ADOPTION OF MOBILE TECHNOLOGY FOR KNOWLEDGE MANAGEMENT IN MANUFACTURING FIRMS: A CASE STUDY OF MAHASHAKTI KENYA LIMITED, ATHI RIVER

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DECLARATION

I declare that this document and the research it describes are my original work and that they have not been presented in any other university for academic work.

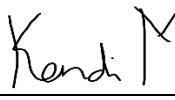
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DEDICATION

In loving memory of my Late Grandfather, Sardar Harbhajan Singh Rehal.

The Masters is complete, and I miss you dearly.

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I would first like to thank God for keeping me healthy, giving me strength, and motivation during this tough year. I would also like to take this opportunity to acknowledge the people who pitched in, in one way or the other to complete this work. To my parents, Harveer Singh Rehal and Pavanjit Kaur Rehal: for all the eternal love, support and care I needed. My brother, Sumit Singh Rehal: for being there whenever I needed help, especially during printing and submission when I had to be away. To my supervisors and other lecturers, Dr. Muchungi, Dr. Gichamba and Mr. Obuhuma: for giving me hope, showing me the right direction towards the completion of my thesis and never giving up on me.

ABSTRACT

Knowledge management is a field with a lot of potential that can benefit individuals as well as different types of organizations. Despite this fact, most organizations in Kenya have focused on knowledge storage, but have not adopted sharing of the stored knowledge. This study examined the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The study was guided by the following objectives: To assess the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River to determine mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River and to investigate the factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The study was anchored on the Diffusion of Innovation Theory. This study employed a descriptive survey design. The study collected data from all the 52 employees at the Mahashakti Kenya Limited based on a census method. The study utilized primary data which was collected using structured questionnaires, key informant interviews and observations. Quantitative data was analyzed using descriptive, correlation and regression statistics. Qualitative data on the other hand, was transcribed, coded into themes and analyzed by use of content analysis. Quantitative data was presented using charts and tables. The study found that mobile technology was used to share information remotely in the company, share timely information and share different types of information. In addition, mobile technology has been efficient in knowledge management within the company. The study also found that the organization used short message services for knowledge management, as well as multimedia messaging services, websites, installable applications, phone calls, emails, WhatsApp, skype, zoom and flash screens. The study further found that the presence of information technology infrastructure and adoption of mobile technology by competitors affected the company's strategy of adopting the technology. However, employee and management attitude did not largely affect the adoption of mobile technology in the company. The study concluded that the extent of mobile technology adoption, mobile technology platforms and factors affecting adoption of mobile technology positively influence knowledge management in Mahashakti Kenya Limited. The study recommends integration of mobile technology to all departments where it had not been integrated, as it has been found to be essential in knowledge management in the company. The study also recommends adoption of other platforms such as SharePoint and DotNet which can enable the company share information more and widely across departments. The study finally recommends training of all employees on mobile technology, to adopt the right attitude towards the technologies used for efficient knowledge management.

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DEFINITION OF TERMS

DotNet .NET Framework is a software framework developed by Microsoft that runs primarily on Microsoft Windows (Gavalas & Economou, 2011).

J2EE It is a platform-independent, Java-centric environment from Sun for developing, building and deploying Web-based enterprise applications online. The J2EE platform consists of a set of services, APIs, and protocols that provide the functionality for developing multi-tiered, web-based applications (Palma et al., 2012).

Knowledge Management It is a process whereby there is creation, sharing, using, and managing the knowledge and information of an organization (Dalkir, 2013).

Mobile Technology It is a form of technology that is mostly used in cellular communication and other related aspects (Park, 2011).

ABBREVIATIONS/ACRONYMS

AI	Artificial Intelligence
ANOVA	Analysis of Variance
BPM	Business Process Management
DCM	Dynamic Case Management
DPC	Double Paper Covered Wire
DPSA	Department of Public Service and Administration
ECM	Enterprise Content Management
GAA	Global Application Management
ICRAF	World Agroforestry Centre
ICT	Information Communication Technology
ISO	International Organization for Standardization
IT	Information Technology
KM	Knowledge Management
KMAP	Knowledge Management Association of the Philippines
KMS	Knowledge Management Systems
KPLC	Kenya Power and Lighting Company
MA	Member Associations
MDI	Management Development Institutes

MMS	Multimedia Messaging Services
NACOSTI	National Commission for Science, Technology and Innovation
NGOs	Non-Governmental Organizations
PDA	Personal Digital Assistant
PEOU	Perceived Ease of Use
REA	Rural Electrification Authority
RHU	Reproductive Health Uganda
SD	Standard Deviations
SIKM	Institutional Knowledge Management
SMEs	Small and Medium Enterprises
SMS	Short Messaging Service
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TIF	Task-Technology Fit
TRA	Theory of Reasoned Action
USSD	Unstructured Supplementary Service Data

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CHAPTER ONE
INTRODUCTION AND BACKGROUND INFORMATION

1.1 Introduction

This chapter presents the background of the concept of mobile technology and knowledge management. It is in this chapter that the background of Knowledge Management (KM), the research problems, purpose of the study, objectives of the study, research questions, hypothesis, significance of the study, scope of the study, delimitations, and limitations of the study, assumptions, and theoretical and conceptual frameworks are discussed.

1.2 Background of the Study

Knowledge Management (KM) is the process of creating, sharing, using, and managing information within an organization (Dalkir, 2013). It is key to an organization's success as it makes the best use of knowledge to achieve organizational objectives. Knowledge management dates to 1991 and is applied in many organizations today (Choi, Lee & Yoo, 2010). Knowledge management can be applied to huge businesses, public institutions and non-profit organizations. It affects day to day life by enabling organizations do things the right way after applying techniques of solving problems and planning. For example, in decision-making, one can look back at similar scenarios and check the decision made versus the outcome of the decision. This will then help to choose the decision that best suits the situation depending on past experiences (Drucker, 2012).

Knowledge management has been applied throughout the world and is enabling organizations attain their goals by helping them manage their knowledge. Because it is not a very old discipline, its adoption is still low especially in emerging markets and many people are not even aware of it (Webb, 2017). In developed countries of Europe

and America, Adams, Tenney and Pew (2017) found that its importance has led organizations that understand it to introduce a new department specifically dedicated to it where the focus is on ways to create, share, use and manage knowledge and information to increase productivity and efficiency. Among the functions of this department is also the retention of knowledge of employees by motivating them to lay out relevant information in a manner that is easier to distribute to others.

In South Africa, Hammel and Hourigan (2017) determined that a few local and provincial government bodies have begun to recognize the importance of developing and implementing information and knowledge management strategies to improve service delivery. A multitude of skills, systems and business processes are required to formally develop and institutionalize a knowledge management program on this scale. Most noticeably, the Department of Public Service and Administration (DPSA) has embarked on a journey to ensure that the case for and benefit of knowledge management in government departments is understood in relation to the environments they operate in. Girard (2015) recommended that in such an environment, it is advised to use mobile technology for KM since information will be distributed faster and such services are usually critical.

In Kenya, knowledge is managed in a very manual manner despite advancements in technology. For example, with the increase of mobile penetration, Garretson *et al*. (2018) found that the mobile penetration in Kenya is at 95%. Omamo, Rodriguez and Muliaro (2018) found that it can be very simple, quick and efficient to share critical information through a small electronic gadget to several people at a very low cost. This can help improve many other business processes as well as give priority to urgent matters. The

quick mode of distribution of information distribution means problems will be taken care of faster due to the correct information being given in a timely fashion to the right people to make their wok simpler.

One of the biggest barriers in Kenya for KM is technology (Garretson *et al*., 2018). Despite the acceptance of KM by people in organizations, technological barriers remain. Lack of technological infrastructure, or improper use of it can have an adverse effect on how knowledge is managed in organizations. Incorporating mobile technology has the potential to simplify the process so that knowledge can be transferred faster even from remote areas that don't have advanced technological infrastructure (Wekesa, Okoth, Mutai & Arudo, 2018). The current technologies used in Kenya for KM are not documented well enough, but what is derived from this research is that the few organizations that have tried to implement KM are doing so using KMS which are desktop applications. This is not enough as a large percentage of business operators are computer illiterate. This calls for a need to fully explore available options that are currently working in the market.

1.2.1 Knowledge Management

Knowledge management is important in handling information and resources efficiently within an organization thus allowing it to gain a competitive advantage (Becerra & Sabherwal, 2014). Such acts require changes in organizational culture, technologies, and techniques as the interaction between those and the people within the organization allows for the successful management of knowledge. There are several organizations worldwide who have implemented knowledge management, yet many organizations especially

within emerging markets do not know about it and the power it possesses (Andreeva & Kianto, 2012).

There are several knowledge management software that enable organizations to utilize captured knowledge for several applications. Most are run on desktop computers where users must log into the system, and privileges are given to people depending on defined hierarchal rules (Laudon & Laudon, 2016). Some of these are linked to online systems so that users can access it at any time and place. Unfortunately, not many have implemented knowledge management systems in their organizations in Kenya (Keengwee & Maxfield, 2017).

With the high penetration of mobile phones in Kenya due to the relatively low cost of acquiring one as well as the low cost of its services, it is unfortunate that its potential use in knowledge management has not yet been explored. With many users of smart mobile phones in the country, and the bursting amount of knowledge within organizations, it is the optimum time to implement knowledge management and incorporate smart phones for easier information sharing and linking it to a desktop-based and online system. Due to the importance of information sharing in some workplaces such as factory-oriented firms, a knowledge management system is of the essence (Roxas & Chadee, 2016). Because the range of literacy levels within such workplaces, a system based on smart phones would allow even low-literacy-level workers to be included so even their knowledge can be captured. With the implementation of knowledge management and the incorporation of feature and smart mobile phones, knowledge can easily be used to improve business processes, make better decisions and accomplish goals much faster in the Kenyan setting within the factory- oriented firms.

1.2.2 Technologies Used for Knowledge Management

Various technologies have been applied globally for knowledge management. In Philippines, Roxas and Chadee (2016) determined that advanced KM stages can have a transformative power in situations where paper and up close and personal groups establish information sharing. Sun innovation was utilized to dispatch the SunPhil Corporate Portal and its knowledge management system, with highlights like report rating, profiling and sifted seek, and community-oriented composing. The time taken to plan recommendations and task documentation has been diminished immensely, and inventive methodologies are being investigated to outfit data activation and constant master contact by means of Personal Digital Assistant (PDA) and Short Messaging Service (SMS) (the Philippines, all things considered, is the world's SMS capital) (Resurreccion & Sy, 2015). SunPhil experts are currently cooperating with customers, sharing their homegrown experience, and mastery in the region of KM. SunPhil is, notwithstanding, taking the KM message to the national dimension through its dynamic help of the Knowledge Management Association of the Philippines (KMAP) (Mohsin & Syed, 2018).

In Ghana, Asiedu *et al*. (2018) noted that Etsy supports sales by using knowledge management technology that has much functionality and can be used in many departments. For the sales team in this example, the technology helps in knowledge sharing by enabling sales representatives to get instant access to whatever knowledge they require to enable the deal to move forward. Some key functions that can be utilized by the sales team include easily organizing content and searching content, posting

questions to the sales team by the user, ensuring the continuous growth of knowledge in the system, utilizing cloud, mobile and social technologies (Osatuyi & Turel, 2018).

In Kenya, the current systems used for KM are mostly desktop applications. These are the most common technologies in the field. KMS is a central point where people in an organization can share items such as documents, files, videos, audios and text. They also have an option of having online discussions/meetings. Some KMS are online-based systems, for example e-learning (Tarus, Gichoya & Muumbo, 2015). Many higher learning institutions are using such systems to offer online education. Most of these systems enable document sharing, online video classes, audio communication among other basic features. Since they are just basic websites, they can be accessed from other devices. Students in this case can access the system online and use it (Tarus, Niu & Mustafa, 2018).

There are still various limitations in the use of technologies; some might opt not to use it due to the screen size. In the case of factories, mobile phones are only used for calls, texts and social media access. Some factories use social media applications such as WhatsApp to share information in various formats. There is no central point as to where knowledge can be managed. Workers in factories hold important information just as other employees, hence the need to capture their knowledge (Keengwee & Maxfield, 2017). The use of mobile technology for KM can help in making the gap smaller.

