

**THE IMPACT OF E- PROCUREMENT ON THE OPERATIONAL  
PERFORMANCE OF PARASTATALS IN THE MINISTRY OF ENERGY AND  
PETROLEUM IN KENYA**

**BY**

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## **DECLARATION**

### **a) Student Declaration**

This project is my original work and has not been presented for any award of Degree in any other University or institution for any other purpose.

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This research project has been presented for examination with my approval as the University Supervisor.

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## **DEDICATION**

I dedicate this project to my entire family for their understanding during my absence while  
doing this work.

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## **ABBREVIATIONS AND ACRONYMS**

<b>ERC</b>	Energy Regulatory Commission
<b>GDC</b>	Geothermal Development Cooperation
<b>GoK</b>	Government of Kenya
<b>IFMIS</b>	Integrated Financial Management Information System
<b>IT</b>	Information Technology
<b>KPLC</b>	Kenya Power and Lighting Company Limited
<b>MoE</b>	Ministry of Energy
<b>PFMR</b>	Public Financial Management Reform
<b>PPDA</b>	Public Procurement and Disposal Act
<b>PPOA</b>	Public Procurement Oversight Authority
<b>SPSS</b>	Statistical Package for the Social Sciences



## ABSTRACT

The study was about the impact of e-procurement on the operational performance of parastatals in the ministry of energy and petroleum in Kenya. The study's objective was to determine the impact of e-procurement implementation on the operational performance of parastatals in the ministry of energy and petroleum. The study targeted the management of the parastatals and administered semi-structured questionnaires to them. Since the collected data was mainly quantitative, descriptive statistics techniques such as means, standard deviations and frequencies were used to analyse the data. The study output was reported using figures and tables. The researcher used regression analysis and Pearson Moment Correlation to establish the effect of e-requisition, supplier selection, e-tendering, tender evaluation, supplier relationship management and procurement record management on the operational performance of the parastatals in the respective ministry. The study affirmed that all the parastatals in the ministry of energy and petroleum have adopted e-procurement and are committed to equipping their staff with the necessary competencies and skills to ensure the success of their e-procurement projects. This level of commitment stems from statutory requirements for state corporations to do all their procurements online. The parastatals in the ministry of energy and petroleum have implemented e-requisition, supplier selection, e-tendering, tender evaluation, supplier relationship management and procurement record management to very great extent. The study also concluded that there is strong relationship ( $R= 0.710$ ) between e-procurement implementation and operational performance of parastatals in the energy and petroleum ministry and that e-procurement implementation influencing 50.4% of the total variance in the operational performance of parastatals in the ministry of energy and petroleum. Further, the study concluded that e-requisition, supplier selection, e-tendering, e-tender evaluation, supplier relationship management and procurement record management on the operational performance of parastatals in the ministry of energy and petroleum have a positive and statistically significant effect on the operational performance of parastatals in the ministry. The study recommended that all the parastatals should set aside adequate budget for regularly training employees on e-procurement implementation and usage. The main limitation of the study was that respondents from the parastatals in the ministry of energy and petroleum were busy in their areas of work which delayed the completion of the data collection process. The researcher handled this challenge by allowing the respondents adequate time to fill in the questions. The fact that e-procurement implementation influences 50.4% of the operational performance of parastatals in the ministry of energy and petroleum implies that there are other factors that greatly influenced the remaining 49.6% of the operational performance of the parastatals. Therefore, there is need to establish these other factors through further studies. The findings of this study could not be generalized to private firms. The researcher therefore recommended that a similar study should be conducted among public sector firms to be used for comparative purposes.

# **CHAPTER ONE: INTRODUCTION**

## **1.1 Background of the Study**

The most advanced application of electronic commerce commonly referred to as E-commerce is termed as E-procurement. This practice has been embraced by most firms seeking to improve their business processes (Aberdeen Group, 2001). Robinson and Kalakota (2000) have proposed benefits in measurement and single data entry, improved efficiency and cost saving and cost saving as the factors that result to growth in the field of e-procurement. The use of internet to procure goods is referred to as E-Procurement. Both cost and time are reduced significantly through the use of E-procurement. Quinnox (2012) defines e-procurement as a highly comprehensive phenomenon that involves the formulation of strategic initiatives that can be used to reorganize of the entire process of purchasing. According to Kabaj (2008), an effective public procurement system is essential for the growth of the economies of African countries and is a good sign of their national commitment to utilize their public resources so as to generate the best output out of them. Furthermore, studies by Kakwezi and Nyeko (2010) propose that public entities' procurement departments in Uganda have inadequate information with regards to the procurement procedure, resource consumptions, inputs, outputs, and the outcomes, and thus are unable to determine their effectiveness and efficiency.

Many reforms have been undertaken in Kenya's public sector public procurement commencing with Public Procurement and Disposal Act 2005 which led to the formation of the Public Procurement Oversight Authority. This was preceded by the formation of e-procurement for the public sector. The e-government strategy paper 2004 described e-procurement as a medium term goal which was to be put into action by June 2007, but was never completed in time since the process was slow. The challenges associated with manual processes are; poor data retrieval, high costs, poor data storage capacity, slow and inefficient (Malela, 2010).

### **1.1.1 E-Procurement**

Electronic procurement can be defined as the purchase of goods and services that enable the business to run its daily activities or the automation of business processes and procedures with the goal of saving business costs (Malcolm, 2001). It can also be defined as any business

transaction that occurs in cyberspace, whether it involves transactions between different business entities or businesses and the consumers. Davila et al., (2003) defines E-procurement as the application of electronic techniques in all stages of purchasing right from the identification payment to contract management. E-procurement entails six processes: web-based enterprise resource planning, e-tendering, e-maintenance repair operate, e-sourcing, e-informing (de and e-reverse auctioning/e-auctioning Boer et al.,2002). Among the benefits of adoption of e-procurement are reduction of transaction costs associated with purchasing due to more efficient purchasing process, less mistakes and less paper work (Brandon-Jones and Croom, 2007). According to Neef (2001), electronic procurement systems are of great significance in the growth of purchasing processes. Electronic procurement are important in the organisation purchase process since they lead to price reductions and efficiency gains (de Boer et al, 2002), major opportunity for the improvement of internal service and the conditions purchasing function and enhanced collaborative relationships (Croom& Johnston, 2003).

The most commonly adopted tools in public procurement sector include; e-RFQ, e-Tendering e-Catalogues, e-Auctions and e-Invoicing . All these tools and others such as complete marketplace technologies were advanced by major participants in the field of e-Procurement such as Commerce One, Ariba, SAP and the Oracle. Despite the different sizes and shapes of the market e-Procurement systems, the basic procurement process is similar across the public sectors and can be solved using straight forward technology in the automation of standardized processes (NEPP, 2007).

