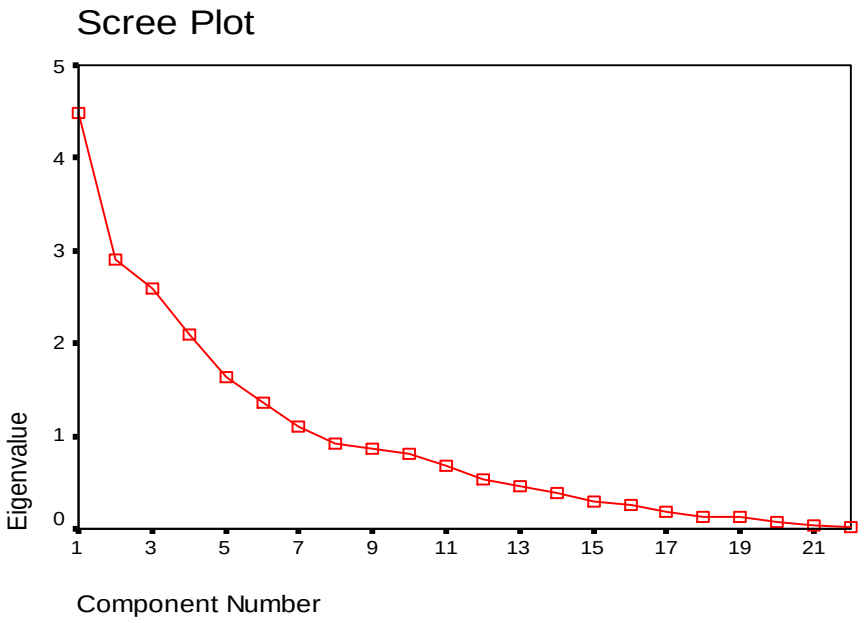
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.494	20.429	20.429	4.494	20.429	20.429
2	2.906	13.209	33.638	2.906	13.209	33.638
3	2.596	11.798	45.436	2.596	11.798	45.436
4	2.098	9.537	54.972	2.098	9.537	54.972
5	1.644	7.473	62.445	1.644	7.473	62.445
6	1.366	6.211	68.656	1.366	6.211	68.656
7	1.108	5.036	73.692	1.108	5.036	73.692
8	.914	4.156	77.848			
9	.870	3.953	81.801			
10	.812	3.692	85.493			
11	.680	3.090	88.582			
12	.539	2.450	91.032			
13	.459	2.087	93.119			
14	.384	1.747	94.866			
15	.300	1.365	96.231			
16	.254	1.156	97.388			
17	.189	.861	98.249			
18	.133	.603	98.852			
19	.121	.551	99.403			
20	.073	.331	99.734			
21	.040	.181	99.915			
22	.019	.085	100.000			

Extraction Method: Principal Component Analysis.

4.5.5 Scree Plot

As indicated by the plot in Figure 4.3, the curve gradually flattens after the seventh component until the 21st component. This implies that the, first seven factors have a significant impact in that if these factors are put in place, they would to a very large extent help overcome the challenges facing KMS implementation by firms.

Figure 4.3: Scree Plot Strategies for KMS implementation



4.5.6 Component Matrix

As Table 4.25 shows, the greatly significant factors were extracted which had the Eigenvalue greater than 1. The table also indicates the loading activity on each of the seven extracted factors.

Table 4.25: Component Matrix Strategies for KMS implementation

	Component						
	1	2	3	4	5	6	7
Provision of technical and organizational infrastructure	.781	-.374	-.152	.240	.068	.107	-.036
Employee training on how to use Information technology tools	.644	-.240	-.565	.052	.027	-.140	.035
Provision of lessons on the benefits of KMS to the management and other employees	.368	-.376	-.438	.328	.270	-.321	.093
Encouraging information exchange among employees	.420	.312	.382	.049	.017	-.522	.077
Enhance use of social media as a knowledge source	.642	.262	-.054	.235	-.044	.333	-.177
Clear purpose and language during system implementation	-.179	.356	-.515	.593	.104	.182	.032
Thorough recruitment of Knowledge Management specialists	-.028	-.304	.397	.482	-.459	-.192	-.137
Staff retreats and informal conferences to create trust and openness among employees	.549	.479	-.299	-.070	.354	-.250	-.123
Creating reward systems to recognize those sharing knowledge within the organization.	.636	.330	-.212	.136	-.069	-.337	.105
Allow access to data warehouses to make knowledge accessible to all	.634	.387	-.105	-.030	-.365	.235	-.235
Companies should offer employee training and development sessions to enhance knowledge sharing among employees	.582	-.326	.221	-.212	-.003	.157	.119
Employees to be encouraged to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related	.674	.125	.445	-.036	-.168	.144	.014
Employees to be encouraged to share experiences	.004	.785	.134	.284	-.100	-.112	.191
Employees to be encouraged to share their past successes and failures.	-.037	.577	.294	.416	-.067	.398	.309