1.2.3 Mahashakti Kenya Limited, Athi River

Mahashakti Kenya Limited started operation in early year 2016 in Kenya under license and technology from Parent company Mahashakti Energy Ltd. India with repair of

Distribution and Power Transformers. Mahashakti Energy Limited is an ISO 9001 and ISO 14000 Certified organization established in 1994 as an insulated and non-insulated manufacturing unit with conductors, cables and Double Paper Covered Wire (DPC) as its major products. In the process of forward integration and diversification of the product line, it began manufacturing of Distribution Transformers and Electronic Energy meters in 1997 and 2000 respectively (Chakrabarty, 2017).

With the growing trends in power sector and existing technologies in Kenya, this means an opportunity to use the devices for KM in the company. After having mobile phones collecting a lot of information, most businesses are not applying KM that will benefit them. The adoption of mobile technology for KM has not been explored. Information is passed every day, but no KM is applied. This calls for the need to study how this technology can be used hand in hand with KM to benefit the factory just as it would benefit other types of organizations.

1.3 Statement of the Problem

Knowledge management is a field with a lot of potential. It is yet to be widely implemented in Kenya to help organizations reach their goals (Keengwee & Maxfield, 2017). The main problem is that only a few organizations are aware of the field and even fewer implementing it. Those who are using it can see its benefits and how it can provide them with a competitive advantage, but unfortunately that is still a small percentage. Despite the existence of organizations that deal with the training and installation of knowledge management and connected systems, very few have managed to implement it. Even those that implement it do not fully utilize it to its full capacity. Due to the large gap in implementation of KM within organizations in a country like Kenya, the need for

this study exists. This project was meant to close the huge gap of knowledge management in Kenya to improve our economy at large.

There are various studies done on technology and knowledge management such as Dalkir (2013); Gavalas and Economou (2011) and Becerra and Sabherwal (2014). These studies all agree that there has been basic implementation of KM existing as desktop applications (KMS) only. This therefore needs to be extended to mobile technologies since a large percentage of the population now uses these devices and ease of access will allow information to be captured from any location or from anyone, even those with low literacy levels. In addition to that, its services are low in cost and easy to use. Because there is little adoption and implementation of mobile technology to KM in Kenya, this study aimed to examine the adoption of mobile technology for knowledge management, focusing on Mahashakti Kenya Limited, Athi River.

1.4 Purpose of the Study

The purpose of the study was to examine the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The study also determined the adoption of mobile technology for knowledge management, evaluated mobile technology platforms used for knowledge management and investigated the factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

1.5 Objectives of the Study

1.5.1 General Objective

The general objective of this study was to examine the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

1.5.2 Specific Objectives

The study was guided by the following specific objectives;

i. To assess the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.
ii. To determine mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River.
iii. To investigate the factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

1.6 Research Questions

The study was guided by the following research questions;

i. What is the extent of mobile technology adoption in Mahashakti Kenya Limited?
ii. What are the mobile technology platforms used for knowledge management in Mahashakti Kenya Limited?
iii. What are the factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited?

iv. What is the effect of mobile technology on knowledge management in Mahashakti Kenya Limited?

1.7 Hypotheses

Hypothesis is an estimation regarding the relationship among the variables of an observed phenomenon (Azzalini, 2017). The research hypothesis that guided this study was that mobile technology does not significantly improve knowledge management in Mahashakti Kenya Limited. In this regard the null hypotheses were stated as:

H_{O1}: Extent of mobile technology adoption does not significantly improve knowledge management in Mahashakti Kenya Limited.

H_{O2}: Mobile technology platforms do not significantly improve knowledge management in Mahashakti Kenya Limited.

H_{O3}: Factors affecting the adoption of mobile technology do not significantly improve knowledge management in Mahashakti Kenya Limited.

H_{O4}: Mobile technology does not significantly improve knowledge management in Mahashakti Kenya Limited.

1.8 Significance of the Study

This study would provide useful information to the policy makers and stakeholders in manufacturing firms as it would determine if mobile technology can be adopted to manage and improve knowledge in the organizations and extend the same to other institutions. Secondly, the study would be important to the management and employees in Mahashakti Kenya Limited since it would illuminate the mobile technology platforms

that can be used to improve knowledge management in the organization. Managed knowledge is an asset since it would help the organization not only reach its goals but also exceed them. To scholarly work, it is significant to carry out this study since the field is not explored in the country, and it is a critical field for every type of organization today. This would provide literature materials for future scholars. In addition, the study would be significant to knowledge-oriented companies and manufacturing firms in Kenya. This would be by providing relevant information on the extent to which mobile knowledge affects knowledge management through knowledge sharing, and therefore they could devise measures on improving their knowledge sharing techniques.

1.9 Scope of the Study

According to Creswell and Creswell (2017), the scope of the study provides for the boundary of the research in terms of content, sample size, depth, geographical, timeframe and theoretical coverage. The study was carried out in Mahashakti Kenya Limited. The study examined the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. Precisely, the study determined the adoption of mobile technology for knowledge management, evaluated mobile technology platforms used for knowledge management and investigated the factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The study was conducted between October 2018 and July 2019.

1.10 Delimitations

These are elements that the researcher controls and can also affect its results. The delimitations put boundaries on the research and limit its scope (Bell, Bryman & Harley, 2018). This study focused on the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

1.11 Limitations

Bryman (2017) asserts that limitation is a function of the factors that might affect the outcome of the study, but the researcher has no control over them. First, the researcher faced reluctance from the respondents to respond to questions. However, this was addressed by seeking consent from the Mahashakti Kenya Limited and other research authorities to inspire confidence and honesty. The study was also limited to scanty literature on mobile technology in knowledge sharing especially in Kenya. However, the researcher did an extensive literature search regarding the subject and on other areas of comparable nature to the study location.

1.12 Assumptions

The researcher assumed that mobile technology plays a role in knowledge management. In addition, the researcher assumed that mobile technology and knowledge management existed in Mahashakti Kenya Limited. The study further assumed that the concept of mobile technology and knowledge management was understood at the Mahashakti Kenya Limited. The researcher finally assumed that employees at the Mahashakti Kenya Limited would be willing to share information needed without coercion or fear.

1.13 Theoretical Framework

Lewis (2015) defines theoretical framework as a reasoned statement supported by evidence and provides a generalized explanation to an occurrence. The theoretical framework introduces and describes the theory that explains why the research problem under study exists. The study was anchored on the Diffusion of Innovation Theory by Surry (1997). Diffusion refers to the mode by which a technology or innovation is adopted by a certain group of people (Hashim, 2015). Seminal works on this theory point out that diffusion is not dependent on itself but encompasses other theoretical perspectives that define diffusion of innovations (Dingfelder & Mandell, 2011).

According to this theory, four determinants are shown to influence how members of an organization adopt an innovation. These factors include: communication mode use to channel information about the innovation, type of innovation, composition and nature of the group and time (Dingfelder & Mandell, 2011). Diffusion theory gives a framework that facilitates interrogation of why innovations may be adopted by other people and rejected by others. This theory can help to account for factors that might help to integrate technology in knowledge management or those factors that hinder combining knowledge management with technology in companies (Hashim, 2015). In the current study, this helped track flow of technology innovations and the rate of the adoption of these technologies along knowledge management. The rate at which technology is adopted is illustrated by diffusion theory.

1.14 Conceptual Framework

Klenke (2016) observed that a conceptual framework is utilized for understanding the place and direction of a research project. The conceptual framework uses previous research to determine a theory and methodology for a current research. It is more than a literature review. It considers all theories, findings and the contexts for the research question. A conceptual framework helps assess the goals of the research and builds the research questions and methodology. This is done by showing the gaps in the research (Creswell & Clark, 2017).

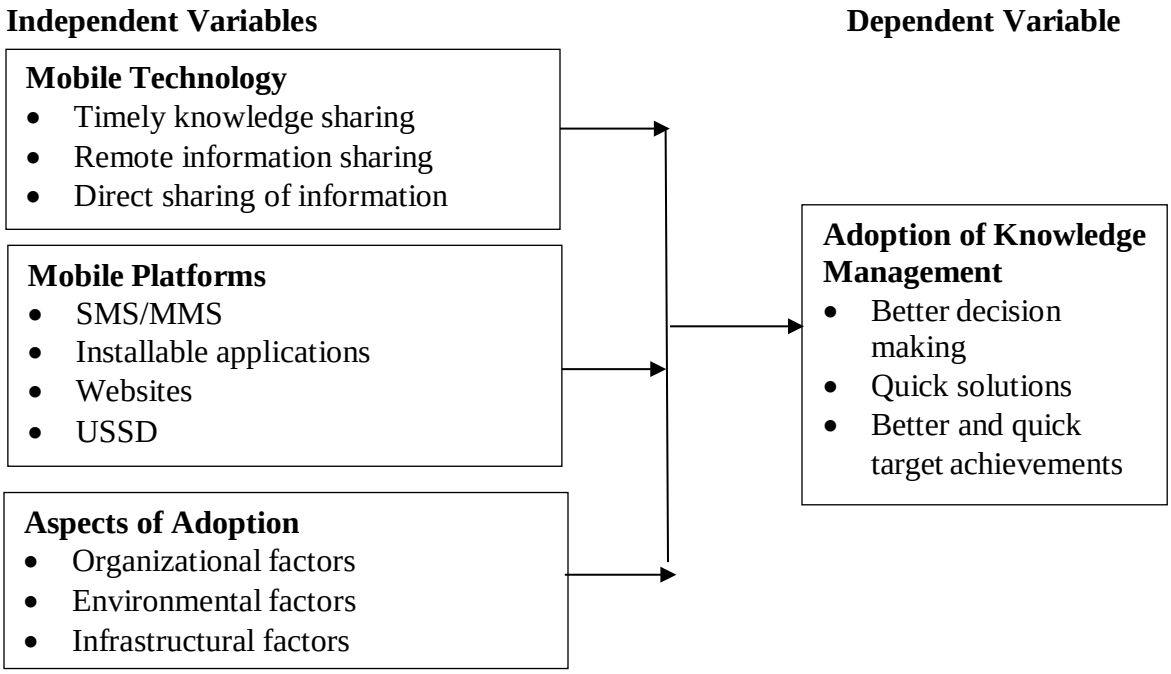


Figure 1-1: Conceptual Framework

This study was conceptualized on the premise that the adoption of mobile technology improves knowledge management and helps the organization achieve its goals faster. Therefore, the dependent variable in this study was knowledge management, and the independent variables were mobile technology, mobile technology platforms and factors affecting mobile technology adoption.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The chapter reviews related literature on the subject studied as previously presented by various researchers, scholars, analysts and authors. There is a large and growing body of literature on mobile technology and knowledge management. The research draws materials from several sources which closely relate to the theme and the objectives of the study. In particular, the chapter is organized as follows; theoretical literature review and empirical review which is arranged in terms based on the three objectives of the study.

2.2 Theoretical Review of Literature

There are various theories underpinning mobile technology and knowledge management. These theories are what organizations use to manage their knowledge. Despite the theory being practiced, the impacts of processes, people and technology on knowledge sharing is what knowledge management is all about. The theories are discussed in this section.

2.2.1 Technology Acceptance Model

This model was first proposed by Davis in 1986. Technology Acceptance Model (TAM) has been vital in determining and explaining technological behavior (Chen, Shing-Han & Chien-Yi, 2011). This approach can be used to explain the reasons surrounding acceptance and rejection of a technology. Further, it offers a basis on which external factors are included in the evaluation of technology performance. TAM specifically observes that; technology use is both directly or indirectly influenced by users' attitudes; expected usefulness gained from technology and convenience or expected ease of use.

The TAM helps in the explanation and prediction of the behavior of the users of new technology; this model is an addition of the Theory of Reasoned Action (TRA) and explains how external variables such attitude, beliefs and intention of use influence the behavior of users of technology (Dai & Kauffman, 2001). The theory posits that what determines adoption of a new technology system is affected either directly or indirectly by the user's attitude, intentions and the user's perception of the usefulness of the system and its ease of use (Davila, Gupta & Palmer, 2003).