Globally, public sector E-procurement is being exercised. Countries for instance Finland, Norway, Denmark, the United Kingdom, Ireland, Spain, Portugal, Germany, Singapore, Italy, Brazil and some regions Australia and USA have adopted e-procurement. Majority of the nations are at the implementation stage of E-procurement. The diffusion pattern of e-procurement differs among countries. The Danish government has for instance adopted a private e-market to see the growth of e-procurement (Efkous 2003). In Spain, the public administration ministry is actively involved in defining functional, organizational and technical specifications (Juan, F. M. M 2002). In Germany, the government has committed 4.5 million Euros in the development of a “flag ship” project which is a public procurement tool applied in Europe (Goerdeler, A. 2003).

### **1.1.2 Operational Performance**

Operational Performance (OP) is the process of aligning units of business in an institution to enhance the combine working in order to attain major business goals (Sudarsana, Sivarami & Mohan, 2015). Schapper, Malta and Diane (2006) noted that the importance of procurement reform in public sector for most upcoming countries is progressively more valued by global agencies of development, in recognition to the socio-economic costs and limitations in governance of public operations are comprised by an increment in sovereignty threats that brought about by foreign investment representation (Kishor, Sajeev & Callender, 2013). Procurement public contributes in reduction of expenditure and encourages growth of economy an increase in attention to policy.

According to Agaba and Shipman (2007) frameworks of public procurement found in first and third world economies are acknowledged to be typified through unsteady pressure among the expectations of public accountability and transparency, as well as efficient and effective management of resources. Muthoni (2010) alluded that any organization which does not adapt good operational performance practices is disadvantaged given that it notachieve its goals and objective. Koskey (2010) further states that as much as the government has set up rules and regulations on how procurement should be done in all government institutions the need to have a good managerial good in order for the effective of the procurement function is more than important for the procurement process in the organization than ever before.

The four key indicators cited to determine performance of operations are: Firstly, improvement of operations – streamlines, simplifies and standardizes. Operational performances are efficient economy’s foundation. Inefficiency as well as lack of value addition in activities should be avoided (Kishor, Sajeev & Callender, 2013). Secondly, productivity tracking – what is tracked gets done. This is carried out through different avenues; however, technology advancement has resulted to an automated production being tracked in the current software invention (Bakker &Schaufeli, 2008). Thirdly, engineered standards - a goal is important to all. Standards that are engineered can be created via studies in motion and time as an objectivity instrument to estimate performance of individual. Fourthly, programs on incentive performance - Pay-for-Performance and Rewards, this can be done through different avenues to performance rewards. Incentives promote great level performance. Nature of human being is that they seem to bring out their utmost results.

Programs for rewards tend to inspire workers as they feel valued for their work and this leads to high performance (Van Weele, 2010).

### **1.1.3 Parastatals in the Ministry of Energy and Petroleum in Kenya**

Kenya's energy policy has seen growth through acts of parliament, regulations and sessional papers. The sessional paper No. 10 of 1965 was the first policy and was commonly defined as the 1965 electric power act (CAP 314) was enacted to regulate the power sector. The sessional paper was No. 1 of 1986 was the second which led to the formation of the price and monopoly control department in the finance ministry to regulate pricing of commodities. The following are the government agencies under the ministry of petroleum and energy: The energy regulatory commission, the energy tribunal, KPLC, rural electrification authority, KenGen, geothermal development company, Kenya nuclear electricity board, Kenya electricity Transmission Company, independent power producers, Kenya pipeline company and national Oil Corporation of Kenya.

The mission of the energy policy in Kenya is to facilitate provision of sustainable, clean, secure, reliable and reasonably priced energy services at the minimal cost while conserving the environment at the same time. This policy is vital for the country as it steers to attain 2008 vision 2030. The energy act no. 12 of 2006 and sessional paper no. 4 of 2004 realigned the energy sector so as to improve the sectors' performance; the energy act and the sessional paper were established to change the energy sector and increase power accessibility across the country. This policy has allowed for increased private participation in the expansion of the sector while attaining better energy services' delivery at the same time. The main aim of this reform was to enable the sector to achieve its mission of providing clean, affordable, sustainable, secure and reliable energy services using the minimum cost while without causing environmental degradation. Private sector involvement eradicates monopolistic tendencies of companies owned by the state (Kenya national energy policy, 2012)

## 1.2 Research Problem

So that organizations remain competitive in the modern competitive business environment, it is important that they embrace information communications technology. E-procurement has been identified as one of the Supply-side activities where innovations that are information systems enabled are likely to accrue major benefits for both public and private sector organisations (PPOA, 2013). Different factors determine the success of any e-procurement application. Organizations experience varying success levels upon e-procurement technologies' implementation. This diversity of outcomes regarding the use of e-procurement systems has motivated different researchers to undertake studies to point out the cause of the diversity.

The e-government strategy paper (2004) proposes one means of attaining medium term objectives as through the implementation of e-procurement findings. The study revealed that public sectors' procurement processes have not been fully utilized with the only use of internet being utilized for web- browsing and e-mails (PPOA, 2013). The slow growth rate of public sector e- procurement adoption in Kenya has led to many challenges in Kenya's procurement sector. Despite the several Public Procurement reforms; poor performance is still being experienced as evidenced by lack of policy on e-procurement, non-compliance with the Act, overspending, slow with a lot of bureaucracy, poor project monitoring, poor planning, eradication of wastage and corruption, need for more transparency and accountability, inadequate training of the procurement officers and addressing collusion in the tender evaluation and award (Mutiga, 2005). The e-procurement implementation in Kenya's public sector has raised concern on the factors that affect e-procurement implementation in Kenya's public sector specifically the Kenyan government ministries.

Vaidya, Callender and Sajeev (2006) examined the major factors affecting the adoption and success of e-procurement Kenya's public sector. It was concluded from the study that the issue of e-procurement should be examined further and deductions on the factors that constitutes the ideal CSFs and establishment of success measures for e-procurement initiatives to assist in the development of e-procurement across the economy. Another study was carried out by Panayiotou, Gayialis, and Tatsiopoulou (2011) on analysis of the procurement processes of the Greek government. The study identified tangible benefits that included reduction in supply, tender costs and savings in lead time. The intangible benefits encompassed organization and process improvements. The study was done by Yen and Ng

(2013) on the impact of Electronic trade on Purchasing. In their study they concluded that information technology had been implemented to promote worldwide competitiveness of various industries. They argued that procurement migration process from manual to internet use is determined size and nature of the firm as well as the companies' requirements.

Mambo (2015) conducted a survey on factors affecting the adoption of E-procurement in the national government and noted that executive team is dedicated to e-procurement implementation; e-procurement is influenced by information technology, staff training and supplier capacity. Muhia (2015) did a research on implementation of e-procurement and procurement performance at Kenya Revenue Authority. He found that e-procurement positively influenced procurement performance at KRA. E-procurement is crucial because it transformed the formerly looked down traditional function into competitive 6 tool. He noted the internet through e-procurement had made e-procurement effective and efficient thus influencing procurement performance at KRA. Despite the Government's incremental and sustained efforts in stipulating ICT strategies in the Public Financial Management Reforms sector so as to boost transparency, effectiveness and efficiency, it's evident that the e-procurement implementation is still lagging. However, no study has examined the impact the impact of e- procurement on the performance of energy sector in Kenya. The studies above show that country-specific differences exist in e-procurement adoption. Due to these variations; the study poses the question what is the impact of e-procurement on the performance of parastatals in the ministry of energy and petroleum in Kenya?