Management to provide a work environment where employees meet to share ideas	.519	-.078	.391	-.028	.466	.300	-.044
Inclusion of customers' Feedback during creation of Knowledge repositories	-.391	-.303	.113	.589	.149	-.088	.058
Provision of procedures for transferring best practices	.337	-.144	.499	.184	.070	-.242	.225
Use of multiple channels for knowledge transfer	.143	-.125	.460	.163	.284	-.005	-.684
Developing a knowledge sharing culture	-.067	.043	.153	-.004	.785	.216	.277
Constantly increase professional challenges to enhance more understanding	-.365	.091	.108	.622	.175	-.091	-.302
Increase top management awareness of Knowledge Management	.134	-.420	-.469	.319	-.184	.344	.027
Allocation of resources towards a knowledge	.314	-.548	.333	.259	-.175	.046	.345

4.5.7 Factor Rotation

Using Principal component Analysis, the factors were rotated through Varimax with Kaiser Normalization method. The rotation aims to extract the significant factors by iterating them. It allows for identification of the variables that make up the significant factors. It ascertains that there are seven factors that have a greater overall impact. The iterations from the analysis were performed 21 times.

Table 4.26: Factor Rotation strategies for KMS implementation

	Component						
	1	2	3	4	5	6	7
Provision of technical and organizational infrastructure	.452	.689	-.145	.328	-.088	.120	.136
Employee training on how to use Information technology tools	.257	.838	-.157	-.044	-.017	-.062	-.135

Provision of lessons on the benefits of KMS to the management and other employees	-.128	.846	.104	.118	.036	.065	.009
Encouraging information exchange among employees	.147	.049	-.068	.174	.796	-.019	.085
Enhance use of social media as a knowledge source	.777	.214	.119	.013	.035	.089	.100
Clear purpose and language during system implementation	.111	.190	.802	-.254	-.167	.026	-.191
Thorough recruitment of Knowledge Management specialists	-.035	-.070	.179	.644	.033	-.465	.282
Staff retreats and informal conferences to create trust and openness among employees	.354	.429	.019	-.475	.504	.194	.027
Creating reward systems to recognize those sharing knowledge within the organization.	.407	.461	.049	-.052	.529	-.107	-.180
Allow access to data warehouses to make knowledge accessible to all	.844	.084	-.084	-.135	.108	-.226	-.025
Companies should offer employee training and development sessions to enhance knowledge sharing among employees	.322	.200	-.515	.354	-.011	.205	.031
Employees to be encouraged to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related	.640	-.052	-.281	.349	.296	.089	.093
Employees to be encouraged to share experiences	.277	-.299	.495	-.100	.539	-.020	-.249
Employees to be encouraged to share their past successes and failures.	.411	-.456	.547	.188	.133	.244	-.255
Management to provide a work environment where employees meet to share ideas	.371	.076	-.222	.211	.079	.620	.331
Inclusion of customers' Feedback during creation of Knowledge repositories	-.431	.044	.498	.380	-.150	.043	.184
Provision of procedures for transferring best practices	.027	.069	-.098	.558	.406	.165	.112
Use of multiple channels for knowledge transfer	.117	-.054	-.007	.087	.070	.101	.886
Developing a knowledge sharing culture	-.177	-.030	.096	-.046	.027	.851	.026

Constantly increase professional challenges to enhance more understanding	-.201	-.078	.669	.056	.009	-.040	.414
Increase top management awareness of Knowledge Management	.161	.443	.152	.178	-.598	-.127	-.135
Allocation of resources towards a knowledge	.044	.186	-.157	.810	-.078	.051	-.049