Over time, TAM has evolved and the original model has been extended into TAM2 to include aspects of social influence such as image, subjective norms and voluntariness into the explanation of perceived usefulness; cognitive instrumental processes such as result demonstrability, job relevance and output quality are also included in the TAM2 model (Davila, Gupta & Palmer, 2003). This new model has been tested in both mandatory and voluntary settings and the results strongly supported it since it led to 60% user adoption; this study will adopt TAM2 together with TAM as the baseline model (Davis & Venkantesh, 2000).

Davis and Venkantesh (2000) assert that the degree to which the person trusts that a system will advance their performance at work will determine if the individual will adopt the system or not, also the more the individual perceives the technology to be easy to use, the more accepted the technology will be by the users; conversely, if a technology is perceived to be complex or difficult to use, then its adoption rate will be slow. This theory will be suitable to this study since mobile technology is a new phenomenon worldwide, these strategies are mostly simple and easy to use by those who are technologically savvy (Petrocelli, 2013). However, TAM asserts that the adoption of a

technology, in this case mobile technology, is determined by the perception that the user has on its usefulness and ease of adoption (Davis & Venkantesh, 2000). Therefore, the ease of usage of mobile technology and the perception employees and managers have on it determines the adoption of this innovation.

2.2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

The theory is based on the research work of Venkatesh and Zhang (2010). It is believed to be the most rigorous method of evaluating and predicting how the end user will perceive a technology (Venkatesh, Thong & Xu, 2012). This model is based on four major factors of usage and intention (expected performance, social influence, underlying conditions and expected effort). In the current study this theory will be used to evaluate user acceptance of information systems based on whether adoption of mobile technology will improve or decrease the performance of the organization.

2.2.3 Social Exchange Theory

The first theory of the study is the social exchange theory by Cook *et al.* (2013). The social exchange theory is a social psychological and sociological perspective that explains social change and stability as a process of negotiated exchanges between parties (Cook *et al.*, 2013). Social exchange theory posits that human relationships are formed using a subjective cost-benefit analysis and the comparison of alternatives. The theory has roots in ICT, economics, psychology and sociology. Social exchange theory features many of the main assumptions found in rational choice theory and structuralism. It is also used quite frequently in the business world to imply a two-sided, mutually contingent and rewarding process involving transactions or simply exchange (Misztal, 2013).

The social exchange theory attempts to explain the nature of the relationships between perceived value and cost-benefit analysis. DeConinck (2010) suggested that when an individual perceives the cost of a relationship outweighs the perceived benefits, then the person will choose to leave the relationship. The theory further states that people who give much to others try to get much from them, and people who get much from others are under pressure to give much to them. The social exchange relationships between two parties develop through a series of mutual exchanges that yield a pattern of reciprocal obligations to each party (Lee, Mohamad & Ramayah, 2010). Social exchange theory indicates that individuals are willing to maintain relationships because of the expectation that to do so is rewarding. Individuals voluntarily sacrifice their self- benefits and contribute these benefits to other individuals with the expectation for more future gains (Morgan, 2012).

There is evidence that trust in the competence of the knowledge source and knowledge receiver is important for successful knowledge transfers (Wang & Noe, 2010). According to McKnight *et al*. (2011), the level of trust increases over time and it is specifically the non-benevolence component of trust that gains strength over time. While a consensus exists among authors that trust as an important factor, the interaction of trust and control is not as clear. Malhotra and Lumineau (2011) demonstrate this using an experiment which showed that control has a crowding-out effect on trust. The role of trust carries importance in knowledge transfer. Trust is important for knowledge-based companies as marketplace swap of knowledge gives rise to elevated levels of uncertainty and risk. Baggio and Cooper (2010) argue that this risk and uncertainty can be reduced by the

presence of a high level of trust. Social exchange theory can therefore be used to develop models relating trust to knowledge sharing and knowledge sharing to team effectiveness.

2.3 Empirical Review of Literature

2.3.1 Mobile Technology for Knowledge Management

Sector (2018) studied knowledge management technology in Etsy, America and found that Etsy knows top notch seller support is something that helps them differentiate and win the loyalty of their customers (who are paying a premium). It may not sound unique that this fast-growing technological company supports sales using knowledge management; lots of businesses use knowledge management to empower sales teams. Support staff use knowledge management technology and can easily assist sellers with complex needs like transactional information, taxes and return information. This is an excellent example of reimagining sales enablement and knowledge base concepts to help sellers.

Kikwasi (2018) determined that in South Africa, the DPSA aims to create innovative and reusable service delivery models with the intention of improved integration and coordination across departments and the public sector. These knowledge management programs ensure that government departments can utilize the skills, expertise, as well as experiences and lessons learnt from other public institutions in the development of their service delivery strategies. The reasons why knowledge management practices struggle include sustainability, globalization, technology, and culture. Application of knowledge management practices enhances speed and effectiveness in delivering products and services that are beneficial to consumers.

Kankwatsa (2018) found that Reproductive Health Uganda (RHU) (2018) has put in place the following in order to enable knowledge management in the organization: RHU National Learning Centre, the goal of which was meant to strengthen RHU's capacity for model learning and hub for capacity building initiatives in SRHR in Uganda and within IPPF Africa Region. Strengthening the capacity, systems and structures of RHU and transforming them into a center of quality service delivery and provision of technical assistance and support to other IPPF Member Associations (MAs) and other Non-Governmental Organizations (NGOs), as well as a place where the interchange of knowledge and learning experiences can readily take place. It also entailed strengthening Institutional Knowledge Management (IKM) which would establish a knowledge culture with appropriate infrastructure for organizational effectiveness and sustainability.

Charles and Nawe (2017) studied knowledge management in higher institutions in Tanzania with reference to Mbeya University of Science and Technology. The study found that Management Development Institutes (MDI) heavily depended on their staff's knowledge to ensure survival in today's highly competitive environment. This knowledge is an asset in an intellectual environment. The study results confirmed a positive relationship between the process innovation and knowledge sharing. The study further notes that MDIs are probably going to develop more regarding new process creation and enhancement of the current ones. Most of the respondents showed that they knew about the relationship between learning and data. Information Management will at that point be helpful in controlling the organization's ability and know-how, thus increasing the value of the center elements of the foundation. Almost certainly, the significant assets of the foundation can never again be viewed as economical wellsprings of upper hand if such

assets can turn out to be rapidly accessible to contenders, accordingly, giving more rivalry. More than 50 percent of the respondents didn't know about knowledge management exercises. The procedures are not all around incorporated in the general administration framework.

Muli *et al.* (2017) note that Phowad Solutions in Kenya, a leading management consultancy firm, which mainly deals with knowledge management, has realized the need for proper knowledge use. This company helps others realize the importance of knowledge management in an organization and helps them to implement it. Phowad solutions (2018) offers business advisory services by assisting investors in start-ups and project management, conducting diagnostic studies, applying scenario-based planning, facilitating board retreats and business policy alignment, driving performance improvement initiatives, supervising business turnarounds, and sustaining total quality management, all form the range of services offered by our business advisory services division. They also offer knowledge retention and transfer strategy, knowledge management valuation, knowledge scan or audit, preparation for ISO 9001:2015 audit, knowledge management assessment and benchmarking, knowledge management strategy development, knowledge management policy development, knowledge management governance, knowledge management framework design and knowledge management accreditation. The exact technology used is not easily traceable, but there are chances of them using mobile technologies since they consider technological advancements and different types of business settings.

2.3.2 Mobile Technology Platforms for Knowledge Management

Flor (2018) studied knowledge management for development in Philippines and determined that the use of a KM system was linked to a web and wireless platform. The system included an electronic whiteboard called SunForum. The business consulting services' Java gurus built a J2EE-compliant application called SunScope and Mercury. SunScope integrated KM with mobile devices and internet. This enabled the access of knowledge by anyone from anywhere using any device. Mercury, on the other hand is a software application that offers an integration with the existing business applications by sending SMS notifications, alerts and messages between users and the enterprise. Through the web application, the enterprise can send an SMS to clients, partners or to the employees. There is mobile technology adoption in this example, but it is very limited, hence the need to explore into this technology and enable it to do much more in KM.

North and Kumta (2018) found that in Germany, companies used live KM systems. According to the study, there are 6 KM systems which entailed GAA portal used for information dissemination using SharePoint and DotNet; global production portal: used for transactional knowledge for reuse using SharePoint and DotNet; SlidePool: used for sharing and reviewing presentations using SharePoint and DotNet; customer project and unit collaboration base: used for knowledge about customer and units using SharePoint and DotNet; social collaboration: used for collaboration suing SharePoint (MySite) and Wiki: used for document collaboration using SharePoint and DotNet. There is no mobile technology adoption seen in this example, which limits the use of such a system to specific devices that are connected to the internet.

Kankwatsa (2018) determined that building RHU's institutional memory in Uganda that is people and information based through knowledge mobilization, transfer and utilization was essential. Key activities included developing of key RHU documents; monitoring of the APB, the strategic plan; strengthening RHU electronic information system and cloud computing and increasing timely reporting and quality data capture. RHU electronic information system and cloud computing were used. There is the potential for incorporating mobile technology to the current system so that people can easily access the documents online anywhere at any time and edit them (with privileges). In addition to that, it can be used to share other information relevant to the organization within.

Tandi (2011) found that internet facilities and subscription to professional databases were not working in Tanzania. However, there were inadequate facilities and developments in technologies; one the other hand, mobile phones, for instance, were so readily available that they could have been used for the purpose. This example shows the technology factor was a major blow, there was no mobile technology for KM and that if used would bring about a major change in KM in the organizations.

Sitbon (2015) found that KM activities upgrade individual, group, and authoritative ability and in this manner increment hierarchical limit in Kenya. Together, these results are expected to improve general efficiency, enhance the nature of choices, and add to development and in addition, the accomplishment of Vision 2030. Further KM intends to build information and abilities of individual staff-emerging out of learning and development in the learning procedure, incite uplifting mentalities, solid good and moral qualities. Thus, singular abilities all things considered add to hierarchical capacity and societal limit in so far rivalry matters are concerned. At a more elevated amount,

hierarchical capacity centres around these angles to accomplish practical development and upper hand by enhancing interior procedures and frameworks, creating centre skills and structuring inventive methodologies. KM inspired systems administration and cooperation which releases imagination of people and the associations to embrace openings in the general public for its own development and advancement. There was a website and some services online, though there was not much information regarding the technology they use. They could incorporate mobile technology for easier information dissemination among the organization as well as to their corporates.

2.3.3 Aspects in Adoption of Mobile Technology

Giampaoli, Ciambotti and Bontis (2017) carried a study on knowledge management, problem solving and performance in top Italian firms. The study determined that other than the physical resources, individuals are the most critical asset in an association. Associations, International NGOs and SMEs must grasp information the executives to guarantee that they expand the utilization of all the learning assets in their ownership and keep applicable in the present quickly changing business condition. With profoundly coordinated Business Process Management (BPM) arrangements, Enterprise Content Management (ECM) and Dynamic Case Management (DCM) arrangements from KMI, associations, International NGOs and SMEs are set to profit in their business targets by streamlining their procedures, human capital resources and physical resources, in this manner enhancing their primary concern. There was therefore need for KM to be taken up by organizations.

Kuo and Lee (2011) found that critical external variables, empowering leadership, Task-Technology Fit (TTF) and compatibility are proposed as significant contributors to KMS.

To test the proposed model, data was collected through a questionnaire survey sent to IT managers of 500 large companies in Taiwan. The results indicate that the perceptions of usefulness, ease-of-use and compatibility significantly affect behavioral intention. Empowering leadership, TTF and compatibility are significant predictors of Perceived Ease of Use (PEOU); however, perceived usefulness is only influenced by compatibility and PEOU. Further, there is a positive and significant relationship between TTF and compatibility.

Hung, Huang, Lin and Tsai (2005) discussed the critical success factors involved in implementing a knowledge management system (KMS), in order to enhance a firm's competitiveness, while keeping costs to a minimum. Based on field studies and a literature review, this study outlined 32 variables in the implementation of a KMS. After completing the statistical analysis, seven factors were determined to be critical: a benchmarking strategy and knowledge structure; the organizational culture; information technology; employee involvement and training; the leadership and the commitment of senior management; a learning environment and resource control; and evaluation of professional training and teamwork.

