THE INFLUENCE OF ENTERPRISE RESOURCE PLANNING SYSTEM ON ORGANISATIONAL PERFORMANCE: CASE STUDY OF KENYAN ENGINEERING CONSULTANCY FIRMS

BY

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UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

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A Research Project Report Submitted to the Chandaria School of Business in Partial Fulfillment of the Requirement for the Degree of Master of Science in Organizational Development (MOD)

UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

SUMMER 2017
STUDENT DECLARATION

I, the undersigned declare that this is my original work and that it has not been submitted to any other College, Institution or University other than the United States International University for academic purposes.

Signed: __________________________  Date: ________________________________

Florence Wanyoike (ID 165493)

This project has been presented for examination with my approval as the appointed supervisor.

Signed: __________________________  Date: ________________________________

Fred O. Newa

Signed: __________________________  Date: ________________________________

Dean, Chandaria School of Business
Empirical evidence suggest the ERP adoption facilitate organizational processes and activities including sales, billing, marketing, human resource management, quality control and production thus ensuring general performance. However, despite the adoption of ERP systems by Kenyan and Kenyan-based companies in the engineering consultancy industry of ERP system, little academic attention has gone to the assessment of the impacts of ERP adoption in the industry. The lack of academic attention on the effect of ERP on the performance of consultancy impedes scholarly understanding of the relationship between ERP adoption and the performance of engineering consultancy firm. The purpose of the study was to determine the influence of enterprise resource planning (ERP) system on organizational performance. The study sought to answer the following research questions, namely; what is the impact of ERP system on financial performance? What is the impact of the ERP system on organizational learning? What is the impact of the ERP system on internal processes?

The study’s research methodology was as follows, it used a descriptive research design. This is design deemed essential and appropriate in describing the relationship between ERP and organizational performance. As such, a descriptive research design permitted the researcher to collect information regarding the ERP system and to describe how it affects the performance of engineering consultancy firms. The population for the study comprised of employees of engineering consultancy firms from which 41 individuals were sampled for participation in the study. It used the stratified random sampling to ensure that every individual in every level of selected engineering consultancy firms’ workforce was represented in the study. Structured questionnaires were used to collect the relevant data over a period of one week. The study results were presented using descriptive statistics while inferential statistics were also used for further analysis of data. The research used Statistical Package for Social Sciences (SPSS) program version 21 for data analysis.

The study found that the majority of the respondents thought that ERP systems had a positive impact on the financial performance of the firm. The study found that the respondents thought ERP had a positive outcome for virtually all the aspect of financial performance including the firm’s profitability, the rate of ROI, competitive advantage, the operational costs and the firm’s market share. However, the study found that a few
respondents were however not sure of the nature of ERPs impact on rate of ROI and the firm’s market share.

The study also determined a greater number of respondents considered ERP to have a positive impact on the firm’s organizational learning processes. It established that decision-making process, business process, productivity, task performance, managerial control and customer satisfaction were all positively affected by the ERP systems in their firms. Nonetheless, a significant number of the respondents revealed that they were not sure of the impact of ERP on customer satisfaction. With regard to the impact of ERP on firms’ internal processes, the study again established that the majority of the respondents thought that the impact of ERP on the internal process was positive. The respondents indicated that ERP systems had a positive impact on the monitoring process, access to information, the process of HRM, internal communication and the accounting process.

It concludes by contending that the impact of ERP on the financial performance of the engineering consultancy firms is mostly positive. This is mainly because the vital aspects or measures of financial performance are affected positively by ERP systems. It also argues that the process of organizational learning is a principal beneficiary of the ERP systems in a firm that adopts the system. The impact of ERP systems on the management of information within the firm has direct benefits in the facilitation of task performance, customer satisfaction, decision-making and managerial control. Furthermore, it reiterates that ERP systems, by their nature facilitate the internal process within the organization, which facilitates the efficient and timely performance of tasks. The systems are capable of facilitating information storage, access and transmittal in real time.

The study recommends that the management of the engineering consultancy firms in Kenya as well as the firms in other industries in Kenya needs to appreciate the value of ERP systems on organizational performance and adopt the systems as part of their performance strategy. Similarly, as part of their performance strategy they must adopt ERP systems as a strategy of enhancing firm’s overall performance through ERP systems potential for the enhancement of business processes such as decision-making, productivity, task performance and managerial control. The researcher further recommends that firms should adopt ERP systems due to their potential to generate a positive impact on firms’ internal processes. For further research, the researcher
recommends that there is need for further research to investigate why despite the relative positive impact that ERP systems have on the performance of the engineering consultancy firms in Kenya, few firms have adopted the systems.
ACKNOWLEDGEMENTS

I would like to acknowledge my project supervisor without whose intellectual support I would not have completed this study. I would also like to acknowledge my parents and my family in general for their moral and financial support in this study.
DEDICATION

It is with great humility that I dedicate this work to my family without whose support I would not have made it this far.
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<td>Asset Turnover</td>
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<td>BPM</td>
<td>Business Process Management</td>
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<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<td>ERPS</td>
<td>Enterprise Resource Planning System</td>
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<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
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<tr>
<td>IS</td>
<td>Information Systems</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>MCS</td>
<td>Management Control Systems</td>
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<td>NBRI</td>
<td>National Business Research Institute</td>
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<tr>
<td>ROA</td>
<td>Return On Assets</td>
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<td>SMEC</td>
<td>Snowy Mountains Engineering Company</td>
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<td>TAM</td>
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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Problem

The contemporary business milieu is characterized by intense competition among firms. The attainment of optimum performance level is crucial in achieving and sustaining a competitive edge in such a competitive environment. The potential and proven ability of Information and Communication Technology (ICT) and Information Systems (IS) to increase organizational performance in terms of efficiency in processes and quality is well documented (Al-Mashari, 2003; Abugabah & Sanzogni, 2009). Njihia and Mwirigi (2014) contend that Enterprise resource planning (ERP), among the principal forms of ICT applications in organizational setting, which is emerging as one of the most effective means of ensuring optimum organizational performance.

ERP systems play a fundamental important supporting role in several industries including the service and product industries. According to Abugabah and Sanzogni (2009), ERPS is hugely responsible of optimum performance industries such as the transport, telecommunications, and education, manufacturing as well as airline industries. Njihia and Mwirigi (2014) observe further these systems support a spectrum of activities in modern organizations including sales, billing, marketing, human resource management, quality control and production thus ensuring general performance of the organization through facilitation of these pertinent processes. Motwani (2016) makes a similar observation noting that ERPs are of fundamental benefit to firms in terms of facilitating performance.

What is an ERP system? Motwani (2016) and Al-Mashari (2003) explain that ERP systems are enterprise-wide or organizational-wide application packages, which are designed to integrate information systems within a firm in support of the multiple organizational processes. Garcia-Sanchez and Perez-Bernal (2007) as well as Njihia and Mwirigi (2014) construe ERPs as a management software incorporating modules such as finance, marketing, production, human resource, which allow firms to plan or systematize their services and products. An enterprise resource planning system is a technique for effective planning and controlling all resources required for production, sending and
responding to customer requirements in manufacturing, distribution and service organizations (Mahmoudi & Ahmadi, 2008).

ERP systems are regulatory and flexible information systems where information and information-based processes within organization integrate in the organization unit (Hendricks et al. 2006). As such, the ERP systems, integrate the firm’s internal and external management information throughout the company, embracing a spectrum of process including sales, marketing, customer relations, services, manufacturing, accounting/stroke finance and management among others (García-Sanchez & Perez-Bernal, 2007). The impact of ERP systems on organizational performance is therefore perceptible from the fact that these systems effectively facilitate organizations principal process.

Gavrea, Ilies and Stegerean (2011) contend that despite its common use in academic literature, the conceptualization of organizational performance is not universally applicable. They point out that in the usage of the concept has been transforming and that while in the 1950s it referred to the realization of objectives set by a social system, in the 1960s and 70s it referred to the organization’s capacity to exploit or utilize both its internal and external environment to access the limited resources. In the 1980s and 90s, and even today organizational performance has been conceptualized as the ability of a company or an organization for that matter to realize its performance objectives in the face of a myriad of internal and external resource constraints (Lebanks & Euske, 2006).

According Gavrea, et al., (2011), Lee, Hong, and Katerattanakul (2004), there are two dimensions to measuring performance in organization. This is done by assessing either the financial or the non-financial indicators. According to Glova and Gavurova (2012), financial indicators include among others, net profit, profitability, return on assets, customer satisfaction, share prices and installation and maintenance costs of a system. The non-financial indicator of performance can be further conceived into two categories, organizational learning processes and internal processes. According to Zuriekat, Salameh and Alrawashdeh (2011) the indicators for organizational leaning include among others, decision-making including employee participation in decision making, business processes, management control and individual productivity of employees. The indicators for internal processes include monitoring, access to information and information flow.
Currently, ERP systems are the most rapidly growing systems in organization. ERP systems have emerged as a response to the enormous transformation in businesses caused by clients’ demand of fast services, wider choices and lower prices. Other factors such as globalization, the need for process standardization and the highly changeable expectations of customers, have also participated in business transformation. ERP systems have been employed in both large and small-medium organizations because of these systems abilities to efficiently respond to these challenges (Botta-Genoulaz & Millet 2006).

D’Aquila, Shepherd and Friscia, (2009) have examined the increasing use of ERP systems by organizational around the world and note that the ERP market has witnessed growth, from being estimated at $65 billion in 2010. Parto, Sofian and Saat (2016) contend that companies are using ERP systems around the world. According to a study by Van Everdingen, et al., (2000, Cited in Juell-Skielse, 2006) that surveyed some 2647 companies within the European Union (EU) to assess ERP adoption, it was found that 27% of the surveyed firms had installed ERP software. In a research conducted by Olhager and Selldin (2003) reported a 75% adoption of ERPs in Swedish manufacturing companies.

Mabert, Soni and Venkataramanan, (2000) conducted a similar study in the US and found that 44% of surveyed firms in the manufacturing sector had adopted ERP systems. In Asia, Dezdar and Ainin (2012) observe that due to the actual and perceived benefit of ERP in modern businesses, companies have acquired ERP software. He notes that both Malaysia and Iran-based firms are increasingly implementing ERP systems. Wen-Hsien, Shu-Ping, Elliot and Hui-Ling (2010) observe a similar increase in the adoption of ERP systems in China. Research suggests that the growth of ERP adoption in firms is directly connected to performance. Wen-Hsien, et al., (2010) report that 65% of managers believe that lack of ERP or the failure of implementation of ERP would damage the firm.

In Africa, countries such as South Africa, Kenya, Nigeria, Ghana, Egypt and Tunisia have also witnessed an increase in the usage of the ERP systems by their firms. South Africa leads Africa in terms of companies that have adopted ERP systems to facilitate organizational processes (Mukwasi & Seymour, 2014; Tobie, Etoundi, & Zoa, 2016). Other countries such as Egypt, Kenya, Nigeria and Ghana have also witnessed a
remarkable increase in the number of organizations adopting the use of ERP systems (Tobie, et al., 2016).

In Kenya, SMEC and GIBB International Limited are among the leading organizations that have taken to adopt ERP systems to facilitate organizational performance. According to the company website, the Snowy Mountains Engineering Company (SMEC) an Australian multinational company, which owes its origins to the Snow Mountains Hydroelectric Scheme initiated in 1949, which was Australia’s largest infrastructure projects. SMEC officiated over an $820 million worth multi-purpose project involved the constructions of bridges, roads and hydropower. After the completion of the Hydroelectric Scheme, it was established as SMEC in 1970 and expanded internationally setting up offices in Jakarta, Kuala Lumpur and Dhaka in addition to its offices in Sydney and Canberra. Its novel initial international projects included road construction in northern Thailand, geological investigation astride the Mekong River, and hydropower development project in Malaysia and Cambodia (SMEC, 2017).

According to the company website, SMEC (2017) is a global engineering consultancy firm with a workforce of 13,000 spanning 40 countries and 95 offices. The company has operated in Kenya since 1976 but set up an office in Nairobi in 2008. The company’s expertise is in infrastructure projects, urban planning and industrial development and offers consultancy services management (Development-aid, 2017). The firm’s first project in Kenya was in the Magarini Land Settlement Project in which the firm was involved in investigating and developing both surface and ground water supplies (SMEC, 2017). The project also included developing agricultural potential and establishment of settlers’ plots. These has been followed by the completion of several other projects by SMEC in Kenya such as; Nairobi Water and Sewerage restructuring project, Lake Victoria environment management program and designing the Social and Environmental Assessment for the Magwagwa Multi-Purpose Dam Development Project. The industry in which SMEC operates dynamic and highly competitive signaling the need for the company to ensure optimum performance (Development-aid, 2017; SMEC, 2017).

According to the Company website, GIBB International Limited (which was formerly referred to as Alexander Gibb and Partners Africa) was registered by the Registrar of Companies in Kenya in 1990 as a Limited Liability Company (LLC) (GIBB International,
Nairobi, Kenya is among the cities in Africa where the company has its headquarters, other cities being Addis Ababa (Ethiopia), Dar es Salaam (Tanzania), Kigali (Rwanda) and Juba (South Sudan). Since its initialization of operations in Africa in the 1940s, GIBB International Ltd has engaged in a spectrum of engineering consultancy and development projects estimated at 1,000.

The majority of GIBB International Ltd Kenya shares are held locals and it is also the locals that form the bulk of the company’s employees. However, staffing is global with qualified workers in a wide range of disciplines being given the opportunity to work for GIBB. In addition, the firm forms associations with both foreign and indigenous firms when appropriate to ensure efficiency and timely completion of projects. However, the strength of GIBB lies in its recognition as professional consultancy firm. According to the company website, in 1997 Lloyd certified the firm’s Quality Management System (QMS) to be at the international standard ISO 9001:1994. Similar certifications were re-confirmed in 2005 at ISO 9001:200 standard, ISO 9001:2008 as well as in 2014.

Hence, it is not surprising that GIBB International Ltd is registered with several international funding agencies including the United Nations (UN), the European Union (EU), the African Development Bank (ADB), Department for International Development (DFID) World Bank (WB), Arab Bank for Economic Development in Africa (BADEA), Canadian International Development Agency (CIDA) among others. Over the years it has been operation, GIBB International Ltd has designed and supervised construction projects valued at US$ 900 million and extended advisory services to its clients estimated at US$ 1500 (GIBB International, 2017). Both companies GIBB International Ltd and SMEC, offer its services in at least eight sectors including transport, environment, water, energy, built environment, resource and industry, governance and government advisory as well as education (SMEC, 2017; (GIBB International, 2017).

1.2 Statement of the Problem

Research has established that there exists a positive correlation between adoption of ERP systems and organizational performance (Al-Mashari, 2003; Abugabah & Sanzogni, 2009; Njihia & Mwirigi, 2014). Empirical evidence suggest the ERP adoption facilitate organizational processes and activities including sales, billing, marketing, human resource management, quality control and production thus ensuring general performance
Therefore, in almost all cases firms do adopt ERP systems to ensure or facilitate organizational performance. Research shows that firms in several industries including manufacturing, distribution and service organizations among others have adopted ERP systems (Mahmoudi & Ahmadi, 2008).