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 21 iterations

4.5.8 Isolation of activities for each factor

Factor isolation involves isolating each of the variables factors and grouping them to extracted factors based on factor loading. Strategies towards implementation of KMS were isolated into seven factors as shown in Table 4.27

Table 4.27: Isolation of activities for Strategies of KMS Implementation

Factor	Variables
1	Enhance use of social media as a knowledge source Allow access to data warehouses to make knowledge accessible to all Employees to be encouraged to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related problems
2	Provision of technical and organizational infrastructure Employee training on how to use Information technology tools Provision of lessons on the benefits of KMS to the management and other employees Increase top management awareness of Knowledge Management
3	Clear purpose and language during system implementation Employees to be encouraged to share their past successes and failures. Inclusion of customers' Feedback during creation of Knowledge repositories Constantly increase professional challenges to enhance more understanding
4	Thorough recruitment of Knowledge Management specialists Companies should offer employee training and development sessions to

	enhance knowledge sharing among employees Provision of procedures for transferring best practices
5	Encouraging information exchange among employees Staff retreats and informal conferences to create trust and openness among employees Creating reward systems to recognize those sharing knowledge within the organization. Employees to be encouraged to share experiences
6	Developing a knowledge sharing culture Management to provide a work environment where employees meet to share ideas
7	Use of multiple channels for knowledge transfer

Factor 1: Indicates that to overcome the named challenges firms enhance use of social media as a knowledge source, allow access to data warehouses to make knowledge accessible to all, they encourage employees to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related problems.

Factor 2: Indicates that a number of firms use strategies as provision of technical and organizational infrastructure, they provide employee training on how to use Information technology tools, provision of lessons on the benefits of KMS to the management and other employees and increase top management awareness of Knowledge Management.

Factor 3: Indicates that to overcome these challenges a number of firms use clear purpose and language during system implementation, they encourage employees to share their past successes and failures, they include customers' Feedback during creation of Knowledge repositories and constantly increase professional challenges to enhance more understanding.

Factor 4: Indicates that a number of firms perform thorough recruitment of Knowledge Management specialists, offer employee training and development sessions to enhance knowledge sharing among employees and provide procedures for transferring best practices.

Factor 5: Indicates that to overcome KMS implementation challenges, firms should encourage information exchange and sharing experiences among employees, provide staff retreats and informal conferences to create trust and openness among employees. There should also be creation of reward systems to recognize those sharing knowledge within the organization.

Factor 6: Indicates that a number of firms employ the strategies of developing a knowledge sharing culture and management providing a work environment where employees meet to share ideas.

Factor **7:** Indicates that several firms use multiple channels for knowledge transfer.

Further, these factors have been summarized in Table 4. 28

Table 4.28: Factor Themes

Factor 1	Knowledge Access
Factor 2	Infrastructure
Factor 3	Employee Understanding
Factor 4	Employee Training
Factor 5	Knowledge Sharing Environment
Factor 6	Knowledge Sharing Culture
Factor 7	Knowledge Transfer Channel

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings and provides conclusions and recommendations of the study based on the study objectives. These objectives were to establish the drivers of implementation of KMS in Nairobi, to establish the challenges facing KMS implementation in Nairobi, to establish the strategies used in KMS implementation in Nairobi.

5.2 Summary of the findings

Based on the response, the findings indicate that are that majority of the employees in these ICT consultancy firms involved in KMS implementation are between 26-30 years of age with fewer women involved in the process at 37.5 % as compared to men who were 62.5 %. Further, the study showed that most of these employees involved in implementation were degree and masters holders indicating high literacy levels in the field of KMS implementation. A cross tabulation of level of education respondents & years of firm in consultancy indicates that firms that are new in the industry have employed more degree holders as compared to the ones that have been in the industry for long.

The study also revealed that companies consult on KMS needs based on key drivers such as the need to create and sustain competitive advantage, presence of Information Technology infrastructure, need to create innovation and leverage best practices are the key drivers. It also pointed out that during the implementation; firms are faced with challenges which included insufficient funding of Knowledge Management projects, knowledge loss through high turnover and lack of a knowledge sharing culture. To overcome these challenges, the findings also

indicated that there are strategies that can be put in place which included provision of technical and organizational infrastructure, training the employees on the use information technology, management to provide a work environment where employees meet to share ideas and provision of lessons on the benefits of KMS to the management.

