PROJECT LEADERSHIP COMPETENCIES, STRATEGIC FACTORS AND ENTERPRISE RESOURCE PLANNING SYSTEM PROJECT IMPLEMENTATION, IN SELECTED ENERGY SECTOR STATE PARASTATALS IN KENYA

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DECLARATION AND APPROVAL

I declare that this thesis is my own work and has not been submitted for a degree in any other university.

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DEDICATION

I dedicate this thesis to my dear wife, Pat Kemei and my lovely daughter Zuri for their love, support and encouragement throughout this program.

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LIST OF ABBREVIATIONS AND ACRONYMS

CSF:	Critical Success Factors
ERC:	Electricity Regulatory Commission
ERP:	Enterprise Resource Planning
GDC:	Geothermal Development Company
ICT:	Information Communication Technology
IT / IS:	Information Technology / Information System
KENGEN:	Kenya Electricity Generating Company
KETRACO:	Kenya Transmission Company
KPC:	Kenya Pipeline Company
KPLC:	Kenya Power and Lighting Company
REA:	Rural Electrification Authority
ROI:	Return on Investment
SAP:	Systems Applications and Products
IV:	Independent Variable
MV:	Moderating Variables
DV:	Dependent Variable

ABSTRACT

By adopting Enterprise Resource Planning (ERP) systems in place of the old stand-alone legacy systems, organizations stand to gain a competitive edge through enhanced business processes, increased productivity, reduced operational costs and improved service delivery. While the benefits associated with ERP systems are numerous and indisputable, studies continue to show that an average of 60% of all worldwide ERP system implementations, in both the developed and developing markets, face challenges and fail to achieve their intended objectives. Principally, ERP system projects are considered highly challenging to deploy, that not only requires rigorous efforts but also demands to have an exhaustive investigation of factors that influence the implementation and adoption of the same. Though several research studies have explored some of Critical Success Factors (CSF) influencing ERP system project implementation, a few of them have focused on project leadership competencies in relation to ERP system project implementation performance. This study therefore sought to investigate the influence of project manager leadership competencies on ERP system project implementation, while establishing the moderating effect of ERP system strategic factors, namely, top management support and implementation strategy on their relationship. For an in-depth analysis of these factors, data was collected and analyzed from Kenya Energy Sector State Parastatals which have implemented ERP Systems with a view of consolidating the benefits associated with them. While questionnaires were used to collect data from study respondent groups, namely; top management and ERP system project team member in their respective organizations, key informant interviews guide was used to collect data from Heads of ICT in these organizations for purposes of triangulation. The study took a pragmatic view which combines both qualitative and quantitative approaches, correlational design was used to determine the extent to which two or more variables related. Sample design used in the study is census given the target respondents from the population. Data was analyzed using Statistical Package for Social Sciences (SPSS) application, version 23. While descriptive analysis made use of frequencies, means and standard deviations, Pearsons' correlation analysis and Regression analysis were used to make inferential analysis from collected data. The findings indicate a significant positive relationship between the main predictor variable and the outcome variable, underpinning the importance of project manager leadership competencies in achieving ERP system project implementation success. The moderating influence of ERP system strategic factors on the relationship between main predictor variables and independent variable was equally significant. This study is expected to facilitate understanding and organizational policy transitions on ERP system project planning, management and implementation process in the Energy sector, and by extension to other organizations, while provide guidelines from lessons learned in regards to ERP systems projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In an effort to remain relevant and to be globally competitive, both government and private institutions have continued to embrace the use of Information Technology (IT), precisely Enterprise Resource Planning (ERP) systems. ERP systems are key components which assists institutions to acquire competency by incorporating the organization processes (Jing & Qiu, 2007; Noudoostbeni, Yasin and Jenatadi, 2009). In the past few years, ERP system has become a ‘‘must have’’ system for almost every firm to improve competitiveness (Yen and Sheu, 2004). Through ERP systems, companies are able to incorporate their organizational procedures, operational information and financial data throughout the business, all this is in an effort to lower expenses, boost performance, acquire competency and gain more market share (Nour & Mouakket, 2011; Gupta & Kohli, 2006).

O‘Leary (2000) described ERP system as part or one of the package software built for use in multiple organizations. According to (Lindh, 2009), ERP system is computer-based solution devised that act or process resources available in an enterprise in order to be successful in business activities. In my opinion, ERP system is an IT based Information Systems (IS) that integrates business data into one single database, allowing business function to share data across the enterprise. Examples of ERP system include; Oracle ERP system, SAP, Microsoft dynamics AX and Jeeves. Implementing ERP system in an organization is globally considered as an irresistible challenge, with the typical ERP system implementation approach (Mabert, Soni & Venkataramanan, 2003).

In a survey of 163 large firms, businesses have obtained various benefits on acquiring the information systems which include; efficient management of decision marking processes, enhanced consumer services delivery, lower operations cost, decreased rigidity, quick, precise dealings, decrease in costs and high benefits (Davenport et al., 2002). However, according to Karim et *al.,* (2007), dataflow structures will experience an advantageous effect in the institutions if they extensively empower business processes. ERP projects needs integration of

various processes in an organization and a good link among employees, supervisors, ICT professionals, institution planners, business researchers, and business group members (Sambamurthy & Kirsch, 2000).

Given that there is no single specific factor that can explain ERP system project performance, there is need for an extensive investigation of the various factors presumed to influence ERP system implementation, especially in the context of developing countries such as Kenya. Many have identified causes of failures, critical issues, critical success factors and areas of improvements in the recent past (Gajic et al., 2014; Al-Mashari and Zairi, 2000; Amoako-Gyampah, 2004; Ettlie et al., 2005; Kim et al., 2005; Loh and Koh, 2004; Muscatello et al., 2003; Xu et al., 2002; Al-Mashari et al., 2006). Despite the various research and recommendations on ERP systems projects, many organizations continue to experience challenges in relation to ERP systems project implementation. A good number of ERP projects accomplished partial achievement, with a degree of failure projected at 60% and 90% as scholars (Xia et al., 2010; Al- Shamlam & Al-Mudimigh, 2011).

Based on individuals selected from 62 organizations, inspirations for an ERP adoption is explained by the need to solve technological challenges and operational difficulties such as processes inefficiencies and business performance as established by Deloitte Consulting (1998). This study therefore seeks to determine the influence of project manager leadership competencies on ERP system project implementation and the moderating role of ERP system strategic factors on their relationship, a case of selected Energy sector parastatals in Kenya. The overall research questions seek to address how organizations can better ERP systems projects implementation performance through the appointment of competent project leadership and team, provision of adequate resources, adoption of appropriate implementation methodology and by ensuring full top management support for the project.

1.1.1 ERP system project implementation

Measuring performance is a critical factor in optimizing accountability and sustainability as outlined by various literatures on ERP system project implementation. Al-Mashari (2003) in measuring performance variation in relation to ERP system adoption came up with three main clusters of benefits; functional, managerial and strategic benefits. Over time, numerous tactics

and practices are proposed to appraise the impact of technological systems. Traditional approaches put emphasis on monetary value, such as present discounted value and payback period. Presently, a number of research carried out have shown that the balance score card method may be used to establish ERP system performance (Markus & Tanis, 2000; Rosemann, 2000; Chand, Owhoso and Vasudevan, 2005).

For purposes of this study, ERP system project implementation is measured based on a combination of IS success model and project constraint triangle model to capture project management success in both.

1.1.2 ERP system implementation leadership competencies

Project Management is an organizational discipline that is becoming an integral part of the IT function. Leadership is embedded into one's job at any level of an organization or project team. A specific person is supposed to be allocated a task to emanate progress in project management (Rosario, 2000). Implementing ERP System projects successfully calls for strong leadership with appropriate knowledge, skills and experience in project management and with the ability to organize the correct beneficial methods of the project. In general, available information propose that leadership and project coordination is crucial in ERP process in project adoption, and further indicates a correlation between leadership competencies and project implementation (Davenport, 2000; Kim et al., 2005).

Leadership is an essential competency, particularly for programs and projects with complex elements associated with human behavior, and covers areas such as negotiating, communicating, problem solving, and critical thinking (PMI, 2014). The three categories of leadership competencies are; Intelligence, management and Emotional, as alluded by Dulewicz and Higgs (2003) will be considered in this study in defining project leadership role as far as ERP system project implementation is concerned. Intellectual competence includes; leadership intelligence, analytical skills, conceptual ability, creative skills, pragmatic skills, education, experience, track-record among others. Both intellectual and emotional competence are expressive abilities required by organizational leadership, in order to inspire and motivate project teams (Herkenhoff, 2004).

Managerial competence denotes those administrative activities that are mainly attentive on accomplishing responsibilities such as; forming, scheduling, delegating, collaborating, data management and explaining project-related difficulties. Expressive aptitude is the person's capability to recognize and comprehend one's individual and others reactions appropriately, and react to those feelings using favorable method (Goleman, 2006; Kunnanatt, 2008). Various scholars, such as (Goleman, Bouyatiz and McKee, 2002) established a profound connection among expressive aptitude and management stylishness of a leader and project success.

1.1.3 ERP system strategic factors

Several studies have come up with different frameworks for classifying ERP System CSF's. For instance, (Holland and Light, 1999), in trying to understand ERP system implementation performance, classified ERP System CSF's into two main broad categories, namely strategic and tactical factors. However, this study will consider the moderating role of ERP System project strategic factors, namely top management support and implementation strategy grounded on Jonkoping International Business School, which categories ERP System project CSF's into three, namely; strategic factors, tactical factors and cultural determinants.

1.1.3.1 Top Management Support

Top management support is indeed essential at all stages of a project; before, during and after ERP System implementation. Top management support is described as the continued support of the ERP implementation process within the business, through adequate funding, providing required staff and ensuring that the adoption process aims at realizing organizational objectives (Stratman & Roth, 2002). Senior management backing is essential for achieving project objectives and positioning these with planned organizational aims (Summer, 1999). There is need for a continued organization sustenance and obligation, equally, senior and junior staff in the adoption process, in respect to individual participation and the readiness to assign valued institutional reserves (Holland et al., 1999).

1.1.3.2 ERP system implementation Strategy

Implementation strategy refers to the approach used in adoption of the ERP process throughout the organization. Scholars such as Teltumbde et al., (2002) propose that the adoption plan is a

key factor that influences the achievement of the ERP process project. ERP system adoption plans comprise of organized or appropriate tactics. According to O'Leary (2000), there are two basics implementation strategies or approaches that are being used to implement ERP system, these implementation strategies included; Big-bang strategy and Phased strategy. The big bang theory is where the installation of all ERP systems modules happens across the entire organization at once, while the phased approach considers module-wise implementation. Appropriate ERP System adoption plan consist of organization design and how the application is to be adopted (Holland et al, 199). Prior to ERP system implementation, the key questions that an organization and project leadership should exhaustively address is whether to adopt all models that are matching (big-bang) or put into action phased method where each model would be adopted in a consecutive style. Each approach has pros and cons hence the need to make an informed decision based on the scenario at hand.

1.1.4 ERP Systems and Energy Sector

Globally, the energy sector has remained essential in the promotion of the economy of any country. The sector is driven by innovations, that helps realize greater yields from specific energy sources, and hence the pressure to adopt the use of Technology, and more specifically ERP systems, as one sure way to optimize their operations for sustainable growth. Globally, the adoption of ERP systems has since heightened as illustrated by various studies (Mabert, Soni and Venkataramanan, 2000; Van Everdingen, Van Hillegersberg and Waarls, 2000; Olhager and Selldin, 2003).

The capability to expand ERP system acquisition using innovative business process re-engineering is considered extremely important within the Oil & Gas business - specially for "Edge" surroundings such as offshore rigs, factories and pipelines. For instance Ensco International Incorporated (ENSCO) a foremost worldwide offshore Oil & Gas drilling companies through ERP automation was able to inevitably gather and simultaneously apply data end-to-end throughout their working areas. It collects information straight from unfixed and automatic input gadgets, authenticates its correctness, offers improved functionality and dispensation that are desirable, and permits the data to the core application for instant update. Currently ENSCO has the entry capability to business data from PeopleSoft submissions on

computers or portable mainframes on more than 52 offshore rigs and 4 storerooms globally, even when the rigs are "still", throughout a rig change.

In Kenya, the Ministry of Energy has been singled out as one of the key drivers in achieving Vision 2030 strategy and global millennium development goals. As a country, energy security remains a matter of national priority in lowering costs of doing business and making Kenya a globally competitive country. To achieve this, technology is considered a key enabler in meeting organizational strategy and objectives. From Appendix III attached, it is evident that the Kenya energy sector parastatals have embraced the use of ERP solutions. However, the big concern then remains whether these organizations have realized the anticipated benefits associated with investment in the ERP systems. The study was focused on the Kenya Energy Sector parastatals that have implemented ERP system projects as outlined in Appendix III.

1.2 Statement of the Problem

In spite of the great advancement and value anticipated through ERP system project implementation, ERP system project failure is fairly common across organizations, and is associated with massive losses of resources (Davenport, 2000; Huang et al., 2004). IS implementation has been and remains to be a theme of substantial awareness to consultants as well as speculative scholars for over twenty years (Sarker, 2000). Despite extensive significant research having been done on the determinants of ERP system project implementation performance, different scholars shows that 50% to 70% of global ERP system adoption encounter difficulties and fail to attain their outlines aims (Backhout, Frey &Nemec, 1999; Hong & Kin 2001; Umble & Umble 2002, De, 2004; Jasperson, Carter Zmud, 2005).

Although ERP systems are designed for quick deployment, organizations many times finds it complicated to implement, this is because ERP system project implementation requires not only rigorous efforts in planning and execution, but also a wide and in-depth analysis of CSF's, ranging from technological, organizational, process and people factors (Gajic et al., 2014; Al-Mashari and Zairi, Ettlie et al., 2005; Muscatello et al., 2003). On the other hand, consequences of ERP system failure are often disastrous to an organization, considering the cost, the risks and the economic impact to business. FoxMeyer, a US based organization in 1996 went into bankruptcy on the basis of a failed SAP ERP system project (Caldwell, 1998; Stein, 1998). In

2004, Hewlett-Packard's (HP) in its attempt to implementation of multiple enterprise systems with a view to overhaul its business processes and drive costs down turned tragic, leading to financial loss of over $160 million. 21% of companies who responded to a 2015 Panorama Consulting Solutions survey characterized their most recent ERP rollout as a failure. In Kenya, the state-owned Uchumi supermarket chain became insolvent in June 2006 citing the over-ambitious expansion strategy and the poor installation of the ERP system.

According to Yu (2005), ERP system application is not only a procedural issue but also a personality issue, hence the need to equally focus on organizational and project management factors in research in order to recognize and comprehend the determinants that influence a lot on the progress or deterioration of ERP process implementation. To determine the purpose and influence of project management based on ERP adoption process publications reviewed by (Anees Ara and Al-Mudimigh, 2011) noted that ERP system management plays a key role in ERP system project implementation. Muller and Turner (2007), in seeking to establish the influence of project manager on ERP project success using web-based survey method, concluded that experienced project managers have higher chances of success compared to young project managers.

This study therefore seeks to establish the influence of project leadership competencies and ERP strategic factors on ERP system project operation in the background of less developed nations; a case study of the Kenya Energy Sector State parastatals. Grounded on the information retrieved it evident that management skills are occasionally recognized as serious determinants on ERP systems developments (Limsila & Ogunlana, 2007; Muller and Turner, 2005). The interest in this study problem stems from relevant literature and gaps of past research studies seeking to know why most ERP systems projects fail to be delivered within time, budget, scope and business objectives, and particularly in developing countries. Turner and Muller (2005), recommended for further study into the development manager's management style when recognizing project success influencers. According to Tuner and Muller (2005), reviewed studies have greatly neglected the influence of the project manager and his/her skills, on project accomplishment.

1.3 Purpose of the study

The purpose of this study was to determine the influence of project manager leadership competencies and ERP system strategic factors on ERP system project implementation, and to establish the moderating influence of ERP system strategic factors on the relationship between project manager leadership competencies and ERP system project implementation among energy sector state parastatals in Kenya.

1.4 Research objectives

The following were the research objectives;

i. To establish the relationship between project manager intellectual competence and ERP system project implementation.
ii. To establish the relationship between project manager management competence and ERP system project implementation.
iii. To establish the relationship between project manager emotional competence and ERP system project implementation.
iv. To establish the relationship between project manager leadership competencies and ERP system project implementation.
v. To establish the relationship between top management support and ERP system project implementation.
vi. To establish the relationship between implementation strategy and ERP system project implementation
vii. To establish the relationship between ERP system strategic factors and ERP system project implementation
viii. To establish the moderating role of top management support on the relationship between project manager leadership competencies and ERP system project implementation.
ix. To establish the moderating role of implementation strategy on the relationship between project manager leadership competencies and ERP system project implementation.
x. To establish the moderating role of ERP System strategic factors on the relationship between project manager leadership competencies and ERP system project implementation.

1.5 Research questions

The research sought to answer the following questions;

i. To what extent does project manager intellectual competencies influence ERP system project implementation in Energy Sector State Parastatals?
ii. To what extent does project manager managerial competencies influence ERP system project implementation in Energy Sector State Parastatals?
iii. To what extent does project manager emotional competencies influence ERP system project implementation in Energy Sector State Parastatals?
iv. To what extent does project manager leadership competencies influence ERP system project implementation in Energy Sector State Parastatals?
v. To what extent does top management support influence ERP system project implementation in Energy Sector State Parastatals?
vi. To what extent does implementation strategy influence ERP system project implementation in Energy Sector State Parastatals?
vii. To what extent does ERP system strategic factors influence ERP system project implementation in Energy Sector State Parastatals?
viii. To what extent do top management support influence the relationship between project manager leadership competencies and ERP system project implementation in Energy Sector State Parastatals?
ix. To what extent do ERP system implementation strategies influence the relationship between project manager leadership competencies and ERP system project implementation in Energy Sector State Parastatals?
x. To what extent do ERP system strategic factors influence the relationship between project manager leadership competencies and ERP system project implementation in Energy Sector State Parastatals?

1.6 Research hypothesis

This study tested the following hypothesis:

$H1_1$: Project manager leadership competencies and ERP system project implementation

$H1_{1a}$: There is a significant relationship between leadership intellectual competence and ERP system project implementation

$H1_{1b}$: There is a significant relationship between leadership managerial competence and ERP system project implementation

$H1_{1c}$: There is a significant relationship between leadership emotional competence and ERP system project implementation

$H1_{1d}$: There is a significant relationship between intellectual, managerial and emotional leadership competencies and ERP System projects implementation.

$H1_2$: ERP System strategic factors and ERP system project implementation

$H1_{2a}$: There is a significant relationship between top management support and ERP system project implementation

$H1_{2b}$: There is a significant relationship between implementation strategy and ERP system project implementation

$H1_{2c}$: There is a significant relationship between ERP system strategic factors and ERP system project implementation

$H1_3$: The moderating effect of ERP System strategic factors on the relationship between project leadership competencies and ERP system project implementation

$H1_{3a}$: The strength of the relationship between project leadership competencies and ERP system project implementation depends on top management support

$H1_{3b}$: The strength of the relationship between project leadership competencies and ERP system project implementation depends on ERP System implementation strategy

$H1_{3c}$: The strength of the relationship between project leadership competencies and ERP system project implementation depends on ERP System strategic factors

1.7 Significance of the study

The findings of this research are of benefit to both academics and practitioners by enabling them to have better understanding of the ERP System project implementation success. More specifically, organizations top management may find this study an invaluable source of information in understanding the importance of their role in ensuring appropriate ERP System project leadership and in providing an enabling environment through their participation and provision of necessary resources for ERP System project implementation success. Investment in ERP Systems is matter of great concern for IS consultants since their adoption is a major

monetary and human venture for any organization (Davenport, 2000; Parr et *al*., 1999; Willis 2001; Zrimsek 2001).

In addition, academicians and practitioners such as project managers may find this research useful in enhancing their understanding of ERP System projects implementation performance and hence optimize their ERP System research and implementations to ensure maximum returns on their ERP systems investment. The research findings may be equally important to ERP System vendors, organizations implementing ERP systems and researchers, since ERP adoption is a chief financial and human investment for any organization (Davenport, 2000; Parr et *al*., 1999; Willis 2001, Zrimsek 2001). The findings of this study will provide organizations adopting ERP systems with a better understanding of likely challenges, hence enabling them put in place necessary measures to assist in minimizing the risks related of project execution.

1.8 Delimitation of the study

The study was based on all the Energy Sector Parastatals in Kenya that have implemented SAP ERP system for effective comparison of factors under consideration, and more specifically the implementation strategy. Sampling was done based on three main groups, namely; project team members, top manager and Head of ICT, categories believed to be highly informed based on their role in ERP System implementation within their organizations. In addition, most of the Parastatals under study are based in Nairobi County hence were easily accessible.

1.9 Limitations to the research

Though the study was restricted to the Energy Sector Parastatals that had implemented SAP ERP system in Kenya, the findings could be generalized to all other types of ERP systems such as Oracle and Microsoft. This limitation was minimized by the fact that the various ERP system vendor defined methodologies agree in principle on the major stages of ERP project implementation life-cycle and project management principles. Since the organizations under study were government agencies, respondents would have had reservations to disclose some information due to the unwillingness of most companies to admit and disclose their ERP System failures. Where possible, these potential shortcomings were addressed by applying both quantitative and qualitative approaches to research and by assuring respondents of privacy and

use of information provided for intended purpose only. In addition, sampling was done in such a way that it represents the population with necessary knowledge to effectively respond to factors of study, where necessary concepts and terms were clarified to the correspondents.

1.10 Assumptions of the study

The study assumed that the target respondents were knowledgeable enough on the subject matter and factors under study to adequately respond to the questioner or interview, and that the target respondents involved in the ERP system project implementation were still working within their respective organizations. The study further assumed that the respondents were honest and truthful in their responses.

1.11 Definition of significant terms

Enterprise Resource Planning (ERP) system: - It is a software application that assimilates the different segments of organizational functions onto one consolidated system within a central database. Examples of ERP systems include; SAP, Oracle and Microsoft dynamics.

ERP system project: - An ERP system implementation, undertaken to achieve certain business objectives, it is defined in terms of outputs, outcomes or benefits, within specified timelines and resources.

Project leadership competencies: - This refers to capabilities and skill considered essential for ERP system project managers to achieve project objectives and goal. These include; intelligence competence, emotional competence and managerial competence.

Intelligence competence: - Type of leadership competencies that involves a measurement of cognitive capacity, one's ability to think and reason and make sound business decisions.

Managerial competence: - Type of leadership competencies that involves the capacity to understand right from wrong and to behave based on the value that is believed to be right. These competencies include; empathy, conscience, self-control, respect for others, kindness, tolerance, and fairness.