The need for ensuring organizational performance is arguably the reason for adoption of ERP system by engineering consultancy firms in Kenya. Nonetheless, despite the adoption of ERP by the engineering consultancy firms in Kenya and other companies, little academic attention has gone to the assessment of the impacts of ERP adoption in the industry. In fact, as Njihia and Mwirigi (2014) argue academic research into the issue of ERP system adoption in Kenyan industries is limited. This certainly impedes the understanding of the field among practitioners in a manner that can precipitate information for the improvement of the systems. The lack of academic attention on the effect of ERP on the performance of consultancy firms further impedes scholarly understanding of the relationship between ERP adoption and the performance of consultancy firms.

The current study sought to abridge this academic gap by examining the impact of ERP in the performance of engineering consultancy firms in Kenya. Hence, the study sought to achieve the following; determine the impact of ERP system on financial performance of engineering consultancy firms in Kenya; Assess the impact of the ERP system on organizational learning; and investigate the impact of the ERP system on internal processes. In so doing, further sought to generate information on the relationship between ERP and organizational performance and contribute the current literature on the ERP-organizational performance relationship.

1.3 Purpose of the Study
The purpose of the study was to determine the influence of enterprise resource planning system on organizational performance.

1.4 Research Questions
1.4.1 What is the impact of ERP system on financial performance?
1.4.2 What is the impact of the ERP system on organizational learning?
1.4.3 What is the impact of the ERP system on internal processes?
1.5 Significance of the Study

The study will be significant to the following stakeholders.

1.5.1 Employees of Engineering Consultancy Firms in Kenya

The study stands to be of vital importance to the employee of engineering consultancy firms, as it stands help them appreciate how ERP system links with their organizations performance objectives. The study may therefore help the employees embrace technology especially the ERP systems and reduce the level of possible resistance and indifference that the employees may have towards such a technological application. Furthermore, the study may permit employees of engineering consultancy firms in Kenya to appreciate how ERP system facilitates and makes their tasks easy while positively contributing to organizational performance.

1.5.2 The Management of Engineering Consultancy Firms in Kenya

The study may be important to the top leadership and management of engineering consultancy firms in Kenya in several ways. The study stands to provide information on the impact of ERP on performance of engineering consultancy firms in Kenya hence form a vital external source of information or an outside perspective on the effects of ERP on performance. The management of engineering consultancy firms in Kenya can therefore integrate the information provided by the current study with internal intelligence of the organizational impacts of ERP and develop a more informed perspective of the relationship between the two. The study results may also supplement internal intelligence and managerial knowledge and can be valuable source of information in the evaluation of ERP implementation for engineering consultancy firms in Kenya. Therefore, the study may be vital in managerial decision-making and the definition of the business strategy for the engineering consultancy firms in Kenya.

1.5.3 Other Organizations

Other organizations including those in the consultancy industry and other industries stand to benefit from the results of the current study. By reviewing the result of the current study, the management of other organizations will get to appreciate more, how ERP can influence organizational performance. Additionally, the information generated by the
current study can help managements of other firms build on their own intelligence on the relationship between ERP system and organizational performance and inform their managerial decisions concerning implementation of the application. Furthermore, the study can help inform management of other organizations to learn from experiences engineering consultancy firms in Kenya with ERP and strategically implement the same to ensure realization of their organization’s performance objectives.

1.5.4 Researchers and Academicians

The study will facilitate the understanding of the relationship between ERP system and organizational performance for researchers interested in doing a related study. It will contribute to current scarce literature on the subject and provides a source of background information for future researchers. Besides, the study will help generate academic interest in the study of the relationship between ERP and organizational performance and facilitate availability of literature on the topic especially in Kenya. It will provide a source of literature to students who are interested in the subject or who intend to conduct a related study on other industries as part of their thesis.

1.6 Scope of the Study

The focus of the current study was to examine the relationship between ERP system and organizational performance. The study centered on engineering consultancy firms in Nairobi, Kenya and examined how ERP has influenced their performance. The performance areas of interests are; the impact of ERP system on financial performance, the impact of the ERP system on organizational learning, the impact of the ERP system on internal processes. The study used a mixture of primary and secondary sources of information to realize its objectives. The primary sources consisted of a quantitative study involving the use of structured questionnaires to collect data from a sampled population of employees of engineering consultancy firms in Nairobi, Kenya. The data was collected over a period of three weeks between May 21st and June 10th, 2017. The secondary sources consisted of peer-reviewed articles, online journals, books and other academic source of relevant information.

One of the limitations of the study was that some of the respondents were not very sure of the questions asked in the data collection instrument especially those pertaining to the
financial aspects of performance. To limit this limitation, the researchers endeavored to clarify the questions to the respondents. Another limitation of the study was that one of the two firms in which the research was conducted had only recently implemented the ERP systems, hence the employees were only just slightly aware of the effects of the ERP on performance.

1.7 Definition of Terms

Following are definition of key terms and concepts that were applied in the course of the study.

1.7.1 Enterprise Resource Planning System (ERP)

Enterprise Resource Planning (ERP) systems are software packages composed of several modules, such as human resources, sales, finance and production, providing cross-organization integration of data through embedded business processes. These software packages can be customized to cater for the specific needs of an organization. During the 1990s ERP systems became the de-facto standard for replacement of legacy systems in large and particularly multi-national companies (Parr & Shanks 2000).

1.7.2 Financial Performance

The accurate and timely financial data are necessary for the efficient and smooth direction of the organization. The provision of the right and timely financial data to the right person in the organization helps much in the process of making the right decision in the right moment (Aral & Weil, 2007).

1.7.3 Information Technology

Information Technology is the application of Information and Communication Technologies tools including computer network, software and hardware required for internet connection (Tan, et al.2009).

1.7.4 Internal Processes

The perspective, according to Gekonge (2005) as quoted by Kairu, et.al (2013), internal processes perspective focuses on the internal business results that lead to financial success and satisfied customers”. To meet the organizational objectives and customers”
expectations, organizations must identify the key business processes at which they must excel. These key business processes are monitored to ensure that outcomes will always be satisfactory.

1.7.5 Organizational Learning

This perspective looks at how an employee of an organization learns in his/her career to improve the performance of the organization. According to Kairu, et al., (2013) the learning perspective examines the ability of employees (skills, talents, knowledge and training), the quality of information systems (systems, databases and networks) and the effects of organizational alignment (culture, leadership, alignment and teamwork), in supporting the accomplishment of organizational objectives.

1.7.6 Profitability

According to Tulsian (2014), defines profitability as the capacity of an investment to generate a return. Profitability is measured using indicators such as return on total assets (ROTA), return on investment (ROI), return on assets (ROA) (Burja, 2011).

1.7.7 Competitive Advantage

According to Awwad, Al-Khattab and Anchor (2013), competitive advantage (CA) refers to the extent to which organizations or companies are able to establish and sustain an unassailable position vis-à-vis its competitors.

1.8 Chapter Summary

Chapter 1 of the study has highlighted the background of the study and stated the problem that has inspired the study. The chapter has further highlighted the general objective of the study and presented the objectives that the study intends to achieve. Chapter 1 has also explained the significance of the study, identifying groups that stand to benefit from the study and how. The chapter has also provided the boundaries of the study under the scope of the study and defined some of the key terms and concepts that were used in the study. In all, Chapter 1 has provided the blueprint of the study, and has underscored what the study intended to achieve.

Chapter 2 provides a review of literature. The chapters’ area of focus includes; the impact of ERP system on financial performance, the impact of the ERP system on organizational
learning, the impact of the ERP system on internal processes. It examines academic source of literature that have been produced in the last 10 years on topic of interests with the aim of assessing previous finding of previous empirical studies and to assess scholars’ perception of the relationship between ERP and organizational performance.

Chapter 3 of the study provides the research methodology to be used in the study. The chapter highlights the research design that was used in the study, identifies, and describes the population of the study. The chapter also defines and explains the sampling design that the researcher used in the study and the sample size of the study. Chapter 3 further explains the data collection instrument for the study, research procedure and the data analysis methods used.

Chapter Four presents the study results and findings concerning the respondents’ biographical data and the three research questions that the study had sought to answer. The results concern the following; the impact of ERP systems on the financial performance, organizational learning and internal process of engineering consultancy firms in Kenya. The chapter also presents the results of inferential statics conducted on the data, specifically the results of the cross tabulation and correlation analyses.

Chapter Five as the final chapter of the study it provides the summary of the study, summatimg the purpose and the research questions of the study as well as the study key findings. The Chapter then provides the discussion of the study’s key findings, the conclusion and suggests some recommendations for progress and for further research.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Chapter Two presents a review of existing literature on the impact of ERP systems on organizational performance. It focuses on three areas; the impact of ERP system on financial performance, the impact of the ERP system on organizational learning, the impact of the ERP system on internal processes. It reviews academic literature published within the past 10 years, which are believed to be still relevant. The purpose of the chapter is to assess finding of previous empirical studies and to assess scholars’ perception of the relationship between ERP and organizational performance. It also intends to determine a gap in existing literature on the nature of relationship hence further buttress the justification of the significance of the study.

2.2 Impact of ERP System on Financial Performance

2.2.1 Financial Performance

Financial performance is conceptualized as implying the maximization of profits. Technically, however, financial performance is divided into two general categories; return to investor and accounting return (profit) (Chiarello, Pletsch, Da Silva & Da Silva, 2014). Generally, financial performance refers to the extent to which the corporation or the firm has met its fiscal or financial objectives. In other words, financial performance is the process of measuring the outcome of a firm’s operations and policies in monetary terms. It is utilized to determine the corporation’s overall health in a given period and is sometimes used to contrast and compare similar businesses across a given industry or to compare industries as well as sectors in aggregation (Aral & Weil, 2007).

The determination of corporate financial performance utilizes two things, capital market measures and financial variables. Other scholars have used return on equity (ROE) and return on assets (ROA) (Chiarello, et al., 2014). Financial performance has been measured by using three indicators; Internal–based performance measured by Return on Assets, Market-based performance measured by Tobin’s Q model (Price / Book value of Equity) and Economic–based performance measured by Economic Value add (Fosser,
Leister, Moe & Newman, 2008; Tanwar, 2013). The most commonly used variables to represent the financial performance were ROE, sales ROA, growth, contribution margin, ROS (Return on Sales), Tobin's Q, market share, ROCE (Return on Capital), firm’s risk, cash flow, operating income and share earnings (Mahmoudi & Ahmadi, 2008). In fact, some scholars have argued that there are three ways of presenting financial performance: as a market measure reflecting the level of satisfaction of stakeholders; as accounting measure depicting level of business efficiency; as surveys reflecting estimated financial performance (Al-Mashari 2003; Abugabah & Sanzogni, 2009).

Therefore, as contends Njihia and Mwirigi (2014), financial performance is vital to several stakeholders in a firm including creditors, shareholders, tax authorities and managers as it assists them to answer two fundamental questions, namely; What is the firm’s financial position at any given time? How is the financial performance of the corporation over a given period? These questions are answered through financial analysis, which involves the utilization of the firm’s financial statements. According to Chiarello, et al., (2014), the financial statements are conceptualized as a set of data, which is ordered according to certain consistent and logical accounting procedures with a purpose of conveying a comprehension of certain financial aspects of the firm. In certain instances, the financial statement may be an indication of the firm’s position at a given period as indicated by a Balance Sheet; a financial statement may also reveal a series of processes over a period as in the case of an Income Statement (Abugabah & Sanzogni, 2009).

The analysis of financial performance incorporates the analysis and interpretation of financial statements including a full diagnosis of the financial soundness and profitability of the firm (Aral & Weil, 2007). Fosser, et al., (2008) explains that financial performance in several instances examines the production and productivity performance of the firm (that is, total business performance), liquidity performance, profitability performance, fixed asset performance, working capital performance and fund flow performance as well as social performance. As such, financial performance of the firm is of vital importance to its creditors, who are mostly interested in the firm’s liquidity performance, bond holders (shareholders) interested in the firm’s cash-flow ability (current profitability and projected profitability), investors interested in the firm’s current and anticipated earnings (that is, a firm’s financial condition and profitability performance) (Fosser, et al.,2008).
Financial performance and the analysis of financial performance is also of significant importance to the firm’s management as they are interested in determining and understanding the various aspects of financial performance including better financial condition, internal processes among others (Abugabah & Sanzogni, 2009). This implies that ERP systems are important to firms with respect to their ability to facilitate financial performance. ERP systems permit for the realization of financial performance in various ways. According to Njihia and Mwirigi (2014), the accurate and timely financial data are necessary for the efficient and smooth direction of the organization. The provision of the right and timely financial data to the right person in the organization helps much in the process of making the right decision in the right moment (Aral & Weil, 2007).

2.2.2 Enterprise Resource Planning System

The term ERP was first coined in 1990 by Gartner however, its roots date to the 1960s (Spano & Bello, 2010). Back then, the concept applied to inventory management and control in the manufacturing sector. Software engineers created programs to monitor inventory, reconcile balances, and report on status. By the 1970s, this had evolved into Material Requirements Planning (MRP) systems for scheduling production processes. In the 1980s, MRP grew to encompass more manufacturing processes, prompting many to call it MRP-II or Manufacturing Resource Planning (Abugabah & Sanzogni, 2009).

By 1990, these systems had expanded beyond inventory control and other operational processes to other back-office functions like accounting and human resources, setting the stage for ERP (Garcia-Sanchez & Perez-Bernal, 2007). Today, ERP has expanded to encompass business intelligence (BI) while also handling "front-office" functions such as sales force automation (SFA), marketing automation and ecommerce (Dirisu, Iyiola & Ibidunni, 2013). With these product advancements and the success stories coming out of these systems, companies in a broad range of industries—from wholesale distribution to ecommerce—use ERP solutions. Nevertheless, what is an ERP system?

Enterprise Resource Planning (ERP) system has been defined as software packages composed of several modules, such as human resources, sales, finance and production, providing cross-organization integration of data through embedded business processes (Garcia-Sanchez & Perez-Bernal, 2007). These software packages can be customized to
cater for the specific needs of an organization. During the 1990s ERP systems became the de-facto standard for replacement of legacy systems in large and particularly multi-national companies (Parr & Shanks 2000). According to Spano and Bello (2010) explain further than an ERP is a kind of advanced Information System (IS), which is capable of providing a comprehensive impression of the firm as well as shared database in which the firm’s transactions are both recorded and stored.

The ERP software has the ability to integrate all the aspects and facets of the firm’s operations such as development, product and service planning, sales and manufacturing all in a single user interface application (Garcia-Sanchez & Perez-Bernal, 2007). Parr and Shanks (2000) explain that the ERP system software typically comprises of several enterprise software modules, which are purchased separately, based on the organizations specific technical capabilities and needs, such as sales, service and product development and intra-organizational communication. Some of the most common ERP modules consist of those for material purchasing, product planning, inventory control, accounting, distribution, marketing, human resource (HR) and finance. A firm will naturally utilize a mixture of dissimilar modules to manage back-office undertakings and tasks (Al-Mashari, 2003; Fosser, et al., 2008; Abugabah & Sanzogni, 2009).

As such, scholars have argued in favor of multiple business value of ERP. Some of the stated values include improved business insight (due to the possibility or availability of real-time information produced by reports) lower organizational operational costs (via well-defined and more streamlined business activities and processes). Others include, enhanced collaboration between organizational staff, as well as between the organization and other stakeholders through effective data sharing in requisitions, contracts and purchase orders (Al-Mashari, 2003; Fosser, et al.,2008; Dirisu, et al., 2013). Furthermore, ERP systems have been appraised for their potential impact on improved efficiency, reduced risks and lower management costs (Mahmoudi & Ahmadi, 2008).