5.3 Conclusion

ICT consultants perform Knowledge Management Systems implementation for organizations. Scenario cases indicate that most firms are implementing KMS and that customers' feedback could be useful as a source of knowledge. The study further concludes that implementation of KMS gives firms sustainable competitive advantage to a very large extent. The availability of IT infrastructure is a key factor towards firms implementing KMS. However lack of the sufficient IT skills hinders the success of implementing such systems. Consequently, strategies for the success have been revealed by the study that employee training and development sessions to enhance knowledge sharing among employees can be useful to overcome the named challenges.

5.4 Recommendations

Given the above summarized findings, it has been found that KMS implementation practices are carried out by ICT consultancy firms in Nairobi to a great extent. As indicated by the findings, there are some key drivers that lead firms to implementing KMS. However the process of implementing KMS is faced by challenges and to overcome the challenges, these firms should offer employee training and development sessions to enhance knowledge sharing among employees.

5.5 Recommendations for Further Research

Further research is necessary as the findings were based on a relatively small sample that may have influenced the nature of the results obtained. There is therefore the need to expand the sample size to carry out the research in ICT consultancy firms in other regions outside Nairobi. Further, research can be conducted focusing on other practices other than implementing Knowledge Management Systems in firms.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

QUESTIONNAIRE

My name is Mugereki Perpetua an MBA student at the University of Nairobi. I am conducting a study on **"IMPLEMENTATION OF KNOWLEDGE MANAGEMENT SYSTEMS IN FIRMS IN NAIROBI"** and kindly request for your assistance in completing the following questionnaire. Please fill in the questionnaire by ticking in the boxes or giving information in spaces provided as appropriate. Your response is highly valued.

Section I: General Information

1. Age:

   18-25 [ ]
   26-30 [ ]
   31-35 [ ]
   36-40 [ ]
   Over 40 [ ]

2. Gender:

   Male [ ] Female [ ]

3. Job title:

   _____

4. Job Description:

   _____

5. For how long have you held your position

   0- 5 [ ] 16-20 [ ]
   6-10 [ ] Over 20 [ ]
   11- 15 [ ]

6. What is your highest level of education?
   PhD [ ]

Masters [ ]

Degree [ ]

Diploma [ ]

Certificate [ ]

Others, specify ……..

7. How many years has the Firm been operating in ICT consultancy?
   0- 5 [ ] 16-20 [ ]

   6-10 [ ] Over 20 [ ]

   11- 15 [ ]

   Others Specify ———————————————————

   _____

8. How many employees does the organization have?

   _____

9. What consultancy services does the organization offer?

   Application development [ ]
   Software Implementation [ ]
   Equipment Maintenance [ ]
   Web Design Services [ ]
   Networking Services [ ]
   Internet Services [ ]
   Business I.T. Solutions [ ]
   ICT Supply Services [ ]

   Others Specify ———————————————————

   _____

Section II: Drivers for implementation of Knowledge management Systems

10. To what extent does each of the following drivers influence the decision towards implementing Knowledge Management Systems in organizations in Kenya? Please tick appropriately.

Drivers for implementation of Knowledge management Systems	**No extent**	**Small extent**	**Moderate extent**	**Large Extent**	**Very Large extent**
	1	2	3	4	5
Need to create and sustain strategic Competitive advantage					
To capture employee knowledge					
To retain employee knowledge					
Key to company's business strategy					
To create innovation					
Knowledge creation					
Knowledge transfer					
Improving quality in production					
Dynamism of business environment					
Aim to leverage best practices					
Improve collaboration in product development					
Need to make of informed decisions					
Growth of the business and retention of market share					
Need for 24/7 Access to Information					
Business Continuity					
Better customer service					
Presence of Information technology infrastructure					
Need to create a Learning Organization					
To create Efficiency and Ease of Operations					
Others specify					

Section III: Challenges facing implementation of Knowledge management Systems

11. The following are possible challenges that organizations are likely to face in Knowledge Management Systems implementation. To what extent do you agree concerning the organizations in Kenya? Please tick appropriately.