Emotional competence: - Type of leadership competencies that involve the ability to recognize, understand, use and manage emotions in oneself and to be aware of others feelings and understand the need to empower them.

ERP system strategic factors: - Refer to organizational project factors that are essential for ERP system project implementation. In this case, they include; top management support and implementation strategy as identified by Jonkoping International Business School.

Top management support: - Refers to the active participation and commitment of organizational top leadership in the ERP system implementation projects. This includes involvement and provision of required resources.

ERP system implementation strategy: - Refers to the approach and methodology used or adopted by an organization in the installation and deployment of an ERP system.

Critical Success Factors (CSF): - These are features or variables essential for an ERP system project implementation in order for business to adequately achieve its objectives and desired value.

1.12 Organization of the study

This research has five chapters. Chapter one presents background information, research and objectives for the study in the area of ERP systems projects implementation. Chapter two evaluates literature and earlier conclusions in relation to the areas of study by presenting an overview of ERP systems project implementation, the application of the same in the energy sector, theoretical background and the conceptual model that offers the study model, unfolding aspects and parts of the study along with their explanations and associations. Chapter three presents the research methodology, design, data collection and analysis methods, screening survey tools and their descriptions. The results of the pilot survey were used to examine whether or not the survey instrument is developed properly. Chapters four contains data analysis, presentation, interpretation and discussions of the survey results and findings. Chapter five provides a summary of findings, conclusion and recommendation of the study by scrutinizing the impact of the study done and presents recommendations for future research and practice.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Over time, ERP systems have become the most important IS solution for both private and public-sector organizations. This chapter provides an overview of ERP system, while seeking to scrutinize the inspiration of project manager leadership competencies on the ERP system project implementation in the light of existing literature review, with an aim of validating or nullifying the same. To effectively achieve this, it was necessary to examine the influence of ERP System strategic factors, namely; top management support and implementation strategy on the relationship between project manager leadership competencies and ERP system project implementation. This segment likewise highlights the theoretical and conceptual frameworks for the study.

2.2 ERP system overview

ERP processes are joined IS planned to generate a one unified output application with the ability to link all the various functions and processes within an organization. The admiration of ERP software commenced in the early 1990s and has grown up to become one of the greatest extensive software applications used in dealing with enterprise widespread commercial progressions (Holland, Kawalek & Light, 1999). The term Enterprise Resource Planning (ERP) was devised by Gartner Group in 1990s, with a view to describe a set of interconnected computer systems that can help in organizing the different functions and activities of an organization. Over time, researchers and practitioners have continued to define ERP Systems in different ways. For instance, (Seddon, Shanks and Willcocks, 2003) defines an ERP arrangement as a packaged professional software system that permits a business to program & fit in widely held corporate procedures, and share joint data and applies across the whole business. O'Leary (2000), defined an ERP system as "computer-based solution intended to process business transactions in real-time arrangement while providing feedback". Today, ERP System vendors have added extra components and functioning as "add-ons" to the essential modules, giving birth to the protracted

ERPs (Hossain, Patrick & Rashid, 2002). Technically, ERP systems are branded as Commercial Off-The-Shelf (COTS) applications.

2.2.1 Structure and characteristics of an ERP system

Regardless of the definition, all ERP systems have this in common; integrated modular design, many distinct business functions and a centralized common database management system (DBMS) as illustrated in Figure 1.

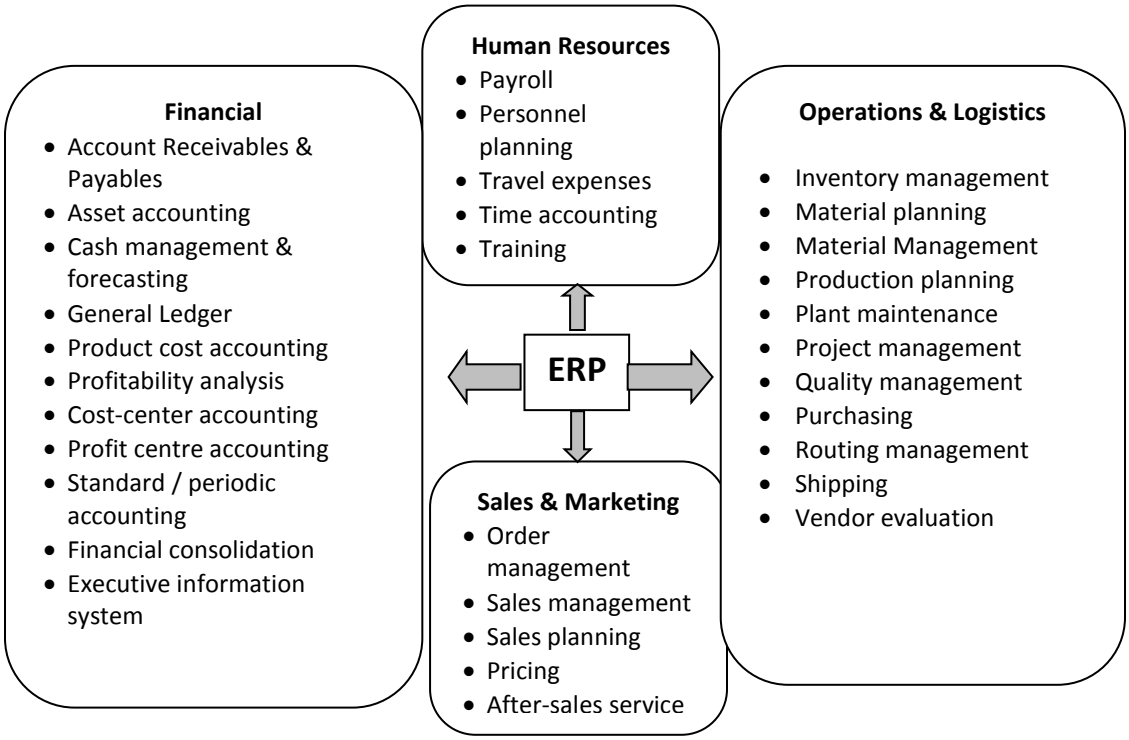

Figure 1: ERP System Functionality Overview (Adam & Sammon, 2003)

ERP system structure is designed to meet the various levels of organizational informational needs. According to Keller (1994), an ERP system has the following technological characteristics; incorporation of a interpersonal catalogue, numerous features, including a graphical user interface (GUI), candidness to diverse hardware podiums, client-server style, consideration of supply chain and openness to internet and intranet. ERP systems are designed with the capability to fulfill all the three levels of organizational information needs, namely; operational, tactical and strategic requirements.

2.2.2 ERP system project life-cycle

ERP System project implementation often follows certain defined methodology or systematic phases. Project Management approaches to ERP system implementation may vary from one ERP System vendor to another in terms of description and details. However, regardless of the ERP System Vendor, all ERP System project methodologies are based on the following seven (7) structured but interrelated stages as illustrated in Figure 2.

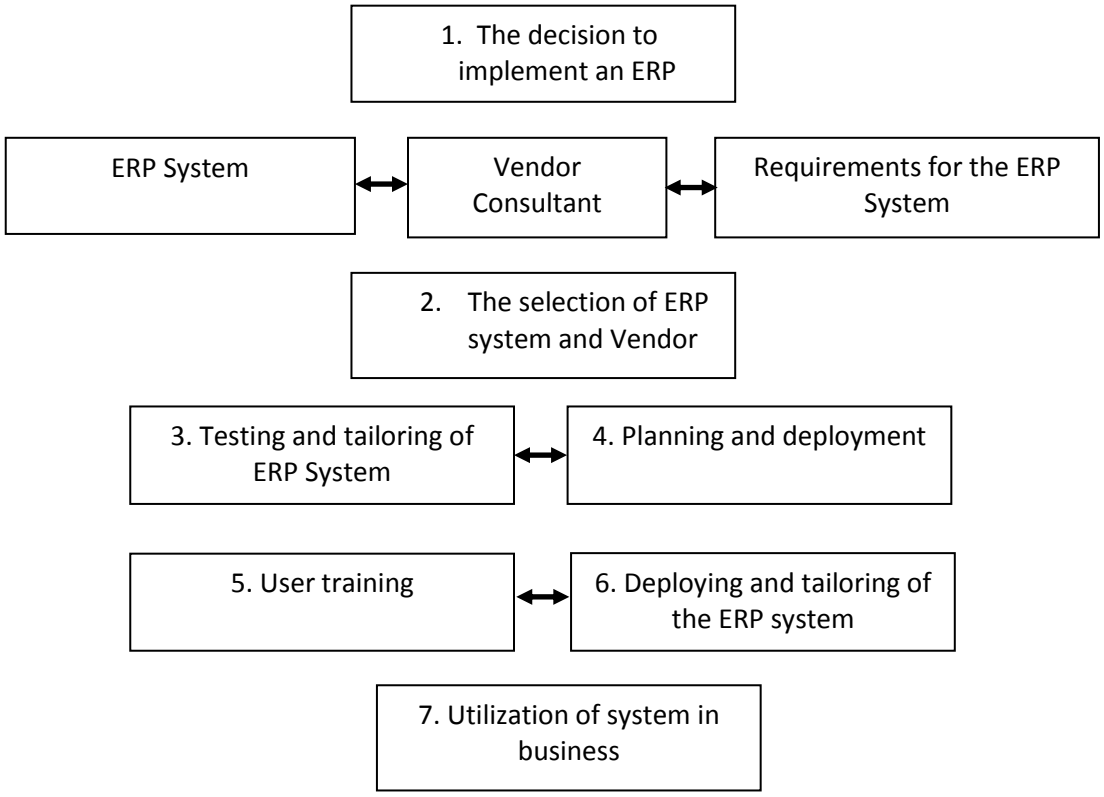

Figure 2. The main phases in the ERP implementation project. (Kouri and Vilpola 2006)

These phases are structured, with formal deliverables and sign-off at the termination of each one of them. These phases are structured, with formal deliverables and sign-off at the termination of each one of them. The main ERP system project life cycle phases are the decision to implement ERP system, ERP system and Vendor selection, Testing, tailoring and deployment, user training and finally, system utilization and project closure. First, the organization has to make decision on the need for based on their strategy and business objectives, this phase includes business case,

budget provision and designating the project management team. Second, is the ERP system and vendor selection process, commonly referred to as procurement, based on identified ERP business requirements and needs. Vendors and consultants of the systems should be evaluated and compared, because the vendor often has an important role in the implementation project. (Kouri and Vilpola 2006). Decision about the vendor is very important and requires careful consideration.

Third, includes testing and tailoring the ERP system to ensure the system's meets outlined company's business needs. The term tailoring, according to (Brehm, Heinzl and Markus. 2001), refers to customization, modification to best suit the organization's needs. On the other hand, testing is done to ensure the system does exactly what it is design to do, in terms of output. Fourth phases incorporates planning the deployment, actual implementation and training of users. At this point, project is at its critical stage and requires careful attention because the mistakes made at this stage can lead to a situation where the users are not utilizing the system properly. Successful deployment, testing and user training leads to system adoption and utilization, it is at this stage the project can be closed according to (Kouri and Vilpola 2006)

2.3 ERP system project implementation

Project management as a discipline focuses on three key result knowledge areas, namely; general management, project management and IT management, which complement each other. While general management focuses on ensuring proper management policies and practices, project management ensures quality project process and results. On the other hand, IT management involves creating and maintaining quality IT product. Generally, ERP System project success is depended on the opinion from which you measure it, though the suitability set of events hinge on the entity overall plan, IT and the specific sector in which they compete (Davenport, 2000; Kim et al., 2005).

Based on research, there are several ways in which ERP system project would be measured. Heeks (2002), describes IT systems projects performance into three categories, namely; Complete failure (aborted implementation), Partial failure (some key objectives are achieved) and Success (majority of stakeholders goals are achieved with system functioning as anticipated). Project managers and ERP System advisors frequently defined achievement in

relations to finishing the project design on time and in line with the financial plan. However, individuals whose task was to accept ERP system and use them tend to underscore having a smooth operation with ERP system and attaining occupational developments (Axline, Markus, & Petrie, 2003). Al-Mashari et al., (2003), describes variations in performance levels of ERP system adoption in three classes, namely; Strategic, Managerial and Operational benefits.

However, according to (Hustad & Olsen, 2013), there is no solitary conventional measures for measuring ERP system project implementation performance that applies across all organizations. Businesses contented with their ERP solution often list multiple benefits varying from process automation, improved efficiency, tighter integration, as well as removal of redundancies data and duplicative roles (Plotkin, 1999). Project Success is considered the indicator of the success of an ERP System project implementation in this research. To determine how successfully a project implementation has been completed, the degree of project success can be assessed in terms of time, cost, quality, and scope.

2.3.1 ERP system implementation and Energy sector

Globally, the energy sector consists of energy equipment, products and services. The various sub-sector combines; exploration, drilling, production, refining, marketing and maintenance, in relation to electricity, oil, gas and consumable fuels. In Kenya, the energy sector is divided in to three main categories, namely; Electricity exploration and generation, transmission and supply, and oil and gas industries as shown in Appendix V attached. The Government of Kenya has identified the energy sector among other initiatives, as a major enabler towards achieving the "Vision 2030" program, aimed at transforming Kenya into a "newly industrializing, middle-income" country. There are three main sources of energy in Kenya – biomass, petroleum and electricity, at 69%, 22% and 9% respectively of total energy consumption in Kenya. Electricity in Kenya is generated from geothermal (47% of consumption), hydropower (39%), thermal (13%) and wind (1%). Kenya's current installed electricity capacity is estimated at 2.3364 Megawatts Kenya: Energy Sources Statistics, (2018). Retrieved from http://energy.go.ke/?p=516).

The Kenya Government is focused on energy sector growth and private-sector participation, this includes; exploration, generation, transmission and distribution. In order to ensure effective and

efficient energy sector organizations, business processes re-engineering and automation is necessary. Today organizations face a new challenge of increasing competition, expanding markets and enhancement in customer expectations (Umble et al., 2003). With the increased use of Plant Control Systems (PLC's), sensors and real-time data acquisition systems, the industry has already experienced an exponential growth in the volume, of data generated, gathered and analyzed from its operations. For instance, BP in a project for the UK North Sea is using big data analytics technology to screen and analyze huge geo-science data sets from 5,000 wells in just a few seconds, compared to 100-well dataset which would normally take a geologist a month to analyze.

By adopting the use of ERP solution, the industry will benefit from an end to end automation process leading to effective resources deployment, while helping businesses trail equipment upkeep and retain tabs on worker output. ERP systems have been developed to provide a total business system solution (Huang, et al, 2001). For instance, by adopting PeopleSoft ERP system, the resolution provided an integrated approach that allowed ENSCO to automatically gather and use data end to end, across their operational areas in real-time. In Kenya, it is evident, that most energy sector organizations have also have made strides towards adoption of technology, and more specifically the use of ERP systems in order to reap from the benefits associated with automation.

2.4 ERP system project leadership

Several authors have related project manager with the project leader. According to (Welti, 1999) the project director is the general head of the project: "their key role is supervision, leading and training. Project leadership is about establishing direction, aligning strategies, and aligning tasks and activities while influencing a cluster of persons to accomplish a shared objective. They must ensure that adoption is as simple as possible, and generate a pleasing environment for the project associates to participate. Numerous scholars have recognized the significance of robust project management in the form of Project champions, managerial guarantors, project directors and course-plotting boards (Beath, 1991).

A number of research studies have shown that there are vital management abilities and skills mandatory in IS project managers to guarantee accomplishment, such as the capability to manage

people, stress, emotions, bureaucracy, and communication. Gharehbaghi and McManus (2003) settled, that operative direction is important for every development and guidance behavior is key to having a positive influence on the achievement of project management. For projects to succeed, a team of individuals should be made accountable to deliver on the project mandate (Rosario, 2000). Project leaders ought to take responsibility to first establish the scope of the ERP system project.

Muller and Turner (2007), acknowledged the relationships between achievement and project managers' leadership capabilities, using the Leadership Development Questionnaire (LDQ) and a composite measure of project success. The project leader character is a necessity to have adequate expertise over all stakeholders to ensure effective engagement and management of the project. Research further shows that most ERP letdowns was as a result of collapse in management participation. The project manager bears the overall responsibility for planning, management of resources, execution of activities and the accomplishment of the distinct project objectives. He / she should demonstrate understanding and expertise matching the magnitude of the project in terms of size and investment.

A number of theories or schools of thoughts have since been developed to try and explain the various leadership traits, styles and competencies. These theories include; Trait school of 1930s-1940s, Behavioral or style school of 1940s-1950s, Contingency theories (Fielder's Model and situation theory) of 1960s-1970s, Impracticable or compelling school of 1980s-1990s, Expressive intellect school and Competence school of 2000s. Traits theories of leadership focuses on personality, social, physical, or intellectual traits, these traits impact how a person interacts with others (Colbert, Judge, Choi, & Wang, 2012).

Behavioral theory attempts to describe leadership in terms of what leaders do. Leadership according to this approach is the result of effective role behavior and is demonstrated by leader's action more than by his traits. On the other hand, servant leadership is a philosophy and set of practices that enriches the lives of individuals, builds better organizations and ultimately creates a more just and caring world. Depending on the circumstances, leaders must apply the most appropriate leadership capabilities to fit the given situation.

2.4.1 Leadership competencies

Competencies can be defined as capabilities: knowledge, skills, and particular qualities that are principal to distinct performance (Boyatsis, 1982; Crawford, 2005). Project leadership competence is an important element in the success of an ERP System project. Personality of leader can be the determinant of success of a project, (Hogan, 2005). Numerous writers claim that project management is one of the greatest vital basics in the delivery of fruitful projects (Müller and Turner, 2010; Sarika, 2008). According to Association for Project Management Body of Knowledge (APMBOK, 2006). "The character of leaders in a project is to endorse the project aims, inspire positive associations, backing real cooperation, elevate self-esteem, and authorize and inspire people".

Ideally, project managers have no formal authority, but exercise delegated authority and thus often held responsible for the overall ERP system project performance. They are responsible for managing all stakeholder expectations, assigning teams task and responsibilities, tracking performance and periodic reporting to the project sponsor. The Project Management Institute (PMI) classifies project manager competencies in three different dimensions, namely: knowledge, personal and performance. According to (PMI, 2002), personal competencies identified as: achievement and action, helping and human service, impact and influence, managerial, cognitive, personal effectiveness.

The functions of a leader are intellectual, managerial and emotional. The greatest noteworthy role on associating the project manager's capability to his or her achievement as a project manager was done by (Crawford, 2005). Crawford stated that when a project manager has attained an access level of knowledge, more knowledge does not make him or her more capable. Resulting the earlier definition of competence, character and leadership style are included in the manager's ability, and it is these other scopes that make a project director more competent (Boyatsis, 1982; Crawford, 2005).

Crawford (2007), submits that project manager competencies are blend of knowledge such as qualification and skills to perform an assigned task and other important personality characteristics such as motives, traits and self-concepts that can lead to superior results toward the project and organizational success. Building on extensive literature review of leadership

theories, numerous research grounded on the competency school have investigated the competency profiles of effective leaders and came to an agreement that different leadership competency profiles are in fact related to project management achievement. For purposes of this study, Project leadership is discussed and investigated based on (Dulewicz and Higgs, 2005), leadership competence theory. The theory view leadership competencies in three dimensions, namely; Intelligence competence, Management competence and Emotional competence as submitted below.

2.4.1.1 Intellectual competence

Intellectual competencies include leadership Intelligence, analysis skills, conceptual ability, creative skills, pragmatic skills, education, experience and track record, among others. According to (Alimo-Metcalfe and Alban-Metcalfe, 2002), a project manager is somebody who plays a more proactive role in creating vision and in helping the organization to develop by adapting to changing environment. While general management is seen as a static activity, dealing with day-to-day events and maintaining the status quo, project leadership on the other hand is essentially dynamic. Productive managers need both the knowledgeable to exhibit intellectual trials and the sensitive competences to motivate his or her followers (Herkenhoff, 2004).

2.4.1.2 Managerial competence

Managerial competence refers to those managerial actions that are primarily focused on achieving the goals of a task, such as: planning and organizing; assigning people to tasks; communicating information; monitoring performance; defining and solving work-related problems; and clarifying roles and objectives. Project manager behavior includes: supporting employees; showing respect for employees' ideas; increasing cohesiveness; developing and mentoring; looking out for employees' welfare; managing conflict; and team building (Arnold, 1995; Levy, 2003; Seltzer & Numerof, 1988; Sosik & Godshalk, 2000). Outputs such as enhanced performance, better decision making, improved process and resource management are components of managerial abilities.

2.4.1.3 Emotional competence

Emotional intelligence has been defined as 'Being able to motivate oneself and persist in the face of frustrations; to control impulse and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope' (Goleman, 1996). Numerous authors, such as (Goleman, Bouyatiz and McKee, 2002) create a strong connection among expressive intellect and management processes of a leader and optimistic organizational development. The expressive intellect works demonstrates the type of management behavior that contemplate these influencers, and attention is on the manager's capability to coordinate feelings of their own and members of their organization (Bolden et al., 2011). Expressive intellect might enable project developers to motivate fellow project members and produce advanced inspiration and commitment to modification (Clarke, 2010).

Based on a sample of 67 UK project managers, it was found that emotional intelligence competence explained additional variance in the project manager competences of teamwork, attentiveness, and managing conflict. Dulewicz and Higgs (2000), study shows that intellectual competence accounts for 27% of leadership performance, whereas managerial competence accounts for 16%, and emotional competence accounts for 36%. This assertion further demonstrates the need for further research to establish the significance each of these leadership competencies in relation to project management leadership and in the light of ERP project implementation success. Indeed, ERP system implementation and IT projects execution in general subscribes to the principle of general management and leadership theories.

Table 2.1 contains a brief description of the three leadership competencies and their respective competency dimensions as outlined by (Dulewicz and Higgs, 2000).

Table 2.1: Leadership competencies

Group	Competency	Goal Oriented	Involving	Engaging
Intellectual	1. Critical judgement	High	Medium	Medium
	2. Vision and imagination	High	High	Medium
	3. Strategic perspective	High	Medium	Medium
Managerial	4. Engaging communication	Medium	Medium	High
	5. Managing resources	High	Medium	Low
	6. Empowering	Low	Medium	High
	7. Developing	Medium	Medium	High
	8. Achieving	High	Medium	Medium
Emotional	9. Self-awareness	Medium	High	High
	10. Emotional resilience	High	High	High
	11. Motivation	High	High	High
	12. Sensitivity	Medium	Medium	High
	13. Influence	Medium	High	High
	14. Intuitiveness	Medium	Medium	High
	15. Conscientiousness	High	High	High

Source: Dulewicz and Higgs (2003)

Turner et *al*., (2009), compared the leadership profiles of line managers and project managers and identified an even stronger relationship between emotional competence and success in line managers than in project managers. Turner and Muller (2006), showed the correlation between of specific leadership dimension of the competency school with project success in different types of projects. Dulewicz and Higgs (2005), went beyond organizational change projects and defining leadership profiles also for engineering & construction projects, as well as ICT projects.