Shuhaimi, Nawawi, Salin (2016) argue that empirical findings indicate extensive evidence regarding the adoption of ERP systems in companies. They contend that ERP systems are invaluable in companies with respect to their ability to integrate and automate business processes. Hassan (2013) finds that ERP systems are capable of facilitating the implementation of best practices in a firm, producing and providing access to information
in real time as well as providing the platform for common data sharing across the enterprise. It is argued further that, ERP replaces disconnected databases within a firm or individual system and thereby helps the firm achieve and sustain consistency in the accuracy of information across the entire firm including personnel, departments and units (Abugabah & Sanzogni, 2009).

Dirisu, et al., (2013) contend that the ERP system is capable of enhancing organizational performance by facilitating transaction processing capabilities of the firm, record keeping, decision–making, operational cost reduction, coordination of internal processes, information sharing and communication. It provides an effective means of accessing and controlling the information in databases which further allow the firm to manipulate the information for greater effectiveness (Awwad, Al-Khattab & Anchor, 2013). Studies have found that ERP system has a valuable effect on organizational performance in terms of facilitating financial performance, organizational learning and internal processes (Shuhaimi, 2016; Velcu, 2015; Abugabah & Sanzogni, 2009). Exactly how ERP systems facilitate organizational performance is examined in existing literature in the subsequent pages in the current chapter.

2.2.3 ERP versus Financial Performance

Empirical review suggests that ERP system has an impact on organizational financial performance, this part of the chapter reviews literature relating the nature of the relationship between ERP and financial performance. It examines research findings and scholar’s arguments regarding the impact of ERP on profitability, competitive advantage, customer satisfaction and operational costs. It commences by examining some of the existing theoretical perspectives on ERP system and financial performance.

2.2.3.1 Theoretical Perspectives on ERP and Financial Performance

Several theoretical models can help explain the use of ERP systems in modern organizations, one such theoretical perspective is the Technology Acceptance Model (TAM). The TAM was advanced by Davis (1989, cited in Mekic & Ozlen, 2014), when he argued that people will adopt a technological application if they deem it useful for them. That is, that there is a propensity for human beings to adopt a technological application if that technology is perceived to have value or is useful for job performance
and it is also easy to use. According to Davis (1989, cited in Park, 2009) TAM is the specification of causal association between the design features of a system, perceived usefulness, ease of use and attitudes towards use of the technology as well as actual behavior.

As such, four aspects to the TAM are relevant to ERP use in firms. As Lee, Kim and Choi, (2012), PU implies the extent to which users anticipate the adoption of a given technology to facilitate their job performance. PEOU referst to the degree to which consumers deem the use of technology to be easy to use. According to Tsai, Wang and Lu (2011) these two components influence the users’ attitude regarding the use of a given technology. On the other hand, PU and the latter (attitude) have a bearing on the users’ behavioral intention to use a given technology (Lee, et al, 2012). According to Tsai (2012), BI implies the users’ conscious intentions to use or not to use a given technology in the future while external variables are the externally controllable factors that influence the individuals’ PU and PEOU as well as the intention to use or not to use a given technology (Mekic & Ozlen, 2014).

![Figure 2.2: The Main Components of TAM](source: Lee, et al., 2012)

Thus, from the hypothesis of the TAM and with respect to the use of ERP systems in firms, the system is deemed to have the usefulness value of the adopting firms. Awwad, et al., (2013) have argued that most firms adopting the ERP system consider the systems to be of significance importance in boosting the financial performance of the firm. Garcia-Sanchez and Perez-Bernal (2007) have argued in favor of the importance of ERP system in the facilitation of various organizational operations including management process, sales and production, product development and human resource management. This
implies that the TAM helps account for the use of ERP system in firms to some extent. Firms consider the ERP system to have a financial performance value for the firm hence their propensity to adopt the system (Shuhaimi, 2016; Velcu, 2015).

2.2.3.2 Empirical Review: ERP and Profitability

According to Tulsian (2014), defines profitability as the capacity of an investment to generate a return. Profitability is measured using indicators such as return on total assets (ROTA), return on investment (ROI), return on assets (ROA) (Burja, 2011). Profitability plays a very fundamental role in determining the performance and the survival of the firm. It is one of the primary indicators of organizational performance and a tale-tell sign of its ability to weather competition (Al-Mashari, 2003; Abugabah & Sanzogni, 2009). Profitability also enhances the firm’s reputation and as such, profit maximization is a constant preoccupation for most managers.

The profitability as a key indicator of organizational performance and a factor that influences organizational reputation is at the center of the organization and is one of the principle if not the principle reason for the existence of the organization (Parto, et al., 2016; Aral & Weil, 2007). Hence, profit maximization is at the heart of every organization and as such firms are looking for means of ensuring profitability. Empirical studies have determined that ERP is among the most important factors that affect organizational profitability in the contemporary business environment (Parto, et al., 2016; Bach, 2014; Aral & Weil, 2007). The consideration of ERP systems in profitability is indeed in line with several studies including that by Hassan (2013) which consider profitability from internal perspective, at the firm level.

Almgren and Bach (2014) contend that ERP precipitates more profit for the company by enhancing productivity. They further explain that ERP lead to general reduction in the cost of doing business and in so doing increase the profit margin of the firm. According to Chtiou (2009), about 70% of the most profitable firms and 90% of the leading firms in market capitalization have implemented ERP. In fact, some studies have suggested that profitability is one of the basic indicator of ERP performance (Abugabah & Sanzogni, 2009; Njihia & Mwiregi, 2014). This implies an intricate connection between profitability and ERP while some scholars such as Velcu (2015) have argued that ERP enhances
profitability there are those such as Mahmoudi and Ahmadi (2008) who have posited that ERP has no or limited impact on organizational profitability.

Velcu (2015) in a study determined the ERP had a positive effect on several indicators of financial performance including; return on investments (ROI) and return on assets (ROA) profit margin, capital turnover, assets turnover and total costs. Similar results were obtained by de Andres, Lorca and Gayo (2014) when they examined 695 leading firms in Spain on the impact of ERP on the profitability. They determined that firms that had successfully implemented ERP systems realized positive ROI, ROA, asset turnover (AT) and profit margin. The underlying argument here is that ERP promises sales increases and reduction in operational costs hence profitability for adopting firms.

Parto, et al., (2016) reports that a study to examine the impact of ERP systems on financial performance that was conducted among 247 companies, it was determined that ROI and ROA registered a decline in the year that the ERP was implemented and but a significantly higher in the following year. The same study found that while those firms that had implemented an ERP registered a decline in ROI and ROA, the decline in non-adopting companies was even much higher (Parto, et al., 2016). In another study conducted by Aral and Weil (2007), it was found that Information Technology (IT) adoption significantly accounted for differences performance of net profit and ROA among adopting and non-adopting firms. Thes study conducted by Velcu (2015) however found a significance difference between successful and unsuccessful ERP adopter. He determined that successful ERP adopters registered profits while the nonsucessful adopters did not.

2.2.3.4 Empirical Review: ERP and Competitive Advantage

According to Awwad, et al., (2013), competitive advantage (CA) refers to the extent to which organizations or companies are able to establish and sustain an unassailable position vis-à-vis its competitors. Likewise, CA can be conceptualized as the firms’ capabilities, which permit it to shape its position so defined and differentiated from that of competitors. There are three ways that a firm can obtain a competitive advantage, through differentiation, cost-leadership or focus strategy (Fosser, et al., 2008).
Dirisu, *et al.*, (2013) explain that differentiation occurs when a brand or a firm outperforms its contenders in the provision of a product or services. In a cost-leadership, a company identifies and exploits all sources of cost advantage and seeks to become a low-cost producer in the industry vis-à-vis contenders (Idrisu, *et al.*, 2013; Tanwar, 2013). In a focus strategy, a firm pursues a narrow competitive scope, that is, selects a segment within its industry and designs its strategies to serve and satisfy that segment more than contenders can (Tanwar, 2013; Valipour, Birjandi & Honarbakhsh, 2012). Therefore, a CA permits the firm to attain customer satisfaction and loyalty as compared to competitors as it is able to create more customer value (Awwad, *et al.*, 2013).

Limited academic attention has gone to assessment of the nature of relationship between ERP and competitive advantage (Fosser, *et al.*, 2008). Nonetheless, the few studies that have been suggest that there exists a positive association between the two. Fosser, *et al.*, (2008) contends that several authors have argued that ERP can help a firm attain a competitive advantage under certain circumstances. According to Ponorica, Al-Saed and Sadik (2013) ERP systems accord adopting firms a competitive advantage over non-adopting firms. They note that ERP systems help firms achieve this by permitting the integration of organizational processes and key activities. Through the ERP systems, managers are able to obtain information in real time and make effective responsive strategic decisions.

However, other researchers such as Lengnick-Hall, Lengnick-Hall and Abdinnour-Helm, (2014) have contended that ERP systems in themselves do not precipitate a competitive advantage unless they are combined with intellectual and social capital available within the firm. Fosser, *et al.*, (2008) explain that some researchers have found some utility firms realized below 50% value after implementing an ERP. Other empirical studies have found that ERP systems can precipitate drawbacks by resulting in a lock-in of their principles and processes within the adopted software (Fosser, *et al.*, 2008). Indeed, if an ERP implementation is not done well it can result in a conflict between the business logic and the system logic. Beard and Sumner (2004) conceived what they termed a ‘common system paradox’ where the adoption of the ERP systems instead of facilitating the competitive advantage that the firm may have had before, it eliminates it all together. Fosser, *et al.*, (2008) that other researchers who have studied ERP-competitive advantage relationship have not realized similar results.
2.2.3.5 Empirical Review: ERP and Customer Satisfaction

The modern business environment is one, which is characterized by high competition between firms. In such an environment, one of the means of obtaining and retaining a market share is through achieving customer satisfaction (Abuagabah & Sanzogni, 2009). Customer satisfaction can be defined simply as the customer or consumers’ post-use or post-purchase evaluation of the product or service based on previously held perception (Ucakturk & Villard, 2013). In a more technical way, customer satisfaction can also be conceptualized as the perceived or real discrepancy or correspondence between a customer’s prior expectations and the real performance of the service or product after use (Iliieska, 2013).

According to the National Business Research Institute, or NBRI (2009), customer satisfaction can be measured using several indicators such as the quality of service, pricing, speed of service, customer complaints or problems, quality of firm-customer relations and the customers’ perception of the firm. Customer satisfaction is considered in much literature as one of the most perceptible intangible benefits of an ERP system adoption by an organization. It has been argued that an ERP system sends message to customers that the product and service qualities have been improved (Batada & Rahman, 2012). The perception of enhanced product quality is vital in precipitating a positive post-purchase evaluation of product or services performance (Nawaz & Channakeshavalu, 2013; Motwani & Sharma, 2013). Nooriae (2012) has argue that ERP systems facilitate product or service improvement as well as enhanced management of the life cycle of customers, both of which increases customers level of satisfaction. Indeed, ERP systems contribution to improvement in on-time delivery of product and services has been noted in some empirical studies (Ucakturk & Villard (2013).

Ponorica, et al., (2013), Nawaz and Channakeshavalu (2013) contend that increased customer satisfaction is one of the key benefits of ERP systems. Motwani and Sharma (2013) observe further that other than improved efficiency in the company’s operations, customer satisfaction is the other ultimate outcome of ERP systems implementation within a firm. Shannak (2016) conducted a study to examine the impact of ERP on organizational performance basing his assessment on the balanced scorecard. He found that ERP systems increased the effectiveness and efficiency of the firms that implemented them and that this resulted in a better customer satisfaction.
Batada and Rahman (2012) also conducted a study to examine the impact of ERP on performance. Among their key findings was that an increase in customer satisfaction was realized after the implementation of ERP systems in the surveyed firms. Velcu (2007) found that ERP led to greater customer satisfaction as it facilitated that fulfillment of their orders. Singh and Singh (2013) note that several previous empirical studies have established that ERP systems increase customer satisfaction by narrowing the amount of time for service or product delivery. The two explain that use of ERP systems can lead to a reduction of the order cycle times, customer response times as well as delivery speeds hence facilitate positive customer satisfaction. This positive effect of ERP on customer satisfaction is even more perceptible in the electronic markets where the system serves as the central information processes function, facilitating firm-customer information exchanges. This not improves the customers’ perception of the firm but positive enhances the customers’ perception of the firms’ products and services hence customer satisfaction (Batada & Rahman, 2012).

2.2.3.6 Empirical Review: ERP and Operational Costs

In non-technical terms, operational costs refer to the expenses that the firms incur in order to operate. Technically though, and according to Zeng, et al., (2012), operational costs are the resource, time and fiscal expenditures that the firm’s management and top leadership incur in orders to keep the firm running on a daily basis. The organizational incurs such expenses in terms of administrative and maintenance costs. In this way, as Singh and Singh (2013) explain, operating cost can be construed as a component and of the firm’s operating income, which is habitually reflected in the firm’s income statement.

The implementation of ERPs in the firms is associated with improved inventory turnover and management, as well as higher productivity and greater efficiency hence diminishing operation costs (Al-Tarawneh, 2012). Empirical studies show that the adoption of ERPs injects efficiency in organizational processes through the reduction of coordination costs and enhancing tighter cording between and among departments, which allow organizations to react promptly and simultaneously to certain environmental turbulences and opportunities (Elragal & Al-Serafi, 2011).

Zeng, Lu and Skibniewski (2012) contend that operation and cycle time reduction are the primary benefits of an ERP system to a company that adopts it. Huang, Huang, Wu and
Lin (2009) in a study to assess the impact of ERP on operational costs of firms determined that the systems led to the reduction of operation costs for the adopting firms. Kang, Park and Yang (2008) argued that ERP systems led to the reduction of operational costs through facilitation of businesses processes including information exchange and decision-making. Furthermore, studies have found that ERP systems also contribute to costs reductions especially those related to Information Technology (IT) structures by substituting ERP for the scattered legacy systems that the firms were using before (Kang, et al., 2008).

According to Elragal and Al-Serafi (2011) observe that ERP systems shortens operational aspects such as lead-time for responding to environmental dynamics that would otherwise result in costly procedures for the firm. Empirical evidence from previous studies exist ERP to cost reduction through removal of error in business processes and particularly elimination of duplicates in a production line hence precipitating the realization of high quality services and products at a reduced cost. Huang, et al., (2009), found that enhanced reaction time precipitated by ERPs to fulfill customers’ orders enhance the corporation’s ability to minimize inventory stock, which leads to greater inventory turnover.

Fur, Gmeiner, Schiereck, and Strahringer, (2007) have however argued that operational cost reduction might not be one of the principal reasons for firms’ adoption of ERP systems. They contend that in service-sector business such as consultancy, banking and telecommunication, ERP adoption is usually done to facilitate efficiency and effectiveness of organizational processes and that cost is of secondary concern. Some studies have even found that the costs associated with the ERP systems implementation and maintenance might actually be a barrier to its adoption by firms. Zeng, et al., (2012) observe that research among US-based firms found that the average costs for implementing an ERP was about $1 million and that the processes took between 6 months and 2 years.

2.3 Impact of the ERP System on Organizational Learning

2.3.1 Organizational Learning

Organizational learning can be conceptualized as an information management scheme, which involves systematic endeavour to transfer knowledge and skills throughout the
whole firm (Zeng, et al., 2012). Ponorica, et al., (2013) observe that organizational learning is a change in firm’s knowledge, which happens as a function of experience. The knowledge consists of both declarative facts and knowledge, skills and routines as well as procedural knowledge. Researchers have used different means to measure organizational learning including determining cognitions of members, measuring knowledge embedded in routines and viewed changes with respect to reflective of changes in knowledge.