Nzui (2014) determined the role ICT has played in enhancing knowledge management at ICRAF. The study found that more than three quarters of ICRAF staff understood what knowledge management is and that they are aware that the processes of capturing, cataloguing, storing and sharing on information are paramount to preserving institutional memory. There was a prevalence of use of ICT in managing knowledge with more than half of the knowledge in the organization originating from ICT based sources and a similar portion of information and knowledge in the organization stored in ICT based

systems. The study established that ICT has a major influence on knowledge management practices in the organization with systems being well integrated and information found to be up to date and trusted.

2.4 Summary of Review of Literature

From the literature review above, there is a clear gap in the penetration of knowledge management within organizations around the globe. From the research, developed countries and some developing countries have tried and managed to implement knowledge management in their countries as well as their organizations. They have also managed to adopt mobile technology for KM, but to some extent; different types of organizations would require a limited adoption of mobile technology, which is valid, because of their type of work and to what extent they would require the technology.

Africa is getting there, albeit slowly. African countries and their organizations are realizing the existence and importance of knowledge management for their own benefit. The region is not yet well-versed with knowledge management, especially in Kenya. In fact, just a countable number of companies have implemented it. This topic from the research perspective is very blurry since not much has been done and not much is documented. There are efforts by various companies such as Phowad solutions to help others know the importance of knowledge management, give them proper training and help them implement it within the organizations. They have managed to do so in a good number of organizations, but there is a lot of work that needs to be done. The education curriculum must also improve, knowledge management should be taught like any other common class so that people are aware of its existence.

2.5 Research Gap

There are several gaps in researching on this topic. First, knowledge management is not very recognized in the country; hence very little information regarding its application in organizations exists. Very few organizations have implemented knowledge management but have not documented anything regarding it. There is not much on KM in most organizations. There is also limited information on the adoption of mobile technology for KM in organizations. In addition, there is no proper information regarding the extent of knowledge management penetration in the country and in organizations. Hence, a lot of effort spent to research from scratch. Finally, there is no proper documentation on the penetration of mobile technology in the country and in organizations.

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction to Research Methodology

This chapter provides an in-depth description of the research design, research site, target population, determination of study sample through sampling procedure and study sample size, data collection measures through identifying data instruments, details on conducting of pilot test on research instruments, understanding instrument reliability and validity, data processing and analysis. This chapter also highlights on the legal and ethical considerations that were adhered to in the research.

3.2 Research Design

According to Garg and Kothari (2014), a research design guides the research in collecting, analyzing and interpreting observed facts. The study employed the descriptive survey research design. According to Mugenda (2008), descriptive survey design is a method of collecting information by interviewing or administering questionnaires to a population to obtain information about people's attitudes, opinion or habits on social issues. Descriptive survey research design was appropriate for this study as it provided a framework for collection of data based on objectives that require a description and data collected using questionnaires and interviews to gauge the opinions of respondents on mobile technology for knowledge sharing. This design also allowed for collection of both qualitative and quantitative data.

3.3 Research Site

The research site is the selected physical boundaries where the population of study is obtained from (Orodho & Kombo, 2004). The research site details the area where the

study is conducted as well as the research population in that area. The study research site was Mahashakti Kenya Limited located in Athi River. Mahashakti Kenya Limited started operation in early year 2016 in Kenya under license and technology from Parent company Mahashakti Energy Ltd. India with repair of Distribution and Power Transformers. The choice of the company was based on the efforts the company has put forward to use mobile technology for knowledge management, which the study aimed to explore, and it is the place of work of the researcher.

3.4 Target Population

According to Garg and Kothari (2014), a target population refers to the set of people, events or objects to which one wishes to generalize the results of the research. The study would be void if we would not have a target population since there would be no one to give data for research purposes. The study targeted the employees of Mahashakti Kenya Limited, Athi River. According to Mahashakti Kenya Limited (2018), there are 52 employees in the company, who formed the population for this study.

3.5 Determination of Population

3.5.1 Sampling Procedure

For the purpose of this study, the selection method was census survey based on the availability of the subject and their willingness to participate. This ensured that every employee had a chance of being selected in the study. Sampling procedure is defined as the methods used and the systematic process of collecting data from a smaller group out of a larger one (Orodho & Kombo, 2004). There is a specific way of collecting the samples to ensure that what is gotten from the sample represents the views of the larger group. For cases where an employee did not understand knowledge management, the

researcher verbally explained the meaning and basics about it so that they can have an idea of what the research is about.

3.5.2 Study Population

The study population is 52 employees in Mahashakti Kenya Limited as per Mahashakti Kenya Limited (2018). Israel (2014) suggested that when the population of the study is less than 200, a census survey should be considered. This is to ensure that non-response cases in the study are dealt with. Therefore, all the 52 employees were used from Mahashakti Kenya Limited.

3.6 Data Collection Measures

The study employed questionnaires and interviews to collect data from all the respondents. For the data collection activity, individual permission for access to the respondents was sought from the relevant authorities. Interviews were administered purposely to 2 top management personnel in the company. The researcher aimed to train research assistants for purposes of data collection. The research assistants were instructed to be flexible on how to distribute and collect the questionnaires. This ensured that the quality of the data collected was up to the required standards. The respondents were required to fill in the information as the researcher/research assistants waited to reduce the instances of non-response.

3.6.1 Development of Instruments

The study relied on the use of primary data. Primary data was collected using questionnaires and interviews containing structured and unstructured questions respectively. Questionnaires were administered to the employees of the company while

key informant interviews were administered to top management personnel. Section A of the questionnaire contained questions on demographic data of responds while section B, C and D contained questions on the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River; mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River and factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River respectively. Section E contained questions on knowledge management. Observations were also used to collect information which the researcher was able to observe from the company.

3.6.2 Pilot Testing of Research Instruments

Pilot testing is the pre-testing of component such as the questionnaire (Garg and Kothari, 2014). The researcher carried out a pilot study using a pilot sample of 5 respondents drawn from the employees of Wrigley EA, Athi river. This represents 10% of the sample size. The pilot study was carried out in Wrigley EA, a company in the same location as the study area. The pilot questionnaires were used during the final phase of analysis. The results obtained from the pilot study helped shape the final questionnaire in terms of the questions, content validity and duration of administration.

3.6.3 Instrument Reliability

Reliability is the extent to which the instrument can yield similar results in repeated trials (Mugenda, 2008). After the pilot study, the questionnaires and discussion were analyzed. Since the pilot used a single treatment, the reliability of these instruments was tested using Cronbach Alpha. This helped in testing for internal consistencies of the items. The

study found that the overall Cronbach alpha coefficient for all the items was 0.771, which was deemed ideal for the study.

3.6.4 Instrument Validity

According to Garg and Kothari (2014), validity determines whether the research instrument truly measures that which it is intended to measure or how truthful the research results are. In the context of the study, the researcher used content validity. Content validity is a subjective decision of whether measures of a certain concept will appear to measure what is intended to measure. In this regard, the researcher gave the data collection instruments to the experts and fellow researchers to be able to get their feedback on whether these measures are relevant in measuring what the researcher intends to measure. Importantly, the questionnaire was given to the supervisor who ensured the questionnaire was measuring the study variables.

3.7 Data Processing and Analysis

The questionnaires were adequately checked for data quality. For all the objectives, quantitative data was coded and entered a datasheet which was transferred to Statistical Package for Social Sciences (SPSS) version 20 for analysis. Quantitative data was analyzed using both descriptive and inferential statistics. Descriptive statistics were conducted through frequency counts and percentages to capture the distribution of responses on the key issues addressed in the study objectives. Analysis was also done through correlation and regression analysis which was used to test the study hypothesis. Regression analysis entailed use of model summaries, ANOVA and regression coefficients. The study adopted an overall multiple linear regression model as: $\mathbf{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon}$

Where Y = Knowledge management

β_0= Intercept

$\beta_1 - \beta_3$ = Slopes coefficients representing the influence of the associated independent variables over the dependent one.

X_1 = Extent of mobile technology adoption

X_2 = Mobile technology platforms

X_3 = Factors affecting adoption of mobile technology

ε = Error term

The findings from quantitative data were presented using figures, tables, graphs and charts. Qualitative data on the other hand, was grouped into themes and analyzed by use of descriptive analysis. The qualitative findings were presented in narrative form as per study objectives.

3.8 Legal and Ethical Considerations

As a legal prerequisite, the researcher sought for an introductory letter from African Nazarene University then sought a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher also employed informed consent by explaining the purpose of the research and guaranteed the confidentiality through the preamble of the questionnaires and before and during interviews.

Ethically, the predominant principle of ethics in research on informed consent of the respondent was upheld. Recorded data was treated with anonymity in the study, to uphold the principle of anonymity. The study emphasized respect to participants with; freedom

to refusal or acceptance to be interviewed and withdrawal from interview. Exceptional attention to building cooperation was observed, with giving of clarity on information to outline assurances. The study complied with the national policy guidelines on basic ethical principles concerning protection of participants.

CHAPTER FOUR
RESULTS AND ANALYSIS

4.1 Introduction

The fourth chapter of the study entails the presentation and interpretation of the findings obtained from the field in four sections. The first section is the introduction of the chapter and what it entails. The second section presents the demographics of the respondents while the third section presents the results for each of the three research questions addressed in this study. The fourth section entails the findings and interpretations of the test for hypothesis this study sought to investigate. The aim of this research was to examine the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The study specifically sought to examine the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River; evaluate mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River and investigate that factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

4.2 Presentation of Findings

This section presents the demographic characteristics of the respondents. The demographic information sought from the respondents in this study included their sex, level of education and their age. The response rate is also given as background to the demographic data collected. The findings are presented in the subsequent subsections 4.2.1 to 4.2.4.

4.2.1 Response Rate

The study sought to collect data from 52 employees from Mahashakti Kenya Limited. The findings are shown in Figure 4.1.

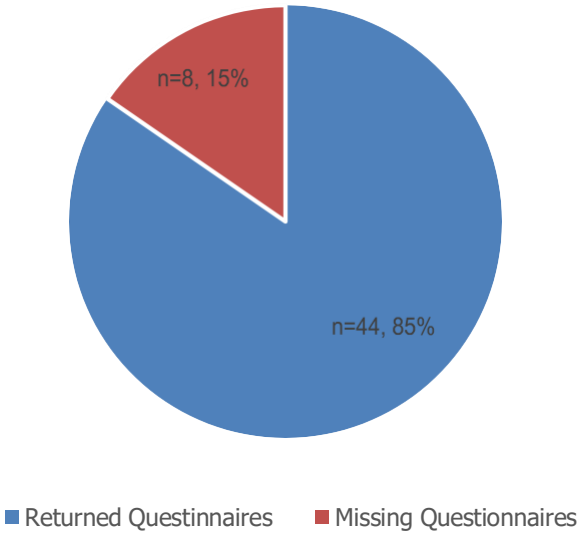


Figure 4-1: Response Rate

The study did not achieve 100% response as there were non-response incidents encountered during data collection. Therefore, out of the targeted 52 respondents, 44 returned the questionnaires successfully, which accounts for 85% of the response. The study hence achieved a response rate of 85% and a non-response rate of 15% as shown in Figure 4.1. This response was excellent as per Garg and Kothari (2014) who recommend a response rate that is above 70% and therefore was considered enough for analysis.

4.2.2 Sex of Respondents

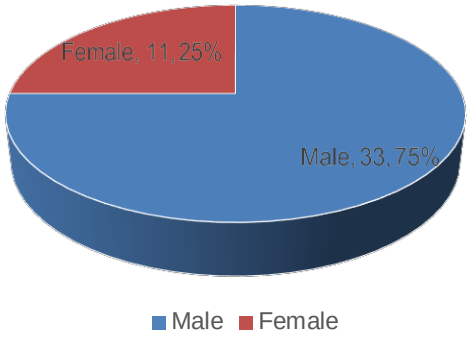


Figure 4-2: Sex of Respondents

The findings on the sex of respondents as shown in Figure 4.2 indicated that 75% of the respondents were male while 25% were female. The findings indicate that majority of the employees at Mahashakti Kenya Limited are male.

The study also sought to determine the relationship between the sex of the respondents and the improved process efficiency for effective knowledge management at Mahashakti Kenya Limited in order to find the type of sex that was more likely to lead to improved process efficiency. The findings are shown in Table 4.1.