2.5 ERP system strategic factors

Holland and Light (1999), emphasized the need to make even business procedures with ERP system during the implementation. Benjamin and Levinson (1993), also acknowledged the need to manage organization, business process, and technology changes in an integrative manner. Strategy should drive tactics in order to fully integrate the three main management processes (planning, execution and control) (Holland & Light, 1999).

Based on (Li Fang, 2005), ERP System project implementation CSF are classified into three broad categories, namely; strategic, tactical and cultural factors. This study seeks to focus on top management support and ERP System implementation strategy, under the strategic factors category to determine their influence on ERP system project implementation and their moderating role on the relationship between project manager leadership competencies and ERP system project implementation as illustrated in as illustrated in figure 3.

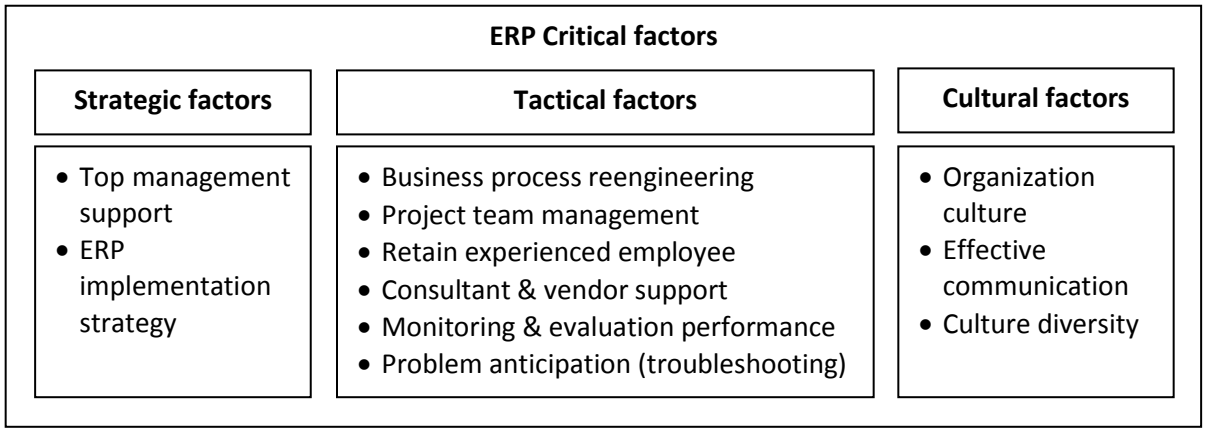

Figure 3: ERP System project CSF's classification (Li Fang 2005)

2.5.1 Top management support

Top Management support refers to the organizational senior manager's favorable attitude and behavior towards the ERP system project, and visible support during and after the implementation. Management support has been identified as a key factor influencing the implementation and effectiveness of IT and IS projects in general (DeLone 1998; McFarlan 1981; Senn 1978). According to Sabherwal et al. (2006), management support is defined as the favorable attitude towards and explicit support for IS. Organization top leadership should openly support and recognize the project as a top priority and of great importance (Wee, 2000). Senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort (Holland et *al.*, 1999).

Top management commitment is considered much more than the ERP system project implementation receiving the Chief Executive Office's blessings, but rather having the strategic leaders of the organization, executive management consistently providing the much-needed

support for projects that are closely aligned with larger organizational objectives. Top management should be active participants in steering committees and intimately involved in all key funding decisions. Khaled et *al.* (2008) in their research have emphasized that top management's support and the selection of the appropriate ERP system are major success factors for the implementation of successful ERP systems.

Management support involves committing sufficient resources, creating conducive environment, encouraging positive attitudes and helping employee's overcome resistance towards the ERP system project. Top management should help to identify the right persons, free them from other responsibilities, organize them into an interdisciplinary team, and empower them for the responsibility of the project (Chen, 2001). A more recent research, however, found that top management support is equally effective in both high and low task interdependence groups (Hwang and Schmidt, 2011).

2.5.2 ERP System Implementation Strategy

Execution strategy signifies the rollout of the ERP system components throughout the organization (Mabert et *al*., 2003). Initial ERP system execution tactics encompassed of big bang tactics in line with the organization's slim attention of speedily going live with their original arrangement dispositions (Johnson, 2000). Davenport (2000), recommends a background of ERP execution tactics grounded on various features with two possibilities; the incremental and big-bang approaches. The incremental tactic; implements the system and associated business change in small pieces; a big-bang approach involves implementing everything at once.

Researchers such as (Teltumbde et al., 2002), recommend that the rollout strategy is one of the significant factors that impact the success of the ERP system project. Phased approach is a slower way of implementation in which the ERP system is introduced by function, that is module by module or by geographic areas. Big Bang approach on the other hand is a more aggressive way in which implementation of the entire scope of the project is addressed through the entire company at once. The selection of an implementation strategy will always determine time and resources that will be required. Organizational size, ERP System technical capacity and goal also affect the choice of implementation strategy.

Over time, ERP System vendors and implementation consultants have come up with more specific and structured approaches, or methodologies that act as the framework for an ERP System implementation based upon their experience. Kale (2000), remarks that such methodology may not be the most effective one but it guarantees accomplishment under ideal conditions. Today, there are so many ERP System implementation methodologies proposed for ERP systems project implementations.

Table 2.2 further illustrates the influence of top management support and implementation strategy by drawing comparative findings of five different firms that employed the various degree of top management support and project methodology engagement leading to different level of implementation success as illustrated in Table 2.2.

Table 2.2: Summary of ERP cases by CSF's

CSF	**Failure**	**Partial Failure**			**Success**
	TechServ	**TechMadia**	**ABS**	**Agency**	**Skyhigh**
Top management support	No sponsor, no CEO involvement no top manager interest	Strong sponsor, CEO not involved enough, some top managers involved but one very passive	Sponsor resigned, CEO passive, top managers passive	Very strong sponsor, CEO not interested, no top manager interest	Strong sponsor, strong CEO involvement, top managers involved
Project methodology	Informal methodology, ''jam it in and fix it later"	Followed consultant methodology	No information	Tried to follow consultant methodology but agency lacked resources	Detailed consideration of organization to customize vendor methodology

Source: Top management support: Mantra or necessity? Int J Project Manage (2008)

The research findings from the Table 2.2, indicates that top management support is important in every stages of IT, and ERP system project implementation. This gives a clear explanation on the success or failure of projects, as clearly illustrated by the comparison of TechServ project

complete failure as compared to the SkyHigh project which was a big success. Similarly, the SkyHigh project success can be attributed to the adherence of a detailed plan and well-structured methodology. Though not very significant, the contrast shows that project approach can be successfully applied to manage risk and at the same time to enhance resources management in business process change implementation.

2.5.3 The influence of ERP system strategic factors on the relationship between Project manager leadership competencies and ERP system project implementation

In order for an ERP system project implementation to be effective, senior managers need to maintain a sense of ownership throughout the project life, and this requires both their time and effort. Management support is positively related to project leadership, Moreover, senior managers can also act as an agent for creating a positive environment for ERP system implementation and utilization in the post-implementation period. Visible management support creates a positive employee attitude thus creating a positive service climate for the project (Sharma & Yetton, 2011).

By championing ERP system implementation and utilization, top managers can lessen the organizational resistance towards the new ERP system and also facilitate a smoother re-engineering of the business processes (Markus, 2000). This in turn improves the organizational performance. Top management is tasked with the responsibility to not only provide necessary resources and visibility, but also to ensure proper human resourcing of the project. Project team should be all inclusive with necessary skills and competencies for ERP system implementation. Top management should also take time to identify and evaluate a competent project leader with necessary authority to steer the project to success.

2.6 Theoretical Framework

Several IS, and by extension ERP System theories have been developed to measure or examine the relations shown amongst success factors and ERP System project accomplishment. Some of the fundamental theoretical foundations includes; competence maturity model (CMM), strategic choice theory, contingency theory, resource-based view, knowledge-based view and social capital theory. Other models for assessing IS success include; the DeLone and McLean (2002), and balanced scorecard method which highlights the four major perspectives of the organization,

namely; financial, customer, internal processes and learning. However, based on the research objectives and approach, this study focused on the following two theories; The Triple Constraint Model and the Updated IS Success Model (DeLone and McLean, 2003), that is widely accepted and used in IS performance measurement.

2.6.1 The constraint model

All projects are carried out under certain constraints. Traditionally, these three important constraints are: cost, time, and scope. The constraint model, referred to as theory of Constraint, enables managers to choose transformation and cause modification as advanced by (Goldtatt, 1990). According to (Wideman, 1996) time, quality and scope are the most fundamental measures of project performance. For any ERP System execution to be described as fruitful, it must meet the three key project success factors, commonly referred to as Project Triple Constraint, these three factors are fully inter-related as illustrated in Figure 4;

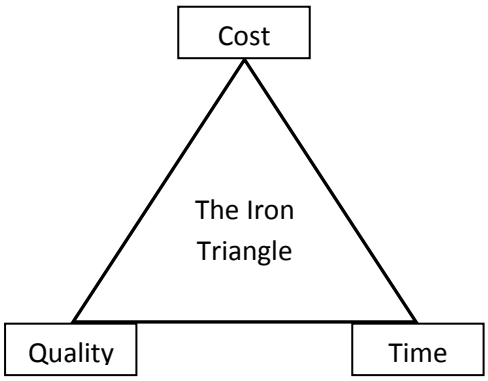

Figure 4: Triple Constraint triangle (Atkinson, 1999)

These three elements are known to work in tandem with one another, and must be managed effectively for successful implementation and closure of any ERP System project. The key attributes are explained as follows:

Time – Refers to the agreed and specified time allocated for the project to be completed and deliverable(s) realized based on scope and resources available to the project.

Cost – This is the estimation of the amount of money that will be required to complete the project. This includes the cost of all resources such; as labour for contractors, risk estimates, bills of materials among others. All aspects of the project that have a monetary component.

Project quality – This refers is the ability of a product / service to perform satisfactorily as intended. For purposes of this study, factors of ERP project quality are; stated requirements system quality, information quality and service quality as perceived by both system users and clients.

Standish Group Chaos Report (2006), submits that only 34% of projects are delivered on time and on budget. The results of an ERP System implementation failure is evident on; delayed implementation, budget overruns and failure to deliver on the outlined scope. At the same time, (Hong and Kim, 2002), submits that when a project is completed on time and within the budget, various operational benefits occur that must be measured as part of ERP system performance or success. According to Martin (1998), most of the ERP System implementations are over budget or late in completion as illustrated by (Buckhout, Frey and Nemec, 1992) in relation to ERP System project management constraints in Table 2.3.

Table 2.3: ERP System project management constraints

Stakeholder Expectations	**Project management problem areas**	**Results of ERP implementations**
Stay within budget	Cost	178% cost overrun
Finish on schedule	Time	230% longer
System performs well	Scope	59% less than expected

Source: Buckhout, Frey and Nemec, (1992)

This notwithstanding, according to (George, 1979), the classical Triple Constraint model, as a tool for measuring project success, is inadequate since it does not support or measure effectively the level of success with respect to the business opportunity. At the same time, (Annamalai and Ramayah, 2012; Singla, 2009), presents that, ERP System project success can be measured in a broad sense from the perceived deviation from projected objectives. As a result, this study sought

to compliment the short-comings of the constraint model by combining it with (DeLone & McLean 2002, 2003) IS Success Model as explained below.

2.6.2 The DeLone and McLean model

The Model is one of the most accepted and widely used model in IS success measurement. According to (DeLone and McLean, 1992), ERP system implementation success is best measured based on the following factors: organizational impact; user satisfaction; information quality; relevance to functional requirements, and return on investment (ROI). Amongst the aspects that have been widely examined, executive support has been revealed to play a vital part in the project outcomes (Ifinedo, 2008).

Some investigators even suggest that top management support is the most critical factor to systems execution accomplishment (Young and Jordan, 2008). DeLone and McLean in 1992 conducted a comprehensive review of IS success literature and proposed a model of IS success that provided a robust indicator of the success of information systems through the identification of six factors; System quality, Information quality, System use, User satisfaction, Individual Impact and Organizational Impact. This model has been widely accepted and supported by many empirical studies, with further development and validation suggestions on the model over time; (Seddon and Kiew, 1996; Rai et *al.*, 2002; McGill and Hobbs, 2003).

DeLone and McLean (2003), propose variations to their original model in two points. First, they join individual impact and organizational impact into one dimension called net benefits. Second, they add the dimension service quality to come up with four dimensions; System Quality, Information Quality, Service Quality and Net Benefit as illustrated in Figure 5.

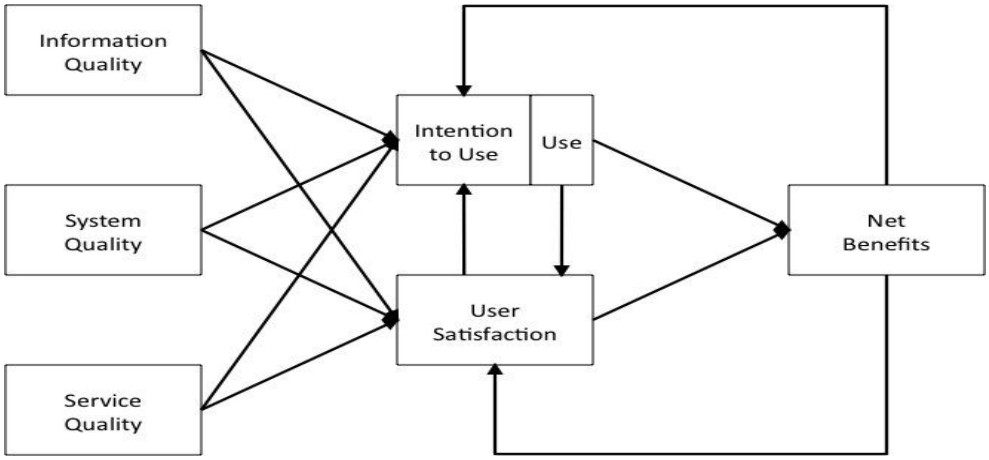

Figure 5: Updated IS Success Model (DeLone & McLean, 2003)

The IS success model has been widely acknowledged among IS researchers, with many recent researches replicating or extending the IS success model to the study of different applications (Rai, Lang and Welker, 2002; McGill and Hobbs, 2003; DeLone and McLean, 2004), this theory is also applicable to ERP systems which is considered a kind of information system. Based on the (DeLone and McLean, 2003) Updated IS Success Model, the four dimensions of IS success can be explained as follows;

System Quality: - Its measurements include: reliability, portability, user friendliness, understandability, effectiveness, maintainability, verifiability and more importantly ease of use.

Information Quality: - Its measure includes: end-user satisfaction, and is characterized by the system quality, reliability, accuracy, usable, concise, comprehensible, pertinent and available.

Service Quality: - Factors such as: tangibility, reliability, assurance and responsiveness of both support staff and the vendor are considered determinants for this dimension.

Net Benefits: - This dimension measures the positive effects of the IS. This factor include: staff productivity, customer satisfaction, costs and other operational benefits.

To effectively, measure ERP system project implementation, the study, proposed a comprehensive, multidimensional model that combines both the Project Triple Constrain factors, namely: Time, Budget and Scope and the (DeLone and McLean, 2003), four-dimension items, namely; system quality, information quality, service quality and net benefit as the measures of ERP system project implementation performance as illustrated in figure 6;

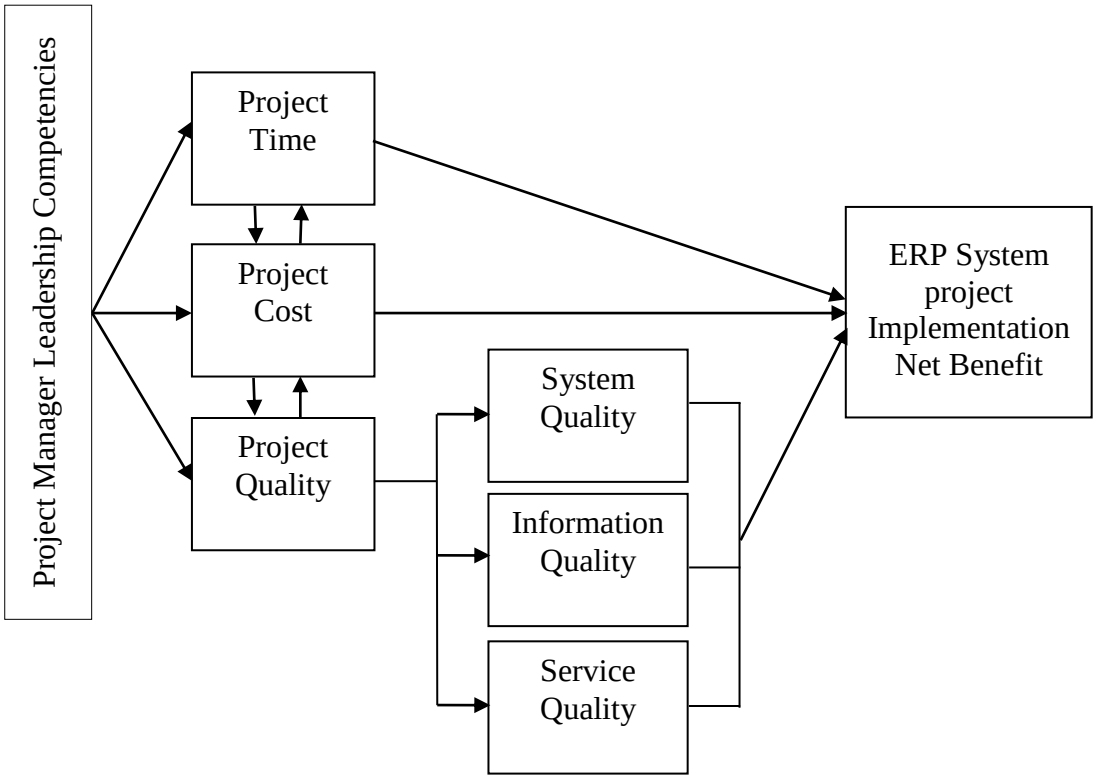

Figure 6: Proposed Integrated IS Implementation Success Framework

However, for purposed of this study, the three dimensions of IS success as explained by DeLone and McLean, (2003) will be considered under project quality, based on the proposed Integrated System Implementation Success Model, Figure 2.6. By combining the two models, the study is able to measure ERP system project implementation performance from two demission, namely the project execution phase and the adoption phase since ERP system project implementation performance is intertwined in the two phases. This approach is in line with (Axline, 2001), submission that ERP adoption should focus not only on project success, but adoption and benefits beyond implementation phase.

2.6.3 Process Research View

Based on IS research literature, the comprehension of the roles of diverse aspects has led to the understanding that project execution is not a static spectacle as alluded in preceding studies (Sarker, 2000). Subsequent research lead to the development of Process research view, which introduces both the intervening and moderating factors on the Factor research, view as illustrated in figure 7.

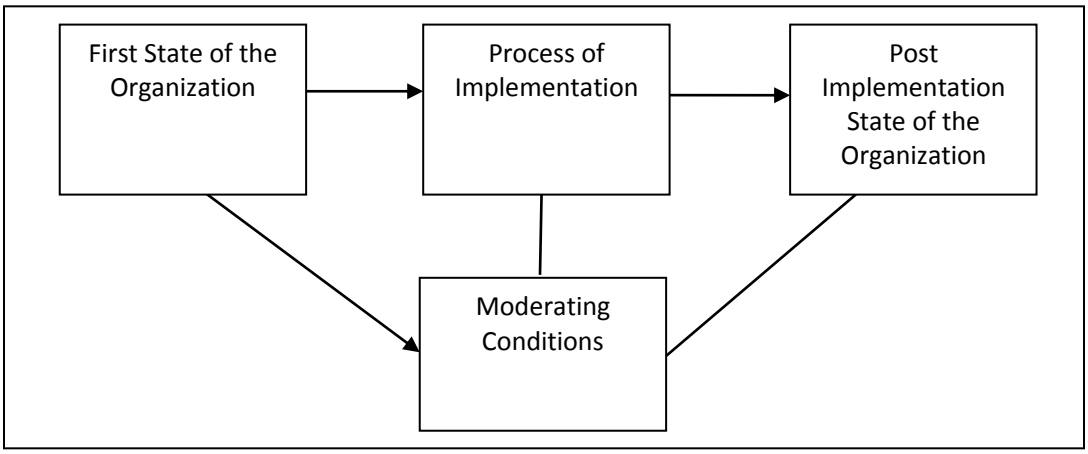

Figure 7: Process research view (Sarker, 2000)

Based on the Process research view approach, the study will explore the factors of ERP system project execution namely; project manager leadership competencies (Independent variable) and ERP system strategic factors (moderating factor) and their influence on ERP system project implementations (dependent variable). The influence of both the independent and moderating factors on the dependent variable is measured using the proposed integrated system implementation success model. The moderating variable is essential, given that ERP system project manager acts on delegated role from the sponsor, or top management. The project manager, always depend on top management to provide resources, prescribe project methodologies and any other support required to effectively guide and deliver on the mandate of the project (Sabherwal et al., 2006). This research sought to examine how ERP systems project implementation project can be effectively measured by combining two IS theories, namely; the Project Triple Constrain factors and the DeLone and McLean (2003).

2.7 Conceptual framework for factors influencing ERP system project implementation

This section describes the conceptual model relating to the relationship between project manager leadership competencies, ERP System strategic factors and ERP system project implementation. In a moderator effects model, an independent variable interrelates with a second independent variable to affect the association between the latter and the dependent variable, as demonstrated in Figure 8.