Zeng, et al., (2012) explain that the concept of organizational learning raises concern regarding whether firms as entities have the ability to do what they want. That is whether organizations have learning abilities, objectives and memories or whether they only learn through their present members. Organizational learning is concerned with how an employee of an organization learns in his/her career to improve the performance of the organization. According to Kairu, et al., (2013) the learning perspective examines the ability of employees (skills, talents, knowledge and training), the quality of information systems (systems, databases and networks) and the effects of organizational alignment (culture, leadership, alignment and teamwork), in supporting the accomplishment of organizational objectives. It is characterised by how members of the organization engage in processes designed to improve and transfer their routine and skills (Ucakturk & Villard, 2013).

Hence, organizational learning generally the process of improving actions through better knowledge and understanding (Zeng, et al., 2012). There are two approaches to organizational learning. It can be perceived as a looking at the firm from a cognitive perspective or as a community-based system. In the former case, the firm is conceived as whole and is treated like a brain having the individual members. In the latter case, the organization is conceived as a community based system in which the practitioners create knowledge in their own networks conceived as communities of practices (Paronica, et al., 2013).

Learning involves attitudes, knowledge, capabilities, belief, skills and mental models among others that tend to persist over time. The process is deemed very important for organizational success as it is considered a source of competitive advantage. A learning organization is where the company has the ability to establish clear goals, make a suitable judgement and monitor progress. Organizational learning process comprises of several
phases; these include knowledge acquisition, distribution of information, information interpretation as well as organizational memory (Qutaishat, Khattab, Zaid & Al-Manasra, 2012).

Different levels of learning have been identified. This hierarchy is based on the levels of association building and insight. The two general levels are higher and the lower learning level. Lower-level learning happens within a given firm structure, an under a given set of rules. It results in the creation of some rudimentary association of behaviour and outcomes of short durations and impact specifically on what the firms does. It is part of routine and incorporates association building. Lower-level learning tends to take place in organizational con- texts that are well understood and in which management thinks it can control situations (Ucakturk & Villard, 2013).

Higher-level learning, in contrary, focuses at adjusting general norms and rules rather than precise actions or conducts. The relations precipitated by higher-level learning have long term effects and impacts on the organization as a whole. This type of learning occurs through the use of heuristics, skill development, and insights. It therefore is a more cognitive process than is lower-level learning, which often is the result of repetitive behaviour (Nooriae, 2012). The context for higher-level learning typically is ambiguous and ill-defined, making purely repetitive behaviour rather meaningless. This ambiguity and environmental complexity characterizes upper management levels of the organization where decision making norms are at least partially determined, that is, where higher-level learning usually occurs (Al-Tarawne, 2012; Nooriae, 2012).

2.3.2 ERP versus Organizational Learning

Previous research suggests that ERP has an impact on organizational learning, this part of the chapter reviews literature relating the nature the nexus between ERP system and organizational learning. It examines research findings and scholar’s arguments regarding the impact of ERP on decision-making within the firm, business processes, the productivity of individual staff members and managerial control. It commences by examining some of the existing theoretical perspectives on ERP system and organizational learning.
2.3.2.1 Theoretical Perspectives on ERP and Organizational Learning

Within this field, resource-based theory (RBT) has emerged as a promising new framework for analyzing the sources and sustainability of competitive advantage (Bradford & Florin, 2003). Given that, organizational learning and resource-based theory both pursue the objective of generating and sustaining competitive advantage, it appears logical for organizational learning to be identified as a strategic resource within the resource-based view. However, current articulations of RBT suffer three major limitations that make the inclusion of organizational learning problematic (Masquefa, 2008).

First, most of the early literature on RBT adopted a narrow definition of resources and focused primarily on the tangible assets under the firm’s control. Second, building a competitive advantage takes time. By adopting a static perspective, resource-based theory has focused on the result rather than on the process of building competitive advantage. Organizational learning, however, is as much a process as an outcome (Gorla, Somers & Wong, 2010). Third, an appropriate working definition of the sustainability of competitive advantage is lacking. ERP, as an information technology resource, is considered as the driver of competitive advantage and sustain firm performance.

ERP is valuable when it effectively enhances business information processing and provides the advantageous information enabling firm to achieve business planning, decision making, and business objectives (Hsu, 2013). Masquefa, (2008) contends that ERP is systematically generated around the best practices within firm and embedded business routines. Therefore, it is difficult to imitate and transfer. Moreover, e-business is an information system based on internet technology such as extranet, EDI communication, and e-commerce that links organization’s enterprise systems and information systems of business partners. Also, previous research found that integration of ERP and e-business has a positive impact on business value (Hsu, 2013).

The speed of accumulation and assimilation of resources is the key to firm growth, as are opportunities arising from underutilization of its resources. Firms continually search for new ways to increase productivity and efficiency. New knowledge yields new ways of using existing resources or new ways of combining sets of resources (Gorla, et al., 2010). The resource-based view theory informs understanding of the linkage between the type of
IT and the nature of business process and organizational performance impacts (Masquefa, 2008; Hsu, 2013).

2.3.2.2 Empirical Review: ERP on Decision Making

According to Al-Tarawneh (2012), decisions are the outcome of a careful deliberations and scrutiny of alternatives. The process of decision-making takes place at all levels of the organization and it involves problem identification and the consideration of multiple alternatives. The decision-making process is therefore a crucial process in the firm and a primary determinant of organizational success. Furthermore, decision-making is a highly information dependent process, one which borrows heavily from the stakeholders and incorporate managerial intelligence to ensure the realization of potentially effective decisions (Ucakturk & Villard, 2013).

As such, in business, decision-making is the identification and selection, from among a multiplicity of alternatives, a possible solution or strategy to a given problem in light demands of the circumstances (Al-Tarawne, 2012; Nooriae, 2012). Nooriae (2012) contends that decision-making is one of the principal managerial functions and one with potential positive or negative consequences for organizational performance. It is suggested that this information-dependent attribute of decision-making process is what makes ERP systems important to it. As such, competency in decision-making separates a performing from a non-performing firm and a successful from unsuccessful firms. This means that any input that facilitates augments or enhances the quality of managerial decision-making directly enhances performance (Zeng, et al., 2012).

Enterprise resource system also increases the availability of information helping the companies to have information in real time to make wise decisions and accurate prognostics regarding the organization. Ucakturk and Villard (2013) contend that the strategic function of information systems (IS) is the ability to provide crucial information for product and service development, and supporting vital business strategies including decision-making. In a study, Kelton, Pennington and Tuttle, Brad (2010) found that the implementation of ERP systems affects decision-making processes in various contexts.

Ponorica, et al., (2013) makes a similar observation when they argue that ERP systems provide consistency and accuracy of information and hence improve the managerial
decision-making processes. In a study conducted by Lecic and Kupusinac (2013), it was found that ERP systems act as vital decision support system, which integrates memory and processes to perform simulations such as “what if” simulation. They further determined that data warehouses that conduct analyses that support decision-making.

Ucakturk and Villard (2013) find that ERP systems are most reliable source of information for managerial decision-making. They further contend that ERP facilitate real time environmental analysis and provide managers with information that they can use strategically to ensure organizational performance. Management can, therefore, make decisions faster and with very few errors. Data becomes very visible across the organization. ERP systems enable managers to control the whole business and accelerate decision-making.

Through the use of ERP, managers are able to access accurate, timely and complete information that support their decision-making competencies (Al-Tarawne, 2012; Nooriae, 2012). Ucakturk and Villard (2013) found that firms that had adopted ERP systems reported making successful and effective decisions. This implies that ERP improves the quality of the managerial decision regarding how to run the firm, respond to threats and opportunities and successfully position the firm within a competitive business context.

2.3.2.3 Empirical Review: ERP on Business Processes

Business processes can be understood, as are all the activities and key processes required in order for the company to excel at providing the value expected by the customers. Dallas and Wyn (2014) explain that business process management (BPM) is a form of management practice in which is concerned with the improvement of company’s performance through the enhancement and control of business processes. As such, BPM integrates managerial techniques and ERP systems throughout organizational processes (Gartner, 2010). The ERP system once implemented is meant to improve organizational functions by simplifying organizational processes leading to seamless operations in the organization.
Njihia and Mwirigi (2014) observe further these systems support a spectrum of activities in modern organizations including sales, billing, marketing, human resource management, quality control and production thus ensuring general performance of the organization through facilitation of these pertinent processes. Addo-Tenkorang and Helo (2011) conducted a review of existing literature on ERP and found that there seemed to be a consensus among researchers that ERP systems allow adopting firms to integrate a spectrum of principle business processes for optimum performance. According to Spathis and Constantinides (2014), the essence of a complete ERP is not only to automate data and provide a platform for sharing it across the firm but also to automate the business process and produce real-time data. In this way, the Enterprise Resource Planning systems directly and indirectly facilitate the various business processes in the daily operation of the firm and enhance the firms’ performance (Njihia & Mwirigi, 2014).

According to Gartner (2010), ERP systems provide firms with the ability to enhance businesses process through the integration of all the activities and function areas of a company. In a study conducted to examine the impact of ERP on organizational process of Australian firms, it was determined that the system has improved the effectiveness of decision-making and transaction process of firms that had implemented ERP systems (Ucakturk & Villard, 2013). Some studies have found that ERP facilitates the accounting process in firms that have adopted enhancing efficiency and speed of these processes (Spathis & Constantinides, 2014; Hsueh-Ju, Shaio, An-An, & Fu-Chuan Pai, 2012).

2.3.2.4 Empirical Review: ERP on Individual Staff Productivity

In high-competition business environment of modern times, the issue of employee productivity is a crucial one for supervisors and managers as their primary job is to explore and get the best out of employees to raise their firms’ competitive edge (Qutaishat, et al., 2012). Providing employees with timely information, reducing their workload by eliminating task duplicities managers are able to achieve their competitive strategies while ensuring optimum performance of individual employees.

Velcu (2015) notes that one of the initial studies on the relationship between ERP on organizational performance revealed that ERP had a positive effect on productivity of employees in the firm. He notes that the study determined a gross marginal product of ERP on productivity to be about 95%. Exact Max (2014) contends that ERP influences
staff productivity in at least four important ways; including improved communication, reduced work-load per employee, facilitatio of fact-based decision-making and elimination of duplication of tasks and data. Panorama Consulting Solutions (2013) observes that a recent poll revealed that organizations world over are adopting ERP systems to reduce the workload for their employees and to ensure their optimum productivity.

Exact Max (2014) makes a similar observation noting that without ERP systems firms experience low employee productivity levels as employees are forced to accomplish several tasks resulting in poor performance, reduced motivation and employee fatigues. Research has established that ERP system facilitate employee productivity in very fundamental ways. It is established that when employees are less bogged down by ineffective business processes they become less productive and that ease of communication between and among employees and the ease of access of data with not apprehension about the data’s validity increases employee productivity (Panorama Consulting Solutions, 2013). In this perspective, productivity metrics implies time allocation to non-value addition but essential activities such as data collection and the correction of mistakes that could be inherent in the data collected.

Nonetheless, Shahzadi and Naveed (2016) caution that ERP systems may fail to achieve anticipated results concerning employee productivity. This is because employees have a tendency of rejecting systems to which they are not familiar. This view is conceived under the Technology Acceptance Model (TAM). According to the TAM, acceptance and use of a technological application is contingent on among things, the extent to which potential user conceive it as being useful, easy to use and the attitudes that they develop towards the application (Mekic & Ozlen, 2014). The implication is therefore, that if the attitudes employees have towards the ERP and if they perceive it as difficult to use and worthless they may resist it. Thus, the ability of ERP to boost employee performance is moderated by these intermediate or contravening variables.

2.3.2.5 Empirical Review: ERP on Management Control

Shahzadi and Naveed (2016) contend that ERP systems are indispensable additions to management control in modern organizations. They observe that ERP systems enhance
business process, efficiencies in different aspects of organizational operations and growth as well as better fulfillment of customer demands, data reliability, better knowledge, inventory control measures and decision-making power that accord managers greater control. ERP systems provide managers with important information in real time, which assist managerial decision making in tandem with the goals and objectives of the firm (Jamil & Mohamed, 2013).

According to Armesh, Salarzeh and Kord (2010), management control systems (MCS) allow managers to achieve managerial functions more effectively. Such as system collects and utilizes information to assess the performance of multiple organizations resources including financial, human among other organizational processes with regard to the attainment of organizational strategies (Ho, Huang & Wu, 2011; Armesh, et al., 2010). Furthermore, MCS have been employed as frameworks for the alignment of congruence between different aspects of organizational process especially action taking and employee decision making with the goals of the firm (Armesh, et al., 2010; Jamil & Mohamed, 2013). In this sense, the use of an ERP system such as the MCS has an important positive impact on organizational performance by according more managerial control of the aspects of organizational activities and performance.

2.4 Impact of the ERP System on Internal Processes

2.4.1 Internal Processes

According to Bosilj-Vuksic and Spremic (2004), internal processes are all the activities and key processes required in order for the company to excel at providing the value expected by the customers. Internal Processes are lead indicators where management intervention is possible to affect customer and financial outcomes. There are several activities that happen in the organization on a daily basis, these include communication, accounting, management, sales, and access to information, evaluation and monitoring as well as marketing among others among others (Botta-Genoulaz & Millet 2006). The perspective, according to Gekonge (2005) as quoted by Kairu et.al (2013), internal processes perspective focuses on the internal business results that lead to financial success and satisfied customers.
To meet the organizational objectives and customers’ expectations, organizations must identify the key business processes at which they must excel. These key business processes are monitored to ensure that outcomes will always be satisfactory (Berner, 2009). The process can be broadly categorised into three groups; Operations Management, Customer Management and Regulatory or social processes. Operations Management can be conceptualized as the administration of business practices to create the highest level of efficiency possible within an organization. It is concerned with converting materials and labour into goods and services as efficiently as possible to maximize the profit of an organization.

Operations management teams attempt to balance costs with revenue to achieve the highest net operating profit possible. Operations management handles various strategic issues including determining the size of manufacturing plants and project management methods, and implementing the structure of information technology networks. Other operational issues include the management of inventory levels, including work-in-process levels and raw materials acquisition; quality control; materials handling; and maintenance policies (Shuhaimi, et al., 2016; Bosilj-Vuksic & Spremic, 2004). Operations management entails studying the use of raw materials and ensuring minimal waste occurs. Managers utilize numerous formulas such as the economic order quantity formula to determine when and how large of an inventory order to process and how much inventory to hold on hand.

The second aspect of internal process incorporates customer management. Customer relationship management (CRM) is a term that refers to practices, strategies and technologies that companies use to manage and analyse customer interactions and data throughout the customer lifecycle, with the goal of improving business relationships with customers, assisting in customer retention and driving sales growth (Botta-Genoulaz & Millet 2006). CRM systems are designed to compile information on customers across different channels or points of contact between the customer and the company, which could include the company's website, telephone, live chat, direct mail, marketing materials and social media (Mwirigi, 2014).

CRM systems can also give customer-facing staff detailed information on customers' personal information, purchase history, buying preferences and concerns. A well-chosen
customer management process is one that allows the firm to capture customer feedback. This valuable information can and should be used by management (Shuhaimi, et al., 2016). Positive feedback can be built on to offer even more great service and negative feedback can be corrected and acted upon. The third dimension to internal processes relate to the regulatory and social processes within the firm. It concerns the establishment of good or cordial relations with various stakeholders (Berner, 2009). The various external stakeholders that the firms seek to establish good relations with include investors, creditors, the government and regulatory authorities as well as the general public affected in one way or another by the firm’s operation (Kusek & Rist, 2014; Bosilj-Vuksic & Spremic, 2004).