Table 4.1: Cross tabulation between sex and improved process efficiencies

		Mobile technology leads to improved process efficiencies			Total	Pearson Chi Square
		Moderate	Agree	Strongly agree		
Sex	Male	10	8	15	33	
	Female	0	8	3	11	0.009
Total		10	16	18	44	

The study found that male respondents were more likely to contribute improved process efficiencies as compared to their female counterparts. In addition, there was a significant relationship between sex of respondents and improved process efficiencies, as shown by a Pearson Chi Square significant value of 0.009, which is less than 0.05 at 5% significance level.

4.2.3 Highest Level of Education Attained by Respondents

The findings on highest level of education of respondents are presented in Figure 4.3.

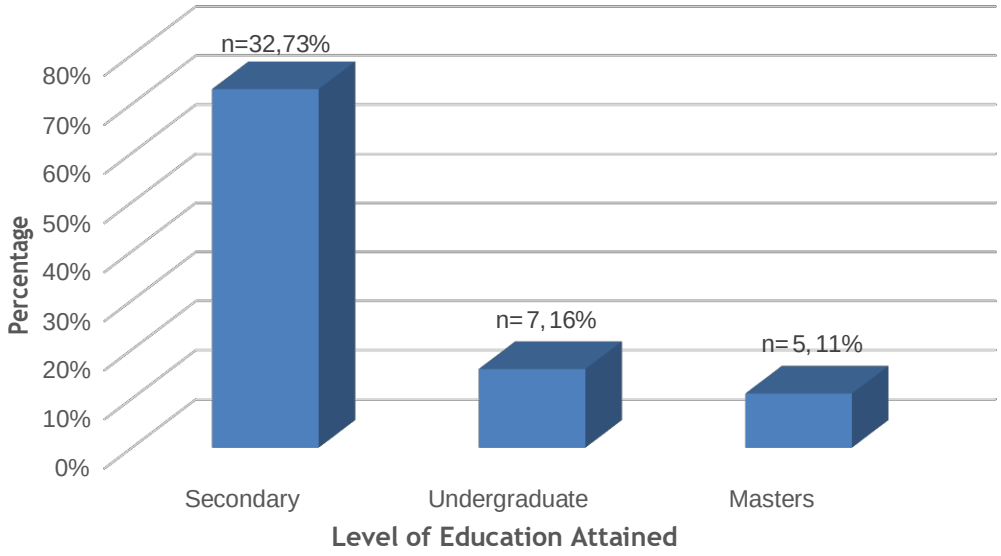


Figure 4-3: Respondents' Highest Level of Education

The findings on the highest level of education attained by respondents indicated that 73% of the respondents had attained secondary school education as their highest level of education, 16% had attained Bachelors' degree level while 11% had attained Masters' degree. The findings imply that most employees at Mahashakti Kenya Limited have attained secondary education as their highest level of education

The study also conducted cross tabulations to determine the relationship between the highest education level of respondents and the quick knowledge within Mahashakti Kenya Limited in order to find whether those with high education levels contributed to quick knowledge solutions. The findings are shown in Table 4.2.

Table 4.2: Cross tabulation between education level and knowledge solutions

		Mobile technology leads to quick knowledge solutions within the company			Total	Pearson Chi Square
		Moderate	Agree	Strongly agree		
Level of education	Secondary	2	13	17	32	0.009
	Undergraduate	2	5	0	7	
	Masters	0	5	0	5	
Total		4	23	17	44	

The study found that all respondents were likely to contribute quick knowledge solutions. In addition, there was a significant relationship between level of education of respondents with quick knowledge solutions, as shown by a Pearson Chi Square significant value of 0.009, which is less than 0.05 at 5% significance level.

4.3.4 Age of Respondents

The findings on the age of respondents are shown in Figure 4.4.

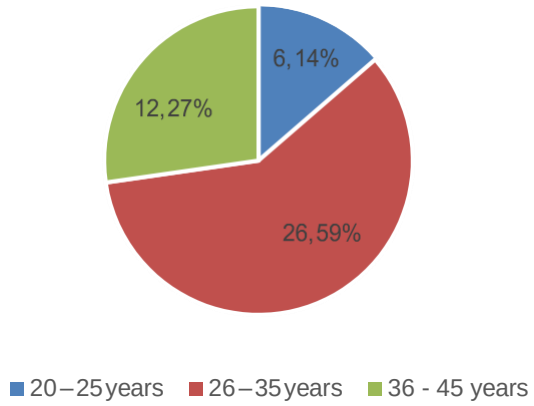


Figure 4-4: Respondents' Age

The finding showed that 59% were aged 26-35 years, 27% were aged 36-45 years while 14% were aged 20-25 years. The findings imply that majority of the employees at Mahashakti Kenya Limited were aged more than 26 years.

The study also sought to determine the relationship between age of respondents and better decision making within Mahashakti Kenya Limited in order to find which age group contributed more to better decision making. The findings are shown in Table 4.3.

Table 4.3: Cross tabulation between age and making better decisions

		Mobile technology leads to better decisions in the company				Total	Pearson Chi Square
		Disagree	Moderate	Agree	Strongly agre		
Age	20 – 25 years	0	0	6	0	6	0.009
	26 – 35 years	5	0	11	10	26	
	36 - 45 years	0	3	6	3	12	
Total		5	3	23	13	44	

The study found that those aged 26-45 years were more likely to make better decisions than those aged 20-25 years. Training on decision making for those aged 20-25 years might be needed in the organization. In addition, there was a significant relationship between age of respondents with better decision making, as shown by a Pearson Chi Square significant value of 0.009, which is less than 0.05 at 5% significance level.

4.3 Analysis by Objectives

The study sought to examine the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. Specifically, the study sought to examine the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River; evaluate mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River and investigate that factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The findings of the study are presented herein in three sections 4.3.1 to 4.3.3 each sub-section based on the objectives of the study.

4.3.1 Extent of Mobile Technology Adoption

The first objective of the study was to examine the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The findings are shown in Table 4.4.

Table 4.4: Extent of Mobile Technology Adoption

		1	2	3	4	5	Mean	SD
Mobile technology is used to share information remotely	f	2	2	0	38	2	3.82	.786
	%	4.5%	4.5%	0.0%	86.4%	4.5%		
Mobile technology is used to share timely information	f	2	0	6	19	17	4.11	.970
	%	4.5%	0.0%	13.6%	43.2%	38.6%		
Mobile technology is used to share different types of information	f	0	2	0	15	27	4.52	.731
	%	0.0%	4.5%	0.0%	34.1%	61.4%		
Mobile technology has been efficient in knowledge management within the company	f	5	0	5	17	17	3.93	1.246
	%	11.4%	0.0%	11.4%	38.6%	38.6%		
Overall Mean/SD							4.09	.707

Where 1- Strongly disagree; 2-Disagree; 3-Moderate; 4- Agree; 5- Strongly agree

The study found that 86.4% (*M* = 3.82, *SD* = 0.786) of the respondents agreed that mobile technology is used to share information remotely in the company, 4.5% strongly agreed, 4.5% disagreed while 4.5% strongly disagreed. The respondents 43.2% (*M* = 4.11, *SD* = 0.970) agreed that mobile technology is used to share timely information, 38.6% of the respondents strongly agreed, 13.6% neither agreed nor disagreed while 4.5% strongly disagreed.

The study also found that 61.4% (*M* = 4.52, *SD* = 0.731) of the respondents strongly agreed that mobile technology is used to share different types of information, 34.1%

agreed while 4.5% disagreed. In addition, 38.6% (M = 3.93, SD = 1.246) of the respondents strongly agreed that mobile technology has been efficient in knowledge management within the company, 38.6% agreed, 11.4% neither agreed nor disagreed while 11.4% strongly disagreed. Overall, the respondents agreed to the statements on the extent of mobile technology adoption (M = 4.09, SD = 0.707). The standard deviation obtained was small (less than 1) showing that the respondents has similar opinions on the extent of mobile technology adoption.

The study also conducted correlation analysis between the aspects of mobile technology adoption with the aspects of knowledge management in effort to determine the effect of each aspect of mobile technology on knowledge management. The aspects of mobile technology adoption included timely knowledge sharing, remote information sharing and direct sharing of information. The aspects of knowledge management included better decision making, quick solutions and better and faster target achievements. The findings are presented in Table 4.5.

Table 4.5: Correlations for Mobile Technology Adoption and Knowledge Management

		Better decision making	Quick solutions	Better and faster target achievements
Timely knowledge sharing	Pearson Correlation	.393**	.400**	.410**
	Sig. (2-tailed)	.008	.007	.006
Remote information sharing	Pearson Correlation	.565**	.787**	.464**
	Sig. (2-tailed)	.007	.003	.004
Direct sharing of information	Pearson Correlation	.826**	.464**	.725**
	Sig. (2-tailed)	.000	.002	.000

**. Correlation is significant at the 0.01 level (2-tailed).

The study determined that timely knowledge sharing significantly influenced better and faster target achievements (r = .410, p <0.025), more than quick solutions (r = .400, p <0.025) and better decision making (r = .393, p <0.025). Remote information sharing significantly influenced quick solutions (r = .787, p <0.025), more than better decision making (r = .565, p <0.025) and better and faster target achievements (r = .464, p <0.025). In addition, direct sharing of information influenced better decision making (r = .826, p <0.025), more than better and faster target achievements (r = .725, p <0.025) and quick solutions (r = .464, p <0.025).

From the open-ended questions in the questionnaire and key informant interviews, the study found that mobile technology was also used for communication because it was

cheap and faster hence reducing the cost of operation, sharing files and documents as well as alerting concerned people on problems that need to be resolved quickly. It also leads to population of data which gives the company insights that are vital in the company. Mobile technology also helps in time and human resource management and cost of knowledge management due to its efficiency and accuracy.

4.3.2 Mobile Technology Platforms

The study sought to evaluate mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River. The findings are shown in Table 4.6.

Table 4.6: Mobile Technology Platforms

		1	2	3	4	5	Mean	SD
The organization uses SMS for knowledge management	F	2	3	5	28	6	3.75	.943
	%	4.5%	6.8%	11.4%	63.6%	13.6%		
The company uses MMS for knowledge management	F	6	7	12	13	6	3.14	1.250
	%	13.6%	15.9%	27.3%	29.5%	13.6%		
The company uses websites for knowledge management	F	6	7	0	27	4	3.36	1.259
	%	13.6%	15.9%	0.0%	61.4%	9.1%		
Installable applications are used for knowledge management in the organization	F	5	3	0	26	10	3.75	1.222
	%	11.4%	6.8%	0.0%	59.1%	22.7%		
The platforms used are effective for knowledge management	F	3	15	3	13	10	3.27	1.336
	%	6.8%	34.1%	6.8%	29.5%	22.7%		
Overall Mean/SD							3.45	.964

Where 1- Strongly disagree; 2-Disagree; 3-Moderate; 4- Agree; 5- Strongly agree

The study found that 63.6% (*M* = 3.75, *SD* = 0.943) of the respondents agreed that the organization uses SMS for knowledge management, 13.6% strongly agreed, 11.4% neither agreed nor disagreed, 6.8% disagreed while 4.5% strongly disagreed. 29.5% (*M* = 3.14, *SD* = 1.250) agreed that the company uses MMS for knowledge management, 27.3% neither agreed nor disagreed, 15.9% disagreed, 13.6% strongly agreed while a similar number strongly disagreed.

The study also found that 61.4% (*M* = 3.36, *SD* = 1.259) of the respondents agreed that the company uses websites for knowledge management, 15.9% disagreed, 13.6% strongly disagreed while 9.1% strongly agreed. In addition, 59.1% (*M* = 3.75, *SD* = 1.222) of the respondents agreed that installable applications are used for knowledge management in the organization, 22.7% strongly agreed, 11.4% strongly disagreed while 6.8% disagreed. However, 34.1% (*M* = 3.27, *SD* = 1.336) of the respondents disagreed that the platforms used are effective for knowledge management, 29.5% agreed, 22.7% strongly agreed, 6.8% strongly disagreed while 6.8% neither agreed nor disagreed. Overall, the respondents agreed to the statements on mobile technology platforms (*M* = 3.45, *SD* = 0.964). The standard deviation obtained was small (less than 1) showing that the respondents has similar opinions on the mobile technology platforms.

From the open-ended questions in the questionnaire and key informant interviews, the study found that other mobile technology platforms used in the company were phone calls, emails, WhatsApp, skype, zoom and flash screens.