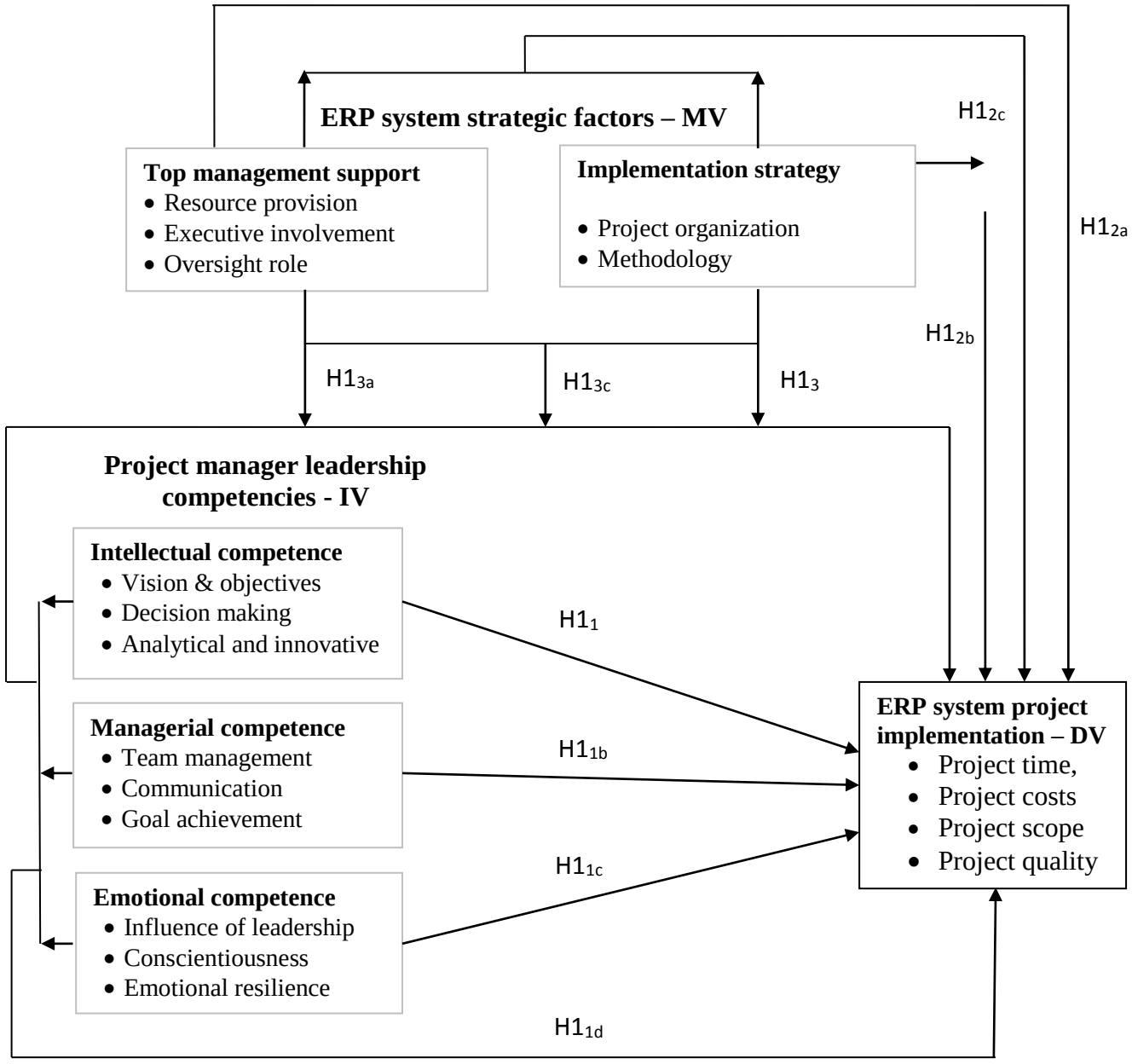

Figure 8: Conceptual framework for ERP system project implementation

The conceptual framework for ERP system project implementation was developed based on the Proposed Integrated IS Implementation Success Framework; Figure 2.6, to determine the influence of both the independent and the moderating factors on the dependent variable under the study as illustrated in Figure 8.

The proposed Conceptual Framework has borrowed largely from the process research view as presented by (Sarker, 2003). Figure 2.8 which show the relationship between ERP System project manager leadership competencies (Independent Variable) and ERP system project implementation (Dependent Variables), between ERP System strategic factors (Independent Variable) influence ERP system project implementation (dependent Variable) and the Moderating role of ERP System strategic factors on the relationship between ERP System project manager leadership and ERP system project implementation.

This study is aimed at establishing the extent to which ERP project manager leadership influences ERP system project performance. Project leadership under consideration is centered on the individual tasked with the responsibility for steering the project activities, often referred as the project manager. For in-depth analysis of this variable, project leadership is further broken down into sub-variables, namely Intellectual, Managerial and Emotional competencies with a view to determine the influence of each of these sub-variables on ERP system project implementation. When choosing project leadership, emphasis is often on project goals, planning and communication under managerial competence with little consideration on creativity, analysis emotional skills, which are equally essential for, project performance. Clarke (2010), proclaims that emotionally intelligent project leader is well furnished to resolve new encounters and difficulties that every new project brings.

On the other hand, ERP System strategic factors also has two sub-variables, namely; top management support and ERP System implementation strategy, for purposes of establishing how each of this factor influence ERP System project implementation performance. Top management support refers to commitment of both the chief executive and senior management, which includes; resource provision, executive involvement and oversight role. Likewise, implementation strategy involves; implementation methodology and project governance and organization. The moderating influence of ERP System strategic factors on the association

between Project manager leadership competencies and ERP system project execution examined separately; first with top management support, secondly with implementation strategy and third the combine influence of both the relationship.

2.8 Gaps Identified based on Literature review

Projects are repeatedly evaluated as fruitful since they have met their time and schedule restrictions. However, the failure rate of ERP implementation is very high, with many examples of failed and abandoned project implementation cited in literature, such as Fox-Meyer Drug, Mobile Europe, Dell and Applied Materials. The study involved intensive review of literature related to project leadership competencies, ERP strategic factors and their influence on ERP system project implementation. While leadership has been for long identified as a factor of success at the organizational level, it was not until recently that in the realm of project management, this concept was adopted (Dvir, *et al.*, 2006; Turner and Muller, 2006).

Project management literature has revealed that the actions, attributes, and activities of a project manager can have important impact on the result of a project (Hagan and Park, 2013). Critical success factors as covered in project management literature unexpectedly do not usually mention the project manager's leadership competence as a success factor for projects (Turner and Muller, 2005). Over the years, researchers have developed several critical success factor frameworks to access projects, but only limited frameworks to date have included leadership competencies of the project manager as a critical factor of success. From the literature reviewed, a number of gaps exist which in a sense provided the motivation for the study.

2.9 Summary of the Literature Reviewed

Based on literature review, there is no doubt that ERP System solutions are revolutionizing the way business is done and quality products and services offered. However, research on ERP system project performance and CSF's shows that several ERP System projects continue to experience challenges and fail to deliver on the business value as anticipated. Several studies have established that ERP systems project is likely to meet its objectives when user participation is high and when users have genuine prospects connecting to the scope of the project and system functionality (Bonner 2000).

Other researchers have written about ERP systems implementation accomplishment and letdown with much emphasis on business tactics, technology and organizational fit (Hong & Kim, 2002). Existing literature demonstrates lack or limited focus on areas such as; ERP system selection process, quality of consultant and project leadership and governance in ERP system project implementation, especially in light of developing countries. Despite several studies having been carried out on top management support and its significance to ERP system project success, few of them have looked at the same in light of project leadership, though most researchers note that project management is among the most significant fundamentals in the conveyance of fruitful projects (Müller and Turner, 2010; Sirika, 2008).

Though several studies have been done on the influence of leadership styles and competencies on organizational performance, only a few attempts have been made to establish the relationship between leadership competencies and ERP system project implementation. Building on the competency school, this study seek to shed light on the project manager leadership competencies; and ERP System strategic factors as a moderating factor on ERP system project implementation. As Bass (1996), notes, leaders have a direct influence on the performance of the organization as well as on the satisfaction and performance of those whom they lead.

Table 2.4: Summary of empirical review

Author(s)	**Objectives**	**Methodology**	**Findings**	**Knowledge gap**
BooYoung Chung (2007)	To analyze ERP implementation success factors associated with the success of ERP systems in engineering and construction firms.	Survey method	Supported the hypothesis that perceived usefulness and Intention to use are significant when it comes to quality as the main predictors of ERP benefits	Impact of current trend of ERP implementation approach.
By Anees Ara, Abdullah S., Al-Mudimigh (2011)	To determine the role and Impact of Project Management in ERP implementation life cycle	Literatures review of publications	Project management plays a key role and hence a proper emphasis must be placed in selecting the project team.	ERP implementation through web 2.0 technologies

Author(s)	Objectives	Methodology	Findings	Knowledge gap
Shafqat Ali Shad, Enhong Chen and Faisal Malik Faisal Azeem (2002)	To examine Performance Enhancement technical ERP Projects in a Telecom Public Sector Organization of Pakistan	Exploratory study; literature review and case study was conducted at Pakistan Telecommunication Limited	Business process engineering had more influence on performance compared to IT infrastructure	Need to explores performance enhancement factors from user perspective
Ralf Muller and Rodney Turner (2007)	To establish the Influence of Project Managers on Project Success	Web-based survey method	Older / experienced Project managers have higher chances of success compared to young project managers	The relationship between project manager traits on project Complexity
Garg (2010)	To identify and validate the critical success factors for ensuring successful ERP system implementation in context to retail industry in India.	Exploratory study data were collected via a survey questionnaire	Top management support and project management were significant, while, product selection was significant to some extent	ERP system selection and ERP system project performance
Kansal (2007), Dagher and Kuzic (2011).	To establish the influence of users' involvement in ERP system project	Literature review of publications.	Identify ERP system users and the need to involve them in all stages of the project.	Determining the role of ERP system user in ERP system life cycle
Yusuf et *al.*, (2004), Kansal (2007).	Top management Support	Survey method	Identify key leaders to support the ERP project, motivate, provide resources and make decision.	Role of top management support on project manager selection

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented the research paradigm and expounds on the research approach, including the research methods and techniques embraced. Based on the philosophical assumptions, methods used in this research include procedures such as research designs, specific research methods of data collection, data analyses techniques, interpretation, as well as validity, reliability, operational definition of variables and ethical considerations as described below. This research sought to establish the relationship between Project manager leadership competencies and ERP system project implementation, and to determine the moderating influence of ERP system strategic factors, namely; top management support and implementation strategy on their relationship.

3.2 Research paradigm

In recognition that every method has its limitations, and that the different research approaches can be complementary, this research took a pragmatic view which considers both positivists and constructivists' perspectives. In recent approach, there is a view that diverse paradigms can co-exist and information is understood as a set of viewpoints (Heylighen, 1999). The choice of pragmatic approach in this research was to provide the freedom for use of a mixed-method approach that accommodates both quantitative and qualitative research.

The distinctive nature of the mixed-method approach and the core ideas and practices on which the paradigm stands have been captured in the works of those such as (Creswell & Plano Clark, 2007). Pragmatic view acknowledges the validity and value of both quantitative and qualitative methods, allowing the use of the different research methods as well as modes of analysis hence enhancing research finding. Baskerville & Myers (2004), claimed that paradigmatic foundations for IS research approach should be founded in pragmatism.

3.3 Research design

The study used correlational design that determines the strength and direction of relationship among variables. The technique was able to measure multiple outcomes and prevalence of all factors under investigation by incorporating descriptive correlation designs, predictive designs and model-testing designs. As per the view of Troachim (2002), occasionally it is tough to differentiate between qualitative and quantitative research because they are closely related. This empirical study combined both quantitative and qualitative exploration methods. While qualitative method was used to ensure an in-depth knowledge about the critical success factors under study, quantitative approach was used to draw inferences from data regarding existing relationships among variables for a more all-inclusive analysis of the findings. Marsh (1982), submits that quantitative surveys can provide information and explanations adequate at the level of meaning. Quantitative data collected using survey method was presented in a numerical format and analyzed. While questionnaire was used to collect data from all respondents, interviews were conducted with Heads of ICT in the selected institutions for in-depth analysis and triangulation purposes, since a good case study research requires triangulation.

3.4 Target population

The target population of study was five organizations, derived from a population of ten Kenya Energy Sector State Parastatals. The unit of analysis is the Kenya Energy Sector State Parastatals that have implemented SAP ERP system. The population of the study was drawn from the list of parastatals under the Kenya: Energy Sources Statistics, (2018). Retrieved from http://www.energy.go.ke and through telephony inquiry to various organizations that have implemented SAP ERP system respectively.

3.5 Sample size

The study used census to collect data from one hundred forty-four (144) respondents based on the five (5) Kenya energy sector parastatals that had implemented SAP ERP System, namely; KENGEN, GDC, KPLC, REA and KETRACO. The choice of census was informed by the need to obtain detailed information about small sub-groups within the population, given the size of population. Respondents were drawn from the following three main groups, namely; ERP system

project team members (drawn from the various business units within their organization), senior managers and Heads of ICT drawn from their respective organizations.

3.6 Sampling procedure

The study used purposive sampling to select parastatals that have implemented similar type ERP system, in this case SAP ERP System from a list of all Energy Sector State Parastatals as outlined in Appendix V. The choice of SAP ERP System was informed by; the fact that most of this state parastatals had implemented SAP system, the product market share and the need to ensure a standard environment for effective comparison and analysis of variables, given that the implementation methodologies was a factor of study in this research.

The sample was drawn from three (3) respondent groups, namely; ERP project team members, top managers and Head of ICT based on their role in relation to ERP system project in their respective organizations as illustrated in Table 3.1

Table 3.1: Sample distribution

Population Stratum	**Organization**	**Project team**	**Top managers**	**Head of ICT**	**Total**
Generation	KenGen	22	9	**1**	**32**
	GDC	18	8	**1**	**27**
Distributions	KPLC	24	10	**1**	**35**
	REA	10	8	**1**	**19**
Transmission	KETRACO	20	10	**1**	**31**
	Totals	**94**	**45**	**5**	**144**

N=Total population = 144

The choice and size of the sample is shown mainly by the research objective(s), research question(s), and afterward, the research design (Onwuegbuzie & Collins, 2007).

3.7 Data collection instruments

The study made use of survey method and key informant interviews. Structured questionnaire was utilized for data collection from 144 respondents who participated in the ERP system project as implementers or decision makers, namely; project team member's top managers and Head of ICT in their respectively organizations. Structured types of questions were used to ensure greater uniformity of measurement, higher reliability and easy coding, since respondents responded in a manner fitting the response category.

Face to face interview was further used to collect data from 5 Heads of the IT function, individual tasked with the responsibility for planning and deployment of technology within their respective organizations. This technique was deep and detailed in terms of information to be obtained. A brief interview guide based on the subject and background of the study was used to ensure effective coverage of the topic in a sequential and systematic manner as outlined in the research framework. Both quantitative and qualitative data was collected concurrently.

3.7.1 Questionnaire for data collection

Both primary and secondary sources of data were used in this study. Primary data was obtained from the respondents through a structured questionnaire comprising of closed and open-ended questions. The questionnaire was divided into three portions: Part A, designed to obtain general organizational and demographic data of the respondents, Part B, focused of project management related information, while Part C, consisted of questions focusing on factors influencing the implementation of ERP System projects implementation. The questionnaire used a 5-point Likert-type scale varying from 1 = strongly disagree to 5 = strongly agree.

In this study, Likert scales were treated as interval scale by assigning numbers on a scale with distances between answers that appear to have equal intervals in order to be able to use statistics that assume the variable is interval. Though technically the Likert scale item is ordered, in some instances they can be analyzed effectively as interval scales (Baggaley & Hull, 1983; Waugh, 2002 and Andrich, 2004). For instance, (Lubke & Muthen, 2004), found that it is possible to find true parameter values in factor analysis with Likert scale data, if assumptions about skewness, normality, equal variance and number of categories, are met. Likewise, Glass et *al*., (1973), found that F tests in ANOVA could return accurate p-values on Likert items under certain

conditions. Since Likert scales contain multiple items and can be taken to be interval scales, descriptive statistics can then be applied, as well as correlational analysis, factor analysis and analysis of variance procedures among others. In this study, nonparametric equivalent to the test was run to ascertain the conclusions.

3.7.2 Interview schedule for data collection

Interview guide was used to collect data from respondent; Head of ICT in their various organization. Questions were segregated based on the factors of study as detailed in Appendix IV.

3.8 Validity of the research instruments

According to Messick (1989) validity refers to the degree to which empirical evidences and theoretical rationales support the adequacy and appropriateness of interpretations and actions based on test scores. To improve on external validity, both quantitative and qualitative data was collected concurrently. The main point of using varied approaches is to triangulate data sources in order to cross-validate the validity of one instrument against another (Bamberger, Rao and Woolcock, 2010). To improve internal validity of the research instruments, a pilot study was carried out to pre-testing and improve the questionnaires.

Construct validity was addressed through subject experts constituting senior lectures and peer review, who examine the tools and decide what that specific item is intended to measure, and their feedback was incorporated. In addition, data quality was unified in the entire study process especially at the data collection point to include completeness of questionnaire, legibility of records and validity of responses. Quality control which include: data cleaning and validation were considered during data processing stage. Confidentiality was guaranteed to the respondent and assurance given that the findings will be used solely for the intended purpose. Multiple regression was also used as a measure of validity through the adjusted R^2.

3.9 Reliability of the research instruments

Evaluating the quality of research is essential if findings are to be utilized. Reliability is the degree to which a test is free from measurement errors (Fraenkel &Wallen, 2003; McMillan &

Schumacher, 2001, 2006; Moss, 1994; Neuman, 2003). To ensure the integrity in the way a study is conducted and the credibility of research findings, concepts such as reliability, validity and generalizability typically associated with quantitative research are critical and hence require a great deal of attention. Cronbach's Alpha method was applied to ascertain reliability, with a reliability value equal or greater than 0.6 being considered acceptable, based on (Yong, Hua & Mei, 2007).

A pilot with 15 respondents (10% of the intended sample size) from Kenya Airport Authority (KAA) was done to validate the instrument and improve internal reliability. According to Connelly (2008), extant literature suggests that a pilot study sample should be 10% of the projected sample. Baker (2001) found out that a sample size of 10-20% of the sample size for the actual study is a reasonable number of participants to consider enrolling in a pilot. The choice of KAA was informed by similar organizational characteristic such organizational size, government ownership and the fact that it had implemented SAP ERP system like the organizations under study. Based on pilot data, Cronbach's alpha was used to test the overall reliability coefficient for a set of study variables: that is, Project manager leadership competencies and ERP system project implementation, as shown in Table 3.2, $\alpha = 0.877$, greater than 0.6, hence the instrument is reliable.

Table 3.2: Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.877	.868	52

3.10 Data analysis techniques

Data collected was captured, cleaned and examined using the Statistical Package for Social Sciences (SPSS) application, version 23. According to Yin (1994), data analysis involves the examining, categorizing, tabulating, or otherwise recombining the collected data. This study used both descriptive and inferential analysis techniques, with the variables being tested to confirm that they are normally distributed with linear relationship. Descriptive statistics made use of

frequencies, proportions, mean, standard deviation and regression. On the other hand, inferential analysis made use of correlation, t-test, P-value and other parametric tests such as bivariate and multivariate analysis including multiple regression and ANOVA to make inferences from data to more general conditions.

The F-test as an analysis of the variance of a regression was be used to test for the significance of the relationship. While Pearson's correlation was used to obtain an index that describes the linear relationship between two variables, regression was used to determine whether the predictors influenced the dependent variables. The study thus examined the relationship between project manager leadership competencies and ERP system project implementation success, and, the moderating influence of ERP system strategic factors and ERP system implementation strategy) on the relationship between project manager leadership competencies and ERP system project implementation.

3.11 Test of hypotheses and the study models

Data analysis utilized a two-step approach. The initial step encompassed the analysis of measurement model, while the second step tested the structural relations among constructs. The test of the measurement model involved the approximation of internal consistency, the convergent and discriminant validity. Pearson's correlation test was used to evaluate the presence or non-existence of association among the study variables; the strength, direction and probability of the linear association between two interval or ratio variables (Burns & Grove, 2005; Polit & Beck, 2006). Relationships between variables was considered strong when r=0.5 or greater, moderately strong when r is between 0.3 and 0.49, weak when r is greater than zero but less than 0.29 and no relationship when correlation is 0. Regression was used for multivariate testing of relationship between two or more variables simultaneously.

To establish combined influence of factors, the study employed the use of forward stepwise regression analysis. This stepwise procedure was helpful to control for multicollinearity. This study sought to examine the relationship between the indicators of project manager leadership competencies, ERP strategic factors and ERP system project implementation. A standard approach of stating the alternative hypothesis of zero coefficient of correlation between

dependent and independent variables was tested. The empirical analysis was based on the standard regression formula as stated below:

$$Yi = b0 + b1X1 + b2X2 + \ldots\ldots\ldots\ldots..bnXn + \epsilon 1$$

Where: Y_1 = the dependent variable (DV)

X_1, X_2 and X_n = independent variable explaining the variance in Y

b_0 = y-intercept (the constant term)

b_1, b_2 and b_n = the coefficient of the 1st, 2nd and the nth predictor variable (X_1, X_2 & X_n)

$\epsilon 1$ = standard error of coefficient

R^2 proportion of the variance in the values of the dependent variable (Y) explained by all the moderating variables (X_2) in the equation together, sometimes reported as adjusted R^2. When a correction has been made to reflect the number of variables in the equation. The regression coefficient b_1 measures the simple effects of X_1 when the value of $X_2 = 0$, meaning no interaction effects involved. To test the moderating influence of X_2 in the model, the significance of b_2 (the coefficient of interactions between X_1 X_2) had to be tested to establish the moderation of X_2 on the relationship between X_1 and Y. Relationships may be nonlinear, independent variables may be quantitative or qualitative, and one can examine the effects of a single variable or multiple variables with or without the effects of other variables taken into account (Cohen, West, & Aiken, 2003).

Table 3.3 summarizes the study hypotheses, the model, type of statistical analysis and results interpretation.