2.4.2 ERP versus Internal Processes

Empirical review suggests that ERP has an impact on organizational internal processes, this part of the chapter reviews literature relating the nature of the relationship between ERP systems and internal processes. It examines research findings and scholar’s arguments regarding the impact of ERP on how ERP systems support or augment internal processes, how ERP affects access to information within the firm and its impact on the monitoring process within the firm. It commences by examining some of the existing theoretical perspectives on ERP system and internal processes.

2.4.2.1 Theoretical Perspectives on ERP and Internal Processes

The institutional theory helps account for the use of ERP system in firms. It helps account of the business value of an ERP system in internal processes. According to Scott (2008), the institutional theory endeavors to account for or describe the profound and more effective aspects of how institutions are established, sustained, altered and dissolved. The institutional theory deals with the pervasive influence of institutions on human behavior such as the processes and mechanisms by which structures, including routines, rules, and norms on social behavior are ordered.

It posits that Institutions are multifaceted, durable, resilient social structures, made up of symbolic elements, social activities, and material resources (Scott 2008). Applying the institutional theory to ERP and business internal processes, it can argue that the ERP systems facilitate the creation of sustained standard of conducting business internal
processes. It facilitates the establishments of resilient means of conducting business processes and the realization of standards in the processes (Hsu, 2013).

2.4.2.2 Empirical Review: ERP on Support of Internal Processes

According to Spano and Bello (2010) an ERP can be considered as a software application that addresses firm’s needs by assuming a process view as opposed to a functional view approach to ascertain the attainment of organizational strategic objectives by effectively integrating organizational functions and processes. Bosilj-Vuksic and Spremic (2004) explain that businesses processes are all the tasks and activities that cross-conventional organizational and functional boundaries and that IT offers the best mean of integrating these activities and tasks. Mwirigi (2014) has argued that an ERP system support a spectrum of activities in modern organizations including sales, billing, marketing, human resource management, quality control and production.

Zeng, et al., (2012) have contended that ERP systems do improve efficiency of organizational processes and lead to cost reduction. Spano and Bello (2010) argue that ERP are able to complement and supplement organizational processes since they are designed to do just that. Bosilj-Vuksic and Spremic (2004) that ERP systems are normally created to supplement business functions including manufacturing, processing and distribution.

In other words, these systems are established to provide, automate support to wide-ranging business processes. Therefore, ERP systems facilitate not only facilitate the integration of organizational processes, it also enhances standardization of processes across multiple business units with the goal of improving efficiency and generation of profits (Bosilj-Vuksic & Spremic, 2004; Botta-Genoulaz & Millet 2006).

Furthermore, these systems are considered highly significant in their support of decision-making. Ucakturk and Villard (2013) have argued that they increase the availability of information helping the companies to have information in real time to make wise decisions and accurate prognostics regarding the organization. One such crucial support can be observed in the health sector, where the Clinical Decision Support (CDS) system facilitates disease diagnosis and surveillance (Berner, 2009). This is in line with Kelton,
et al., (2010) study which found that the implementation of ERP systems affects decision-making processes in various contexts.

2.4.2.3 Empirical Review: ERP on Access to Information

Shuhaimi, et al., (2016) contend that one of the most important and significant impact of ERP systems in firms is the facilitation of access to appropriate operational data in real time. Arnold (2006) contends that these systems satisfy management needs for informed decision making through making access to crucial information accessible to managers in real time. This possible because ERP systems allow for the collection and storage of large amounts of data in centralized database (Shuhaimi, et al., 2016). The firm is therefore able to maintain constant and precise information traversing personnel, units and departments and attain a complete and uninterrupted information flow Al-Tarawne, 2012; Nooriae, 2012).

The data stored in the databases can be used directly or the organization can use other forms of data mining techniques and technologies to make the data more suitable for managerial decisions (McForland, 2012). Ponorica, et al., (2013) makes a similar observation when they argue that ERP systems provide consistency and accuracy of information and hence improve the managerial decision-making processes. Every member of organization depending on the kind of information they are allowed to access is able to access the information they need to perform their tasks.

Other studies have found that managers in organization currently consider ERP systems as capable of generating very important information that is not important to the management but to the rest of the employees in a firm. Some key information that can be obtained in the ERP systems includes financial and non-financial information (Gavrea, et al., 2011; Lee, et al., 2004). The financial information that managers and employees can obtain from or generate from ERP systems and databases are diverse. These include net profit, profitability, return on assets, share prices, installation, and maintenance costs.

The non-financial information included organizational learning processes and internal processes including such things as decision made, meetings and records customer feedback, complaints and satisfaction (Shuhaimi, et al., 2016; Lee, et al., 2004). Shuhaimi, et al., (2016) argue that ease of access and control of information in the databases could permit the organization to generate and manipulate various types of financial and managerial reports and customize them depending on user’s needs.
Therefore, most scholars seem to agree that a successfully implemented ERP system positively contributes to access to information in the firm.

2.4.2.4 Empirical Review: ERP on Monitoring

Monitoring can be conceptualized as an information-dependent and a continuous process or function the employs systematic data collection concerning specific indicators to give the management information regarding the progress and attainment of predetermined objectives (Kusek & Rist, 2014). The monitoring process provides information about where a program, a policy or a project is in real time as well as over time relative to preset goals and objectives. Shuhaimi, et al., (2016) observe that ERP systems are important in the monitoring of organizational process and performance.

Mustapha and Ismail (2013) conducted a study to examine the impact of IT on monitoring and found that firms with an integrated information system experienced significantly lower costs for monitoring. They argued that the ERP system allows the firm to store information in one place and make it easy for managers and other employees concerned with monitoring and evaluation of the firms’ progress to obtain such vital information. Additionally, an ERP system facilitates the monitoring of budgeting and planning functions to ensure that costs do not exceed the budget (Shuhaimi, et al., 2016).

Therefore, EPR is crucial in monitoring profitability measures such as return on total assets (ROTA), return on investment (ROI), return on assets (ROA) (Burja, 2011). It can also be effective in observing the firms competitive advantage. The information ERP provides are crucial in measuring competitive advantage through differentiation, cost-leadership or focus strategies that the firm has adopted (Fosser, Leister, Moe & Newman, 2008; Tanwar, 2013).

2.5 Conceptual Framework

The dependent variable is ERP system while the independent variables are financial performance, organizational learning and internal processes as shown in Figure 2.1.
Chapter 2 has provided a review of literature. Its area of focus included what existing literature say about; the impact of ERP system on financial performance, the impact of the ERP system on organizational learning, the impact of the ERP system on internal processes. The review has revealed that the several scholars have paid attention to the nexus between ERP systems and organizational performance. However, it has also revealed that there is a lot of inconsistency in existing research concerning how ERP affects different aspects and indicators of organizational performance.

It also indicates that little research has gone to the assessment of the same among Kenyan organizations. Therefore, the current study draws from this gap in literature and seeks to, the impact of ERP system on financial performance, the impact of the ERP system on organizational learning, the impact of the ERP system on internal processes in Kenya.
with particular interest in the engineering consultancy sector. The next chapter provides the methodology the research intends to use to meet the objectives of the study.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

Chapter Three provides or presents the research methodology for the study. The chapter highlights the research design that used in the study, identifies, and describes the population of the study. The chapter also defines and explains the sampling design for the study and the sample size of the study. Chapter Three further explains the data collection instrument for the study, research procedure and the data analysis methods used.

3.2 Research Design

The general strategy adopted by the research to integrate varied attributes of the research, which are both coherent and logical is referred to as the research design (Blanche, Durrheim & Painter, 2006). By designing the research, the research guaranteed that the problem that the study seeks to investigate is effectively addressed. Consequently, a research design can be perceived as the blueprint of the study highlighting the data collection method, the scrutiny and measurement of the data.

Thornhill and Saunders (2000) advice that the research design that a researcher chooses for a study should depend on the problem that the study intends to investigate. It follows then that the research problem defines the research design to be used to operationalize or investigate it. Without a relationship between the research problem under investigation and the research design chosen, the study would generate senseless results.

The researcher used a descriptive research design. This design is crucial for studies that provide and accurate profile of situations and the nature of relations between phenomena or variables (Blanche, et al., 2006). Bless, Higson-Smith and Kagee (2006, p.48) allows the research to highlight and describe the relationship between variables. Consequently, a descriptive research design permitted the researcher to collect information regarding the Enterprise Resource Planning (ERP) and to describe how it affects the performance of engineering consultancy firms in Kenya. This approach also facilitated the extrapolation of findings within the entire industry and give insight on how ERP affects various aspects of organization a performance. Blanche, et al., (2006) explains that a descriptive research design permits the researcher to describe the various aspects of a situation under study.
3.3 Population and Sampling Design

3.3.1 Population

The larger pool of people, events and items from which the researcher draws the elements, individuals and cases for sampling is the population (Blanche, *et al.*, 2006 & Bless, *et al.*, 2006). It is also upon the population that the research extrapolates the results of the research. However, Bartlett, Kotrilk and Higgins (2001) advices that such a population should be homogeneous in that it must possess and exhibit the information of interests to the researcher.

The research is valid if the findings it generates close links to the opinions, features and characteristic of the population (Bartlett, *et al.*, 2001). The population for this study comprised of employees of SMEC and GIBB International Ltd operating in Kenya. The target population of the study comprise of 41 individuals. The population comprised of employees in various positions as indicated in Table 3.1.

Table 3.1: The Stratification of the Workforce of Selected Firms

<table>
<thead>
<tr>
<th>Position in Firm</th>
<th>SMEC</th>
<th>GIBB International</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Top Level Management</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2. Middle Level Staff</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>3. Low-Level Managers</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>4. Junior Staff</td>
<td>15</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>37</strong></td>
<td><strong>43</strong></td>
<td><strong>80</strong></td>
</tr>
</tbody>
</table>

Source: Author

3.3.2 Sampling Design

To obtain germane sample for consideration and inclusion in the research, a significant number of individuals are selected from the population. Thornhill and Saunders (2000) explain that it is normally from this population that researcher collects and infers information. It follows therefore that the validity of the study result is contingent on the
suitability of the sampling design (Blanche, et al, 2006). The sampling design comprises of the sampling frame, the sampling technique and the sample size.

3.3.2.1 Sampling Frame

A register or a list of individuals, cases and events from which the researcher obtains the sample is the sampling frame (Blanche, et al, 2006). Robson (2002) clarifies more that the sampling frame denotes to the source of the appropriate or correct population from which the survey sample is drawn. The researcher obtained the sampling frame of the study from the Human Resource Department of the selected engineering consultancy firms in Kenya, located within Nairobi. The researcher observed that the population could be stratified into four categories as per their positions in the firm. The stratification of the workforce in the selected engineering consultancy firms in Kenya according to these three categories is as indicated in Table 3.1.

3.3.2.2 Sampling Technique

Robinson (2002) explains that the study objectives determine the methodology for deriving sample for inclusion in the study. Blanche, et al., (2006) adds further that the sampling process is not abstract but is guided by the scope and parameters of the study as well as the population and the objectives of the study. The current study employed the use of stratified random sampling. This sampling technique involves dividing the population into strata or a number of groups, which in this case was; the Top-Level Management, Middle Level Staff, Low-Level Managers and Junior Staff. The research then conducted random sampling with each stratum.

3.3.2.3 Sample Size

The sample size refers to the proportion of individuals that are actually chosen to participate in the study (Thornhill & Saunders, 2000). They comprise of the people that bare close characteristics with the population but which the researcher can access within the time and resource constraints. The appropriate sample size was generated by applying the statistical formula for sample size proposed by Yamane’s (1967);

\[ n = \frac{N}{(1 + Ne^2)} \]
\[
N/(1 + Ne^2) = \frac{80}{1 + 80 \times 0.0025} = 57.1
\]

Thus the sample size comprised of 57 individuals from both companies. The distribution of the sample size is shown in Table 3.2.

### Table 3.2: Sample Size Distribution

<table>
<thead>
<tr>
<th>Position in Firm</th>
<th>Number of Employees</th>
<th>Total</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SMEC</td>
<td>GIBB International</td>
<td></td>
</tr>
<tr>
<td>1. Top Level Management</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2. Middle Level Staff</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>3. Low-Level Managers</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>4. Junior Staff</td>
<td>15</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>37</strong></td>
<td><strong>43</strong></td>
<td><strong>80</strong></td>
</tr>
</tbody>
</table>

Source: Author

**3.4 Data Collection Methods**

Blanche, *et al.*, (2006) and Bless, *et al.*, (2006) explain that data collection is the technique or strategy for obtaining or aggregating the information from the respondents. Data collection implies the method that the researcher uses whether it is the use of questionnaires, interview schedules, face-to-face interviews or telephone interviews or whether it is participation and observation (Thornhill & Saunders, 2000).

For this study, the researcher used structured questionnaires in which a combination of Likert scale questions was used to obtain data from the respondents. The questionnaire was subdivided into 4 major sections each dealing with a particular set of questions all aimed at obtaining relevant responses. In total, the questionnaire will comprise of 27 questions. Section 1 of the questionnaire consisted of 6 questions aimed at obtaining the biographical data or background information of the respondents. Section 2 comprised of 7 questions aimed at obtaining information concerning the impact of ERP system on financial performance.
The third part of the instrument comprised of a set of another 7 questions, which will seek to obtain information concerning the impact of the ERP system on organizational learning. Section 4 of the questionnaire also comprised of 7 questions and asked about the impact of the ERP system on internal processes.

3.5 Research Procedures

According to Bless, et al., (2006) research procedures are the processes and activities that the researcher undertakes when collecting data. The researcher performed the following sets of the activities in the study. After developing the questionnaire, the researcher obtained a formal introduction letter from USIU research office that was then presented to the leadership of the selected engineering consultancy firms in Nairobi in request for permission to conduct the study among the companies’ employees.

After obtaining authorization for the study, the researcher first conducted a pilot study or a pre-test of the questionnaire to assess the feasibility of the study and the suitability of the data collection instrument. The researcher then proceeded to conduct the study. During the research, the researcher issued the research questionnaire to the potential respondents. The researcher left the questionnaires with the respondents for them to fill-in at their convenience. The researcher then picked the questionnaires on a date previously agreed with the respondent at the time of issuance of the questionnaire.

The questionnaire took each respondent between 20 and 30 minutes to respond effectively to all the questions in the study. The questions were kept both short and precise to prevent respondent fatigue and to ensure proper understanding, on the part of the respondents of all the questions. The entire data collection process was conducted over a period not exceeding three weeks. The three-week duration for data collection was appropriate to ensure that the data collection was not rushed too much while also ensuring that the data collection did not drag on for an unnecessarily longer period.

3.6 Data Analysis Methods

This study used quantitative method of data analysis. To ensure easy analysis, the questionnaires were coded accordingly. The quantitative analysis involved both descriptive and inferential analyses. The analysis process involved the process of transforming a mass of raw data into tables, charts, with frequency distribution and
percentages to provide key answers to the research questions. Further associations between the variable were conducted by use of Statistical Package for Social Sciences (SPSS) program version 21, through which Cross-Tabulations and Correlations were conducted between and among relevant variables to permit further interpretation of the data.