4.3.3 Factors Affecting the Adoption of Mobile Technology

The study sought to investigate that factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. The findings are as shown in Table 4.7.

Table 4.7: Factors Affecting the Adoption of Mobile Technology

		1	2	3	4	5	Mean	SD
The attitude of top management affects the adoption of mobile technology in the company	f	3	15	7	12	7	3.11	1.243
	%	6.8%	34.1%	15.9%	27.3%	15.9%		
The presence of IT training programs affects the adoption of mobile technology in the company	f	5	18	2	8	11	3.05	1.446
	%	11.4%	40.9%	4.5%	18.2%	25.0%		
The presence of IT infrastructure affects the adoption of mobile technology in the company	f	0	11	10	12	11	3.52	1.131
	%	0.0%	25.0%	22.7%	27.3%	25.0%		
The adoption of mobile technology by competitors affects the company's strategy of adopting the technology	f	4	7	13	15	5	3.23	1.138
	%	9.1%	15.9%	29.5%	34.1%	11.4%		
Employee attitude affects the adoption of mobile technology in the company	f	0	8	15	12	9	3.50	1.023
	%	0.0%	18.2%	34.1%	27.3%	20.5%		
Employee skills affects the adoption of mobile technology in the company	f	11	4	2	16	11	3.27	1.561
	%	25.0%	9.1%	4.5%	36.4%	25.0%		
Overall Mean/SD							3.28	.991

Where 1- Strongly disagree; 2-Disagree; 3-Moderate; 4- Agree; 5- Strongly agree

The study found that 34.1% (M = 3.11, SD = 1.243) of the respondents disagreed that the attitude of top management affects the adoption of mobile technology in the company,

27.3% agreed, 15.9% strongly agreed, 15.9% neither agreed nor disagreed while 6.8% strongly disagreed. 40.9% (*M* = 3.05, *SD* = 1.446) disagreed that the presence of IT training programs affects the adoption of mobile technology in the company, 25% strongly agreed, 18.2% agreed, 11.4% strongly disagreed while 4.5% neither agreed nor disagreed. In addition, 27.3% (*M* = 3.52, *SD* = 1.131) agreed that the presence of IT infrastructure affects the adoption of mobile technology in the company, 25% strongly agreed, 25% disagreed while 22.7% neither agreed nor disagreed. Overall, the respondents agreed to the statements on mobile technology platforms (*M* = 3.28, *SD* = 0.991).

The findings also indicate that 34.1% (*M* = 3.23, *SD* = 1.138) of the respondents agreed that the adoption of mobile technology by competitors affects the company's strategy of adopting the technology, 29.5% neither agreed nor disagreed, 15.9% disagreed, 11.4% strongly agreed while 9.1% strongly disagreed. 34.1% (*M* = 3.50, *SD* = 1.023) neither agreed nor disagreed that employee attitude affects the adoption of mobile technology in the company, 27.3% agreed, 20.5% strongly agreed while 18.2% disagreed. In addition, 36.4% (*M* = 3.27, *SD* = 1.561) agreed that employee skills affect the adoption of mobile technology in the company, 25% strongly agreed, 25% strongly disagreed, 9.1% disagreed while 9.1% disagreed.

From the open-ended questions and key informant interviews, the study found that other factors affecting adoption of mobile technology management in the company included having a device to access the applications and giving employees access to the network, training on the mobile technology platforms adopted, state of existing infrastructure, maintenance costs incurred, accessibility of mobile technology used, cost of acquiring a

smartphone, organizational structure and roles and responsibilities of each employee and disorganization in duties. In addition, factors such as load of work on an employee and their attitude also affected the adoption of mobile technology in the company.

4.4 Testing of Hypotheses

The study used regression analysis to test the following hypotheses in the study;

H_{O1}: Extent of mobile technology adoption does not significantly improve knowledge management in Mahashakti Kenya Limited.

H_{O2}: Mobile technology platforms do not significantly improve knowledge management in Mahashakti Kenya Limited.

H_{O3}: Factors affecting the adoption of mobile technology do not significantly improve knowledge management in Mahashakti Kenya Limited.

H_{O4}: Mobile technology does not significantly improve knowledge management in Mahashakti Kenya Limited.

4.4.1 Testing Hypothesis One

The first null hypothesis of the study was stated as follows;

H_{O1}: Extent of mobile technology adoption does not significantly improve knowledge management in Mahashakti Kenya Limited.

To test the hypothesis, regression analysis was used to find the relationship between extent of mobile technology adoption and knowledge management at a significance level of 5%. The model summary, ANOVA table and coefficients of regression were obtained

to explain the relationships that existed between the variables of the study. The results are as shown in Table 4.8 to Table 4.10.

Table 4.8: Model Summary for Extent of Mobile Technology Adoption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.736[a]	.541	.530	.46429

a. Predictors: (Constant), Extent of Mobile Technology Adoption

The study found that extent of mobile technology adoption explained 54.1% of the proportion in knowledge management at Mahashakti Kenya Limited, R^2= .541. The results are presented in Table 4.8. The findings imply that other factors not studied in the current study account for 45.9% of the proportion in knowledge management at Mahashakti Kenya Limited.

Table 4.9: ANOVA for Extent of Mobile Technology Adoption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.688	1	10.688	49.580	.000[b]
	Residual	9.054	42	.216		
	Total	19.742	43			

a. Dependent Variable: Knowledge Management

b. Predictors: (Constant), Extent of Mobile Technology Adoption

The ANOVA findings indicate the reliability of the model on the relationship between extent of mobile technology adoption and knowledge management at Mahashakti Kenya Limited. The study found a significant value of 0.000 which is less than 0.05 at 95%

confidence level and F value of 49.580. Since the F value is greater than the critical value of 4.08, there is a significant relationship between the variables. The regression model was therefore reliable. The findings are presented in Table 4.9.

Table 4.10: Regression Coefficients for Extent of Mobile Technology Adoption

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.040	.445		2.337	.024
	Extent of Mobile Technology Adoption	.756	.107	.736	7.041	.000
a. Dependent Variable: Knowledge Management						

The study found that extent of mobile technology adoption significantly predicted knowledge management, $\beta = .736$, $t = 7.041$, $p = .000$. The p value was less than 0.05 and t value more than 1.96. These findings implied rejection of the null hypothesis. Therefore, the study concluded that extent of mobile technology adoption significantly improves knowledge management in Mahashakti Kenya Limited. The results are presented in Table 4.10.

Since there is a linear relationship between the variables, a linear regression model can be adopted as follows; $\mathbf{Y = \alpha + \beta_1 X_1 + \varepsilon}$

Where Y = Knowledge Management

β_0= Intercept

β_1 = Slope coefficients representing the extent of mobile technology adoption

X_1 = Extent of mobile technology adoption

ε = Error term

The linear equation for the study will therefore be:

$$\mathbf{Y= 1.040 + 0.756X_1 + 0.445}$$

The findings imply that for every unit increase in extent of mobile technology adoption, knowledge management increases by 0.756; implying a positive effect of extent of mobile technology adoption on knowledge management.

4.4.2 Testing Hypothesis Two

The second null hypothesis of the study was stated as follows;

H_{O2}: Mobile technology platforms do not significantly improve knowledge management in Mahashakti Kenya Limited.

Regression analysis was used to find the relationship between mobile technology platforms and knowledge management at a significance level of 0.05. The model summary, ANOVA table and coefficients of regression were obtained to explain the relationships that existed between the variables of the study. The results are as shown in Table 4.11 to Table 4.13.

Table 4.11: Model Summary for Mobile Technology Platforms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.845[a]	.714	.707	.36679

a. Predictors: (Constant), Mobile Technology Platforms

The study found that mobile technology platforms explained 71.4% of the proportion in knowledge management at Mahashakti Kenya Limited, R^2= .714 as shown in Table 4.11. The findings imply that other factors not studied in the current study account for 28.6% of the proportion in knowledge management at Mahashakti Kenya Limited.

Table 4.12: ANOVA for Mobile Technology Platforms

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.091	1	14.091	104.744	.000[b]
	Residual	5.650	42	.135		
	Total	19.742	43			

a. Dependent Variable: Knowledge Management

b. Predictors: (Constant), Mobile Technology Platforms

The ANOVA findings indicate the reliability of the model on the relationship between mobile technology platforms and knowledge management at Mahashakti Kenya Limited. The study found a significant value of 0.000 which is less than 0.05 at 95% confidence level and F value of 104.744. Since the F value is greater than the critical value of 4.08, there is a significant relationship between the variables. The regression model was therefore reliable. The findings are presented in Table 4.12.

Table 4.13: Regression Coefficients for Mobile Technology Platforms

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.747	.336		2.225	.032
	Mobile Technology Platforms	.841	.082	.845	10.234	.000
a. Dependent Variable: Knowledge Management						

The study found that mobile technology platforms significantly predicted knowledge management, β = .845, t = 10.234, p = .000. The p value was less than 0.05 and t value more than 1.96. These findings implied rejection of the null hypothesis. Therefore, the study concluded that mobile technology platforms significantly improves knowledge management in Mahashakti Kenya Limited. The results are presented in Table 4.13.

Since the study found a linear relationship between the variable, a linear regression model was adopted as shown: $\mathbf{Y = \alpha + \beta_2 X_2 + \varepsilon}$

Where Y = Knowledge Management

β_0= Intercept

β_2 = Slope coefficients representing mobile technology platforms

X_2 = Mobile technology platforms

ε = Error term

The linear equation for the study will therefore be:

$\mathbf{Y= 0.747 + 0.841X_2 + 0.336}$

The findings imply that for every unit increase in mobile technology platforms, knowledge management increases by 0.841; implying a positive effect of mobile technology platforms on knowledge management.

4.4.3 Testing Hypothesis Three

The third null hypothesis of the study was stated as follows;

H_{O3}: Factors affecting the adoption of mobile technology do not significantly improve knowledge management in Mahashakti Kenya Limited.

The study used regression analysis to find the relationship between factors affecting the adoption of mobile technology and knowledge management at a significance level of 5%. The model summary, ANOVA table and coefficients of regression were obtained to explain the relationships that existed between the variables of the study. The results are as shown in Table 4.14 to Table 4.16.

Table 4.14: Model Summary for Factors Affecting Adoption of Mobile Technology

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763[a]	.582	.572	.44305

a. Predictors: (Constant), Factors Affecting Adoption of Mobile Technology

The study found that factors affecting the adoption of mobile technology explained 58.2% of the proportion in knowledge management at Mahashakti Kenya Limited, R^2= .582 as shown in Table 4.14. The findings imply that other factors not studied in the current study account for 41.8% of the proportion in knowledge management at Mahashakti Kenya Limited.

Table 4.15: ANOVA for Factors Affecting Adoption of Mobile Technology

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.498	1	11.498	58.575	.000[b]
	Residual	8.244	42	.196		
	Total	19.742	43			

a. Dependent Variable: Knowledge Management

b. Predictors: (Constant), Factors Affecting Adoption of Mobile Technology

The ANOVA findings indicate the reliability of the model on the relationship between factors affecting the adoption of mobile technology and knowledge management at Mahashakti Kenya Limited. The study found a significant value of 0.000 which is less than 0.05 at 95% confidence level and F value of 58.575. Since the F value is greater than the critical value of 4.08, there is a significant relationship between the variables. The regression model was therefore reliable. The findings are presented in Table 4.15.

Table 4.16: Coefficients for Factors Affecting Adoption of Mobile Technology

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.858	.434		1.979	.054
	Factors Affecting Adoption of Mobile Technology	.799	.104	.763	7.653	.000

a. Dependent Variable: Knowledge Management

The study found that factors affecting the adoption of mobile technology significantly predicted knowledge management, $\beta = .763$, $t = 7.653$, $p = .000$. The p value was less than 0.05 at 95% confidence level. These findings implied rejection of the null hypothesis. Therefore, the study concluded that factors affecting the adoption of mobile technology significantly improves knowledge management in Mahashakti Kenya Limited. The results are presented in Table 4.16.