### **1.3 Research Objective**

- I. To determine the extent of e-procurement implementation of the Parastatals in the Ministry of Energy and Petroleum in Kenya.
- II. To explore the effect of e-procurement implementation on the operational performance of Parastatals in the Ministry of Energy and Petroleum in Kenya.

### **1.4 Value of the Study**

The study would provide empirical basis for the formulation of policies and strategies for developing e- procurement guidelines on the energy sector in Kenya.

The outputs from this study form a critical base with regard to establishing of distinct procurement performance standards; guidelines and procedures that provided decision-

makers in the procurement sector with objective and unbiased information with regards to the performance of the procurement department.

The study seek to enrich the existing literature and serve also as an avenue for further studies by forming a strong and rich source of information meriting substantive publication in academia. There is no doubt the result contributed to the existing theories on e-procurement.



## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

In this chapter the researcher review related literature focusing on the impact of e-procurement on the performance of parastatals in the Ministry of Energy and Petroleum in Kenya and also defined some basic concepts in line with the study objectives.

### **2.2 Theoretical Literature Review**

The theories employed in theoretical framework for study are advanced in this section. This study seeks to examine the impact of e- procurement on the performance of energy sector in Kenya as postulated by the resource based theory.

#### **2.2.1 Resource Based Theory**

This theory argues that better performance and sustainable competitive advantage by company could be attained by exploiting valuable, imperfectly imitable, rare and non-substitutable resources (Hart, 1995). A firm with valuable resources as a higher capability of utilizing available opportunities and reduce all forms of threat that exist in the external environment. A resource that is possessed by only a few firms is referred to as a bundle or rare resource. A Bundle of resources or non-substitutable resource is one that is hard for a competing firm to produce an equivalent resource. A bundle of resources or an imperfectly imitable resource is one that is hard to imitate or that which can be replicated at a high cost (Hart, 1995). Daft (1983) lists these resources to entail all capabilities, assets, and organizational processes, firm attributes, information and knowledge possessed by a firm (Hart, 1995).

Peteraf and Helfat (2003) were of the opinion of dynamic capabilities, which implies that resources only have the capability of increasing the value of the firm if they are utilized in a manner takes into consideration the dynamism of the external business environment ( Ireland, Sirmon &Hitt 2007). Resources are described as either tangible or intangible (Mentzer, Bobbitt & Min, 2004). The most frequently discussed intangible resource firm resource is knowledge (Mentzer et al., 2004). The agreement between sellers and buyers concerning the reduction of lead time in conducting business activities takes time, but such learning is

strongly directly related to how the supplier perform and how costs was minimized in supply chain relationships (Carter, 2005).

The RBV theory has been subjected to a lot of criticisms for the past 20 years in which it has been in existence. However, in response Wagner (2006) contends that the prominent source of superior performance is causal ambiguity. This situation makes it difficult for firms since they cannot manage the resources which they are not aware about their existence though it might be necessary for survival in the dynamic environment which comes with the risk of converting prior strengths into weaknesses. Wagner (2006) contends that technological innovations are defined as the desirable practices acquired from efficient technologies. Desirable practices support the technological functions in the delivery of services of high quality and sustain superior performance therefore technological innovation frameworks are resources that fall well within RBV because it leads to improved service delivery and performance.

### **2.2.2 Technology Acceptance Model**

The Technology Acceptance Model (TAM) was advanced by Davis (1993). This model seeks to explain the factors the level of acceptance and adoption of new information technologies. The TAM model proposes two specific variables that determine the attitude of the users towards the use of information technology and the actual system application: actual ease of use relative to new features of the information system and perceived benefits.

Usefulness can be described as the degree to which the use of a system enhances a person's performance and the simplicity of use is described as the extent to which the users presume that the benefits accrued from the use of the system exceed the efforts applied. Before the use of e-procurement, the administrators need to analyze the attitude of the employees regarding the new information technology so as to prevent implementation failures and poor utilization of resources. Administrators have to provide services that are safe and of high within the constraints of limited resources. Public organizations have embraced computers, information systems and technologies which have resulted to performance enhancement through provision of better communication, promoting innovation and efficiency and access to information and knowledge (Dewett& Jones, 2001).

A properly designed policy and process is important for the pre-conditions of the implementation of e-procurement. Success in the implementation of e-procurement is however dependent on the users' acceptance. E-procurement entails organizational changes and mainly affects the employees in the procurement unit (Kaliannan, Raman, Dorasamy & Awang, 2008). The move from the traditional procedures and its replacement with new procedures that are dependent on the use of IT entails significant changes. The growth of the e-procurement process is greatly influenced by resistance to change and the acceptance user is not considered (Rahim, 2008).

### **2.3 E-procurement Process**

E-procurement is the use of electronic means in the acquisition of goods and services (Panayiotou, Tatsiopoulou & Sotiris 2004). Procurement services can be defined in three ways: direct procurement, sourcing and indirect procurement (Degan & Minahan, 2001). Indirect procurement entails the selection, purchasing and supplies' management for day to day execution of business activities. Supply chain management, also referred to as direct procurement entails the purchase of goods and planning of processes so as to manufacture complete products. According to Kim & Shunk (2003), sourcing can utilize to both direct and indirect procurement and entails four components (information, negotiation, settlement and after-sales)

Electronic procurement does not function as an independent strategy but entails the application of electronic means to execute the tendering process (Degan & Minahan 2001). The introduction of e-procurement has completely transformed the buying process due to elimination of errors and lost time resulting from retyping of data and the exchange of paper (Egbu, Tookey & Vines, 2004). Public and private sector organizations have adopted Information Technology (IT) systems to automate and streamline all the procurement processes over the recent past. E-Procurement systems have attracted massive attention. In the past few years which the sharp recent advancement in e-Procurement has raised intense debate, (Koorn, Mueller & Smith, 2001; Dai & Kauffman, 2001), it is therefore evident that the use of internet in e-procurement is more beneficial as opposed to earlier inter-organizational manual tools and processes.

Procurement staff must exhibit the appropriate competence to use the software that enables the organizations to apply management skills in the management of activities such as, value

addition and distribution chain in the company (Beth, 2003). This type of technology is dependent on real-time databases. ERP systems allow the overall management and the procurement management itself with the capability to produce consistent, steadfast and timely information that is essential for the achievement of the goals of the organization.

According to Novack& Andraski (1996), people are the most essential element in the concept of logistics marketing." Daugherty (2000) proposed: "To take supply chain performance to the next level, companies have to tap into this human element more intensively. Many companies have pushed hard on technological and infrastructure improvements and investments. The next wave of improvements and investment should center on the people who manage and operate the supply chain."