Table 3.3: Summary of test of hypotheses

Hypotheses	**Model**	**Statistics**	**Interpretation**
H_{1a}: There is a significant relationship between Project manager intellectual competence and ERP system project implementation	$Y_1 = b_0 + b_{1a}X_{1a} + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Linear regression r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from Project manager intellectual leadership

Hypotheses	Model	Statistics	Interpretation
H_{1b}: There is a significant relationship between Project manager managerial competence and ERP system project implementation	$Y_1 = b_0 + b_{1b}X_{1b} + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Linear regression r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from Project manager managerial leadership variables
$H1_{1c}$: There is a significant relationship between Project manager emotional competence and ERP system project implementation	$Y_1 = b_0 + b_{1c}X_{1c} + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Linear regression r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from Project manager emotional leadership variables.
$H1_{1d}$: There is joint influence of Project manager intellectual, managerial and emotional leadership competencies on ERP system project implementation	$Y_1 = b_0 + b_{1a}X_{1a} + b_{1b}X_{1b} + b_{1c}X_{1c} + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Multiple regression r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from ERP System Project manager leadership variables.
$H1_{2a}$: There is a significant relationship between top management support and ERP system project implementation	$Y_1 = b_0 + b_{2a}X_{2a} + \epsilon 1$	▪ Pearson's coefficient ▪ Linear regression analysis; r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from ERP System top management support variables
$H1_{2b}$: There is a significant relationship between implementation strategy and ERP system project implementation	$Y_1 = b_0 + b_{2b}X_{2b} + \epsilon 1a$	▪ Pearson's correlation coefficient Linear regression r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from implementation strategy variables

Hypotheses	Model	Statistics	Interpretation
$H1_{2c}$: There is a joint influence of top management support and implementation strategy on ERP system project implementation	$Y_1 = b_0 + b_{2a}X_{2a} + b_{2b}X_{2b} + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Multiple regression r, R2, F and t values	The model establishes the strength and variation in ERP system project implementation resulting from project strategic factors variables
$H1_{3a}$: The relationship between project leadership competencies and ERP system project implementation depends on top management support	$Y_1 = b_0 + b_1X_1 + b_{2a}X_{2a} + b_3 (X_1 * X_{2a}) + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Stepwise Regression Analysis r, R2, F and t values	The model shows how each strength and variable influences ERP system project implementation when one of the variables (ERP System strategic factors) is controlled
$H1_{3b}$: The relationship between project manager leadership competencies and ERP system project implementation depends on implementation strategy	$Y_1 = b_0 + b_1X_1 + b_{2b}X_{2b} + b_3 (X_1 * X_{2b}) + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Stepwise Regression Analysis r, R2, F and t values	The model establishes the strength and variation in the relationship between ERP system project implementation and ERP System Project leadership resulting from ERP system implementation strategy
$H1_{3c}$: The relationship between project manager leadership competencies and ERP system project implementation depends on ERP strategic factors	$Y_1 = b_0 + b_1X_1 + b_2X_2 + b_3 (X_1 * X_2) + \epsilon 1$	▪ Pearson's correlation coefficient ▪ Stepwise Regression Analysis r, R2, F and t values	The model establishes the strength and variation in the relationship between ERP system project implementation and ERP System Project leadership resulting ERP system strategic factors

Where: Y_1 = the dependent variable (DV)

X_1 = independent variable that is explaining the variance in Y

$X_{1a,}$ X_{1b} and X_{1c} = independent sub-variable under variable X_1 that is explaining the variance in Y

X_2 = both independent and moderating variables

X_1 = independent variable that is explaining the variance in Y

X_{2a} and X_{2c} = independent sub-variable under variable X_2 that is explaining the variance in Y and moderates the relation between Y and X_1

b_0 = y-intercept (the constant term)

b_1 = the coefficient of the first predictor variable (X_1)

b_2 = the coefficient of the first predictor variable (X_2)

(X_1*X_2) = The interaction term between the independent variable (X_1) and the moderating variable (X_2)

$\epsilon 1$ = standard error of coefficient

3.12 Ethical considerations

In this study the researcher ensured that participants are protected by keeping the information given confidential. Mugenda (2003), argues that respondents should be protected by keeping the information given confidential. Besides ensuring that the information is kept confidential, the researcher also observed the principle of anonymity by asking the participants not to indicate their names on the instruments. The principle of voluntary consent was upheld, to ensure participants willingly participate in the study. In addition, this research was carried out in compliance with the National Commission for Science, Technology and innovation (NACOSTI) requirements and guidelines. A research permit for this research was obtained from NACOSTI, in line with Section 17 (1) of the Science, Technology and Innovation Act, 2013 requires all persons intending to undertake research in the country to apply to the Commission for the grant of a Research License.

3.13 Operational definition of variables

Table 3.4: Operational definition of variables

Objectives	Sub- Variable	Hypothesis	Indicator	Measurements	Measu-rement scales	Study Design	Analysis tools
1. To establish the relationship between project manager leadership competencies and ERP system project implementation	a) Intellectual competence	: There is a significant relationship between project manager leadership intellectual competencies and ERP system project implementation	Project goal & Objectives Decision making Creativity & innovation	- level of project goal awareness - Level of awareness of project objectives - Level of decision accuracy - Timeliness of decision making - level analysis - Level of innovation	Interval	Descriptive Survey & Inferential statistics	Central Tendency; Mode & Pearson's correlation and Regression analysis
	b) Managerial competence	**$H1_{1b}$**: There is a significant relationship between project manager leadership managerial competencies and ERP system project implementation	Team and Time management Communicat-ion	- Level of team (s) participations - Level of team(s) cooperation - Level of compliance to set timelines - Level of communication - Frequency of	Interval	Descriptive Survey & Inferential statistics	As $H1_{1a}$ above

Objectives	Sub- Variable	Hypothesis	Indicator	Measurements	Measu-rement scales	Study Design	Analysis tools
			Goals Attainment	communication - Level of clarity of targets - Level of goal attainment			
	c) Emotional competence	**$H1_{1c}$**: There is a significant relationship between project manager leadership emotional competence and ERP system project implementation	Project Leaders influence Project Leaders conscientiousn-ess Project Leader emotional resilience	- Level of influence on top management - Level of influence on project team - Level of reliability - Level of adherence to ethics and standards - Level of planning - Level of flexibility - Level of patience - Level of conflict management	Interval	Descriptive Survey & Inferential statistics	As $H1_{1a}$ above
2. To determine the influence of ERP System strategic factors on ERP system project	d) Top management support	**$H1_{2a}$**: There is a significant relationship between top management support and ERP system project	Top management commitment	- Level of top management involvement in the project - Level of project manager authority	Interval	Descriptive Survey & Inferential statistics	Central Tendency; Mode & Proportion

Objectives	Sub- Variable	Hypothesis	Indicator	Measurements	Measu-rement scales	Study Design	Analysis tools
implementation		implementation					
			Recourses allocation	- Level of personnel assigned to the project - Level of resources availed to the project			Test of Relationships; Pearson's correlation test and t-test
	e) ERP System implementation Strategy	**$H1_{2b}$**: There is a significant relationship between implementation strategy and ERP system project implementation	Methodology Project organization	- Level of adherence to policy and standards - Level of adherence to execution methodology - Level of project governance structure - Level of project accountability	Interval	Descriptive Survey & Inferential statistics	As $H1_{2a}$ above
3. To establish the moderating role of ERP System strategic factors on the relationship	a) Top management support	**$H1_{3a}$**: The strength of relationship between project manager leadership competencies and ERP system project	• As 2a above	- As 2a above	As 2a above	As 2 above	Central Tendency; Mode & Pearson's correlation and Regression

Objectives	Sub- Variable	Hypothesis	Indicator	Measurements	Measu-rement scales	Study Design	Analysis tools
between project manager leadership		implementation depends on top management support					analysis
competencies and ERP system project implementation .	b) ERP System implementation Strategy	**$H1_{3b}$**: The strength of relationship between project manager leadership competencies and ERP system project implementation depends on implementation strategy	• As 2a above	- As 2a above	As 2a above	As 2a above	- As above
4. To measure ERP system project implementation	▪ Project constraints factors	As 1 & 2 above	Cost variance	- Percentage of budget deviation	Nominal	Descriptive Survey & Inferential statistics	Central Tendency; Mode & Proportion
			Time variance	- Percentage of deviation from planned time	Nominal		
			Information quality	- Level of information accuracy - Level of information	Interval	Descriptive Survey & Inferential statistics	

Objectives	Sub- Variable	Hypothesis	Indicator	Measurements	Measu-rement scales	Study Design	Analysis tools
				understandability - Level of information reliability			
			System quality	- Level of compliance to requirements - Level of system reliability - Level of service usability	Interval	Descriptive Survey Inferential statistics	
			Service quality	- Level of service - Level of service efficiency - Level of service integrity	Interval	Descriptive Survey & Inferential statistics	
5. **Other factors**		Demographic variables	- Gender - Job level - Education - Project role - Years worked - No. of years	- Male/Female - Level of placement - Level of Education - Role type - No of years - Years of experience - Yes / No	Nominal Ordinal Ordinal Ordinal Interval Ordinal Nominal	Descriptive Survey and Inferential statistics	Central Tendency; Mode & Proportion

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRATATION AND DISCUSSION

4.1 Introduction

The main focus of this chapter is the presentation of data examination, explanation and discussion of the results of the research. The purpose of this research was to establish the influence of ERP system project manager leadership competencies and ERP system strategic factors on ERP system project implementation. It further sought to analyze moderating effect of ERP System strategic factors; namely top management support and ERP system strategy, on the association between project manager leadership competencies and ERP system project implementation.

Based on the overall purpose and the specific objectives of the study, hypotheses were formulated and tested using various statistics tools. Prior to analysis, both qualitative and quantitative data were examined to ensure the variables were appropriately computed and coded accordingly. Quantitative data was further explored for various assumptions to determine whether the preferred test statistics would be appropriate. Data analysis was done after the data had undergone normality of the distribution, homogeneity of variance, interval data and independence. The data analyzed satisfied the normality tests conducted.

4.2 Questionnaire return rate

Establishing the response rate was necessary as a measure to enhance external validity, with respondents drawn from the following Kenya Energy Sector organizations: Kenya Electricity Generating Company (KenGen), Geothermal Development Corporation (GDC), Kenya Power and Lighting Company (KPLC), Rural Electrification Authority (REA) and Kenya Transmission Company (KETRACO). 133 out of 144 questionnaires administered were received back, representing a return rate of 92.4%. Arora and Arora (2003) argues that a questionnaire that produces 75% or 85% response rate has done extremely well. The non-response included those who either declined or were not available to respond to the questionnaire.

From the findings in Table 4.1, the study involved 31 (23.3%) respondents from Kenya Power and Lighting Company, 29 (21.8%) from Geothermal Development Company (GDC), 28

(21.1%) from Kenya Electricity Generating Company and 28 (21.1%) from Kenya Transmission Company (KETRACO), while the other 17 (12.1%) were from Rural Electrification Authority (REA). This means that the study sampled respondents from various organizations.

Table 4.1: Return Rate

Starter group	Total (N)	(%) per organization
Kenya Electricity Generating Company	28	21.1
Geothermal Development Company	29	21.8
Kenya Power and Lighting Company	31	23.3
Rural Electrification Authority	17	12.8
Kenya Transmission Company	28	21.1
Total	**133**	**100.0**

4.3 Demographic information of the respondents

The study collected quantitative data by use of census from one hundred and forty-four (144) respondents drawn from three main groups, namely: ERP project team members, top manager and Head of ICT from their respective organizations. Qualitative data was collected using face to face interview from the five (5) Head of ICT as respondents. The researcher found it important to ascertain the general characteristics of the respondents under which the researcher would justifiably make inferences from their responses. First, the researcher sought to find out organizations involved in the study, departments of the respondents, gender, job level, level of education, years worked in the organization and the previous involvement with ERP system implementation.

Table 4.2, shows that, the 54 (40.6%) of the respondents were from ICT department while the remaining majority 79 (59.4%) were from other business units; procurement, Human Resource, Finance among other departments. This demonstrates that the various departments of the organizations were involved the ERP system project implementation. The findings further indicated that the majority 52 (39.1%) of the respondents were from the operational level category of the organization, followed closely by 33 (24.8%) who from middle management, another 33 (24.8%) were from first level superior job level, with only 14 (10.5%) coming from

executive/senior management level. This indicates that various levels of organizational management were involved in the ERP system project implementation within the energy sector, a factor necessary to ensure comprehensive response on the objectives of the study.

Majority of the respondents 67 (50.4%) had Bachelor's degree as their highest level of education. They are followed by 53 (39.8%) who had Master degree level as their highest level. The rest had either Diploma or PhD. This implies that the officers were qualified to understand and adequately respond to the various questions relating to the objectives of the study. Table 4.2 further reveals that, most of the respondents 56 (42.1%) had worked for a period of 5 - 10 years in their respective organizations. Another 42 (31.6%) had worked for less than 5 years, 16 (12%) had worked for 11-15 years and 13 (9.8%) having worked for between 16-20 years. From this finding, it can be presumed that the majority of respondents had been at their respective organizations long enough and good level of education to comprehend various business procedures and to provide satisfactory data and response to the questioner.

Table 4.2 shows that 67 (51%) of the respondents had never been involved in ERP system project implementation before, while 66 (49%) had been previously involved in ERP system, largely as users. This provides a balanced mix of response given that approximately 50% of the respondents had previously participated in an ERP system project implementation and other half being involved for the first time. In addition, the findings indicate a balance view of ERP respondent response given that the participants were drawn from all the levels of the organizations; senior management, middle management and operations.

Table 4.2 Demographic characteristics by gender

		Gender		Total
		Male	Female	
Department	ICT	29	15	44
	HRM	6	7	13
	Procurement	13	12	25
	Operations	31	8	39
	Others	1	1	2
Level of Education	Diploma	5	5	10
	Bachelors Degree	44	23	67
	Masters degree	32	20	52
	PhD Degree	3	0	3
	Others	1	0	1
Previously involved in ERP System	Yes	45	21	66
	No	40	27	67
Job Level	Senior Management	12	2	14
	Middle Management	22	11	33
	First Level Superior	20	13	33
	Operational Level	31	22	53
	Any Other	0	1	1
Years worked	< 5 years	25	17	42
	5-10 years	33	23	56
	11-15 years	13	3	16
	16-20 years	10	3	13
	> 20 years	4	2	6

4.4 Tests for statistical assumptions and analysis

The researcher found it important to do an exploration of data to ensure that the assumptions for parametric tests were applied. There are four basic assumptions that parametric tests are based on that must be met before analyses can be done. These include normality of the distribution, homogeneity of variance, internal data and independence (Field, 2009). The demographic factors

which were based on nominal and ordinal scales while the rest of the study variables were measured at the interval level. This means that the assumption of interval data was met for the dependent, independent and moderating variables and they did not need tests.

4.4.1 Tests of normality

To determine if the distribution was normal, Tests of normality were conducted. The Shapiro-Wilk test was applied, being one of the most popular tests for normality assumption diagnostics and with good properties of power based on correlation within given observations and associated normal scores (Shapiro and Wilk, 1965). The analysis made use of Shapiro-Wilk test, being relevant in this study given a dataset of 133 elements. From Table 4.3, p-value is 0.284, the significant value of Shapiro-Wilk is greater than 0.05, hence the conclusion that the data set was normally distributed.

Table 4.3 Test of normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ERP System project implementation	.079	133	.041	.988	133	.284

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance

Normality was only done for the dependent variable since the independent variables are considered to be fixed in many applications, and in regression analysis, independent (explanatory/predictor) variables, need not be transformed no matter what distribution they follow. Moreover, when the sample size is greater than thirty (30) violation of normality is not a problem (Tabachinick and Fidell, 2007).

4.4.1.1 Test of skewness and kurtosis

Another test of normality done was skewness and kurtosis both of which are shown in Table 4.4, with their respective associated standard error. Skewness as a measure of the asymmetry of the probability distribution of a real-valued random variable about its mean. The skewness value can

be positive or negative, or even undefined. If the skewness is greater than 1.0 (or less than -1.0), then skewness is substantial and the distribution is far from symmetrical. Therefore, skewness value of -.080 for system project implementation indicated that the distribution was symmetrical.

Kurtosis was applied as a measure of whether the data are heavy-tailed or light-tailed relative to a normal distribution. If the kurtosis is less than zero, then the distribution is light tails and is called a platykurtic distribution. If the kurtosis is greater than zero, then the distribution has heavier tails and is referred to as leptokurtic distribution. Therefore, a kurtosis value of .157 for system project implementation is greater than 1, meaning that the distribution was heavily tailed.

Table 4.4: Tests of skewness and kurtosis

N	Valid	133
	Missing	0
Skewness		-.080
Std. Error of Skewness		.210
Kurtosis		.157
Std. Error of Kurtosis		.417

4.4.2 Test of homogeneity of variance

This was done as prerequisite for parametric inferential statistics such as ANOVA. Levene's test was conducted to examine the homogeneity of variance. Levene's test was used to test the null hypothesis to confirm that that the difference between the variances is zero. If the test is significant at $p<=.05$ then it can be concluded that the null hypothesis is incorrect and that the variances are significantly different. Table 4.5 indicates the results of Levene's test from the study data set to be statistically significant for ERP system project implementation outcomes, the variances were equal, $F(31,88) = 3.069$. The significance value of 0.024, confirms $p>0.05$, implying that the level of homogeneity in the data set was acceptable, and thus the data do not show homogeneity of variance.

Table 4.5: Test of homogeneity of variances

Levene Statistic	df1	df2	Sig.
2.670	31	88	.024

* F (31,88) = 3.069, p>.05

4.4.3 Treatment and decision rule for Likert-Scale

Technically, the Likert scale item is ordered. However, applied research believes that parametric methods can be applied to analyze data since it assumes Likert-type of data to be equidistant. For instance, Lubke & Muthen (2004), found that it is possible to find true parameter values in factor analysis with Likert scale data, if assumptions about skewness, number of categories, etc., were met. Likewise, Glass et al. (1972) found that F tests in ANOVA could return accurate p-values on Likert items under certain conditions. To utilize the Five-point Likert-type multiple items for parametric test, responses were summed up together resulting in data that was treated as interval, with coding indicating magnitude of difference between items which appear to measure a single latent variable. Likert-type items consisting of sums across many items are considered interval data in literature (Carifio & Perla, 2008; Nroman, 2010)

4.5 Descriptive statistics

The analysis of data was done both qualitatively and quantitatively. The qualitative analysis was in order to ensure that a detailed view about the variables under consideration were obtained from the study respondents as well as for triangulation purposes. Data was obtained by using two tools of data collection; questionnaire for the quantitative component and interviews for the qualitative component. While qualitative data was coded and summarized into themes and interpreted, quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) version 23. Structured type of questions were used to ensure greater uniformity of measurement, higher reliability and easy coding, since respondents responded in a manner fitting the response category.

4.5.1 Descriptive statistics for project leadership competencies

In order to understand the descriptive data set, the analysis begun by describing the project manager leadership competencies, ERP system strategic factors and ERP system project implementation by mean, mode, median and standard deviation. These were analyzed and recorded in aggregates of individual responses across the various variables and their indicators. Each of the study main variables had 5-point Likert scale describing them. There were 19 items for ERP system project implementation, 18 items for project manager leadership competencies and 14 items for ERP system strategic factors.

Table 4.6 shows the mean, mode and standard deviation for the predictor variables: intellectual competence, managerial competence and emotional competence for project manager leadership competencies. The mean for intellectual competence, managerial competence and emotional competence are 4.1183, 4.4500 and 3.6681 respectively as detailed in Table 4.6. The standard deviation for intellectual competence, managerial competence and emotional competence were 1.1673, 0.6246 and 0.5568 respectively. This shows that across the board there was minimal deviation from the mean although intellectual competence had the highest deviation. Similarly, the mode for intellectual competence, managerial competence and emotional competence were 4.00, 4.22 and 3.64 respectively.

The findings indicated that with the highest average of 4.4500 and a standard deviation of 0.6246, managerial competence had the highest effect on ERP system project implementation compared to the other leadership competence that included intellectual and emotional competence. The overall effect of the project leadership competence on ERP project system implementation was high as indicated by an average of 4.0788 and a standard deviation on 0.7829. This finding is reflected by Hogan (2005), who asserted that project leadership competence is an important element in the success of an ERP System project, personality of leader can be the determinant of success of a project.

Table 4.6: Descriptive statistics for project manager leadership competencies

	Intellectual competence	Managerial competence	Emotional competence	Project manager leadership competencies
Mean	4.1183	4.4500	3.6681	4.0788
Median	4.0000	4.4444	3.6363	4.0269
Mode	4.00	4.22	3.64	3.95
Std. deviation	1.1673	0.6246	0.5568	0.7829

The quantitative findings on project manager leadership competencies can be corroborated by some of the related themes explored from the qualitative data set obtained from face to face interview with the Head of the ICT function in their respective organizations.

The study explored the intellectual competencies by seeking to know if the project leaders demonstrated an understanding of the project vision and goals. The extent to which the respondents thought the project manager demonstrated creativity and analytical skills was discussed, and if the project leader had pre-requisite experience to provide project leadership. The findings indicated that the project managers were informed of the vision and goals and that they demonstrated creativity in conducting their work since they could factor in the views of other staff. For instance, one participant had this to say:

> *"In our case, the project manager played a critical role. He understood the organizational goal and objectives for undertaking the ERP implementation and would seek direction from the project management committee when and as required" (Participant, KENGEN).*

The study further examined the managerial competencies by seeking information from the heads of ICT of some on the managerial qualities the project manager demonstrated as leader and if the project leader provided guidelines and support to the team when required. The interviews also sought to know if the project leader defined and assigned responsibility to the various teams and person. The findings revealed that the project managers supported the junior staff on performing their duties by providing the necessary material. This is supported by (Arnold, 1995; Levy, 2003; Seltzer & Numerof, 1988; Sosik & Godshalk, 2000) who indicated that a leader's conduct

includes: supporting workers; display of respect for workers' ideas; growing cohesiveness; developing and mentoring; looking out for employees' welfare; managing conflict; and team building. This finding is also confirmed by the scores in quantitative data which indicated that managerial competence had the highest effect of the three leadership competencies with the mean of 4.4500. The finding is reflected by a participant who said:

> *"The project manager had experience in ERP projects and to a larger extent was able to ensure proper project planning and management, and at the same time was able to coordinate project activities as required" (Participant, REA)*

Under emotional competencies, the researcher investigated the extent to which the project leader appealed to both senior management and project team on matters of the project. Project leader's ability to influence both organizational and project leadership on project matters was also put into perspective. The participants were further requested to indicate the extent to which the project leader adhered to legal, regulatory and organizational policies and if they demonstrated self-control and refrain. The findings indicated that the project managers were able to work in harmony with both the senior and the project team, while adhering to the stipulated rules and regulations. A participant demonstrated that the leaders followed the laid down rules by indicating that:

> *"Project planning and implementation adhered to procurement regulations and organizational policies and procedures" (Participant, KPLC).*

Though significant, emotional competence with mean of 3.6681 was ranked last compared to the other two factors in the project manager leadership competencies: intellectual competence and managerial competence with a mean of 4.1183 and 4.4500 respectively. This finding agrees with Goleman, Bouyatiz and Mckee (2002), who found a distinctive relationship amongst emotive intelligence and management style of a manager and positive organizational performance.

4.5.2 Descriptive statistics for ERP system strategic factors

Table 4.7 presents the mean, mode and standard deviation for the predictor variables: top management support and implementation strategy. The mean for top management support and implementation strategy are 3.5811 and 3.9100 respectively. The standard deviation was 0.5636

for top management support and 0.6063 for implementation strategy. This shows that among the two datasets, there was minimal deviation from the mean. Similarly, the modes for top management support and implementation strategy were 3.55 and 4.00 respectively.

The joint contribution of the two strategic factors showed a significant effect as shown by an average of 3.7455 and a standard deviation of 0.5849. The finding is supported by Benjamin and Levinson (1993), who emphasized the importance to of managing organization process and technology changes in a collective manner. Policy would drive strategies so as to fully integrate the three key administration procedures (development, implementation and control) (Holland & Light, 1999). The joint contribution indicated a positive effect of top management backing and implementation strategy on ERP system execution as shown by an average of 3.7455 and a standard deviation of 0.5849.