Challenges in Implementing Knowledge Management Systems in companies	**No extent**	**Small extent**	**Moderate extent**	**Large Extent**	**Very Large extent**
	1	2	3	4	5
Limited Information technology to facilitate sharing of knowledge					
Lack of a knowledge sharing culture					
Insufficient skills of the Chief Knowledge Management Officer to identify the key knowledge sources within the organization.					
Lack of trust and openness among employees					
Lack of Management support & commitment					
Lack of understanding of knowledge management by employees					
Lack of reward and recognition for knowledge sharing					
Employee Hoarding of knowledge					
Best knowledge not accessible					
Lack of time for knowledge sharing					
Lack of knowledge management team					
Inadequate skill in knowledge management initiatives					
Lack of motives in knowledge creation					
Unwillingness to rely on knowledge alone					
Insufficient amount of funding for knowledge management projects					

Knowledge loss through turnover and early retirement					
Lack of awareness of associated benefits of KMS implementation					
Difficulties in defining structures for knowledge creation making requirements gathering for KMS development difficult					
The knowledge management context makes it difficult for traditional systems development and implementation methodologies					
Others specify					

Section IV: Strategies to overcome the Challenges faced during implementation of Knowledge management Systems

12. To what extent can each of these strategies be used to overcome the challenges faced during implementation of Knowledge Management Systems in organizations in Kenya? Please tick appropriately

Strategies to overcome the challenges encountered during KMS implementation	**No extent**	**Small extent**	**Moderate extent**	**Large Extent**	**Very Large extent**
	1	**2**	**3**	**4**	**5**
Provision of technical and organizational infrastructure					
Employee training on how to use Information technology tools					
Provision of lessons on the benefits of KMS to the management and other employees					
Encouraging information exchange among employees					
Enhance use of social media as a knowledge source					
Clear purpose and language during system implementation					
Thorough recruitment of Knowledge Management specialists					
Staff retreats and informal conferences to create trust and openness among employees					

Creating reward systems to recognize those sharing knowledge within the organization.					
Allow access to data warehouses to make knowledge accessible to all					
Companies should offer employee training and development sessions to enhance knowledge sharing among employees					
Employees to be encouraged to use knowledge repositories such as data warehouse as their point of first reference when faced with a work related					
Employees to be encouraged to share experiences					
Employees to be encouraged to share their past successes and failures.					
Management to provide a work environment where employees meet to share ideas					
Inclusion of customers' Feedback during creation of Knowledge repositories					
Provision of procedures for transferring best practices					
Use of multiple channels for knowledge transfer					
Developing a knowledge sharing culture					
Constantly increase professional challenges to enhance more understanding					
Increase top management awareness of Knowledge Management					
Allocation of resources towards a knowledge base					
Others specify					

Your time is highly valued. Thank you

APPENDIX II: ICT CONSULTANCY FIRMS

1. Farwell Consultants
2. Afyainfo
3. AshWoth Technologies
4. Incotech Africa Consultants (K) Ltd
5. Crimsom Technologies
6. Wilcom Systems Kenya Ltd
7. Attika Crafts Agency
8. Asper Worldwide Enterprises
9. Linksoft Technologies
10. Blueweb Technologies
11. Blueprint Technologies
12. Blueline Synergy Limited
13. Definitive Technology Ltd
14. Indra Kenya
15. Delisys Delivery Systems Ltd.
16. Techno Brain Ltd
17. Design Village
18. Designergy Company Limited
19. Invent Technologies Ltd
20. Isolutions Associates
21. Intersat Africa Ltd
22. Integrated Networks and Data Systems Ltd.
23. Institute of Software Technologies
24. Icon Telesec Services Limited

25. Global Link Consultants Limited
26. Fgee Technical Agencies
27. Fairtech Solutions Limited
28. Enterprise Information Management Solutions (EIM)
29. Digital Horizons Ltd
30. Digital Consulting Group Limited
31. Linksoft Communication Systems
32. Kingsoft Company Limited
33. Swift Technologies Limited
34. ICT Consultants Kenya
35. Corporate Consultancy Services in Kenya
36. World Waves Solutions
37. Extend Limited
38. Magnate Ventures Ltd