Whereas e-Procurement involves changes in traditional procurement practices and new technologies, an e-Procurement initiative success (WB, 2003) is dependent on the intensity of training advanced to the staff. End-users acknowledge the importance of the e-Procurement system upon understanding its operational functionalities. Therefore, training needs be highly considered, together with the importance of the public sector agencies to identify the relevant skills needed by all the parties involved in the procurement process (ECOM, 2002).

It is clear that employees are greatly involved in the utilization of e-procurement and training, skills possessed and competencies may have an impact on the adopted and implementation of e-procurement in the organization. The human element is of great importance in the business environment since organizational objectives for instance e-procurement cannot be attained in its absence.

## **2.4 Operational Performance Measurement**

As observed by Huse and Gabrielsson (2004), the implementation of a strategy must be done as planned improve the general performance of operations successfully, this should be followed by abandon of the thought by executives that lower-level managers tend to have similar strategic thinking and its execution of fundamental principles, as well as the necessity. Reforms of governments are based on the perception that procurement in public sector is a tool which is effective in following a varied range of social objectives. Often, debates on policies tend to incline on the expansion of the line of goals instead of assessing the compatible potentiality of the approved objectives.

According to Brennan (2007) measuring performance of operations in the procurement department is key to an increasing vital function of supply chain in an economic downturn. Raw material together with service cost reduction enable organizations to have a competitive advantage on the prices of end goods to thrive well in competitive business world. The key challenge is that the solution has to be gotten before going to issue of compatibility (Cornelia, Muhumuza, & Basheka, 2010).

Operational performance has a significant impact on organizational performance therefore organizations need ways of assessing performance of its operations function and operations management. Operational performance measures include customer satisfaction, quality, speed of delivery, productivity, flexibility, cash flow, market share, innovation and learning. Quality is consistent conformance to customer expectations. Quality is a fundamental measure since it's a major influence on customer satisfaction and loyalty. Speed of delivery is critical in choosing goods and services for customers and its' greatly affected by speed of decision making and flow of materials and information in all operations involved in product or service production, (Slack et al., 2010).

Flexibility is a measure of how a firm can vary its operations activities to cope with unexpected circumstances and offer individual attention and it determines the agility of firm operations which saves time, speeds response, and ensures dependability. Productivity is a measure of firms' operations activities ability to reduce cost of inputs while maintaining level of its output which reduces operations cost, increases firm profitability and reduces cost to customers, (Slack et al, 2010). Customer satisfaction is an overall measure of how firm's operations produce products and services that surpass their consumers' desires and expectations. Its critical determining market shares and cash flows and its' affected by quality, flexibility, speed and productivity of firm operations, (Kumar et al., 2010).

## **2.5 Empirical Literature Review and Knowledge gaps**

Hawking, Stein, Wyld and Forster (2004) examined the challenges of implementation of e-procurement in Australia and identified these on the merit of relevance as poor technical infrastructure, poor technological infrastructure among business partners, implementation costs, lack of skilled personnel, lack of integration with business partners, inadequate business processes to support e-procurement, company culture, security, regulatory and legal

controls, upper management support, inadequate e-procurement solutions, and cooperation of business partners.

Calipinar and Soysal (2012) analyzed e-Procurement in the health sector in Turkey. The researchers established that with little time and financial investment, saving considerable time and money can be ensured by using the proposed advice given to pharmacies working in hospitals. The study concluded that the general picture for e-procurement in growing nations can be seen by academics and practitioners with e-procurement adoption by pharmacies located in Turkey.

Sharifai, Mbaraka and Agaba (2013) found out in their research the connection between electronic procurement and the performance of the service organizations that were selected. The study used a descriptive survey design with quantitative and qualitative approaches. It established e- procurement has a significant relationship with performance of service organizations. This conclusion came because IT has been embarrassed in all spheres of life to an extent that almost everything revolves around use of information technology. This research mainly focused only on service organizations in Uganda not in any other country.

Locally, Mose, Njihia and Magutu (2013) studied large-scale manufacturing firms in Nairobi, fundamental success factors and challenges when implementing e-procurement. The study established that e-procurement practices have been accepted by many Kenyan large scale manufacturers. These include: publication of tenders, submission and receiving applications and shortlisting suppliers online.

Kamotho (2014) analyzed relationship between e-procurement performance and practices among state corporations. It was established from the study that state corporations have adopted various e-procurement practices that had had a significant impact on their procurement. The researcher recommended that; the national government should address the various challenges that are faced by state corporations.

Ngeno and Omwenga (2015) examined the factors contributing to the adoption of EProcurement in Bomet County Government. The researchers established that e-procurement is the preferred procurement method with 76% of the respondents upholding while the remaining opting for the manual way. The researchers also established that organizational culture, environment and technology greatly influence e-procurement system adoption. The study recommended that the county governments should commit more resources in equipping

staff with regard to the adoption of ICT. The study, however, was not based on pharmaceutical firms in Nairobi.

The e-government strategy paper (2004) proposed e-procurement as a medium term objective which was due for implementation in June 2007. However, this process has been delayed and the results reveal that most public sector' procurement processes are still traditional with the use of internet remaining use in web browsing and mailing (PPOA, 2013). Despite the appreciation of e- procurement, it is evident from the research by Ngai and Gunasekaran (2008) that e-procurement has not been fully embraced. It is on the basis of this facts that the study sought to find out what factors affect the implementation of e- procurement in the national Government ministries in Kenya.

**Table 2.1: Summary of the Literature Review and Knowledge Gaps**

Scholar	Study	Major Findings	Limitations and knowledge gaps
Calipinar and Soysal (2012)	E-Procurement in the health sector in Turkey.	Activities in pharmacies and drug flow from doctor to patient can be improved by use of technology from the perspective of e-procurement.	The study was Turkey based thus could not represent Kenyan Parastatals in the energy sector
Kumar and Srinivasan (2013)	The implementation and performance effect of electronic procurement on the Indian ship management companies	They established existence of a relationship between managerial and systematic problems with lack of performance improvement non with electronic procurement system	The study was India based thus could not represent e-procurement in Kenya.
Magutu, Njihia and Mose (2013)	Large-scale manufacturing firms in Nairobi, critical success factors and haddocks when implementing e-procurement.	Established that the major challenges facing adoption of e-procurement were; employees' resisting change, management not supporting the e-procurement practices and company board not approving e-procurement practices.	This study did not focus on parastatals in the ministry of energy and petroleum in Kenya