Table 4.7: Descriptive statistics for ERP strategic factors

	Top management support	Implementation strategy	ERP strategic factors
Mean	3.5811	3.9100	3.7455
Median	3.5555	4.0000	3.7778
Mode	3.55	4.00	3.78
Std deviation	0.5636	0.6063	0.5849

The quantitative findings on ERP strategic factors were substantiated by a qualitative data set that was collected through the interviews with the Head of the ICT functions. The resultant data was analyzed and summarized thematically. The respondents were guided to discuss various aspects of ERP strategic factors namely top management support and implementation strategy.

4.5.2.1 Top management support

Top management support, the role of senior management and CEO in establishing the project office, appointing the project team and providing support and required resources for the project was examined. The study also examined if there were project structures for effective communication. The findings showed that the management ensured that there was distinction in

the description of jobs for the project manager and team and to larger extent resources were provided. One of the participants stated:

> *"Resources such as office space, furniture, human resource were made available by Management" (Participant, KETRACO)*

However, there were concerns in some organizations on the visibility, constancy and participation of the top management in the ERP system project activities, as stated by one of the participants;

> *"Top management support was there, though limited in some cases and could hardly meet as scheduled" (Participant, GDC).*

According to (Sabherwal et *al*., 2006), management support is defined as the favorable attitude towards and explicit support for an IS project. Senior management backing has been widely recognized, and singled out as a key aspect influencing the effectiveness of IT System implementation in IS literature (DeLone 1998; McFarlan 1981; Senn 1978). The team was also provided with the necessary support to enhance their performance.

4.5.2.2 Implementation strategy

In the study of the ERP System implementation strategy, the study sought to establish whether particular methodology and standards were adopted and implemented. The researcher examined the approach of implementation that was used in terms of bang or phased approach, and whether there were other ICT projects running parallel to the ERP System projects. According to Johnson (2000), most of the ERP system execution tactics included phased and big bang approaches. However, research findings show that three of the five organizations under study preferred phased implementation approach, with two opting for the bang approach.

> *"The ERP project was done in phases and adhered to SAP prescribed implementation methodology, ASAP" (Participant, REA).*

Another respondent indicated:

> *"In our case we considered bang approach, though some modules we staggered to late time." (Participant, KETRACO).*

Although implementation strategy was considered important and agreed upon by most of project management, some of the organizations had difficulties adhering to the vendor recommended methodology during project execution, leading to implementation challenges. This finding is supported by Teltumbde *et al*., (2002) who alluded to the fact that rollout strategy is among the vital aspects that influence the accomplishment of the ERP system project. Execution strategy had been found to influence ERP system project implementation with a mean of 3.9100 compared to 3.5811 for top management support.

> *"Though efforts were made to use ASAP - SAP recommended methodology, at some point the project team had difficulties and did not effectively use the approach, this may have affected the quality of delivery" (Participant, GDC).*

4.5.3 Descriptive statistics for ERP system project implementation

The Table 4.8 shows the mean, mode and standard deviation for ERP system project implementation. The mean for project management efficiency, system quality information quality and service quality are 3.505, 4.0680, 4.0600 and 4.1650.8 respectively as shown in Table 4.8. The standard deviation ranged from 0.6332 to 0.9800 with project management efficiency and system quality having 0.9800 and 0.6720 standard deviation respectively. This shows that across the board there was minimal deviation from the mean. Similarly, the mode for project management efficiency, system quality, information quality and service quality was 4.0. From the findings, of the four measures of ERP system project implementation, service quality was found to be of the highest measure as shown by a mean of 4.1650 and a standard deviation of 0.6332. The overall effect of the sub-variables was found to be significant as shown by a combined mean of 3.9495 and a standard deviation of 0.7407. This means that the firms under study had a relatively successful implementation of the ERP system project.

Table 4.8: Descriptive statistics for ERP system project implementation

	Project management efficiency	System quality	Information quality	Service quality	ERP system project implementation
Mean	3.505	4.0680	4.0600	4.1650	3.9495
Median	4.0000	4.0000	4.0000	4.0000	4.0000
Mode	4.00	4.00	4.00	4.00	4.00
Std deviation	0.9800	0.6720	0.6775	0.6332	0.7407

The quantitative findings on ERP system project implementation was validated by qualitative data set. Through the study, the respondents were guided to discuss various aspects of ERP system project implementation that included project management efficiency, system quality, information quality and service quality.

The study investigated project management efficiency by examining the extent to which the ERP system project had achieved what it was intended and if the project was completed on time, within budget and as scheduled. To a large extent, the study found out that ERP systems project implementation had met the outlined requirements, such as increased efficiency, reduced operational cost, enhanced controls among others. On this factor one of the participants is quoted saying;

> *"Approximately 70-75% of the business requirements were met" (Participant, KPLC)*

Another respondent indicated:

> *"Business benefits realized included; enhanced business processes controls and efficiency, effective decision-making process, and reporting" (Participant, KenGen).*

This finding is supported by Al -Mashari *et al*., (2003), classification of performance measures due to ERP system implementation performance as; operational, managerial and strategic benefits. This includes; cost reductions, enhanced staff productivity, better resource management, improved decision making and performance improvement.

Majority of the respondents were concerned about project delays, as a result of a number of factors, such as change of scope, consultant delays and lack of technical capabilities among others. It is only on rare occasions that the projects deliverables were completed in time. The respondents indicated that given an opportunity to change the system, they would ensure that the team dynamics did not slow down the project pace.

> *"It is true, project delivery was delayed due to variation in scope and limited technical skills on some of the consultant experts on subject matter, and internal team" (Participant, KETRACO).*

> *"We experienced some delays, by appx. 4 months due to other parallel organizational initiatives requiring our attention as well" (Participant, KenGen).*

On the aspect of system quality, the researcher probed the respondents' general feeling or experience on the ERP System and their perception on the look and feel of the system. The study found out that the system was user friendly and to a large extent provided the expected output and results. The study examined the respondents experience and level of comfort when using the ERP System systems. System users were found to be comfortable to use the system. System quality dimension elements include: reliability, portability, user friendliness, understandability, effectiveness, maintainability, economy, and verifiability. Perceived ease of use is the most common measure of system quality (McGill and Hobbs, 2003).

On investigation of the information quality, the researcher examined the nature of information processed or received from the ERP system. The researcher investigated if the information / report received from ERP systems was reliable for decision making. The study probed if the employees require information from other sources or systems to complement ERP reports and if they are able to get information from the system any time they want. Though the study found out the ERP system output to be reliable and accessible, occasionally, information from other sources would be required to complement the source. One of the participants indicated that:

> *"Though the reports generated from the ERP system are largely sufficient, occasionally, there is need to compliment these reports with information from other sources, hence the need for the planned systems enhancements and improvements" (Participant, KPLC).*

In examining the impact of ERP systems project implementation on service quality, the study found out that clients were more delighted as a result of improved service delivery, increased efficiency, ease of doing business and access to information. The factors of tangibility, dependability, awareness, guarantee and identification are considered elements for service quality (Pitt et *al.*, 1995). This finding was also reflected in the quantitative data that showed a mean of 4.1650 on service quality. One of the respondents indicated that:

> *"ERP system implementation saw an increase in processes efficiencies, leading to enhanced satisfaction for both our internal and external clients" (Participant, GDC).*

4.6 Testing research hypothesis

Hypothesis testing was done using inferential statistics. Pearson's correlation was used as measure of the strength of the association between the two variables, while regression analysis was used to estimate or predict the strength and direction of the relationship between two or more variables. The qualitative component was mainly for triangulation. Qualitative findings were used to get in-depth discussions so as to facilitate analysis for the emerging conclusions to be easily drawn from analysis. Statistical analysis was done using SPSS version 23 while qualitative phase involved summarizing the responses into themes and sub-themes. The study hypothesized an existence of a positive relationship between the independent variables and the dependent variable.

4.6.1 Pearson correlation

Based on SPSS statistics was used to a measure the strength and direction of association between the study variables, the findings indicate that the correlation is significant at the 0.01 level for 2-tailed. Table 4.9, shows a positive and strong correlation of .857 between project manager leadership competencies and ERP system project implementation. On the other hand, ERP strategic factors and ERP system project implementation showed a positive correlation and a moderate strength of .482.

Table 4.9: Pearson correlations between ERP system project implementation, Project manager leadership competencies and ERP system Strategic Factors

		ERP system project implementation	Project manager leadership competencies	ERP system Strategic Factors
ERP system project implementation	Pearson correlation	1.000	.857**	.482**
	Sig. (2-tailed)	-	.000	.000
Project leadership competencies	Pearson Correlation	.857**	1.000	.703**
	Sig. (2-tailed)	.000	-	.000
ERP system Strategic	Pearson Correlation	.482**	.703**	1.000
	Sig. (2-tailed)	.000	.000	-
Factors	N	133	133	133

4.6.2 Regression Analysis

Regression analysis was used to analyze quantitative data given that the study involved both modeling and analysis of several variables which included the relationship between dependent variable and multiple independent variables. Both linear and multiple regression analysis were used to examine the relationship between variables and to test the hypothesis as follows:

4.6.2.1 $H1_1$: Project manager leadership competencies and ERP system project implementation

$H1_{1a}$: There is a significant relationship between leadership intellectual competence and ERP system project implementation

Linear regression was conducted to examine the influence of intellectual competence on ERP system project implementation. Regression was used to estimate the unknown effect of changing one variable over another (Stock and Watson, 2003). The linear regression of intellectual competence on system project implementation was significantly related with F (1,133) = 9.008, p<.05. The analysis yielded a correlation coefficient of r = .254 indicating that there was a relatively significant relationship between leadership intellectual competence and ERP system project implementation. Intellectual competence account for 6.4% of the variation in ERP system project implementation with the other 93.6% explained by other factors not considered in this study. The results are presented in Table 4.10. The regression equation is therefore as follows:

ERP system project implementation = 68.065 + 0.305 × Intellectual competence

Table 4.10: Model for ERP System project implementation and Intellectual leadership competence

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.254[a]	.064	.057	8.168	68.065	Constant term
				.102	.305	Intellectual competence

a. Predictors: (Constant), Intellectual competence
Model 1: F (1, 133) = 9.008; *p*<.05

Indicators of intellectual competence were explored whether qualitatively. The findings demonstrate that project leaders clearly understood the project vision and objectives, and was able to guide others team members on the same. The project managers were creative and analytical hence able to inspire and work effectively the teams and stakeholders based on agreed objectives and targets. In addition they exhibited ability to make right and timely decisions on

project related matters as expected of them. Decision-making is not only vital for an organization to keep on track but it can be a matter of success and failure as Crainer (1999) The findings were in agreement with the descriptive data that indicated a mean of 4.1183. The finding was reflected by one of the respondents who said:

> *"The project manager understood his role, and was knowledgeable enough on project matters, he made use of the team members skills and abilities to the advantage of the project performance" (Participant, REA).*

$H1_{1b}$: There is a significant relationship between leadership managerial competence and ERP system project implementation

A good understanding and the establishment of a valid communication and decision-making are of such significance to project managers. A linear regression was done to investigate the influence of managerial competence on ERP system project implementation. The linear regression of managerial competence on system project implementation was significantly related with $F(1,133) = 49.524$, $p<.05$. The analysis yielded a correlation coefficient of $r = .524$ indicating that there was a strong relationship between leadership managerial competence and ERP system project implementation. $R2 = .274$, meaning 27.4% of the variation in ERP system project implementation is accounted by Managerial competence. The results are presented in Table 4.11. The regression equation for ERP system project implementation is represented as:

ERP system project implementation = 44.210 + 0.784 × Managerial competence

Table 4.11: Model for ERP System project implementation and managerial competence

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.524[a]	.274	.269	7.193	44.210	Constant term
				.111	.784	Managerial competence

a. Predictors: (Constant), Managerial competence

Model 1: $F(1, 133) = 49.524$; $p<.05$

The study examined primary data on the managerial competencies by seeking information on the managerial qualities the project manager exhibited. It was found that the project leader provided

the required guidelines and support to the team. The project leader also defined and assigned duties and responsibilities to various teams and person. The project leader ensured proper and timely communication of project issues to the teams and stakeholders using well defined media. The same is submitted by (Levy, 2003; Sosik & Godshalk, 2000) who indicated that benefits such as improved supply management, enhanced decision making, preparation and performance improvements fall into the administrative grouping. The project manager also support teams to ensure both individuals and group goals are attained as far as project targets were concerned. This finding is also confirmed by the scores in quantitative data which indicated that managerial competence had the highest effect of the three-leadership competencies with the mean of 4.4500. The finding was reflected by a participants who said:

> *"The PT made up of department representative and ICT technical expert was officially appointed based on competence and was tasked with specific deliverables within specified time lines" (Participant, GDC).*
>
> *The project manager was a good communicator. He ensured project meetings begun in time with the various team leaders required to submit and present their progress reports during review meetings" (Participant, KETRACO).*

$H1_{1c}$: There is a significant relationship between leadership emotional competence and ERP system project implementation

A linear regression was done to investigate the influence of emotional competence on ERP system project implementation. The linear regression of emotional competence on system project implementation was significantly related with $F(1,133) = 36.675$, $p<.05$. The analysis produced a correlation coefficient of $r = .468$ indicating that there was a strong relationship between leadership emotional competence and ERP system project implementation. Emotional competence account for 21.9% of the variation in ERP system project implementation. The results are presented in Table 4.12. The regression equation is therefore as follows:

ERP system project implementation = 49.680 + 0.642 * Emotional competence

Table 4.12: Model for ERP System project implementation and emotional leadership competence

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.468[a]	.219	.213	7.463	49.680	Constant term
				.106	.642	Emotional competence

a. Predictors: (Constant), Emotional competence
Model 1: F (1, 133) = 36.675; p<.05

Primary data on emotional competence showed that the project leader influenced both senior management and project team on matters of project. A study by (Peter, 2013) showed that emotional intelligence is a critical factor in leadership performance. Project leader's demonstrated also responsibility and accountability of matters of the project and adhered to the legal, regulatory and organizational policies and demonstrated self-control and refrain. This finding agrees with Clarke (2010) who states that emotionally intelligent project managers are well furnished to resolve new encounters and problems that every new project brings. Moreover, emotional intelligence might enable project managers to motivate fellow project workers and generate higher levels of motivation and obligation towards change (Clarke, 2010). A participant demonstrated that the leaders followed the laid down rules by indicating that:

> *"The project implementation adhered to rules and regulations and followed the organizational policies" (Participant, KPLC).*

$H1_{1d}$: There is a relationship between project manager leadership competencies and ERP system project implementation

Multiple regression was used to determine the association between project manager leadership competencies and ERP system project implementation. According to Table 4.13, it shows that project manager leadership competencies was significantly related to ERP system project implementation with F (1, 133) = 19.634, p<0.05. The study recorded a correlation coefficient of r = 0.560 as indicated in Table 4.13. This result shows that there is a moderate positive linear relationship between project manager leadership competencies and ERP system project implementation. With a coefficient of determine (R^2) of 0.313 as can be seen in Table 4.9,

project manager leadership competencies account for 31.3% of the variation in the level of ERP system project implementation. This indicates that project manager leadership competencies have a positive influence on ERP system project implementation. The regression equation is as shown below.

ERP system project implementation = 39.828 + 0.76 × Intellectual competence + 0.541× Managerial competence + 0.318 × Emotional competence

Table 4.13: Model for ERP System project implementation and project manager leadership competencies

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.560[a]	.313	.298	7.050	39.249	Constant term
				.094	.076	Intellectual competence
				.141	.541	Managerial competence
				.126	.318	Emotional competence

a. Predictors: (Constant), intellectual, Managerial and Emotional competences
b. Dependent Variable: System projects implementation
Model 1: F (1, 133) = 19.634; $p<.05$

The quantitative findings on project leadership competence can be corroborated by some of the related themes explored from the qualitative data set. Primary data was obtained from face to face interview that included the Head of the ICT function. The study explored the leadership competencies by seeking to know if the project leaders demonstrated intellectual, managerial and emotional competencies. These includes a thorough understanding of the project vision, goals, innovation, communication skills, team leadership, management and emotional resilience on matters ERP system project management. The extent to which the respondents thought the project manager demonstrated creativity and analytical skills and if the project leader had pre-requisite experience to provide project leadership. The findings indicated that the project manager was creative in his duties and demonstrated understanding of rules and regulations. Project manager leadership competencies is an important element in the success of an ERP

System project, personality of leader can be the determinant of success of a project Hogan (2005). A participant reflected this by saying:

> *"In my opinion, the project manager holds the key to the success of an ERP implementation, he/she must be competent enough to effectively manage and coordinate project activities and teams." (Participant, KPLC).*

The results are consistent with studies that suggest that project manager leadership competencies might have a direct impact on system projects implementation. According to Welti (1999) the project executive is the general leader of the project: "their key risk is supervision, leading and training". Project manager leadership is about establishing direction, aligning strategies, and aligning tasks and activities while influencing a group of persons to achieve a joint goal. They make the execution as simple as possible and generate a pleasing atmosphere and environment for the project members to work in. Various authors have accredited the significance of strong project management in the form of project champions, executive sponsors, project managers and steering committees (Beath, 1991).

4.6.2.2 $H1_2$: ERP System strategic factors and ERP system project implementation

$H1_{2a}$: There is a significant relationship between top management support and ERP system project implementation

Top management support is one of the most critical factors for implementation of projects in Pakistan (Awan, Raouf, Ahmad, & Sparks, 2009). A linear regression was conducted to examine the influence of top management support on ERP system project implementation. The linear regression of top management support on system project implementation was significantly related with $F(1,133) = 42.028$, $p<.05$. The analysis yielded a correlation coefficient of $r = .493$, account for 24.3% of the variation in the level of ERP system project implementation indicating. This indicates a strong association between top executive backing and ERP system project execution since it contributes 24.3% of the. The results are presented in Table 4.14. The regression equation is therefore as follows:

ERP system project implementation = 49.260 + 0.817 × Top management support

Table 4.14: Model for ERP system project implementation and top management support

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.493[a]	.243	.237	4.112	49.260	Constant term
				.126	.817	Top management support

a. Predictors: (Constant), Top management support
Model 1: F (1, 133) = 42.028; $p<.05$

The researcher analyzed qualitative data on the role of top management support. The study found that the top management had established a project team and structure. The project team had been given the necessary support and resources although in some companies the team complained on delayed response from the management. This finding is reflected by Lucas (1981); Thong et *al.*, (1996) who indicated that management support ensures a long-term commitment of the company to allocate sufficient resources for a target, such as intensive training for the employees to help them get familiar and learn how to use the new system, and external consultants to provide professional expertise and experiences. Top management needs to support project activities and project teams, which is an emerging trend in developing countries (Haque & Anwar, 2012). One of the respondents indicated that:

> *"Project team was appointed by the CEO with specific terms of reference and project charter" (Participant, KenGen).*

$H1_{2b}$: There is a significant relationship between implementation strategy and ERP system project implementation

The strategy defines the organizational principles and approach to executing the ERP implementation. According to (Al-Mashari & Zairi, 2000), the implementation strategy describes the plan for change that ensures alignment with overall corporate objectives and goals. A linear regression was conducted to examine the influence of implementation strategy on ERP system project implementation. The linear regression of implementation strategy on system project implementation was significantly related with F (1,133) = 45.361, p<.05. The analysis yielded a correlation coefficient of r = .507 indicating that there was a strong relationship between

implementation strategy and ERP system project implementation. Implementation strategy account for 25.7% of the variation in ERP system project implementation. The results are presented in Table 4.15. The regression equation is therefore as follows:

ERP system project implementation = 48.080 + 0.880 × ERP System implementation strategy

Table 4.15 Model for ERP System project implementation and ERP System implementation strategy

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.507[a]	.257	.252	7.277	48.080	Constant term
				.131	.880	ERP System implementation strategy

a. Predictors: (Constant), ERP System implementation strategy
Model 1: F (1, 133) = 45.361; $p<.05$

The study sought to establish whether the ERP System project subscribed to a predefined implementation approach and if the methodology was adhered to. The findings indicated that both approaches were used by the organization of study depending on the project size, scope and resources available for the project. Implementation strategy had been found to influence ERP system project implementation the most with a mean of 3.9100 compared to 3.5811 for top management support as indicated in the descriptive statistics. The study finding is shown by a respondent who said:

> *"ASAP methodology was used, though not effectively adhered to." (Participant, GDC).*

> *"We opted for big bang, it seemed cheaper, though I now think a phased approach would have better" (Participant, KenGen).*

$H1_{2c}$: There is a significant relationship between ERP System strategic factors and ERP system project implementation.

A multiple regression was used to determine the relationship between ERP System strategic factors and ERP system project implementation. According to Table 4.16, it shows that ERP System strategic factors was significantly related to ERP system project implementation with F (1, 133) = 26.303, $p<0.05$. The study recorded a correlation coefficient of r = 0.537 as indicated in Table 4.16. This result shows that there is a moderate positive linear relationship between ERP System strategic factors and ERP system project implementation. With a coefficient (R^2) being equal to 0.288 as can be seen in Table 4.16, ERP System strategic factors account for 28.8% of the variation in ERP system project implementation. This indicates that ERP System strategic factors have a positive influence on ERP system project implementation.

The regression equation is as follows.

ERP system project implementation = 44.592 + 0.432 × Top management support + 0.546 × Implementation strategy

Table 4.16: Model for ERP System project implementation and ERP system strategic factors

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.537[a]	.288	.277	7.152	44.592	Constant term
				.182	.432	Top management support
				.190	.546	Implementation strategy

a. Predictors: (Constant), Implementation strategy, Top management support
b. Dependent Variable: System project implementation
Model 1: F (1, 133) = 26.303; $p<.05$

The quantitative findings on ERP strategic factors were substantiated by qualitative data set that was collected through the interviews of the Head of the ICT functions. The resultant data was analyzed and summarized thematically. Top management must assist to identify the right persons, free them from other responsibilities, organize them into an interdisciplinary team and

empower them for the responsibility of the project (Chen, 2001). In some instances, organizations had parallel initiatives and other projects which made the performance of the ERP system project implementation a bit difficult in some cases. This can be reflected in one of the respondent assertion:

> *"Generally speaking, senior management made some effort to provide the necessary support to the ERP project. Individuals were identified and seconded to the project, however, occasionally they were required to attend to their routine jobs" (Participant, KPLC).*

4.6.2.3 $H1_3$: Moderating effect of ERP System strategic factors on the relationship between project manager leadership competencies and ERP system project implementation

$H1_{3a}$: The strength of the relationship between project manager leadership competencies and ERP system project implementation depends on top management support.