3.7 Chapter Summary

Chapter Three has outlined the methodology for the study. The chapter has identified and described the research design for the study as explanatory research design. It has noted that this design facilitated the answering of the three research questions. The chapter has also defined the population for the study and identified the sampling design that was used in the study; the sampling design was convenient purposive. The chapter has also identified the sample size and the data collection methods applied in the study.

The chapter has indicated that the study used structured questionnaires to collect relevant data from the research participants. The research procedure and the intended method for data analysis has also been defined. The chapter has pointed out that a spectrum of descriptive and inferential statistics was used to present the research results and to interpret the data. These included the use of pie charts, column and bar graphs, as well as Cross-tabulations Correlations. The next chapter, Chapter Four presents the results of the study.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the study results and findings concerning the three research questions as per the questions in the questionnaire. The chapter uses descriptive statistics include, frequency tables, pie charts and bar graphs to present the study results. The chapter then applies inferential statistics particularly cross tabulations and correlations to analyze the results further. The response rate of the study was 72% (57 questionnaires were issued and 41 were returned). The study commences by providing the results of the study regarding the respondents’ biographical details.

4.2 Background Information

In the data collection instrument, the research sought to gather respondents’ background or biographical information. This part of the chapter presents and describes the results that were obtained.

4.2.1 Categorization of Respondents by Age

When asked to indicate their age, 11 respondents (26.8%) indicated they were aged between 20 and 30 years, 20 (48.8%) between 31 and 40 years, 8 (19.5%) between 41 – 50 years, 1 (2.4%) between 51 and 60 years and another 1 respondent (2.4%) between 61 and over. Table 4.1 shows the results.

<table>
<thead>
<tr>
<th>Categorization of Respondents by Age</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 30 Yrs.</td>
<td>11</td>
<td>26.8</td>
</tr>
<tr>
<td>31 - 40 Yrs.</td>
<td>20</td>
<td>48.8</td>
</tr>
<tr>
<td>41 - 50 Yrs.</td>
<td>8</td>
<td>19.5</td>
</tr>
<tr>
<td>51 - 60 Yrs.</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>61 and over Yrs.</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
4.2.2 Categorization of Respondents by Sex

Figure 4.1 is a representation of the classification of respondents by sex. Twenty-three respondents (56%) were males and 18 (44%) were females.

![Pie Chart: Categorization of Respondents by Sex](image)

Figure 4.1: Categorization of Respondents by Sex

4.2.3 Categorization of Respondents by Educational Qualification

The respondents also indicated their highest educational level. As shown in Table 4.2, 25 respondents (61%) were holders of bachelor’s degree, 6 (14.6) master’s degree, 2 (4.9%) professional degree while 8 (19.5%) indicated they had other unspecified educational qualifications.

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's Degree</td>
<td>25</td>
<td>61</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>6</td>
<td>14.6</td>
</tr>
<tr>
<td>Professional Degree</td>
<td>2</td>
<td>4.9</td>
</tr>
<tr>
<td>Others</td>
<td>8</td>
<td>19.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.2: Categorization of Respondents

4.2.4 Categorization of Respondents by Job Position or Title

Figure 4.2 shows respondents’ classification by job title or position in their firms. One respondent (2.4%) belonged to the “Top-Level Management”, 9 (22%) “Middle-Level Management”, 6 (14.6%) “Lower-Level Management” and 25 (61%) belonged to the “employee” category.

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4.2.5 Categorization of Respondents by Tenure in Farm

Figure 4.3 shows the classification of the respondent in their tenure in their respective firms. Twenty-two respondents (54%) had worked in their respective firms for 0 - 5 years, 16 (39%) for 5 – 10 years, 3 (7%) 15 – 20 years.

4.2.6 Availability of ERP System in the Firm

Table 4.3: Shows the results obtained regarding the presence of an ERP system in the firm. Two respondents (4.9%) disagreed that their firm had an ERP system, 31 (75.6%) agreed and 8 (19.5%) strongly agreed. The results are shown in Table 4.3.
Table 4.3: Availability of ERP System in the Firm

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>2</td>
<td>4.9</td>
</tr>
<tr>
<td>Agree</td>
<td>31</td>
<td>75.6</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>8</td>
<td>19.5</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3 Impact of ERP System on Financial Performance

One of the research goals was to investigate the impact of ERP system on financial performance of the firms. This part of the chapter presents and describes the results obtained in relation to the impact of ERP system on financial performance.

4.3.1 Impact of ERP on Financial Performance

As shown in Table 4.4, one respondent (2.4%) indicated that the impact was of ERP on their firms’ financial performance was “mostly negative”, 6 (14.6%) “Neutral”, 23 (56%) “Positive”, and 11 (26%) indicated that it was “Mostly positive”.

Table 4.4: Impact of ERP on Financial Performance

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly negative</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>6</td>
<td>14.6</td>
</tr>
<tr>
<td>Positive</td>
<td>23</td>
<td>56.1</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>11</td>
<td>26.8</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.2 Impact of ERP on Profitability

The respondents were asked to indicate their opinion on the impact of ERP on their firm’s profitability. Seventeen respondents (17.1%) were “Neutral”, 27 (66%) thought it was “Positive” and 7 (17%) “Mostly positive”. The results are as shown in Figure 4.4.
4.3.3 Impact of ERP on Rate of Return on Investment (ROI)

Table 4.5 shows the results of the respondents take on the impact of ERP on rate of ROI. Twelve respondents (29.3%) were “Neutral”, 22 (53.7%) thought it was “Positive” and 7 (17%) thought it was “Mostly positive”

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>12</td>
<td>29.3</td>
</tr>
<tr>
<td>Positive</td>
<td>22</td>
<td>53.7</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>7</td>
<td>17.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.3.4 Impact of ERP on Firm's Competitive Advantage

The researcher asked the respondents to indicate their opinion on the impact of ERP on firm’s competitive advantage. As shown in Figure 4.4, 7 respondents (17%) were “Neutral”, 21 (51.2%) indicated it was “Positive” and 13 (31.7%) indicated it was “Mostly positive”.

Figure 4.4: Impact of ERP on Profitability
4.3.5 Impact of ERP on Operational Costs

Table 4.6 shows the results of respondents take on the impact of ERP on operational costs. Twenty-six respondents (63.4%) thought it was “Positive”, 9 (22%) “Mostly positive” while 6 (14.6%) were “Neutral”.

<table>
<thead>
<tr>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>6</td>
</tr>
<tr>
<td>Positive</td>
<td>26</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
</tr>
</tbody>
</table>

4.3.6 Impact of ERP on Firm’s Market Share

Figure 4.5 is indicative of the results obtained on respondents take on impact of ERP on their firm’s market share. Twenty-five respondents (61%) indicated it was “Positive”, 3 (7.3%) “Mostly negative” and 13 (31.7%) were “Neutral”.

Figure 4.5: Impact of ERP on Firm's Competitive Advantage
4.3.7 Most Important Aspect of Firm’s Financial Performance Affected by ERP

The researcher asked the respondents to rate aspects of financial performance most affected by ERP systems on a scale of 1 (least important) (being 1) to 5 (most important). “Competitive advantage” had the greatest mean rating (3.93), followed by rate of ROI (3.81), then profitability (3.75). Productivity, Market share and Operational costs had mean ratings of 3.32, 2.97 and 2.94 respectively. The results are shown in Figure 4.6.

![Figure 4.6: Impact of ERP on Firms Market Share](image)

**Figure 4.6: Impact of ERP on Firms Market Share**

**Figure 4.7: Most Important Aspect of Firm’s Financial Performance Affected by ERP**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Mean Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>3.75</td>
</tr>
<tr>
<td>Support of Internal Processes</td>
<td>2.78</td>
</tr>
<tr>
<td>Enforcement of Internal Processes</td>
<td>2.88</td>
</tr>
<tr>
<td>Information Access</td>
<td>3.96</td>
</tr>
<tr>
<td>Communication</td>
<td>3.91</td>
</tr>
</tbody>
</table>

![Figure 4.7: Most Important Aspect of Firm’s Financial Performance Affected by ERP](image)
4.4 Impact of ERP on Organizational Learning

The researcher also sought to examine the impact of ERP on firms’ organizational learning. This part presents and describes the results that were obtained.

4.4.1 Impact of ERP on Decision-Making

Table 4.7 shows the results of respondents’ opinion on the impact of ERP on their firm’s decision-making process. Twenty-seven respondents (65.9%) indicated that the impact was “Positive”, 9 (22%) indicated that the impact was “Mostly positive” while 5 (12.2%) were “Neutral”.

Table 4.6: Impact of ERP on Decision-Making

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>5</td>
<td>12.2</td>
</tr>
<tr>
<td>Positive</td>
<td>27</td>
<td>65.9</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.2 Impact of ERP on Business Processes

On the impact of ERP on firm’s business processes, 2 respondents (4.9%) were “Neutral”, 31 (75%) thought it was “Positive” and 8 (19.5%) thought it was “Mostly positive”. The results are as indicated in Figure 4.7.

Figure 4.8: Impact of ERP on Business Processes

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4.4.3 Impact of ERP on Firm's Productivity

The respondents were asked to indicate their perspective on the impact of ERP on firm’s productivity. Twenty-three respondents (56.1%) indicated it was “Positive” and 13 (31.7%) “Mostly positive” while 5 (12.2%) indicated they were “Neutral”. Table 4.8 is a representation of the outcome.

Table 4.8: Impact of ERP on Firm's Productivity

<table>
<thead>
<tr>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>5</td>
</tr>
<tr>
<td>Positive</td>
<td>23</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
</tr>
</tbody>
</table>

4.4.4 Impact of ERP on Task Performance

Figure 4.8 shows the respondents’ opinions on the impact of ERP on task performance. Eighteen respondents (44%) indicated it was “Positive”, 17 (41%).” Mostly positive” while 6 respondents (15%) revealed that they were “Neutral”.

Figure 4.9: Impact of ERP on Task Performance
4.4.5 Impact of ERP on Managerial Control Process

The researcher asked the respondents to indicate their opinion on the impact of ERP on the managerial process. As shown in Table 4.9, 4 respondents (9.8%) were “Neutral”, 21 (51.2%) indicated it was “Positive” and 16 (39%) thought it was “Mostly positive”.

Table 4.9: Impact of ERP on Managerial Control Process

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>4</td>
<td>9.8</td>
</tr>
<tr>
<td>Positive</td>
<td>21</td>
<td>51.2</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>16</td>
<td>39.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.4.6 Impact of ERP on Customer Satisfaction

Figure 4.9 shows the results of the respondents’ take on the nature of impact of ERP on customer satisfaction. While 13 respondents (31.7%) were “Neutral”, 22 (53.7%) indicated it was “Positive” and 6 (14.6%) indicated it was “Mostly positive”.

4.4.7 Most Important Aspect of Firm’s Organization Learning Affected by ERP

The researcher asked the respondents to rate aspects of organizational learning most affected by ERP systems on a scale of 1 (least important) (being 1) to 5 (most important). “Employee productivity” had the greatest mean rating (3.9), followed by rate of “Business processes” (3.86), then “Decision making” (3.81). “Management control” and “Customer satisfaction” had mean ratings of 2.97 and 2.54 respectively. The results are shown in Figure 4.10.
4.5 Impact of the ERP System on Internal Process

The researcher further sought to examine the impact of ERP on the firm’s internal processes. This part of the chapter presents the results that were obtained in line with this goal.

4.4.1 Impact of ERP on the Monitoring Process

When asked to indicate their opinion on the impact of ERP on the monitoring process. Three respondents (7.3%) indicated they were “Neutral” while 25 (61%) and 13 (31.7%) indicated they thought it was “Positive” and ‘Mostly positive” respectively. The results are as indicated in Table 4.10.

Table 4.10: Impact of ERP on the Monitoring Process

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>3</td>
<td>7.3</td>
</tr>
<tr>
<td>Positive</td>
<td>25</td>
<td>61.0</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>13</td>
<td>31.7</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.2 Impact of ERP on Firm's Internal Processes

Shown in Figure 4.11 are the results when the respondents were asked to indicate their say on the impact of ERP on internal processes. Twenty-two respondents (53.7%) indicated ERP had a “Positive” impact on internal processes, 16 (39%) thought the impacts were “Mostly positive” while 3 (7.3%) were “Neutral”.

Figure 4.11: Most Important Aspect of Firm’s Organization Learning Affected by ERP
4.4.3 Impact of ERP on Access to Information within the Firm

Table 4.11 is the result regarding the respondents’ opinion on the impact of ERP on access to information. While 5 respondents (12.2%) were “Neutral”, 24 (58.5%) thought it was “Positive” and 12 (29.3%) thought it was “Mostly positive”.

Table 4.11: Impact of ERP on Access to Information within the Firm

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>5</td>
<td>12.2</td>
</tr>
<tr>
<td>Positive</td>
<td>24</td>
<td>58.5</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>12</td>
<td>29.3</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.4 Impact of ERP on Firm's Human Resource Management Process

Regarding the impact of ERP on firm’s HRM process, 16 respondents (39) thought the impact was “Mostly positive”, 20 (48.8%) thought it was “Positive” while 5 (12.2) were “Neutral”. Figure 4.13 shows the results.

Figure 4.13: Impact of ERP on Firm's Human Resource Management Process
4.4.5 Impact of ERP on Internal Communication Process

The researcher asked the respondents their take on the impact of ERP on firm’s internal communication process. While 7 respondents (17.1%) were “Neutral”, 22 (53.7%) thought it was “Positive’ and 12 (29.3%) thought it was “Mostly positive”. Table 4.12 shows the results.

Table 4.12: Impact of ERP on Internal Communication Process

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>7</td>
<td>17.1</td>
</tr>
<tr>
<td>Positive</td>
<td>22</td>
<td>53.7</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>12</td>
<td>29.3</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.6 Impact of ERP on the Firm’s Accounting Process

Figure 4.14 shows the results when the respondents were asked their opinion on ERP impact on firm’s accounting process. Five respondents (12.2%) were “Neutral’, 22 (53.7%) thought the impact was “Positive” and 14 (34.1%) thought the impact was “Mostly positive’.

Figure 4.14: Impact of ERP on the Firm’s Accounting Process
4.4.7 Most Important Aspect of Firm’s Internal Processes Affected by ERP

The researcher asked the respondents to rate aspects of internal processes most affected by ERP systems on a scale of 1 (least important) (being 1) to 5 (most important). “Information access” had the greatest mean rating (3.96), followed by rate of “communication” (3.91), then “monitoring” (3.75). “Enforcement of internal processes” and “Support of internal processes” had mean ratings of 2.88 and 2.78 respectively. The results are shown in Figure 4.15.

![Figure 4.15: Most Important Aspect of Firm’s Internal Processes Affected by ERP](image)

4.6 Cross-Tabulations of Selected Variables

The cross-tabulation analyses between different variables were conducted to examine the association between them that could further assist in understanding the impact of ERP on organizational performance.