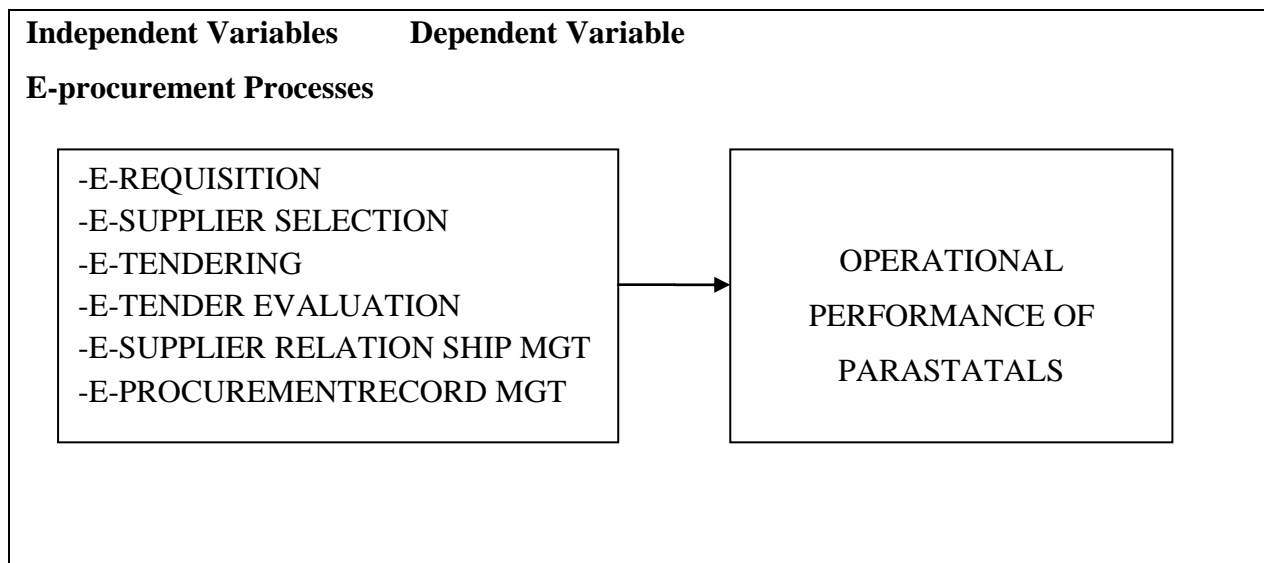


Mose, Njihia and Magutu (2013)	Important success factors and challenges in the implementation of e-procurement among large scale Kenyan manufacturing companies.	It was concluded from the study that e-procurement had been adopted by majority of the large scale manufacturing firms.	These studies didn't address E-procurement adoption in public sector which the current study focuses on.
Sharifai, Mbaraka and Agaba (2013)	E-Procurement and service organizations' performance in Uganda.	A significant relationship exists between e-procurement and service organizations.	Study focused on Ugandan service organizations not Kenyan service organizations.
Kamotho (2014)	E-procurement practices and performance among state corporations	Established state corporations have employed different e-procurement procurement practices that had had major implications their procurement.	Association between e-procurement and operational performance were not assessed in the study
Ngeno and Omwenga (2015)	The factors lead to the adoption to the adoption of E-Procurement in Bomet County Government.	The researchers established that e-procurement is the chosen method of procurement with 76% of the respondents agreeing the remaining percentage opting for the traditional method	The study focused on Bomet county government while the current study investigates parastatals in the ministry of energy and petroleum in Kenya

## 2.8 Conceptual Framework

This study conceptualizes that e-requisition, e-supplier selection, e-tendering, e-tender evaluation, e-supplier relationship management and e-procurement record management, if well addressed can improve on the performance of Parastatals in the energy and petroleum ministry in Kenya.

**Figure 2.1: Conceptual Model**



**Source: Author (2017)**

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter highlights on the research design that was used, population of the study, data collection, validity and reliability and data analysis.

### **3.2 Research Design**

The researcher adopted the descriptive design. Bell (1993) describes a descriptive survey as a technique that seeks to unveil the characteristics of factors involved in a given circumstance, the extent to which it exists and the associations between them. A descriptive survey seeks to establish, and it is able to show the attributes of the variables being examined (Uma, 2003). Descriptive survey was adopted since it enabled the researcher to adopt a holistic approach to the study. The other reason for adopting descriptive survey is due to the fact that data was collected from a large number of respondents.

### **3.3 Population of the Study**

The target population comprised all the energy parastatals in Kenya which are ten in number, Government of Kenya 2017 refer to appendix II: Therefore, the study was guided by the data collected and analyzed from the ten state owned energy firms which is the target population in this particular study.

### **3.4 Data Collection**

Both primary and secondary data was utilized. Trained enumerators were used to collect primary data from the respondents through use of Questionnaires. The sources of secondary data were documents and reports which were collected through reviewing available literatures or publication regarding the impact of e- procurement on the performance of energy sector. The researcher used this technique to gather the information that is in these reports. It involved both quantitative and qualitative approaches.

The questionnaire is divided into three sections; Section A contains questions that seek to obtain general information regarding the respondents while section B contains questions based on the extent of e-procurement implementation on the parastatals' performance in the Ministry of Energy and Petroleum. Section C contains questions focusing on effect of e-procurement implementation on the performance of parastatals in the Energy and Petroleum ministry. The study target two respondents, procurement managers and operations managers

per Parastatal and the data collection tools were dropped and picked up later on a scheduled date.

### 3.5 Data Analysis

Once data collection was completed, the Questionnaires were edited, coded and systematically fed into a computer spreadsheet for analysis. Data analysis was undertaken using the SPSS software. Data was analyzed using descriptive and inferential statistics (mean test) then presented using percentage tables and frequency. The effect of e-procurement on organizational performance was tested using linear regression analysis. Coefficient of determination  $R^2$  was used to ascertain the extent of relationship between e-procurement and organizational performance. Linear regression model was applied as shown below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon$$

Where:

$\beta$  Slope or the contribution of e-procurement index to operational performance.

$\epsilon$  is the error term.

$X = (X_1, X_2, X_3, X_4, X_5, X_6, X_7)$  is the measure of e-procurement by index

$X_1$  is e-requisition

$X_2$  is supplier selection

$X_3$  is e-tendering

$X_4$  is tender evaluation

$X_5$  is supplier relationship management

$X_6$  is procurement record management

Data was presented by use of tables.

**Table 3.1: Summary of Data Collection and Data Analysis.**

No	Research Objective	Questionnaire	Data Analysis
I.	To determine the extent of e-procurement implementation on the performance of the parastatals at the Energy and Petroleum ministry.	Section B	Descriptive Statistics
II.	To ascertain the effect of e-procurement implementation on the performance of parastatals in the Energy and Petroleum ministry.	Section C	Correlation and Regression Analysis

## CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

### 4.1 Introduction

Data analysis, findings and discussions are presented in this chapter. The study's objectives were to ascertain the degree of e-procurement implementation by parastatals in the ministry of energy and petroleum and its effect on the operational performance of the said parastatals. The study targeted the management of the parastatals and administered semi-structured questionnaires to them. Since the collected data was mainly quantitative, descriptive statistics techniques such as means, standard deviations and frequencies were used to analyse the data. The study output was reported using figures and tables. The researcher used regression analysis and Pearson Moment Correlation to establish the effect of e-requisition, supplier selection, e-tendering, tender evaluation, supplier relationship management and procurement record management on the operational performance of the parastatals in the energy and petroleum ministry.