According to (Meredith and Mantel, 2010), top management support is one of the prime factors for achieving the project success. A project manager with excellent skills, who lacks executive support, is likely to fail ERP system project. The moderating effect of top management support on the association between project manager leadership competencies and ERP system project execution was explored by computing the interaction between top management support and project leadership competencies. Stepwise regression involving ERP system project implementation and project manager leadership competencies and interaction between top management support and project leadership competencies on ERP system project implementation was then conducted to establish the moderating effect of top management support on the relationship. This yielded two models, namely: model 1 (without the interaction term) and model 2 (with the interaction term).

Both model 1 and 2 were significant with $F(1, 130) = 49.084$, $p<.05$, $F(2, 129) = 35.260$, and $p<.05$, respectively. Model 2 with the interaction between project manager leadership competencies and top management support accounted for significantly more variance than only project manager leadership competencies and ERP system project implementation. Table 4.16 shows results from the analysis. The regression model showing the moderating influence of top

management support on the relationship between project manager leadership competencies and ERP system project implementation can therefore be presented as follows:

ERP system project implementation = 43.826 + 0.302 × Project manager leadership competencies + 0.528 × Project manager leadership competencies × Top management support

Table 4.17: Model for ERP System project implementation and Project manager leadership competencies with top management support as a moderator index

Model	R	R Square	Adjusted R Square	Std. Error	F	B	Predictor variables
1	.522[a]	.273	.267	7.202	49.084	43.826	Constant term
						.302	Project manager leadership competence
2	.593[b]	.352	.342	6.825	35.260	35.880	Constant term
						.216	Project manager leadership competence
						.528	Top management support

a. Predictors: (Constant), Project manager leadership competence

b. Predictors: (Constant), Project manager Leadership competence, Top management support.

Model 1: $F(2, 133) = 49.084$; $p<.05$, Model 2: $F(3, 133) = 35.260$; $p<.05$

The study results from the multiple regression shows that top management support significantly moderates the relationship between project manager leadership competencies and ERP system project implementation with R Square change of 0.079. This finding is supported by other studies which seem to find a moderating effect of top management support to be significant. Lucas (1981); Thong et *al.,* (1996) in their study found that management support ensures a long-term commitment of the company to allocate sufficient resources for a target), such as intensive training for the employees to help them get familiar and learn how to use the new system, competent project leadership and external consultants to provide professional expertise and experiences. At the same time, one of the Head of ICT interviewed had this to say:

> *"It is important for the CEO to ensure that a person with project management experience and significant level of authority or influence within the organization is appointed to head the ERP project". (Participant, KPC).*

$H1_{3b}$: The strength of the relationship between project manager leadership competencies and ERP system project implementation depends on ERP System implementation strategy

The moderating effect of implementation strategy on the association between project manager leadership competencies and ERP system project execution was also explored by computing the interaction between implementation strategy and project manager leadership competencies. Multiple regression involving ERP system project implementation and project manager leadership competencies, and interaction between implementation strategy and project manager leadership competencies on ERP system project implementation was then conducted to establish the moderating effect of implementation strategy on the relationship. This yielded two models, namely: model 1 (without the interaction term) and model 2 (with the interaction term).

Both model 1 and 2 were significant with $F(1, 130) = 49.084$, $p<.05$, $F(2, 129) = 31.324$, and $p<.05$, respectively. Model 2, with the interaction between leadership competencies and implementation strategy with R Square change of 0.052 to the relationship between leadership competencies and ERP system project implementation as a moderating factor. Table 4.17 shows results from the analysis. The regression model showing the moderating influence of implementation strategy on the relationship between project manager leadership competencies and ERP system project implementation can therefore be presented as follows:

ERP system project implementation = 43.826 + 0.302 × Project manager leadership competencies + 0.513 × Project manager leadership competencies × ERP System implementation strategy.

Table 4.18: Model for ERP System project implementation and Project manager leadership competencies with implementation strategy as a moderator index

Model	R	R Square	Adjusted R Square	Std. Error	F	B	Predictor variables
1	.522[a]	.273	.267	7.202	49.084	43.826	Constant term
						.302	Project manager leadership Competencies
2	.570[b]	.325	.315	6.963	31.324	39.127	Constant term
						.194	Project manager leadership Competencies
						.513	ERP System implementation strategy

a. Predictors: (Constant), Project manager leadership Competencies
b. Predictors: (Constant), Project manager leadership competencies, ERP system implementation strategy
Model 1: F (2, 130) = 49.084; p<.05
Model 2: F (3, 129) = 31.324; p<.05

In support of previous findings indicating implementation strategy influences ERP system project implementation, the study found that implementation strategy significantly moderated the relationship between project manager leadership competencies and system projects implementation. A study conducted by Kale (2000), remarks that such methodology may not be the most effective one but it guarantees success under ideal conditions. One of the participants underscored the important of implementation strategy on ERP implementation by stating that:

> *"I believe that implementation methodology as defined by the vendor plays crucial role in the success of the ERP system project. However, there seems to be less emphasis on the methodology as the project progresses, due to pressure to have the project out realized" (Participant, GDC).*

$H1_{3c}$: The moderating effect of ERP System strategic factors on the relationship between project manager leadership competencies and ERP system project implementation.

The study hypothesized that system strategic factors, namely; top management support and implementation strategy, influence the direction and/or strength of the relationship between project manager leadership competencies and ERP project implementation. The moderator effect was represented as an integration term between the principal predictor variable and a moderator factor, in this case the factors considered were top management support and ERP implementation strategy.

The following model was applied in the analysis: ERP system project implementation = $\beta_0 + \beta_1$ Project manager leadership competencies + β_2 Project manager leadership competencies * ERP System strategic factors + ε. Where: β_1, β_2 and β_0 are the correlation coefficients; ERP system project implementation is the dependent variable; project leadership competencies is the independent variable and system strategic factors is the moderating variable. B2 coefficient reflects the interaction between the predictor variable and the moderating variable. The moderating effect of ERP system strategic factors on the relationship between project manager leadership competencies and ERP system project implementation was explored by first computing the interaction between ERP system project implementation and project manager leadership competencies.

Multiple regression involving ERP system project implementation and project manager leadership competencies and interaction between ERP System strategic factors and project manager leadership competencies on ERP system project implementation was then conducted to establish the moderating effect of ERP system strategic factors on the relationship. This yielded two models, namely: model 1 (without the interaction term) and model 2 (with the interaction term). Both model 1 and 2 were significant with $F(2, 131) = 48.767$, $p<.05$, $F(3, 130) = 35.204$, and $p<.05$, respectively.

Model 2 with the interaction between project manager leadership competencies and ERP system strategic factors accounted for a significant variance, with R Square change of 0.08 compared to project manager leadership competencies and ERP system project implementation on their own.

Table 4.19 shows results from the analysis. The regression model showing the moderating influence of system strategic factors on the relationship between project manager leadership competencies and ERP system project implementation can therefore be presented as follows:

ERP system project implementation = 36.092 + 0.183 × Project manager leadership competencies + 0.318 × Project leadership competencies × ERP System strategic factors

Table 4.19: Model for ERP System project implementation and Project manager leadership competencies with ERP system strategic factors as a moderator index

Model	R	R Square	Adjusted R Square	Std. Error	F	B	Predictor variables
1	.522[a]	.273	.267	7.228	48.767	43.772	Constant term
						.303	Project manager leadership competencies
2	.594[b]	.353	.343	6.844	35.204	B	Predictor variables
				4.760		36.092	Constant term
				.051		.183	Project manager leadership competencies
				.080		.318	System strategic factors

a. Predictors: (Constant), Project manager leadership competencies

b. Predictors: (Constant), Project manager leadership competencies, ERP system strategic factors

c. Dependent Variable: ERP system projects implementation index

Model 1: F (2, 131) = 43.187; $p<.05$

Model 2: F (3, 130) = 50.432; $p<.05$

The study results from the multiple regression show that ERP system strategic factors to some extent moderates the relationship between project manager leadership competencies and ERP system projects implementation. This finding is supported by other studies which seem to find a moderating effect of system strategic factors to be significant. Markus (2000) asserted that by championing ERP system systematic implementation and utilization, top managers can lessen the organizational resistance to the new system and also facilitate a smoother reengineering of the business processes, which in turn improves the organizational performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents and summarizes the key outcomes of this research study. The study sought to discuss the key findings, categorize the contributions to knowledge, address research restrictions, discuss future research potentials and provide research conclusions. The study examined the relationship between project manager leadership competencies, ERP strategic factors and ERP system project implementation, with a view to help improve the ERP project deliver performance, thus achieving the research aim and objectives. The unit of analysis was the Kenya Energy Sector State Parastatals that had implemented Structure Application Product (SAP), with respondents drawn from three main groups, namely; ERP system project team members, top managers and Head of ICT function in their respective organizations. This chapter gives a summary of the findings of the study relative to the objectives and makes conclusions drawn from the quantitative and qualitative data. This chapter also covers the limitations of the study, areas for further research and gives recommendation for action.

5.2 Summary of the Findings

Over time, ERP systems have become the most important IT solution for both private and public-sector organizations. Worldwide ERP's are accepted as an enterprise-wide system planned to assimilate and to optimize the business procedures to accomplish benefit over the competitors in the industry (Moon, 2007). ERP System solutions are revolutionizing the way companies operate and provide quality products and services.

This study sought to examine the association between project manager leadership competencies, strategic factors and enterprise resource planning system implementation project, in selected energy sector state parastatals. In determining ERP system project implementation, the study sought to understand the extent to which project manager leadership competencies that included intellectual, managerial and emotional competence had on the ERP system project implementation. The study investigated the influence of system strategic factors that was made

up of the top management support and the implementation strategy as a moderating factor towards the influence of the project supervisor management competence on the implementation of the ERP system project. This study has attempted to respond to Hogan (2005) who indicated that project manager leadership competencies is an important element in the success of an ERP System project, personality of leader can be the determinant of success of a project. The descriptive analysis pointed to a possible influence of project manager leadership competencies on implementation of ERP system project. This was further clarified through linear and multiple regression. The summary of the findings are presented for each of the objectives examined.

5.2.1 The relationship between project manager leadership competencies and ERP system project implementation

The study examined the influence of project manager leadership competencies that included intellectual competence, managerial competence and emotional competence on ERP system project implementation. The analysis on the influence of intellectual competence indicated F (1, 133) = 9.008; $p<.05$ and $r = .254$. The study findings suggest that the linear relationship between intellectual competence and ERP system project implementation was positive. An R^2 .064 shows that intellectual competence under leadership competencies accounted for approximately 6.4% of the variation in ERP system project implementation. The other 93.6% can be explained by other variables that were not considered in the model. The finding is supported by Herkenhoff (2004), who says that in a state of strategic changes, effective managers require both the emotional and intellectual skills to motivate and understand the team members. The study concludes that there is some connection between project manager intellectual competence and ERP system project implementation.

The study examined the influence of managerial competence on ERP system project implementation. The analysis indicated F (1, 133) = 49.524; $p<.05$ and $r = .524$. The study findings suggest that linear relationship between managerial competence and ERP system project implementation was positive. An R^2 .274 shows that managerial competence as a factor under project manager leadership competencies accounted for approximately 27.4% of the variation in ERP system project implementation. The other 72.6% can be explained by other variables that were not considered in the model. The finding is highlighted by Arnold, (1995); Levy, (2003);

Seltzer & Numerof, (1988); Sosik & Godshalk, (2000) who indicated that leader conduct comprises: supporting workers; display of respect for workers' ideas; growing cohesiveness; developing and mentoring; searching for employees' welfare; managing conflict; and team building. Benefits such as improved resource utilization, enhanced decision-making and performance increase are types of managerial outputs. The study concludes relationship between leadership managerial competence and ERP system project implementation was significant.

The analysis on the influence of emotional competence on ERP system project implementation revealed F (1, 133) = 36.675; p<.05 and r =.468. The study findings suggest a positive linear relationship between emotional competence and ERP system project implementation. An R^2 .219 shows that emotional intelligence accounted for approximately 21.9% of the variation in ERP system project implementation. The other 78.1% can be explained by other variables that were not considered in the model. The finding is supported by Druskat, (2004); Mayer, Salovey and Caruso, (2004) who said that emotive intellect is an individual's capacity to detect and comprehend his or her own and other peoples' emotions appropriately, and achieve those emotions in a desired way. They related reactions to projects recommending that the provisional nature of projects place a specific requirement for project administrators to have emotional intelligence. The study concludes the relationship between leadership emotional competence and ERP system project implementation was significant.

From the study, of the three sub-variables under project manager leadership competencies, for both descriptive statistics and regression analysis, managerial competence came out as the most significant factor, followed by emotional competence and finally intellectual competence. It is therefore important that to ensure that ERP system project manager demonstrates a high level of management competence for effective management of project resources and outputs.

The study examined the relationship between the overall influences of project manager leadership competencies on ERP system project implementation. Project manager leadership competencies was found to be significantly related to ERP system project implementation with F (1, 133) = 19.634; p<.05 and a correlation coefficient of r =.560. This shows that the linear connection between project manager leadership competencies and implementation of ERP system project is moderately positive. Meaning that the greater the leadership competence a

project manager possess the greater the level of ERP system project implementation. With R^2 of .313, project manager leadership competencies accounts for 31.3% of the disparity in ERP system project execution.

The finding confirms the hypothesis that the relationship between intellectual, managerial and emotional leadership competencies and ERP System projects performance is significant. Numerous authors note that project management is among the most significant elements in the conveyance of fruitful projects (Muller and Turner, 2010; Sarika, 2008). Participants all agreed that it is a great idea to have incorporated project managers' management capabilities as a vital success factor. The participants articulated that being a project leader needs them to draw upon a certain grouping of knowledge, past involvement, skills, and individual characteristics in order to lead projects. The participants further alluded to the fact that project managers have better opportunities for project success if their organizational top management support will provide required resources and participation.

5.2.2 The relationship between ERP system strategic factors and ERP system project implementation

This objective was explored by examining the extent to which ERP system strategic factors that included the top management backing and implementation strategy on ERP system project execution. This was informed by an initial assumption that ERP system strategic factors mediate the relationship between project manager leadership competencies and ERP system project implementation. The analysis on the influence of top management support analysis yielded $F(1, 133) = 42.028$; $p<.05$ and $r =.0493$.

The study findings suggest that the linear relationship between top management support and ERP system project implementation is positive. Similarly, R^2 .243 show that top management support account for approximately 24.3% of the variation in ERP system project implementation. The other 75.7% can be explained by other variables that were not considered in the model. The finding are in line with (Khaled *et al*., 2008), who in their studies emphasized the importance of executive support in ERP system success. The study findings indicate that the relationship between top management support and ERP system project execution was significant.

The analysis on the influence of implementation strategy on ERP system project implementation indicated F (1, 133) = 45.361; p<.05 and r =.507. The study results recommend that there is a positive linear correlation between implementation strategy and ERP system project implementation. An R^2 .257 shows that implementation strategy under strategic factors accounted for approximately 25.7% of the variation in ERP system project implementation. The other 74.3% can be explained by other variables that were not considered in the model. The finding is highlighted by Teltumbde et *al*., (2002) who recommend that the rollout policy is one of the significant aspects that influence the accomplishment of the ERP system project.

Initial ERP system execution policies encompassed of phased or big bang methods in tune with the firms' slight emphasis of speedily going live with their early system placements (Johnson, 2000). The study concludes that the association between implementation strategy and ERP system project execution was positive. The findings on the overall influence of system strategic factors on ERP system project yielded F (1, 133) = 26.303; p<.05 and r=0.537. The study findings suggest that the strong linear relationship between system strategic factors and ERP system project execution was positive. Similarly, R^2 = .288 shows that system strategic factors account for approximately 28.8% of the variation in ERP system project implementation. The other 71.2% can be explained by other variables that were not considered in the model.

The findings in the current study is consistent with Markus (2000) who argued that by championing ERP system implementation and utilization, top managers can lessen the organizational resistance to the new system and also facilitate a smoother reengineering of the business processes which in turn improves the organizational performance. The study concludes that the relationship between top management support, implementation strategy and ERP system project execution is significant. As a result, top management should take lead and play their role in decision making, resource provision and change management so as to ensure effective execution of ERP system and the realization of anticipated business value.

5.2.3 The moderating effect of ERP System strategic factors on the relationship between project manager leadership competencies and ERP system project implementation

The study hypothesized that ERP system strategic factors moderate the influence of project manager leadership competencies on ERP system project implementation. This meant that the

ERP system strategic factors that were the top management support and implementation strategy (moderators) would influence the track and/or strength of the association between the predictor variable and the dependable variable which is ERP system project implementation. The moderator effect was represented as an interaction between the central predictor variable and a moderating factor in which case the factors considered for top management support were; resource provision, executive involvement and oversight role and for implementation strategy being; project organization and implementation methodology.

A multiple regression analysis involving the project manager leadership competencies and each of the mediators; and their respective interaction terms were all found to be significant $p<.05$. The linear combination of project manager leadership competencies and top management support was significantly related to ERP system project implementation, $F(2, 131) = 49.084$; $p<0.05$. The multiple correlation coefficient was $r = 0.528$, showing that the combination of project manager leadership competencies and top management backing has a slight influence on ERP system project implementation than each of the variable independently. R^2 at .352, shows that approximately 35.2% of the variance in ERP system implementation can be accounted for by the linear combination of project manager leadership competencies and top management support. This indicates that the combination of the two predictors increases the variation by 5%.

The study further showed that when the two variables are considered in combination, top management support had a slight influence on ERP system project implementation. This confirms the proposition that, relationship between project manager leadership competencies and ERP system project implementation depends on top management support is significant. These findings are consistent with many commentators who have argued that top management support moderate the ERP system project execution. For instance, Khaled et *al.,* (2008) in their study, they emphasized that top most executive backing and the assortment of the suitable ERP system are main success factors for the execution of effective ERP systems.

A multiple regression analysis involving the project manager leadership competencies and ERP system project implementation were found not to be significant $p<.05$. The linear combination of project manager leadership competencies and implementation strategy was significantly related to ERP system project implementation, $F(2, 131) = 49.084$; $p<0.05$. The multiple correlation

coefficient was r = 0.513, showing that the combination of project manager leadership competencies and implementation strategy has a high influence on ERP system project implementation than each of the variable independently. R^2 at .325, shows that approximately 32.5% of the variance in ERP system implementation can be accounted for by the linear combination of project manager leadership competencies and implementation strategy.

This indicates that the combination of the two predictors increases the variation by 18.8%. This confirms the hypothesis, that the relationship between project manager leadership competencies and ERP system project implementation depends on implementation strategy, is significant. This finding is consistent with many commentators who have argued that ERP system project implementation moderate the ERP system project implementation. For instance (Teltumbde *et al*., 2002), recommend that the rollout tactic is among the significant aspects that influence the accomplishment of the ERP system project.

A multiple regression analysis involving the project manager leadership competencies and each of the mediators; and their respective interaction terms were all found not to be significant $p<.05$. The linear combination of project manager leadership competencies and ERP System strategic factors was significantly related to ERP system project implementation, $F (2, 131) = 43.187$; $p<0.05$. The multiple correlation coefficient was r = 0.318, showing that the combination of project manager leadership competencies and ERP System strategic factors has a high influence on ERP system project implementation than each of the variable independently. R^2 at .353, shows that approximately 35.3% of the variance in ERP system project implementation can be accounted for by the linear combination of project manager leadership competencies and ERP System strategic factors. This indicates that the combination of the two predictors increases the variation by 1.5%.

The study further showed that when the two variables are considered in combination, ERP System strategic factors seem to have a slight influence on ERP system project implementation. This confirms the hypothesis that the relationship between project manager leadership competencies and ERP system project implementation depends on ERP System strategic factors. This finding is in line with (Markus, 2000), who argues that management support is positively related to project leadership. Muscatello et al. (2003) based on multiple case studies show that

effective executive management is a key success factor for small- and medium-sized enterprises to achieve success in ERP implementation. By championing ERP system implementation and utilization, top managers can lessen the organizational resistance to the new system and also facilitate a smoother reengineering of the business processes which in turn expands the organizational performance on ERP system implementation.

The summary of the hypotheses test results and findings are shown in table 5.1 below:

Table 5.1 Summary of hypotheses test results and findings

Objective	**Hypothesis**	**Test results**	**Findings**
The relationship between project manager emotional competence and ERP system project implementation.			
i. To establish the relationship between project manager intellectual competence and ERP system project implementation.	H_{1a} There is a relationship between project manager intellectual competence and ERP system project implementation.	F (1, 133) = 19.634; $p<.05$ $r = 0.254$ $R^2 = 0.064$	Project manager intellectual competence has a positive moderating influence on ERP system project implementation.
ii. To establish the relationship between project manager managerial competence and ERP system project implementation.	H_{1b} There is a relationship between project manager managerial competence and ERP system project implementation.	F (1, 133) = 19.634; $p<.05$ $r = 0.524$ $R^2 = 0.274$	Project manager managerial competence has a positive significant influence on ERP system project implementation.
iii. To establish the relationship between project manager emotional competence	H_{1c} There is a relationship between project manager emotional competence and ERP system project	F (1, 133) = 19.634; $p<.05$ $r = 0.468$	Project manager emotional competence has a positive influence on ERP system project

Objective	Hypothesis	Test results	Findings
and ERP system project implementation.	implementation.	$R^2 = 0.219$	implementation.
iv. To establish the relationship between project manager leadership competencies and ERP system project implementation.	H_{1d} There is a relationship between project manager leadership competencies and ERP system project implementation.	F (1, 133) = 19.634; p<.05 r = 0.560 $R^2 = 0.313$	Project manager leadership competencies has a positive influence on ERP system project implementation.
The relationship between ERP system strategic factors and ERP system project implementation.			
v. To establish the relationship between top management support and ERP system project implementation.	H_{2a} There is a relationship between top management support and ERP system project implementation.	F (1, 133) = 26.303; p<.05 r = 0.493 $R^2 = 0.243$	There is a strong linear relationship between top management support and ERP system project implementation.
vi. To establish the relationship between implementation strategy and ERP system project implementation.	H_{2b} There is a relationship between implementation strategy and ERP system project implementation.	F (1, 133) = 26.303; p<.05 r = 0.507 $R^2 = 0.257$	There is a strong linear relationship between implementation strategy and ERP system project implementation.
vii. To establish the relationship between ERP system strategic factors and ERP system project implementation.	H_{2c} There is a relationship between ERP system strategic factors and ERP system project implementation.	F (1, 133) = 26.303; p<.05 r = 0.537 $R^2 = 0.288$	There is a strong linear relationship between ERP system strategic factors and ERP system project implementation.