Adopting a linear regression model: $\mathbf{Y = \alpha + \beta_3 X_3 + \varepsilon}$

Where Y = Knowledge Management

β_0= Intercept

β_3 = Slope coefficients representing factors affecting the adoption of mobile technology

X_3 = Factors affecting the adoption of mobile technology

ε = Error term

The linear equation for the study will therefore be:

$$\mathbf{Y= 0.858 + 0.799X_3 + 0.434}$$

The findings imply that for every unit increase in factors affecting the adoption of mobile technology, knowledge management increases by 0.799; implying a positive effect of factors affecting the adoption of mobile technology on knowledge management.

4.4.4 Testing Hypothesis Four

Based on multiple linear regression model, the study sought to establish the relationship between mobile technology and knowledge management at Mahashakti Kenya Limited and tested the following hypothesis:

H_{O4}: Mobile technology does not significantly improve knowledge management in Mahashakti Kenya Limited.

Table 4.17: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925[a]	.856	.846	.26627

a. Predictors: (Constant), Extent of Mobile Technology Adoption, Mobile Technology Platforms, Factors Affecting Adoption of Mobile Technology

The study found that extent of mobile technology adoption, mobile technology platforms and factors affecting adoption of mobile technology explained 85.6% of the proportion in knowledge management in Mahashakti Kenya Limited, R^2= .856. The results are presented in Table 4.17. The findings imply that other factors not studied in the current study account for 14.4% of the proportion in knowledge management in Mahashakti Kenya Limited.

Table 4.18: ANOVA for the Multiple Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.906	3	5.635	79.483	.000[b]
	Residual	2.836	40	.071		
	Total	19.742	43			

a. Dependent Variable: Knowledge Management

b. Predictors: (Constant), Extent of Mobile Technology Adoption, Mobile Technology Platforms, Factors Affecting Adoption of Mobile Technology

The ANOVA findings indicate the reliability of the model on the relationship between mobile technology and knowledge management in Mahashakti Kenya Limited. The study found a significant value of 0.00 which is less than 0.05 at 95% confidence level and F value of 79.483. Since the F value is greater than the critical value of 2.84, there is a significant relationship between the variables. The regression model was therefore reliable. The findings are presented in Table 4.18.

Table 4.19: Regression Analysis Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.240	.298		2.806	.005
	Extent of Mobile Technology Adoption	.220	.111	.219	4.176	.001
	Mobile Technology Platforms	.596	.109	.599	5.445	.000
	Factors Affecting Adoption of Mobile Technology	.462	.074	.441	6.212	.000

a. Dependent Variable: Knowledge Management

The study found that extent of mobile technology adoption significantly predicted knowledge management, β = .219, t = 4.176, p < .000. Mobile technology platforms significantly and positively predicted knowledge management, β = .599, t = 5.445, p < .000. Finally, factors affecting adoption of mobile technology positively and significantly predicted knowledge management, β = .441, t = 6.212, p < .000. All the p values were less than 0.05 and t values more than 1.96. These findings implied rejection of the null hypothesis. Therefore, the study concluded that mobile technology significantly improves knowledge management in Mahashakti Kenya Limited. The results are presented in Table 4.19.

Adopting a multiple linear regression model: $\mathbf{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon}$

Where Y = Knowledge management

β_0= Intercept

$\beta_1 - \beta_3$ = Slopes coefficients representing the influence of the associated independent variables over the dependent one.

X_1 = Extent of mobile technology adoption

X_2 = Mobile technology platforms

X_3 = Factors affecting adoption of mobile technology

ε = Error term

The linear equation for the study will therefore become:

$$\mathbf{Y = 0.240 + 0.220X_1 + 0.596X_2 + 0.462X_3 + 0.298}$$

The findings imply that for every unit increase in extent of mobile technology adoption, knowledge management increases by 0.240, for every unit increase in mobile technology platforms, knowledge management improves by 0.596; and for every unit increase in the factors affecting adoption of mobile technology, knowledge management increases by 0.462. Mobile technology therefore positively influences knowledge management. Since mobile technology platforms had the highest coefficient than mobile technology adoption and the factors affecting the adoption of mobile technology for knowledge management, it is important for the company to invest more on the platforms for improved knowledge management.

CHAPTER FIVE
DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary and discussion of the findings. It further presents the conclusions and recommendations of the study. Presentations of the findings are done objectively to address the research questions and the overall objective of examining the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

5.2 Discussions

This section presents a discussion of the findings considering the objectives of the study. The discussion is as per each objective investigated in this study.

5.2.1 Extent of Mobile Technology Adoption

The study found that the respondents agreed that mobile technology is used to share information remotely in the company as shown in Table 4.4. The findings of the study agree with the findings of Nzui (2014) who determined that sharing of information remotely is paramount to preserving institutional memory. The study found that there was a prevalence of use of ICT in managing knowledge with more than half of the knowledge in the organization originating from ICT based sources and a similar portion of information and knowledge in the organization stored in ICT based systems. The study established that information sharing through ICT has a major influence on knowledge management practices in the organization with systems being well integrated and information found to be up to date and trusted.

The respondents agreed that mobile technology is used to share timely information as presented in Table 4.4. Kankwatsa (2018) agrees with the findings of the study that increasing timely reporting and quality data capture is essential in knowledge management in most organizations. Through an electronic information system and cloud computing, there is the potential for incorporating mobile technology to the current system so that people can easily access the documents online anywhere at any time and edit them (with privileges). In addition to that, it can be used to share other information relevant to the organization within. The study found that mobile technology was also used for communication because it was cheap and faster hence reducing the cost of operation, sharing files and documents as well as alerting concerned people on problems that need to be resolved quickly. Mobile technology leads to population of data which gives the company insights that are vital in the company.

The study also found that the respondents strongly agreed that mobile technology is used to share different types of information as shown in Table 4.4. In line with the findings of the study, Sector (2018) reports that most organizations store and share different types of information using mobile technology. It may not sound unique that fast-growing technological companies support sales using knowledge management; lots of businesses use knowledge management to empower sales teams. Support staff use knowledge management technology and can easily assist sellers with complex needs like transactional information, taxes and return information. This is an excellent example of reimagining sales enablement and knowledge base concepts to help sellers.

The respondents strongly agreed that mobile technology has been efficient in knowledge management within the company as presented in Table 4.4. Kikwasi (2018) agrees with

the findings of the study that mobile technology helps in knowledge management programs in order to ensure that government departments can utilize the skills, expertise, as well as experiences and lessons learnt from other public institutions in the development of their service delivery strategies. Application of knowledge management practices enhances speed and effectiveness in delivering products and services that are beneficial to consumers.

The study determined that timely knowledge sharing, remote information sharing, and direct sharing of information significantly influenced better and faster target achievements, quick solutions and better decision making as shown in Table 4.5. Charles and Nawe (2017) agree with these findings when the authors found that knowledge is an asset in an intellectual environment. The study results confirmed a positive relationship between mobile technology and knowledge sharing. Information management helps in controlling the organization's ability and know-how, thus increasing the value of the center elements of the foundation.

5.2.2 Mobile Technology Platforms

The study found that the respondents agreed that the organization uses SMS for knowledge management as presented in Table 4.6. In line with the findings of the study, Flor (2018) argues that integration of knowledge management with mobile devices and internet enables the access of knowledge by anyone from anywhere using any device. Software applications that offer an integration with the existing business applications by sending SMS notifications, alerts and messages between users and the enterprise are useful. Through the web application, the enterprise can send an SMS to clients, partners or to the employees. There is mobile technology adoption in this example, but it is very

limited, hence the need to explore into this technology and enable it to do much more in knowledge management.

The respondents agreed that the company uses MMS for knowledge management as shown in Table 4.6. Tandi (2011) disagrees with the findings and reports that MMS as well as internet facilities and subscription to professional databases were not working in Tanzania. In addition, there were inadequate facilities and developments in technologies; one the other hand, mobile phones, for instance, were so readily available that they could have been used for the purpose. This example shows the technology factor was a major blow, there was no mobile technology for knowledge management.

The study also found that the respondents agreed that the company uses websites for knowledge management as presented in Table 4.6. The findings agree with those of Sitbon (2015) who found that knowledge management inspired systems administration and cooperation which releases imagination of people and the associations to embrace openings in the general public for its own development and advancement is crucial. There was a website and some services online, though there was not much information regarding the technology they use. They could incorporate mobile technology for easier information dissemination among the organization as well as to their corporates.

In addition, the respondents agreed that installable applications are used for knowledge management in the organization as shown in Table 4.6. The study found that other mobile technology platforms used in the company were phone calls, emails, WhatsApp, skype, zoom and flash screens. North and Kumta (2018) agree that companies use installable applications to complement mobile technology applications. Kumta (2018) however

disagrees that most companies adopt 6 main knowledge management systems which entailed GAA portal used for information dissemination using SharePoint and DotNet; global production portal: used for transactional knowledge for reuse using SharePoint and DotNet; SlidePool: used for sharing and reviewing presentations using SharePoint and DotNet; customer project and unit collaboration base: used for knowledge about customer and units using SharePoint and DotNet; social collaboration: used for collaboration suing SharePoint (MySite) and Wiki: used for document collaboration using SharePoint and DotNet. There is no mobile technology adoption seen in this example, which limits the use of such a system to specific devices that are connected to the internet.

5.2.3 Factors Affecting the Adoption of Mobile Technology

The study found that the respondents disagreed that the attitude of top management affects the adoption of mobile technology in the company as presented in Table 4.7. The employees neither agreed nor disagreed that employee attitude affects the adoption of mobile technology in the company. These findings are like those posited by Giampaoli, Ciambotti and Bontis (2017) who determined that other than the physical resources, individuals are the most critical asset in an association. Organizations are set to profit in their business targets by streamlining their procedures, human capital resources and physical resources, in this manner enhancing their primary concern. There was therefore need for knowledge management to be brought up by organizations.

The respondents disagreed that the presence of IT training programs affects the adoption of mobile technology in the company as presented in Table 4.7. The findings also indicate that the respondents agreed that the adoption of mobile technology by

competitors affects the company's strategy of adopting the technology. Kuo and Lee (2011) agree with the findings of the study when they found that critical external variables, empowering leadership and compatibility are proposed as significant contributors to knowledge management. Empowering leadership and compatibility are significant predictors of Perceived Ease of Use of technology adopted.

In addition, the respondents agreed that the presence of IT infrastructure affects the adoption of mobile technology in the company. In addition, the respondents agreed that employee skills affect the adoption of mobile technology in the company as presented in Table 4.7. Muli *et al.* (2017) agree that infrastructure in knowledge management assessment helps in making data easily traceable. However, organizations use mobile technologies considering technological advancements and different types of business settings.

The study found that there were factors affecting adoption of mobile technology management in the company which included having a device to access the applications and giving employees access to the network, training on the mobile technology platforms adopted, existing state of infrastructure, maintenance costs incurred, accessibility of mobile technology used, cost of acquiring a smartphone, organizational structure and roles and responsibilities of each employee and disorganization in duties. The findings are in line with those of Hung, Huang, Lin and Tsai (2005) who discussed the critical success factors involved in implementing a knowledge management system in order to enhance a firm's competitiveness. The study found that factors like a benchmarking strategy and knowledge structure; the organizational culture; information technology; employee involvement and training; the leadership and the commitment of senior

management; a learning environment and resource control; and evaluation of professional training and teamwork. Kankwatsa (2018) also agrees that strengthening institutional knowledge management which would establish a knowledge culture with appropriate infrastructure for organizational effectiveness and sustainability is essential for knowledge management in organizations.

5.3 Summary of Main Findings

The study sought to examine the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River. Specifically, the study sought to examine the extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River; evaluate mobile technology platforms used for knowledge management in Mahashakti Kenya Limited, Athi River and investigate that factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited, Athi River.

On the extent of mobile technology adoption, the study found that the respondents agreed that mobile technology is used to share information remotely in the company. The respondents agreed that mobile technology is used to share timely information. The study also found that the respondents strongly agreed that mobile technology is used to share different types of information. The respondents strongly agreed that mobile technology has been efficient in knowledge management within the company. The study determined that timely knowledge sharing, remote sharing of information and direct sharing of information significantly influenced better and faster target achievements, quick solutions and better decision making.

On mobile technology platforms, the study found that the respondents agreed that the organization uses SMS for knowledge management. The respondents were moderate on the usage of MMS for knowledge management in the company. The study also found that the respondents agreed that the company uses websites for knowledge management. In addition, the respondents agreed that installable applications are used for knowledge management in the organization. The study found that other mobile technology platforms used in the company were phone calls, emails, WhatsApp, skype, zoom and flash screens.