### 4.2 Response Rate

The study issued two questionnaires to each of the 10 parastatals in the ministry of energy and petroleum in Kenya. Therefore, the total numbers of questionnaires administered were 20. Out of these, 17 were correctly filled and collected. This implies that the study managed to get a 85% response rate which the researcher considered a sufficient representation of the target population. Edwards, Clarke and Kwan (2002) recommend a response rate of at least 80%.

The results of response rate as indicated in Table 4.2.

**Table 4.2: Response Rate**

<b>Response Rate</b>	<b>Frequency</b>	<b>Percentage</b>
Filled and Collected	17	85
Not Collected	3	15
<b>Total</b>	<b>20</b>	<b>100</b>

**Source: Research Data (2017)**

### 4.3 Reliability Test

The researcher further carried out reliability test to check the questionnaire's internal consistency. A Cronbach's Alpha co-efficient of 0.7 or more was used as a threshold for an internally consistent study questionnaire. The reliability test results are as tabulated in Table 4.3.

**Table 4.3: Reliability Test**

	Cronbach's Alpha	Cronbach's Alpha Standardized Items	N of Items
E-Requisition	.731	.739	5
E-Supplier Selection	.765	.770	5
E-Tendering	.762	.803	4
E-Tender Evaluation	.706	.714	4
E-Supplier Relationship Management	.737	.783	4
E-Procurement Record Management	.754	.811	4
Operational performance	.773	.817	6
<b>Overall</b>	<b>.764</b>	<b>.813</b>	<b>36</b>

**Source: Research Data (2017)**

The study recorded an overall Cronbach's Alpha co-efficient of 0.764. Further, E-Requisition, Supplier Selection, E-Tendering, E-Tender Evaluation, E-Supplier Relationship Management and E-Procurement Record Management, recorded Cronbach's Alpha co-efficient of 0.731, 0.765, 0.762, 0.706, 0.737 and 0.754 respectively. Since all the values were greater than 0.7, the study concluded that the questionnaire had a high level of internal consistency and therefore reliable in establish the effect of e-procurement (E-Requisition, E-Supplier Selection, E-Tendering, E-Tender Evaluation, E-Supplier Relationship Management and E-Procurement Record Management) on the operational performance of parastatals in the energy and petroleum ministry in Kenya.

### 4.4 Demographic Information

On demographic information, the aim of the study was to to obtain the respondents' general information. The parameters discussed are gender, education, service duration and e-procurement. The findings of the study are as discussed.

#### 4.4.1 Gender of Respondents

The study sought to ascertain the gender of the respondents from parastatals in the ministry of energy and petroleum. The findings of the study are depicted in Figure 4.4.1.

**Table 4.4.1: Distribution by Gender**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Male	10	58.8
Female	7	41.2
<b>Total</b>	<b>17</b>	<b>100.0</b>

**Source: Research Data (2017)**

The table above shows that majority (58.8%) of the respondents from the parastatals in the ministry of energy and petroleum in Kenya were male while 41.2% were female. This shows that the researcher considered both male and female gender during the administration of the questionnaires.

#### 4.4.2 Academic Qualification

The respondents were asked to indicate their education levels. The findings are as tabulated in Table 4.4.2.

**Table 4.4.2: Academic Qualification**

<b>Level</b>	<b>Frequency</b>	<b>Percent</b>
Degree	11	64.7
Masters	4	23.5
Diploma	2	11.8
<b>Total</b>	<b>17</b>	<b>100.0</b>

**Source: Research Data (2017)**

The findings show that majority (64.7%) of the respondents had a degree followed by 23.5% of the respondents who had a masters level of education. Only 11.8% had a diploma level of education. This shows that the respondents from the parastatals in the ministry of energy and petroleum in Kenya were literate to understand the researchers' query in regard to the effect of



e-procurement implementation on the operational performance of parastatals in the ministry of energy and petroleum.

#### **4.4.3 Duration of Working for the Parastatals in the ministry of energy and petroleum in Kenya.**

The study further sought to ascertain the respondents working experience at the parastatals in the ministry of petroleum and energy in Kenya. The study's results are as tabulated in Figure 4.4.3.

**Table 4.4.3: Duration of Working for the Parastatals**

<b>Duration</b>	<b>Frequency</b>	<b>Percent</b>
6 - 10 years	12	70.59
Less than 5 years	3	17.65
11 - 20 years	2	11.76
<b>Total</b>	<b>17</b>	<b>100.0</b>

**Source: Research Data (2017)**

The above figure reveals that majority (70.59%) of the respondents had a working experience of 6-10 years followed by the respondents who had a working experience of less than 5 years at 17.65%. Only 11.76% had a working experience of 11-20 years at the parastatals in the energy and petroleum ministry in Kenya. This shows that the respondents had been working at the parastatals long enough to understand how e-procurement implementation impacts their operational performance.

#### **4.4.4 Management Position**

The study also further sought to ascertain the positions held by the respondents within the parastatals in the ministry of energy and petroleum in Kenya. The findings are as indicated in Table 4.4.4.

**Table 4.4.4: Management Position**

<b>Position</b>	<b>Frequency</b>	<b>Percent</b>
Management	15	88.2
Non-Management	2	11.8
<b>Total</b>	<b>17</b>	<b>100.0</b>

**Source: Research Data (2017)**

The above findings shows that majority (88.2%) of the respondents were in management while the remaining 11.8% were not in management positions. The findings reveal that majority of the respondents held management positions which implies that they clearly understand how implementation of e-procurement influences their parastatals operational performance.

#### **4.4.5 Adoption, Training and Commitment to e-Procurement**

The study further sought to know whether the parastatals in the ministry of energy and petroleum have adopted e-procurement, trained the employees on the same and is committed to its successful implementation. The study found out that all the the parastatals in the ministry of energy and petroleum have adopted e-procurement. Consequently, they have trained the employees on how to use the related systems and this has greatly improved their e-procurement skills. This also points to serious commitment by the parastatals to providing its staff with the necessary competencies and skills to ensure the success of their e-procurement projects. This level of commitment stems from statutory requirements for state corporations to do all their procurements online.

#### **4.5 E-Procurement Implementation**

The extents to which parastatals in the ministry of energy and petroleum have adopted e-requisition, e-supplier selection, e-tendering, e-tender evaluation, e-supplier relationship management and e-procurement record managementis addressed in this section. The rating was done using a Likert scale of 1-5 where: 1= Strongly Disagree 2 = Disagree 3= Neutral, 4=Agree, and 5 = Strongly Agree.The computed mean scores were interpreted using this key:

**Table 4.5: Interpretation Scale**

Scale	Interpretation
1.00 - 1.49	strongly disagree
1.50 - 2.49	disagree
2.50 - 3.49	neutral
3.50 - 4.49	agree
4.50 - 5.00	strongly agree

**Source: Author (2017)**

#### 4.5.1 Summary Extent of E-Procurement Implementation

The study sought to determine the extent of e-procurement implementation among parastatals in the ministry of energy and petroleum in Kenya. The findings are as indicated in Table 4.5.1.