Objective	Hypothesis	Test results	Findings
Moderating effect of ERP system strategic factors on the relationship between project manager leadership competencies and ERP system project implementation.			
viii. To establish the moderating effect of top management support on the relationship between project manager leadership competencies and ERP system project implementation.	H_{3a} There is a moderating effect of top management support on the relationship between project manager leadership competencies and ERP system project implementation.	F (3, 130) = 50.432; $p<.05$ $r = 0.593$ $R^2 = 0.352$	There is a positive influence of top management support on the relationship between project manager leadership competencies and ERP system project implementation.
ix. To establish the moderating effect of implementation strategy on the relationship between project manager leadership competencies and ERP system project implementation.	H_{3b} There is a moderating effect of implementation strategy on the relationship between project manager leadership competencies and ERP system project implementation.	F (3, 130) = 50.432; $p<.05$ $r = 0.570$ $R^2 = 0.325$	There is a positive influence of implementation strategy on the relationship between project manager leadership competencies and ERP system project implementation.
x. To establish the moderating effect of ERP system strategic factors on the relationship between project manager	H_{3c} There is a moderating effect of ERP system strategic factors on the relationship between project manager leadership competencies	F (3, 130) = 50.432; $p<.05$ $r = 0.594$ $R^2 = 0.353$	There is a positive influence of ERP system strategic factors on the relationship between project manager leadership competencies

Objective	Hypothesis	Test results	Findings
leadership competencies and ERP system project implementation.	and ERP system project implementation.		and ERP system project implementation.

5.3 Conclusions

It is apparent from the literature review on ERP system implementation and the findings of this study, that technology adoption is not a preserve of IT as always presumed, by many, but a strategic initiative that requires input and participation from all levels of organization, and more specifically the top executives. The study demonstrates that project leadership plays a key role as far as ERP system implementation performance is concerned. The individual task with the responsibility to steer the ERP system implementation agenda must possess intellectual, emotional and more importantly, managerial competence to effectively coordinate project activities. The project manager must work closely with all the stakeholder to ensure the ERP system implementation objectives are achieved and business value attained as anticipated. ERP strategic factors made up of: top management support and implementation strategy too plays a crucial role in moderating the relationship between project manager leadership competence and ERP system project implementation. While the implementation strategy provides necessary framework, policies and guidelines for effective project execution, top management support on the other hand, ensured project remained on success course through provision of required resources.

The study further concluded that ERP system implementation in the Kenya Energy sector state parastatals has been success to large extent. Much of the benefits anticipated were realized leading to improved service delivery, operational efficiency and productivity. However, the findings also indicates that some of the organizations had their ERP system project delivered beyond scheduled time and budget. In some cases, certain modules, such as business analytics and reports were not successfully completed as anticipate. Consequently, the findings alludes to the fact that effective ERP system implementation, organization top management should ensure consistent involvement and commitment to the ERP system project through effective decision-

making, appointment of competent project team and provision of necessary resources among others.

5.4 Recommendations

Based on the research findings and conclusions, recommendations touching on the future; ERP system implementation performance, Academic research and Organizational IT policy and governance. Investment in ERP Systems is a significant issue for both IS doctors and scholars

5.4.1 Implications of the Result on Policy and Practice

Based on the research outcomes, organizations leadership are required take ownership of ERP system implementation by developing policy framework for procurement, planning, management and execution of ERP systems projects in order to realize the intended corporate objectives and value. They should ensure appointment of a competent and well skilled project manager to drive the ERP system implementation agenda in their institutions. Both the ERP system vendors and implementing agencies should ensure that properly defined and proven methodologies are identified, adopted and used in order to enhance ERP system project implementation performance.

5.4.2 Contribution to Knowledge

Academicians and practitioners such as project managers may find this research useful in enhancing their understanding of ERP System projects performance, thus maximizing on ERP project pitfalls. These findings will further contribute to hypothetical study as a source of information for knowledge or further research, and especially in the light of project leadership competencies and the role of organizational executives in ERP system implementation. In addition, future studies will draw reference from these findings for further research or to support their work, more specifically in relation to the prosed Integrated System Implementation Success model that combining the two theories; the constraint model and Updated IS Success Model (DeLone & McLean, 2003) for holistic measuring of ERP system project implementation performance from two demission; project execution phase and the adoption phase. This approach

is in line with (Axline, 2001), submission that ERP adoption should focus not only on project success, but adoption and benefits beyond implementation phase.

5.5 Suggestion for future research

The research aimed at investigating the relationship between project manager leadership competencies, top management support and ERP system project performance. For purposes of this study, ERP system project implementation was measured based on a combination of two theories; IS success model and project constraint triangle model to capture project management success in both implementation and adoption phase.

Future studies should consider investigating project manager leadership competencies in the light of both tactical and cultural factors with a possibility of looking at the alternative leadership theories, such as Balanced scorecard approach theory as recommended by (van Grembergen, Saull and De Haes, 2004; Chand, Hachey, Hunton, Owhoso, and Vasudevan, 2005; Markus and Tanis, 2000; Roseman, 2001). Similarly, a future study would further investigate and develop the proposed theoretical model for this study with a view to come up with an enhanced IS model that incorporate general management, project management and technology CSF's in order to increase IT project performance holistically.

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APPENDICES

APPENDIX I: Organizational consent letter to collect data

ATTENTION:
Managing Director,
KenGen / KPLC / GDC / REA / KETRACO

RE: REQUEST FOR DATA COLLECTION FROM YOUR ORGANIZATION

I am a PhD student at the University of Nairobi. I write to request for your permission to collect data from your Organization on my study topic: **Project Leadership Competencies, Strategic Factors and Enterprise Resource Planning System Project Implementation, in Selected Energy Sector State Parastatals in Kenya**, namely; KenGen, KPLC and GDC. This study is a requirement for the award of my PhD in **Project planning and management** – Information Systems.

To achieve the objectives of this research, I am required to administering questionnaires to top management representatives and ERP Project implementation team members, and to carry out a one-on-one interview with the Head of ICT function in your organization.
The research findings of this study will be treated with utmost confidentiality and used for academic purposes only. A copy of this finding will be made available to your organization on request.

Your response and support will be greatly appreciated.
Yours sincerely,

_____

Daniel Kemei
Tel. +254711900972 / Email: *dankem08@gmail.com*

APPENDIX II – Introduction Letter to Participant

Dearest Research Participant,

My name is **Daniel Kemei**. I am a PhD student in Project Planning and Management - Information Systems, at the University of Nairobi and currently working with Kenyan Government parastatal as an ICT Projects Manager. My current academic research proposal is aimed at exploring how Enterprise Resource Planning (ERP) System project management leadership competencies and project strategic factors influence ERP system project implementation.

The purpose of this letter is to request you to take part in this research project. My proposed research entails survey and interviews with representatives of top management, ERP system project implementation team, senior management representatives and Head of ICT in the Kenya Energy Sector Parastatals. Your participation will take the form of survey and/or an interviews for which the location, time and place will be agreed with you. Participation in the study is voluntary with your consent, and should you for some reason want to withdraw from it, you can do so at any time. Your privacy will be respected at all time and everything you share will be treated confidentially, while the information provided is solely for academic purposes.

A copy of the final dissertation resulting from this research will be held at the University of Nairobi's library, and can easily be made available on request. Once again thank you for accepting to participate. I look forward to exploring the research subject further with you.

Regards,

_____

Daniel Kemei
Tel. +254711900972 / Email: *dankem08@gmail.com*

APPENDIX III – Questionnaires

Enterprise Resource Planning (ERP) Systems Project implementation Survey

Thank you very much for your time and accepting to take part in this study. This research study seeks to establish the influence of ERP system project manager leadership competencies and ERP system strategic factors on ERP system project implementation among energy sector state parastatals in Kenya. You are therefore kindly invited to complete this questionnaire consistently with respect to your ERP System project role, involvement and understanding to the best of your knowledge. Kindly base your responses on current ERP System status and not on projected future results.

PART A: Demographic Factors

1. Please indicate the name of your organization _____
2. Kindly indicate the business unit / department _____
3. Kindly indicate job title in the organization _____
4. Gender / Sex Male [ ]
   Female [ ]
5. Please indicate your job level:

   a. Executive Management [ ]
   b. Senior Management [ ]
   c. Middle Management [ ]
   d. First Level Supervisor [ ]
   e. Any other, specify _____

6. Highest completed Level of Education
    a. Diploma [ ]
    b. Bachelor's Degree [ ]
    c. Master's Degree [ ]
    d. PhD Degree [ ]
    e. Others (specify [ ]
7. Number of years worked in the organization
    a. Less than 5 years [ ]
    b. 5 – 10 years [ ]
    c. 11 – 15 years [ ]
    d. 16 – 20 years [ ]
    e. More than 20 years [ ]
8. Had you been involved in another ERP System project previously?
    a. Yes [ ]
    b. No [ ]

PART B: GENERAL PROJECT MANAGEMENT QUESTIONS

The questionnaire seeks to find out factors considered important in the implementation ICT projects. Please tick (✓) the box that matches your answer or fill the space provided

1. What was your role in the indicated ICT project
    a. Project sponsor [ ]
    b. Management representative [ ]
    c. Project team member
        i. Project Leader / manager [ ]
        ii. Technical expert [ ]
        iii. Fictional / user representative [ ]
        iv. Change agent [ ]
        v. Any other specify _____

2. What levels of employees are involved in the ERP System project identification, implementation and decision making in your organization?
    a. Board and top management [ ]
    b. Top and middle management [ ]
    c. Low level employees [ ]
    d. All employees [ ]

3. At what level were employees involved in the ERP System projects, tick all appropriate
    a. Requirements gathering and analysis [ ]
    b. Systems and design [ ]
    c. System Implementation [ ]
    d. Rollout, training and usage [ ]

PART C: ERP SYSTEM PROJECT IMPLEMENTATION FACTORS

Using a Likert 1-5 scale, with 5 being 'Strongly agree', 4 being 'Agree', 3 being 'Neutral, 2 being 'Disagree' and 1 being 'Strongly disagree' Please tick (✓) as appropriate the number below that best represents how you feel about your recent ERP System project in your organization.

C1. Project Manager Leadership competencies (Independent variable)

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
a) Intellectual Competence	Project Vision and objectives	Project leader clearly understood the strategic vision of the ERP system project					
		Project leader demonstrated understanding of ERP System goals and objectives					
	Decision Making	Project leader made well thought decisions					

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
		Project leader often made timely decisions					
	Creativity & Innovative	Project leader demonstrated creativity and was analytical as project leader					
		Project leader encouraged the team to be creative and innovative					
b) Managerial Competence	Teams & Time managem-ent	Project leader clearly defined project roles and delegated tasks to ensured adequately involved of all members					
		Project leader gave realistic timelines and demonstrated effective management of time in project meetings and assignments					
	Communi-cation	Project leader clearly communicated and constantly updated the teams on project status and timelines					
		Project leader timely communicated project and the impact of missed goals and targets.					
	Goal Achieve-ment	Project leader set realistic goals and provided support towards the					

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
		achievement of the same					
		Project leader ensured that both individuals and teams understood and deliver on their targets					
c) Emotional competence	Influence of leadership	Project leader increased the ERP system project commitment within the organization and top management					
		Project leaders inspired the project team and staff on the project vision					
	Conscientiou-sness	Project leader adhered to legal, regulatory and organizational policies during ERP project implementation.					
		Project leader was ethical and held the project team to high ethical standards					
	Emotional resilience	Project leader managed teams emotions and demonstrated self-control					
		Project leader demonstrated ability to cope with challenges and guided the teams in resolving project challenges and conflicts					

C2: ERP System implementation strategic factors (X2)

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
a) Top management support	Executive Involvem-ent	Top management clearly defined project vision, goals and objectives					
		Top management demonstrated commitment through sustained involvement in the project					
		Top management appointed and empowered a senior management representative to lead the project with unlimited access to the CEO					
	Resources allocated to the project	Top management provided adequate and skilled staffing for the project					
		Top management allocated the adequate budget for the project.					
		Top management provided project administration resources such as office space, equipment, tools etc.					
b) Implemen-tation strategy	Project Organizat-ion	An organization structure with accountability framework was established for the ERP project					

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
		An oversight Committee was established for the ERP System project					
		Project team had representation of all the key stakeholders with well-defined roles and responsibilities					
		A framework for effective change management and communication on ERP System project and organization was established					
	Implemen -taion strategies	Plans for ERP System acquisition, implementation and maintenance were clearly defined and communicated to all stakeholders					
		ERP System implementation followed a well define approaches					
		The level of ERP System customization was clearly defined and understood					
		Monitoring and evaluation framework for the ERP System project was clearly defined and communicated					

C3: ERP system project implementation (Y)

ERP System Factors	**Element**	**Statement**	**5 = Strongly agree**	**4 = Agree**	**3 = Neutral**	**2= Disagree**	**1= Strongly disagree**
Project Implementa-tion Performance	Project Budget	ERP System project was completed within budget					
	Project Time	ERP System project was completed within the time schedule					
	Project a) Scope	ERP System project achieved what was intended					
		ERP System adaption has led to reduced operational costs					
		ERP System adaption has led to increased efficiency					
		ERP System has led to improved service delivery					
	b) Project quality i. Informat-ion Quality	The information provided by the information system is accurate and is free from errors					
		The output information of the information system is easy to understand					
		The output information of the information system is complete					

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
		The output information of the information system is secure.					
	ii. Systems Quality	The information system performs was reliable					
		I find the information system is easy to use.					
		The information system is easy to maintain and up-to-date					
		The system is trusted to fulfill the commitments it assumes.					
		I find the information system is available and flexible to be used					
	iii. Service Quality	It was easy to find what you were looking for (readily available).					
		Using information system in my job would enable me to accomplish tasks more quickly and efficiently					
		By using the functions of the information system, I can upgrade the					

ERP System Factors	Element	Statement	5 = Strongly agree	4 = Agree	3 = Neutral	2= Disagree	1= Strongly disagree
		efficiency of my work.					
		The information from the system is adequate and of integrity					

Your time and contribution in this study is highly appreciated, thanks you very much.

APPENDIX IV - Interviews Questions

No.	Interview Questions
C-1:- Independent variable:- Project Leadership Competencies	
a). Intellectual Competencies	
1	Did the project leader demonstrate the understanding of the project vision and goals?
2	To what extend do you think the project manager demonstrated creativity and analytical skills?
3	Did the project leader have pre-requisite experience to provide project leadership?
b). Managerial Competencies	
4	What are some on the managerial qualities did the project manager demonstrated as leader?
5	Did project leader provided guidelines and support to the team when required?
6	Did the project leader define and assign them to various teams and person?
c). Emotional Competencies	
7	To what extend did the project leader demonstrated appeal to both senior management and project team on matters of project?
8	Did Project leaders demonstrate responsibility and accountability of matters of the project?
9	To what extent did the project leader adhered to legal, regulatory and organizational policies?
10	To what extend did the project leader demonstrated self-control and refrain?
C-2:- Moderating variable:- ERP System Strategic Factors	
a). Top management support	
11.	What was top management role in the establishment of the project manager and team?
12.	Was the role of Senior management / CEO in the project?
13.	In your opinion, was the project team given the necessary support and resources?
14.	Were there project structures for effective communication?

No.	Interview Questions
a). Implementation Strategies	
15.	Where there project management structure in place, that is; project structure, steering committee, dedicated project team?
16.	Were role for the various project management structure well define and team officially constituted?
17.	What approach of implementation was used; All modules at once or phase approach?
18.	Where there other ICT project running parallel to the ERP System projects?
C-3: - Depended variable: - ERP system project implementation	
a). Project management efficiency	
19.	Did the ERP System project achieve what it was intended, to what extent?
20.	Was the project completed with time / as schedule, by what duration?
21.	Was the project completed with planned budget expenditure? If overrun, then by what %?
22.	Based on agreed requirements, to what extend were they meet? In % form?
b). System quality	
23	What is your general feeling or experience on the ERP System?
24	What would say about the looks and feel of the system?
25	What is your experience and level of comfort when using the ERP System systems?
26	Given an opportunity what would you change to make the system friendlier?
c). Information quality	
27	What is the nature of information you process / receive from the ERP system?
28	Is the information / report you receive from ERP systems reliable for decision making?
29	Do you require information from other sources or systems to complement ERP reports?
30	Are you able to get information from the system any time you what?
d). Quality	
31	What was the impact in ERP system implementation on service delivery?
32	Are clients more delight with service level since ERP System implementation?
33	Has the number of client's service increased with ERP implementation?
e). Net benefit	

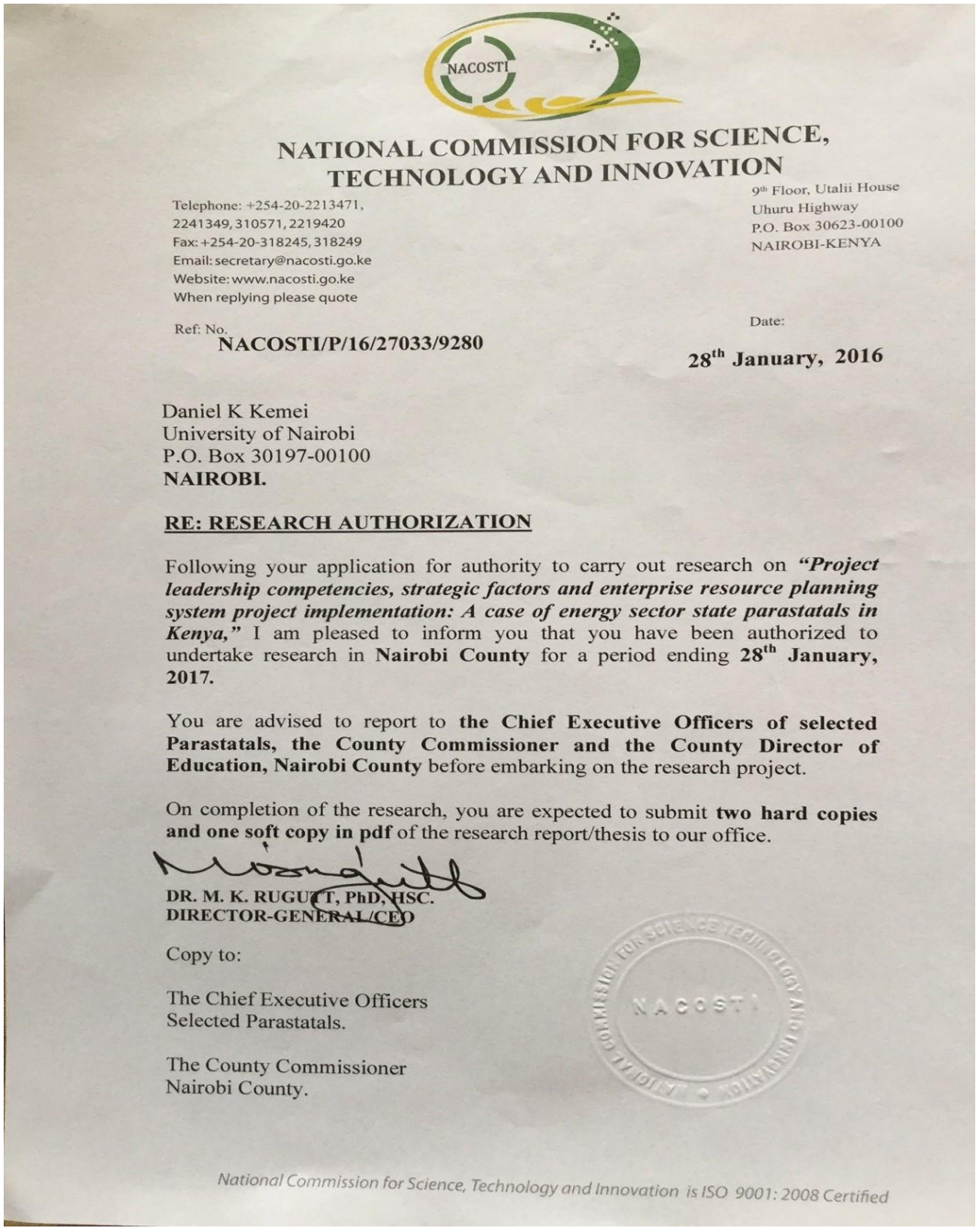
No.	Interview Questions
34	From an individual point of view, how did the implementation of the ERP System impact on you and how you work?
35	Are the reports from the ERP system sufficient for you to make effective decisions?
36	How has the use of ERP System enhance your productivity?
37	On average, how many hours do you spend on the ERP System at work?
38	How the ERP System project / implementation affect the organization?
39	In what was did the ERP System affect your service delivery and clients in general?
40	Given another change and lessons learned, what would you do / recommend be done differently?
41	Did the organization receive value for the ERP System investments?

APPENDIX V: Kenya's Energy Sector Parastatals and ERP Status

Parastatal	Year of Incorpo-ration	Core mandate	Ownership	ERP Type
Kenya Electricity Generating Company (KenGen)	1978	The largest power producing company in Kenya producing about 80% of the electricity consumed in the country.	70% Government owned	SAP
Geothermal Development Corporation (GDC)	2006	A Special Purpose Vehicle to fast track the development of geothermal resources in the country.	100% Government owned	SAP
Kenya Power and Lighting Company (KPLC)	1954 – KPC and 1983 - KPLC	To building and maintaining the power distribution and transmission network and retailing of electricity to its customers.	50.1% Government owned. 49.9 privately owned	SAP
Rural Electrification Authority (REA)	2006	Purposes is to enhance rural electrification in the country	100% Government	SAP
Kenya Transmission Company (KENTRACO)	2008	Electricity Transmission	100% state-owned	-
Kenya Pipeline Company (KPC)	1973	To provide efficient, reliable, safe and cost-effective means of transporting petroleum products from Mombasa to the hinterland	100% Government owned	SAP
National Oil Corporation of Kenya (NOCK)	1981	Petroleum supply chain covering the upstream oil and gas exploration, midstream petroleum infrastructure and downstream marketing of petroleum product	100% Government owned	Oracle

Parastatal	Year of Incorpo-ration	Core mandate	Ownership	ERP Type
Electricity Regulatory Commission (ERC)	2006	Regulate the electrical energy, petroleum and related products, renewable energy and other forms of energy. Protect the interests of consumer, investor and other stakeholder interests.	100% Government owned	MS Dynamic
Kenya Nuclear Electricity Board (KNEB)	2010	To fast track the development of nuclear electricity generation in Kenya and to promote safe & secure application of nuclear technology for sustainable electricity generation & distribution in Kenya.	100% Government owned	-
Kenya Petroleum Refineries (KPR)	1960	To supply of a wide variety of oil products	49% Government owned	-

APPENDIX VI - Research Permit



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Ref: No. **NACOSTI/P/16/27033/9280**

Date: **28th January, 2016**

Daniel K Kemei
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Project leadership competencies, strategic factors and enterprise resource planning system project implementation: A case of energy sector state parastatals in Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **28th January, 2017.**

You are advised to report to **the Chief Executive Officers of selected Parastatals, the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DIRECTOR-GENERAL/CEO

Copy to:

The Chief Executive Officers
Selected Parastatals.

The County Commissioner
Nairobi County.

NACOSTI

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