4.6.1 Financial Performance and Productivity

A cross-tabulation analysis was conducted to examine the relationship between impact of ERP on financial performance and productivity. As shown in Table 4.11, of the 23 respondents who indicated that the impact of ERP on financial performance was “Positive”, 3 respondents were “Neutral”, 15 and 5 indicated that ERP’s impact on productivity was “Positive” and “Mostly positive” respectively. At the same time, of the 23 respondents who indicated that ERP’s impact on productivity was “Positive”, 15 respondents thought its impact on financial performance was “Positive” and another 4 thought it was “Mostly positive” however, 4 respondents were “Neutral”. More results associations are shown in Table 4.13.
Table 4.13: Cross-tabulation of Financial Performance and Productivity

<table>
<thead>
<tr>
<th>Impact of ERP on Financial Performance</th>
<th>Impact of ERP on Productivity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly negative</td>
<td>Neutral</td>
<td>Positive</td>
</tr>
<tr>
<td>Neutral</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Positive</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

4.6.2 Competitive Advantage and Customer Satisfaction

A cross tabulation analyses between the impact of ERP on firm’s competitive advantage and customer satisfaction was conducted. The analysis revealed that of the 21 respondents who thought ERP had a “Positive” impact on the competitive advantage, 14 and 1 thought that it had a “Positive” and a “Mostly positive” impact on customer satisfaction respectively however 6 respondents were “Neutral”. Also of the 22 respondents who thought that ERP had a “Positive” impact on customer satisfaction, 14 thought it had a “Positive” impact on the firms’ competitive advantage and 6 thought its impact on competitive advantage was “Mostly positive”, nevertheless 2 respondents were “Neutral”. More results associations are shown in Table 4.14.

Table 4.14: Cross-tabulation of Competitive Advantage and Customer Satisfaction

<table>
<thead>
<tr>
<th>Impact of ERP on Firm's Competitive Advantage</th>
<th>Impact of ERP on Customer Satisfaction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neutral</td>
<td>Positive</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Positive</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

4.6.3 Market Share and Customer Satisfaction

Table 4.15 shows the outcome of a cross tabulation analysis between the respondents take on impact of ERP on market share and customer satisfaction. Of the 25 respondents who thought that ERP had a positive impact on the firm’s market share, 18 thought it had a “Positive” impact on customer satisfaction while 2 thought its impact on customer
satisfaction was mostly “Positive” however 5 respondents were “Neutral”. On the other hand, of the 22 respondents who thought, that the impact of ERP on customer satisfaction was “Positive” 18 thought its impact on market share was also “Positive” and 1 thought its impact was “Mostly positive” however 3 respondents were “Neutral”. More inferences on the association can be deduced from Table 4.15.

Table 4.15: Cross-tabulation of Market Share and Customer Satisfaction

<table>
<thead>
<tr>
<th>Impact of ERP on Firms Market Share</th>
<th>Impact of ERP on Customer Satisfaction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>Positive</td>
<td>Mostly positive</td>
</tr>
<tr>
<td>Neutral</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Positive</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>22</td>
</tr>
</tbody>
</table>

4.6.4 Decision-Making and Access to Information

A cross-tabulation analysis was conducted between the results of the responses on the impact of ERP on decision-making and access to information. Out of the 27 respondents who indicated that ERP had a “Positive” impact on organizational decision-making, 4 were neutral on its impact on access to information, 17 thought it had a “Positive” impact on access to information and 6 thought its impact on access to information was “Mostly positive”. Of the 24 respondents who revealed that the impact of ERP on access to information was ‘Positive”, 17 and 5 thought that its impact on decision making was “Positive” and “Mostly positive” respectively while two were neutral. More inferences on the association can be deduced from Table 4.16.

Table 4.16: Cross-tabulation of Decision-Making and Access to Information

<table>
<thead>
<tr>
<th>Impact of ERP on Decision-Making</th>
<th>Impact of ERP on Access to Information within the Firm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>Positive</td>
<td>Mostly positive</td>
</tr>
<tr>
<td>Neutral</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Positive</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>24</td>
</tr>
</tbody>
</table>
4.6.5 Task Performance and Internal Communication

Table 4.17 is a representation of the results of the cross tabulation between the results of the respondents take on the impact of ERP on task performance and internal communication process. As is evident in the table, of the 18 respondents who thought that the impact of ERP on task performance was “Positive”, 3 were “Neutral” regarding its impact on internal communication processes, 11 thought the impact was “Positive” while 4 thought the impact was “Mostly positive”. Of the 22 respondents who thought that the impact of ERP on internal communication process was “Positive”, 11 thought that ERP had a “Positive” impact on task performance, 8 thought the impact was “Mostly positive”, while 3 were “Neutral”.

Table 4.17: Cross-tabulation of Task Performance and Internal Communication

<table>
<thead>
<tr>
<th>Impact of ERP on Task Performance</th>
<th>Impact of ERP on Internal Communication Process</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neutral</td>
<td>Positive</td>
</tr>
<tr>
<td>Neutral</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Positive</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Mostly positive</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>22</td>
</tr>
</tbody>
</table>

4.7 Correlation Analysis among Selected Variables

A correlation analysis was conducted between the dependent and the independent variables of the study to infer and understand the nature of the relationship between.

4.7.1 Correlation of ERP and Financial Performance

The value of the Pearson correlation coefficient between ERP and financial performance was $r = -0.169$, $p < 0.05$. This value is indicative of a weak negative correlation and could imply that as the use of ERP system increases the financial performance of the studied firms has declined.
Table 4.18: Correlation of ERP and Financial Performance

<table>
<thead>
<tr>
<th>ERP use in the Firm</th>
<th>Pearson Correlation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Financial Performance</td>
<td>Pearson Correlation</td>
<td>-.169</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.292</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>41</td>
<td>41</td>
</tr>
</tbody>
</table>

4.7.2 Correlation of ERP and Financial Performance

The Pearson correlation analysis was conducted between ERP and organizational learning; the coefficient value obtained was \( r = .049 \), \( p < .001 \). This result indicates that as the use of ERP systems in the firm increases, so is the level of organizational learning. The results are as shown in Table 4.19

Table 4.19: Correlation of ERP and Organizational Learning

<table>
<thead>
<tr>
<th>ERP use in the Firm</th>
<th>Pearson Correlation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Organizational Learning</td>
<td>Pearson Correlation</td>
<td>.049</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.763</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>41</td>
<td>41</td>
</tr>
</tbody>
</table>

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

4.7.2 Correlation of ERP and Internal Processes

The correlation analysis between ERP and internal processes was conducted to examine the impact of ERP on internal processes. The coefficient value obtained was \( r = .141 \), \( p < .001 \), which was indicative of a weak association between the two variables. The results are as shown in Table 4.20
Table 4.20: Correlation of ERP and Internal Processes

<table>
<thead>
<tr>
<th>ERP use in the Firm</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Processes</td>
<td>Pearson Correlation</td>
<td>.141</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.378</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>41</td>
<td>41</td>
</tr>
</tbody>
</table>

4.8 Regression Analysis

4.8.1 Regression Model Summary for ERP Use in the Firm

The researcher conducted a regression test to assess the significance and degree of the impact of the dependent variable (ERP) on independent variables (elements of organizational performance). This section provides the results of the regression analysis between ERP and financial performance, organizational learning and internal processes. The dependent variable was ERP use in the firm and financial performance, organizational learning and internal processes were the independent variables. The model’s total variability denoted by Adjusted R square value revealed that 6.8% of the variance in the model could be accounted for by financial performance, organizational learning and internal processes as indicated in Table 4.21.

Table 4.21: Model Summary for ERP Use in the Firm

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.371*</td>
<td>.138</td>
<td>.068</td>
<td>.562</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Internal Processes, Organizational Learning, Financial Performance

4.8.2 ANOVA Analysis for ERP Use in the Firm

Table 4.22 is shows that the independent variable (ERP use in the Firm) is not statistically significant F (3, 37) = .135, p < .05. that is, the model has no explanatory power. In other words, none of the independent variables help predict the dependent variable. Explaining further, there is a strong evidence that the model is useless since .135 is greater than .05. The results of the ANOVA analysis are shown in Table 4.23.
Table 4.23: ANOVA Analysis for ERP Use in the Firm

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1.868</td>
<td>3</td>
<td>.623</td>
<td>1.970</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>11.693</td>
<td>37</td>
<td>.316</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>13.561</td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: ERP use in the Firm
b. Predictors: (Constant), Internal Processes, Organizational Learning, Financial Performance

4.8.3 Regression Coefficient Analysis for ERP Use in the Firm

A Multiple regression analysis was conducted to further assess the nature of the relationships between the dependent and the independent variables. Table 4.24 is shows the results of the multiple regression analysis.

Table 4.24: Regression Coefficient Analysis for ERP Use in the Firm

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>3.015</td>
<td>1.115</td>
<td></td>
<td>2.704</td>
</tr>
<tr>
<td>Financial</td>
<td>.243</td>
<td>.111</td>
<td>.335</td>
<td>2.189</td>
</tr>
<tr>
<td>Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational</td>
<td>-.135</td>
<td>.187</td>
<td>-.111</td>
<td>-.722</td>
</tr>
<tr>
<td>Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>.074</td>
<td>.146</td>
<td>.077</td>
<td>.505</td>
</tr>
<tr>
<td>Processes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: ERP use in the Firm

The general equation for predicting the impact of ERP on performance from financial performance, organizational learning and internal processes, are;

ERP = a + bFinancial Performance

Therefore;

ERP = a + bFinancial Performance

= 3.015 + .243Financial Performance
ERP = a + bOrganizational Learning

Therefore;

\[ \text{ERP} = a + b \text{Organizational Learning} \]

\[ = 3.015 - .135 \text{Organizational Learning} \]

ERP = a + bInternal Processes

\[ \text{ERP} = a + b \text{Internal Processes} \]

\[ = 3.015 + .074 \text{Internal Processes} \]

The first equation reveals that the coefficient for financial performance is .243. This means that the model predicts that with a unit increase in ERP adoption in the firm, one should expect an increase in firm’s financial performance of by an average of .243 (all factors staying \textit{stantis paribus} due to direct relationship). The second equation reveals that the coefficient for organizational learning is -.135, which implies that one should expect a decrease of .135 in organizational learning with a unit increase in the adoption of ERP system (holding the other variables constant). Lastly, the third equation for internal process indicates that the coefficient for internal processes is .074, which implies that one should expect an increase in internal process by an average of .074 with a unit increase in the adoption of ERP systems (holding the other variables constant).

4.9 Chapter Summary

This chapter has presented the study results and findings concerning the three research questions as per the questions that were in the questionnaire. The chapter used descriptive statistics including, frequency tables, pie charts and bar graphs to present the study results. The chapter then used inferential statistics particularly cross tabulations and correlations to analyze the results further. The findings suggest that ERP systems have positive effects on the three aspects of organizational performance studied.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

Chapter Five as the final chapter of the study it provides the summary of the study, summating the purpose and the research questions of the study as well as the study key findings. The Chapter then provides the discussion of the study’s key findings, the conclusion and suggests some recommendations for progress and for further research.

5.2 Summary

The purpose of the study was to determine the influence of enterprise resource planning (ERP) system on organizational performance. The study sought to answer the following research questions, namely; what is the impact of ERP system on financial performance? What is the impact of the ERP system on organizational learning? What is the impact of the ERP system on internal processes?

The study’s research methodology was as follows, it used a descriptive research design. This is design deemed essential and appropriate in describing the relationship between ERP and organizational performance. As such, a descriptive research design permitted the researcher to collect information regarding the ERP system and to describe how it affects the performance of engineering consultancy firms. The population for the study comprised of employees of engineering consultancy firms from which 41 individuals were sampled for participation in the study. It used the stratified random sampling to ensure that every individual in every level of selected engineering consultancy firms’ workforce was represented in the study. Structured questionnaires were used to collect the relevant data over a period of one week. The study results were presented using descriptive statics while inferential statistics were also used for further analysis of data. The research used Statistical Package for Social Sciences (SPSS) program version 21 for data analysis.

The study found that the majority of the respondents thought that ERP systems had a positive impact on the financial performance of the firm. The study found that the respondents thought ERP had a positive outcome for virtually all the aspect of financial performance including the firm’s profitability, the rate of ROI, competitive advantage, the
operational costs and the firm’s market share. However, the study found that a few respondents were however not sure of the nature of ERPs impact on rate of ROI and the firm’s market share.

The study also determined a greater number of respondents considered ERP to have a positive impact on the firm’s organizational learning processes. It established that decision-making process, business process, productivity, task performance, managerial control and customer satisfaction were all positively affected by the ERP systems in their firms. Nonetheless, a significant number of the respondents revealed that they were not sure of the impact of ERP on customer satisfaction.

With regard to the impact of ERP on firms’ internal processes, the study again established that the majority of the respondents thought that the impact of ERP on the internal process was positive. The respondents indicated that ERP systems had a positive impact on the monitoring process, access to information, the process of HRM, internal communication and the accounting process.

5.3 Discussions

5.3.1 Impact of ERP System on Financial Performance

The study found that the majority of the respondents thought that ERP systems had a positive impact on the financial performance of the firm. In fact, 82.9% of the respondents thought that ERP systems somehow positively contributed to organizational performance as compared to 2.4% held a negative view and 14.6% who were neutral. This finding is not strange given that several scholars including Fosser, et al. (2008), Zeng, et al., (2012), Abugabah and Sanzogni (2009) have all argued in favor of a positive link between ERP systems and the performance of various aspects of the firm such as in terms of profitability, competitive advantage and operational costs.

With respect to profitability the study found that 83% of the respondents were of the opinion that ERP systems had improved their firm’s profitability, with the rest of the respondents (17%) being unsure of the nature of the impact. This finding corroborates earlier findings by Chtiou (2009) that about 70% of the most profitable firms and 90% of the leading firms in market capitalization have implemented ERP. It also closely relates to those studies, such as those by Abugabah and Sanzogni (2009) as well as Njihia and Mwirigi (2014) which have suggested that profitability is one of the basic indicators of
ERP performance. At the same time, the findings disconfirm studies such that done by Mahmoudi and Ahmadi (2008), which found that that ERP has no or limited impact on organizational profitability.

Besides the study established that ERP systems a greater number of the respondents thought that the impact of ERP systems on their organizations rate of ROI was positive. It found that 70.7% of the respondents held a positive view of the impact of ERP systems on organizational rate of ROI while 29.3% thought they were not sure of the nature of the relationship. Nonetheless, these findings were also confirmed by previous studies. For instance, Velcu (2015) in a study determined the ERP had a positive effect on several indicators of financial performance including; return on investments (ROI) and return on assets (ROA) profit margin, capital turnover, assets turnover and total costs. De Andres, Lorca and Gayo (2014) obtained similar results, when they examined 695 leading firms in Spain on the impact of ERP on the profitability. However, the findings are not in line with the findings by Parto, et al., (2016) who after conducting a study among some 247 firms found that firms that adopted ERP systems registered a decline in both ROI and ROA in a year after implementing the systems.

The respondents also thought that ERP systems contributed to competitive advantage and market share with 82.9% and 68.7% indicating respectively, that the impact was positive. The finding with respect to the impact of ERP on competitive advantage is opposed to earlier findings by other researchers such as Lengnick-Hall, et al., (2014) who have contended that ERP systems in themselves do not precipitate a competitive advantage unless they are combined with intellectual and social capital available within the firm. Indeed, in the present study it is difficult to say whether what Lengnick-Hall, et al., are contending is the case, this may be subject to further research. Concerning market share, very few previous studies have examined the impact of ERP on market share. Nonetheless, Abugabah and Sanzogni (2009) have contended that ERP systems help in retaining a market share is through achieving customer satisfaction.

Huang, et al., (2009) in a study to assess the impact of ERP on operational costs of firms determined that the systems led to the reduction of operation costs for the adopting firms. Kang, Park and Yang (2008) argued that ERP systems led to the reduction of operational costs through facilitation of businesses processes including information exchange and
decision-making. These findings are in line with the current study, which found that 85.4% of the respondents thought that the ERP systems led to costs reductions.