**Table 4.5.1: Aggregate of Extent of E-Procurement Implementation**

Independent Variables	Aggregate Mean	Std. Deviation
E-Tendering	4.78	0.492
E-Supplier Relationship Management	4.72	0.552
E-Requisition	4.62	0.571
E-Tender Evaluation	4.53	0.606
E-Supplier Selection	4.52	0.507
E-Procurement Records Management	4.51	0.634

**Source: Research Data (2017)**

#### 4.5.2: E-Tendering

The respondents strongly agreed that the parastatals in the ministry of energy and petroleum have implemented E-Tendering to a very great extent as demonstrated by an average mean score of (M=4.78, SD= 0.492). The most agreed on statement was that “The standard covers all aspects of our organization’s activities, including: identifying its key processes, defining roles and responsibilities, its policies & objectives, and documentation requirements for e-procurement” with a mean score of (M=4.62, SD= 0.393). This was preceded by the statement that “Our organization’s series of standards, define, establish, and maintain a

quality assurance system by adopting e-tendering” with a mean score of ( $M=4.61$ ,  $SD=0.424$ ). The least rated statement was that “Our organization conforms to a specification that sets standards for companies to follow by ensuring that quality is achieved through e-tendering” with a mean score of ( $M=4.71$ ,  $SD=0.588$ ). This shows that the respondents strongly agreed on all the statement. There was only a small variation among the respondents opinions in regard to the extent of e-tendering implementation among parastatals in the ministry of energy and petroleum.

#### **4.5.3: E-Supplier Relationship Management**

An aggregate mean of ( $M=4.72$ ,  $SD=0.552$ ) was recorded implying that the respondents strongly agreed that the parastatals in the ministry of energy and petroleum have implemented Supplier Relationship Management. Supplier Relationship Management was implemented to a very great extent. To great extent, the respondents strongly agreed that “Our organization retains its long serving suppliers” and that “Our organization applies two types of benchmarking to assess quality: competitive and non-competitive benchmarking” with mean scores of ( $M=4.63$ ,  $SD=0.590$ ) and ( $M=4.76$ ,  $SD=0.437$ ) respectively. The least rated statement was that “Our organization compares specific numerical or statistical measurements return on assets used and the market share against direct competitors in the marketplace” with an average score of ( $M=4.59$ ,  $SD=0.712$ ) indicating a strong agreement among the respondents. The standard deviations obtained indicated that the responses given did not greatly deviate from the mean scores.

#### **4.5.4: E-Requisition**

The respondents strongly agreed that parastatals in the ministry of energy and petroleum have implemented e-requisition as evidenced by the aggregate mean score of ( $M=4.62$ ,  $SD=0.571$ ). The mean score also indicates that E-Requisition has been implemented to a very great extent. The respondents strongly agreed that “Our organization ensures effective and efficient e-procurement channels are in place by adopting e-requisitioning” as shown by a mean of ( $M=4.62$ ,  $SD=0.393$ ). The respondents also strongly agree that “Our organization strives for constant innovation to improve work processes and systems by reducing time-consuming, low value-added activities such as e-procurement” and that “Our organization focuses on improving processes to enable clients get easy and faster services through e-procurement” as evidenced by mean scores of ( $M=4.76$ ,  $SD=0.437$ ) and ( $M=4.65$ ,  $SD=0.702$ ) respectively. On the statement that “Our organization does not focus much on e-requisition, but more on

the performance”, the respondents agreed as evidenced by a mean of ( $M=4.35$ ,  $SD= 0.606$ ). The respondents also registered differing opinions as evidenced by the recorded standard deviations.

#### **4.5.5: E-Tender Evaluation**

An aggregate mean of ( $M=4.53$ ,  $SD= 0.606$ ) was recorded implying that there was a strongly agreement among the respondents in regard to the extent of Tender Evaluation implementation among parastatals in the ministry of energy and petroleum. The parastatals had done the implementation to a very great extent. The respondents also strongly agreed that “Our organization concentrates time and effort on identifying and refining steps in an operation that the customer deems valuable, and to eliminate wasteful or unnecessary steps in a process” and that “Our organization relies heavily on the observation of processes by management, as well as the importance of clean and efficient work spaces” as shown by high mean scores ( $M=4.71$ ,  $SD= 0.686$ ) and ( $M=4.70$ ,  $SD= 0.576$ ) respectively. The also strongly agreed that “Our organization eliminates the steps that the customer is not ing to pay for without affecting the end product or service”. The least rated was that “The Lean way to determine value in our organization is whether or not customers pay for that step in the process” with a mean score of ( $M=4.06$ ,  $SD= 0.556$ ) indicating the respondents agreed to great extent.

#### **4.5.6: E-Supplier Selection**

The respondents strongly agreed that that parastatals in the ministry of energy and petroleum have implemented Supplier Selection to a very great extent as evidenced by the aggregate mean score of ( $M=4.22$ ,  $SD= 0.507$ ). The respondents strongly agreed that “Our organization selects suppliers so as to improves high-volume production processes” as indicated by a mean score of ( $M=4.76$ ,  $SD= 0.437$ ). The least agreed on statement was that “Our organization has a disciplined, data-driven approach and methodology for eliminating suppliers for the system at any stage of transaction through e-procurement” with a mean score of ( $M=4.76$ ,  $SD= 0.437$ ) indicating that the respondents agreed to a great extent. This study recorded low levels of standard deviations implying minimal variations in respondents in relation to the given statements.

#### **4.5.6: E-Procurement Records Management**

The respondents strongly agreed that parastatals in the ministry of energy and petroleum have implemented procurement records management to a very great extent as indicated by an

aggregate mean of ( $M=4.51$ ,  $SD= 0.634$ ). The most rated statements were that “Our organization helps the suppliers meet quality standards to address the quality issues in the manufacturer-supplier relationship” and “Our organization works directly with their parts and components suppliers to improve quality at the supplier's location” with average scores of ( $M=4.65$ ,  $SD= 0.606$ ) and ( $M=4.65$ ,  $SD= 0.602$ ). This indicates strong agreement among the respondents. “Our organization involves in sharing the use of statistical controls” was the least rated statement with an average score of ( $M=4.51$ ,  $SD= 0.634$ ). The low standard deviation indicated minimal differences in the responses.

#### 4.6 Operational Performance

In this section, the researcher sought to establish the extent to which e-procurement implementation influences operational performance of parastatals in the ministry of energy and petroleum. The recorded mean scores were interpreted using the following scale: 4.50 - 5.00 = Strongly Agree ; 3.50 - 4.49 = Agree; 2.50 - 3.49 = Neutral; 1.50 - 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree as shown in Table 4.6.