On the factors affecting the adoption of mobile technology, the study found that the respondents disagreed that the attitude of top management affects the adoption of mobile technology in the company. The respondents also disagreed that the presence of IT training programs affects the adoption of mobile technology in the company. However, the respondents agreed that the presence of IT infrastructure affects the adoption of mobile technology in the company. The findings also indicate that the respondents agreed that the adoption of mobile technology by competitors affects the company's strategy of adopting the technology. The respondents neither agreed nor disagreed that employee attitude affects the adoption of mobile technology in the company.

5.4 Conclusion

The study tested hypothesis and concluded that extent of mobile technology adoption, mobile technology platforms and factors affecting adoption of mobile technology positively influence knowledge management in Mahashakti Kenya Limited. Specifically, the study made the following conclusions:

Firstly, the study concluded that mobile technology was used to share information remotely in the company, share timely information and share different types of information. In addition, mobile technology has been efficient in knowledge management within the company.

Secondly, it was established that the organization used SMS for knowledge management, as well as MMS, websites, installable applications, phone calls, emails, WhatsApp, skype, zoom and flash screens.

Lastly, the study determined that the presence of IT infrastructure and adoption of mobile technology by competitors affected the company's strategy of adopting the technology. However, employee and management attitude did not largely affect the adoption of mobile technology in the company.

The study would provide literature material on knowledge sharing and would help other scholars in related topics. The management, employees and company processes would also benefit from the illumination of mobile technologies for knowledge management improvement and enhance goal achievements. Finally, the study would be significant to knowledge-oriented firms by providing information on the extent to which mobile knowledge affects knowledge management through knowledge sharing, and therefore they could advise measures on how to improve their knowledge sharing techniques.

5.5 Recommendations

Based on the findings, discussions and conclusions, the study made the following recommendations for improvement.

On the first objective, the study found that knowledge sharing, remote sharing of information and direct sharing of information improved better and faster target achievements, quick solutions and better decision making. The study therefore recommends more adoption of mobile technology in the company, as it will help improve on their knowledge management aspects of decision making, quick solutions and achieving of targets. The study also recommends integration of mobile technology to all departments where it had not been integrated, as it has been found to be essential in knowledge management in the company.

On the second objective, the study found that most mobile technology platforms used in the company were SMS, MMS, websites, installable applications, phone calls, emails, WhatsApp, skype, zoom and flash screens. The study recommends adoption of other platforms such as SharePoint and DotNet which can enable the company share information more and widely across departments.

On the third objective, the study found that the attitude of the top management and other employees did not affect knowledge management in the organization. It also found that IT infrastructure affects the adoption of mobile technology in the company and the adoption of mobile technology by competitors also affects the company's strategy of adopting the technology. The study therefore recommends the adoption of mobile technology that will increase their competitive advantage.

5.6 Areas of Further Research

This study was only conducted in Mahashakti Kenya Limited, Athi River. This limited the coverage of the study. The study also measured the view points of employees only; therefore, the views of other concerned parties such as regulators were not taken into account. The researcher recommends that other studies be conducted on the same subject area in other organizations to find out the views of other concerned parties. Other researchers could carry out a similar research in other organizations which are not in the the manufacturing industry such as the banking sector, insurance and media sectors and the results therefore used for comparisons.

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APPENDICES

Appendix I: Questionnaire for Employees

Thank you for taking part in this study. The aim of this research is to examine the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited. Please be as honest as possible. Your response will only be used for academic purposes only and not for any other use. The responses will be treated with utmost confidentiality.

SECTION A: DEMOGRAPHIC INFORMATION

1. What is your sex
   a) Male ☐
   b) Female ☐
2. What is your level of education?
   a) Secondary ☐
   b) Undergraduate ☐
   c) Masters ☐
   d) PhD ☐
3. How old are you?
   a) 20 – 25 ☐
   b) 26 – 35 ☐
   c) 36 - 45 ☐
   d) 45 and above ☐

SECTION B: EXTENT OF MOBILE TECHNOLOGY ADOPTION

4. To what extent are the following mobile technology techniques used at Mahashakti Kenya Limited? Use a ranked scale of 1-5 (1- Strongly disagree; 2- disagree; 3- Moderate; 4- agree; 5- strongly agree)

STATEMENTS	**1 SD**	**2 D**	**3 N**	**4 A**	**5 SA**
4a. Mobile technology is used to share information remotely					
4b. Mobile technology is used to share timely information					
4c. Mobile technology is used to share different types of information					
4d. Mobile technology has been efficient in knowledge management within the company					

4e. In what other ways from your own perspective does your company use mobile technology?

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SECTION C: MOBILE TECHNOLOGY PLATFORMS

5. To what extent does your company use the following mobile technology platforms for knowledge management? Use a ranked scale of 1-5 (1- Strongly disagree; 2- disagree; 3-Moderate; 4- agree; 5- strongly agree)

STATEMENTS	**1 SD**	**2 D**	**3 N**	**4 A**	**5 SA**
5a. The organization uses SMS for knowledge					

management					
5b. The company uses MMS for knowledge management					
5c. The company uses websites for knowledge management					
5d. Installable applications are used for knowledge management in the organization					
5e. The platforms used are effective for knowledge management					

5f. What other platforms does your company use for knowledge management?

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SECTION D: FACTORS AFFECTING THE ADOPTION OF MOBILE TECHNOLOGY

6. To what extent do the following factors affect the knowledge management in Mahashakti Kenya Limited? Use a ranked scale of 1-5 (1- Strongly disagree; 2- disagree; 3-Moderate; 4- agree; 5- strongly agree)

STATEMENTS	**1 SD**	**2 D**	**3 N**	**4 A**	**5 SA**
6a. The attitude of top management affects the adoption of mobile technology in the company					
6b. The presence of IT training programs affects the adoption of mobile technology in the company					
6c. The presence of IT infrastructure affects the adoption of mobile technology in the company					
6d. The adoption of mobile technology by competitors affects the company's strategy of					

adopting the technology					
6e. Employee attitude affects the adoption of mobile technology in the company					
6f. Employee skills affects the adoption of mobile technology in the company					

6g. What other factors in your own perspective affect the adoption of mobile technology in your company?

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……

SECTION E: KNOWLEDGE MANAGEMENT

7. To what extent does knowledge management improve knowledge management in Mahashakti Kenya Limited? Use a ranked scale of 1-5 (1- Strongly disagree; 2- disagree; 3-Moderate; 4- agree; 5- strongly agree)

STATEMENTS	**1 SD**	**2 D**	**3 N**	**4 A**	**5 SA**
7a. Mobile technology leads to quick knowledge solutions within the company					
7b. Mobile technology leads to better decisions in the company					
7c. Mobile technology leads to reduced losses in the company					
7d. Mobile technology leads to improved process efficiencies					
7e. Mobile technology leads to better and faster target achievements					

7f. In what other ways does the mobile technology improve knowledge management in your organization?

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THANK YOU!

Appendix II: Key Informant Interviews

i. What is extent of adoption of mobile technology for knowledge management in Mahashakti Kenya Limited?

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ii. What are the mobile technology platforms used for knowledge management in Mahashakti Kenya Limited?

_____

_____

_____

iii. What are the factors affecting the adoption of mobile technology for knowledge management in Mahashakti Kenya Limited?

_____

_____

_____

Appendix III: NACOSTI Authorization Letter



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/19/47981/27820** Date: **1st February, 2019**

Kirandeep Kaur Rehal
Africa Nazarene University
P.O. Box 53067-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Developing a framework for the adoption of mobile technology for knowledge management in manufacturing firms: A case study of Mahashakti Kenya Limited, Athi River"*** I am pleased to inform you that you have been authorized to undertake research in **Machakos County** for the period ending **1st February, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Machakos County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Machakos County.

The County Director of Education
Machakos County.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified

Appendix IV: NACOSTI Permit

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. **The License is valid for the proposed research, location and specified period.**
2. **The License and any rights thereunder are non-transferable.**
3. **The Licensee shall inform the County Governor before commencement of the research.**
4. **Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.**
5. **The License does not give authority to transfer research materials.**
6. **NACOSTI may monitor and evaluate the licensed research project.**
7. **The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.**
8. **NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.**

National Commission for Science, Technology and innovation
P.O. Box 30623 - 00100, Nairobi, Kenya
TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 22947

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MISS. KIRANDEEP KAUR REHAL
of AFRICA NAZARENE UNIVERSITY, 5327-506 Nairobi,has been permitted to conduct research in *Machakos County*

on the topic: *DEVELOPING A FRAMEWORK FOR THE ADOPTION OF MOBILE TECHNOLOGY FOR KNOWLEDGE MANAGEMENT IN MANUFACTURING FIRMS: A CASE STUDY OF MAHASHAKTI KENYA LIMITED, ATHI RIVER.*

for the period ending:
1st February,2020

Permit No : NACOSTI/P/19/47981/27820
Date Of Issue : 1st February,2019
Fee Recieved :Ksh 1000



.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

Appendix V: Letter from the County Commissioner

THE PRESIDENCY

MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telephone: 21009 and 21983 – 90100
Email Address:countycommasaku@gmail.com
Fax No. 044-21999

OFFICE OF THE
County Commissioner
P.O. Box 1 - 90100
MACHAKOS.

When replying please quote:

REF NO.CC/ST/ADMS/9VOL.11/48 **DATE:** 12th March, 2019

The Deputy County Commissioner
ATHI RIVER SUB COUNTY

RE: RESEARCH AUTHORIZATION- KIRANDEEP KAUR REHAL

The National Commission for Science, Technology and Innovation has authorized the below named researchers to carry out a research on ***"Developing a framework for the adoption of mobile technology for knowledge management in manufacturing firms: A case study of Mahashakti Kenya Limited, Athi River"*** in Machakos County for the period ending **1st February, 2020.**

Please be notified and accord her the necessary assistance.

COUNTY COMMISSIONER
MACHAKOS
P.O. Box 1 MACHAKOS

ELIJAH OMOYO
For: COUNTY COMMISSIONER
MACHAKOS

Appendix VI: Letter from the County Director of Education

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION

Telegrams: "**SCHOOLING**" Machakos
Telephone: Machakos (
Fax: Machakos
Email –cdemachakos@yahoo.com
When replying please quote

OFFICE OF THE
COUNTY DIRECTOR OF
EDUCATION
P.O. BOX 2666-90100,
MACHAKOS

MKS/ED/CDE/U/1/VOL.2/275

12th March, 2019

Kirandeep Kaur Rehal
African Nazarene University
P.O Box 53067-00200
NAIROBI

RE: RESEARCH AUTHORIZATION.

Reference is made to the letter from National Commission for Science, Technology and Innovation Ref: **NACOSTI/P/19/47981/27820** dated **1st February, 2019.**

You are hereby authorized to carry out your research on, "**Developing a framework for the adoption of mobile technology for knowledge management in manufacturing firms: A case study of Mahashakti Kenya Limited, Athi River in Machakos County Kenya"** for a period ending **1st February, 2020.**

COUNTY DIRECTOR OF EDUCATION
MACHAKOS
MINISTRY OF EDUCATION
P.O. Box 2666-90100 MACHAKOS

SHAMSA MOHAMED ADAN
COUNTY DIRECTOR OF EDUCATION
MACHAKOS

Appendix VII: Letter from the University

AFRICA NAZARENE
UNIVERSITY

January 18, 2019

To Whom It May Concern

Dear Sir/Madam,

RE: PROPOSAL APPROVAL FOR KIRANDEEP KAUR REHAL (17S03DMIT003)

The above named is a Master of Applied IT student at Africa Nazarene University. This is to confirm that her research proposal titled "Developing a framework for the adoption of mobile technology for knowledge management in manufacturing firms: A case study of Mahashakti Kenya Limited, Athi river" has been approved for conduct of research, subject to obtaining other permissions and/or clearances that may be required beforehand.

Any support and/or assistance accorded to her will be highly appreciated.

Please feel free to contact me via email on jobuhuma@anu.ac.ke in case of further clarity required.

Yours Sincerely,

AFRICA NAZARENE UNIVERSITY
CHAIRMAN
SIGN:.....
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Obuhuma James
Head of Department, Computer and Information Technology