5.3.2 Impact of ERP on Organizational Learning

The study also determined a greater number of respondents considered ERP to have a positive impact on the firm’s organizational learning processes. Majority of the respondents comprising of 87.9% considered ERP systems to facilitate the decision-making process positively as compared to 12.2% who were unsure. The findings corroborate previous studies as that by Kelton, et al., (2010) which found that the implementation of ERP systems affect decision-making processes in various contexts.

Another study by Lecic and Kupusic (2013) found that ERP systems act as vital decision support system, which integrates memory and processes to perform simulations such as “what if” simulation. The ability of the ERP systems to support the decision-making process is because as Ucakturk and Villard (2013) contend they provide crucial information for product and service development, and supporting the making of vital business strategies. Furthermore, the ERP systems accord managers access to accurate, timely and complete information that support their decision-making competencies (Al-Tarawne, 2012; Nooriae, 2012).

As such, the study finding that the majority of the respondents thought that ERP systems had a positive impact on business process is easy to understand. During the study, 95.1% of the respondents thought that the systems positively contributed to business process against just 2.9% who were unsure. This finding is in line with previous studies including that by Addo-Tenkorang and Helo (2011) who after conducting a review of existing literature on ERP, found that there seemed to be a consensus among researchers that ERP systems allow adopting firms to integrate a spectrum of principle business processes for optimum performance. In a study conducted to examine the impact of ERP on organizational process of Australian firms, it was determined that the systems have improved the effectiveness of decision-making and transaction process of firms that had implemented ERP systems (Ucakturk & Villard, 2013). According to Gartner (2010), ERP systems provide firms with the ability to enhance businesses process through the integration of all the activities and function areas of a company.
The study also found that ERP systems are positive related to improved productivity within the firms with 87.9% of the respondents indicating that it had contributed positively to their firm’s productivity against 12.2% who are unsure. This finding is not strange as similar but previous studies have also found a positive association between ERP systems and productivity. Velcu (2015) after conducting a study determined a gross marginal product of ERP on productivity to be about 95%. He further contends that studies on the relationship between ERP on organizational performance revealed that ERP had a positive effect on productivity of employees in the firm.

Exact Max (2014) makes a similar observation noting that without ERP systems firms experience low employee productivity levels as employees are forced to accomplish several tasks resulting in poor performance, reduced motivation and employee fatigues. Panorama Consulting Solutions (2013) observes that a recent poll revealed that organizations world over are adopting ERP systems to reduce the workload for their employees and to ensure their optimum productivity.

Exact Max (2014) contends that ERP influences staff productivity in at least four important ways; including improved communication, reduced work-load per employee, facilitation of fact-based decision-making and elimination of duplication of tasks and data. Concerning customer satisfaction, the study found that 68.5% of the respondents were of the opinion that ERP systems facilitate the realization of customer satisfaction against 31.7% who were not sure. Indeed, while not many previous studies have examined the nature of the relationship it would be worth conducting more research on the same.

5.3.3 Impact of the ERP System on Internal Process

With regard to the impact of ERP on firms’ internal processes, the study again established that the majority of the respondents thought that the impact of ERP on the internal process was positive. The study found that the majority of the respondents, 92.7% indicated that ERP systems contributed positively to the monitoring process in their firms while just 7.3% were unsure. Previous researchers support the study finding regarding impact of ERP systems on the monitoring process.

For instance, Shuhaimi, et al., (2016) argues that ERP systems are important in the monitoring of organizational process and performance. Earlier, Mustapha and Ismail
(2013) conducted a study to examine the impact of IT on monitoring and found that firms with an integrated information system experienced significantly lower costs for monitoring. Shuhaimi, et al., (2016) argues further that ERP system facilitates the monitoring of budgeting and planning functions to ensure that costs do not exceed the budget. Mustapha and Ismail (2013) explain that the ERP system allows the firm to store information in one place and make it easy for managers and other employees concerned with monitoring and evaluation of the firms’ progress to obtain such vital information.

ERP systems have also been found to have a positive impact on several internal processes of the firm. The greater number of respondents, 92.7% indicated that ERP systems affected internal processes positively with just 7.3% stating they were uncertain of the nature of the association. This finding is corroborated by some previous studies such as those conducted by Hsueh-Ju, et al., (2012), Spathis and Constantinides (2014) have found that ERP facilitates the accounting process in firms that have adopted enhancing efficiency and speed of these processes. Njihia and Mwiregi (2014) explain that these systems support a spectrum of activities in modern organizations including sales, billing, marketing, human resource management, quality control and production thus ensuring general performance of the organization through facilitation of these pertinent processes. Spathis and Constantinides (2014) on the other hand argues that the essence of a complete ERP is not only to automate data and provide a platform for sharing it across the firm but also to automate the business process and produce real-time data.

Access to information and communication are other critical areas in which ERP systems have great positive impacts, in the study, 92.7% and 83.9% of the respondents indicated that they thought ERP systems had positive impact on the two respectively with just 7.3% in the first case and 17.1 in the second face indicating they were not sure. The information available through the ERP systems include such things as decision made, meetings and records customer feedback, complaints and satisfaction (Shuhaimi, et al., 2016; Lee, et al., 2004). As such, every member of organization depending on their clearance level or the kind of information they are allowed to access is able to access the information they need to perform their tasks. With respect to communication ERP, systems facilitate information sharing between and across departments as well as with external stakeholders.
The study found that ERP systems are vital instruments in the accounting process with 87.8% of the respondents indicating the ERPs facilitate the accounting process. This is probably because specialized ERP systems are used to conduct various accounting calculations in the accounts or sales departments and this results in greater efficiency in the process. ERP systems are also vital for the HRM process as it allows for the collection and storage of information regarding employees’ background.

5.4 Conclusion

5.4.1 Impact of ERP System on Financial Performance

The impact of ERP on the financial performance of the engineering firms is mostly positive. This is mainly because the vital aspects or measures of financial performance are affected positively by ERP systems. ERP systems for instances facilitate the ROE, ROA, ROI and stakeholder satisfaction, all which precipitate greater performance. Moreover, the most important contribution of ERP systems on financial performance is that brings efficiency in the performance of finance related processes the firm. This in turn translate to improved sales and profitability, reduced operational costs implying that more money is retained in the firms and increased market share meaning the more people are able to access and purchase the firms services. Furthermore, the increase in profitability, market share, cost reduction gives the firm greater competitive advantage especially against the non-adopters of the ERP system.

5.4.2 Impact of ERP on Organizational Learning

The process of organizational learning is a principal beneficiary of the ERP systems in a firm that adopts the system. The impact of ERP systems on the management of information within the firm has direct benefits in the facilitation of task performance, customer satisfaction, decision-making and managerial control. The ERP systems facilitate access to vital information that is critical for managers to make prompt and informed decisions, which not only allow for effective response to the dynamics of the business environment but allow for greater efficiency in the sharing of information in task performance and the performance of other business process including customer relations. The ability of the ERP systems to accord the management timely information further
accords the business a competitive advantage in terms of information sharing and decision-making, which add to the general organizational performance and efficiency.

5.4.3 Impact of the ERP System on Internal Process

ERP systems, by their nature facilitate the internal process within the organization, which facilitate the efficient and timely performance of tasks. The systems are capable of facilitating information storage, access and transmittal in real time. The ERP systems also have the ability to facilitate other process including the accounting processes and access to both financial and non-financial information. Moreover, the ERP systems are capable of assisting information gathering and sharing both horizontally between members of department and vertically between members of the department and their respective leadership or top-level management. The impact of the ERP systems on the organizational performance in terms of facilitating internal process is therefore obvious.

5.5 Recommendations

5.5.1 Recommendations for Improvement

5.5.1.1 Impact of ERP System on Financial Performance

The management of the engineering consultancy firms in Kenya as well as the firms in other industries in Kenya needs to appreciate the value of ERP systems on organizational performance and adopt the systems as part of their performance strategy. They must embrace ERP systems not only because it is currently being used by their peers but more so for its value in facilitating organizational survival, profitability, market share and competitive advantage. However, the adopting firms should adopt the systems strategically and gradually to ensure that they add only to efficiency and performance and do not generate additional operational costs. In other words, firms adopting the ERP systems must ensure that the adoption is undertaken in areas that are essential as far as organizational performance is concerned.

5.5.1.2 Impact of ERP on Organizational Learning

The management of the engineering consultancy firms in Kenya as well as the firms in other industries in Kenya should appreciate the value of ERP systems on organizational learning process. Similarly, as part of their performance strategy they must adopt ERP
systems as a strategy of enhancing firm’s overall performance through ERP systems potential for the enhancement of business processes such as decision-making, productivity, task performance and managerial control. Additionally, the ERP systems adopted should also be customer oriented and should be aimed at enhancing firm-customer relations with the goal of achieving greater customer satisfaction. In general, the management should appreciate the ability of ERP systems to enhance information management within the firm.

5.5.1.3 Impact of the ERP System on Internal Process

The internal processes are vital determinants of organizational performance hence firms should adopt ERP systems due to their potential to generate a positive impact on firms’ internal processes. The management of the engineering consultancy firms in Kenya and the firms in other industries should adopt ERP systems since these systems have the ability to facilitate the internal processed such as internal access to vital information, internal communication (both horizontal and vertical) and the accounting processes. They should appreciate the potential of ERP systems to generate efficiency in these processes, which has a direct impact on organization performance.

5.5.2 Recommendations for Further Research

There is need for further research to investigate why despite the relative positive impact that ERP systems have no the performance of the engineering consultancy firms in Kenya, few firms have adopted the systems. Furthermore, while the study has found that ERP systems have positive impact on financial performance, organizational learning and internal processes, there is need for a focused research in a specific area of the three to facilitate how exactly ERP facilitates performance in that area among engineering consultancy firms in Kenya.
REFERENCES


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APPENDIX 1: LETTER OF INTRODUCTION

Wanyoike Florence
Mobile Number;
+254 – 728872343
Email Address;
flochiru@gmail.com
2017.

Dear Sir/Madam

RE: LETTER OF INTRODUCTION

I am a graduate student at United States International University – Africa (USIU-A) currently pursuing Degree of Master of Science in Organizational Development (MOD). I am currently developing my thesis in partial fulfillment of the requirements for the degree program. My thesis is entitled “THE INFLUENCE OF ENTERPRISE RESOURCE PLANNING SYSTEM ON ORGANISATIONAL PERFORMANCE: CASE STUDY OF KENYAN ENGINEERING CONSULTANCY FIRMS”

As the topic suggests, I have picked your organization as one in which I would like to collect my data. This letter is to request for your express permission and support to conduct the study among your employees.

I affirm to adhere strictly to all the ethical guidelines regarding research. I also a vow to university regulations guiding research. The research will not have any negative repercussions on the organization or participating employees.

Thanks in advance for your consideration.

Yours Faithfully,

Florence Wanyoike

(Sign)
APPENDIX 2: QUESTIONNAIRE

THE INFLUENCE OF ENTERPRISE RESOURCE PLANNING SYSTEM ON ORGANISATIONAL PERFORMANCE

Date: ___________________

Kindly read each query cautiously and respond to it the best of your ability, where necessary mark [√] the boxes provided. There are no accurate or inaccurate responses; your answers are crucial to the study. All replies to this survey are completely confidential. All identifying information if any will be removed during the data entry and analysis; however, you are advised to respond anonymously. The questionnaire will take an average of 20-30 minutes to fill.

*Thank you for your participation in this study.*

PART 1: BIOGRAPHICAL INFORMATION

1. Age

[ ] 20 -30  [ ] 31- 40  [ ] 41-50  [ ] 51-60  [ ] 61 and over

2. Gender

1. Male  [ ] 2. Female  [ ]

4. Educational Qualification

1. Bachelor’s Degree  [ ] 2. Master’s Degree  [ ]
3. Professional Degree  [ ] 4. Others  [ ]

5. Job Position / Title (Tick appropriate title)

[ ] Top Level Management  [ ] Middle Level Management
[ ] Lower Level Management  [ ] Junior Employee

6. How long have you worked in your organization?

…………………………… (No. of years)

7. Has your firm adopted an ERP system?

[ ] Not Sure  [ ] Strongly Disagree  [ ] Disagree

[ ] Agree  [ ] Strongly agree
PART II: Impact of ERP System on Financial Performance

1. Where necessary answer or complete the following questions and statements with choices provided (For each statement pick just one response).

<table>
<thead>
<tr>
<th>Statements/questions</th>
<th>Mostly negative</th>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
<th>Mostly positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. The impact of ERP system on your firm’s financial performance has been…</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. The impact of ERP system on your firm’s profitability has been…</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. The impact of ERP system on your firm’s rate of return on investment (ROI) and return on assets (ROA) has been…</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. How do you perceive the influence of ERP system on your firms’ competitive advantage?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v. What is the impact of ERP adoption on operational costs for your firm?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi. The impact of ERP on your firm’s market share has been…</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. In the table are some of the aspects your organization’s financial performance affected by Enterprise Resource Planning or ERP systems. Please rank in order of importance (with 1 being least important and 5 being most important)

<table>
<thead>
<tr>
<th>Aspects of financial performance</th>
<th>Least Important</th>
<th>Most Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Profitability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Competitive advantage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. Operational Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. Market Share</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v. Productivity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PART III: Impact of the ERP System on Organizational Learning

1. Where necessary answer or complete the following questions and statements with choices provided (For each statement pick just one response).

<table>
<thead>
<tr>
<th>Statements/questions</th>
<th>Mostly</th>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
<th>Mostly</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. How do you perceive the effect of ERP system on decision-making process in your firm?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. What is the influence of the ERP system on your firm’s business processes?</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>iii. The impact of ERP system on your firm’s productivity has been…</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iv. What has been the impact of ERP systems on your task performance in the firm?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>v. How do you perceive the effect of ERP system on managerial control process in your firm?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi. The impact of ERP systems on customer satisfaction has been mostly…</td>
<td></td>
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</tr>
</tbody>
</table>

2. In the table are some of the aspects your organization learning process affected by Enterprise Resource Planning or ERP systems. Please rank in order of importance (with 1 being least important and 5 being most important)

<table>
<thead>
<tr>
<th>Aspects of learning process</th>
<th>Least Important</th>
<th>Most Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decision-making</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Businesses processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Individual staff/employee productivity</td>
<td></td>
<td></td>
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<tr>
<td>4. Management control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Customer satisfaction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PART IV: Impact of the ERP System on Internal Processes

1. Where necessary answer or complete the following questions and statements with choices provided (For each statement pick just one response).

<table>
<thead>
<tr>
<th>Statements/questions</th>
<th>Mostly</th>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
<th>Mostly positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. The impact of ERP system on your firm’s monitoring process have been…</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ii. What would you say has been the impact of ERP system on your firm’s internal processes?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iii. What has been the impact of ERP systems on access to information in your firm?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iv. What would you say has been the impact of ERP system on human resource management process in your firm’s?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>v. The impact of ERP system on communication within your firm has been…</td>
<td></td>
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</tr>
<tr>
<td>vi. What has been the impact of ERP systems on the accounting process in your firm?</td>
<td></td>
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</tr>
</tbody>
</table>

2. In the table are some of the aspects your organizational process affected by Enterprise Resource Planning or ERP systems. Please rank in order of importance (with 1 being least important and 5 being most important)

<table>
<thead>
<tr>
<th>Aspects of learning process</th>
<th>Least Important</th>
<th>Most Important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1. Monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Support of internal processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Enforcement of internal processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Access to information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Communication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

END