**Table 4.6: Operational Performance**

Statement	Mean	Std. Deviation
Supplier relationship has improved and exchange of information is timely and accurate	4.94	0.243
E-tendering is more transparent and is carried out within the time framework	4.76	0.437
Procurement Record management has improve and retrieval of documents is faster.	4.71	0.588
Evaluation is carried out in timely and transparent manner	4.71	0.686
Supplier selection is more transparent and suppliers are given equal opportunities.	4.62	0.393
<b>Aggregate mean</b>	<b>4.79</b>	<b>0.469</b>

**Source: Research Data (2017)**

The respondents strongly agreed that e-procurement implementation influences operational performance of parastatals in the ministry of energy and petroleum as evidenced by the aggregate mean of ( $M=4.79$ ,  $SD= 0.469$ ). The most affected performance indicators were that

“Supplier relationship has improved and exchange of information is timely and accurate” and that “Supplier selection is more transparent and suppliers are given equal opportunities” with mean scores of (M=4.94, SD= 0.243) and (M=4.62, SD= 0.393) respectively. This was followed by the indicator that “E-tendering is more transparent and is carried out within the time framework” with a mean score of (M=4.76, SD= 0.437). The least affected was the indicator that “Evaluation is carried out in timely and transparent manner” with a mean score of (M=4.71, SD= 0.686). These findings reveal that all the statements were affected

#### 4.6 Multiple Regression Analysis

Here, the aim of the study was to explore the effect of e-procurement implementation on the operational performance of parastatals in the energy and petroleum industry in Kenya. The results are discussed below.

##### 4.6.1 Regression Coefficient

The study sought to ascertain the effect e-procurement variables on the operational performance of parastatals. The findings are as shown in Table 4.6.1.

**Table 4.6.1: Regression Coefficient**

Model		Unstandardized Coefficients		Standardized Coefficients	t	(p-value) Sig.
		B	Std. Error	Beta		
1	(Constant)	4.225	1.269		3.329	.008
	E-Requisition	.218	.044	.306	4.955	.001
	E-Supplier Selection	.166	.054	.206	3.074	.012
	E-Tendering	.232	.081	.159	2.864	.015
	E-Tender Evaluation	.134	.056	.224	2.389	.038
	E-Supplier Relationship Management	.168	.073	.314	2.301	.044
	E-Procurement Record Management	.197	.061	.174	3.230	.009
a. Dependent Variable: Operational Performance						

**Source: Research Data (2017).**

The equation for the regression model is expressed as:

$$Y = 4.225 + 0.218X_1 + 0.166X_2 + 0.232X_3 + 0.134X_4 + 0.168X_5 + 0.197X_6$$

Where:

Y is operational performance

X1 is e-requisition

X2 is supplier selection

X3 is e-tendering

X4 is tender evaluation

X5 is supplier relationship management

X6 is procurement record management

The findings reveals that E-Requisition ( $t= 4.955$ ,  $p= 0.001$ ), Supplier Selection ( $t= 3.074$ ,  $p= 0.012$ ), E-Tendering ( $t= 2.864$ ,  $p= 0.015$ ), E-Tender Evaluation ( $t= 2.389$ ,  $p= 0.038$ ), E-Supplier Relationship Management ( $t= 2.301$ ,  $p= 0.044$ ) and E-Procurement Record Management ( $t= 3.230$ ,  $p= 0.009$ ) produced statistically significant values (high t-values greater than 2.228 and p-values less than 5%). The study found out that e-requisition, supplier selection, e-tendering, e-tender evaluation, supplier relationship management and procurement record management on the operational performance of parastatals in the energy and petroleum ministry all have a positive and statistically significant effect on the operational performance of parastatals in the energy and petroleum ministry. The constant value of 4.225 shows that if e-requisition, supplier selection, e-tendering, e-tender evaluation, supplier relationship management and procurement record management were rated zero, the operational performance of parastatals in the ministry of energy and petroleum would be at just 4.225. A unit increase in e-requisition, supplier selection; e-tendering, e-tender evaluation, supplier relationship management and procurement record management would improve the operational performance of parastatals in the ministry of energy and petroleum by 0.218, 0.166, 0.232, 0.134, 0.168 and 0.197 respectively.



**Table 4.6.1 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.710 <sup>a</sup>	.504	.206	.18062

a. Predictors: (Constant), E-Procurement Record Management, E-Requisition, E-Tender Evaluation, E-Supplier Selection, E-Supplier Relationship Management, E-Tendering

**Source: Research Data (2017).**

The model summary revealed that there is strong relationship ( $R= 0.710$ ) between e-procurement implementation and operational performance of parastatals in the ministry of energy and petroleum. An R-Square of 0.504 was recorded implying that e-procurement implementation influences 50.4% of the total variance in the operational performance of parastatals in the energy and petroleum ministry.

The findings of this study corroborate some findings of previous studies. For instance, Calipinar and Soysal (2012) established that e-Procurement in the health sector in Turkey leads to improved drug flow from doctor to patient. Sharifai, Mbaraka and Agaba (2013) studied the effect of e-Procurement on the performance of service organizations in Uganda and established that a significant association exists between e-procurement and service organizations. Kamotho (2014) in his study established that state corporations have embraced different e-procurement procurement practices that have had a significant effect on their performance. The study also contradicted the findings of a study by Kumar and Srinivasan (2013) where the researchers seek to examine the effect of electronic procurement on ship management companies' performance in India and found out that it doesn't lead to performance improvement.

#### **4.6.3 Analysis of Variance**

The researcher did analysis of variance (ANOVA) to test the regression model's goodness of fit. The findings are as indicated in Table 4.6.3.

**Table 4.6.3: Analysis of Variance (ANOVA <sup>a</sup>)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.215	6	.035	4.375	0.020 <sup>b</sup>
	Residual	.076	10	.008		
	Total	.291	16			
a. Dependent Variable: Operational Performance						
b. Predictors: (Constant), E-Procurement Record Management, E-Requisition, E-Tender Evaluation, E-Supplier Selection, E-Supplier Relationship Management, E-Tendering						

**Source: Research Data (2017)**

Ap-value (significance level) of 2% was recorded indicating that the regression model used to establish the effect of e-requisition, e-supplier selection, e-tendering, e-tender evaluation, e-supplier relationship management and e-procurement record management on the operational performance of parastatals in Kenya's ministry of energy and petroleum fit since it is greater than p=5%.

The study's findings corroborate some findings of previous studies. For instance, Calipinar and Soysal (2012) established that e-Procurement in the health sector in Turkey leads to improved drug flow from doctor to patient. Sharifai, Mbaraka and Agaba (2013) studied the effect of e-Procurement on the performance of service organizations in Uganda and established a significant association exists between e-procurement and service organizations. Kamotho (2014) in his study established that state corporations have adopted various e-procurement procurement practices that have had a strong effect on their performance. The study also contradicted the findings of a study by Kumar and Srinivasan (2013) where the researchers sought to ascertain the effect of electronic procurement on the performance of ship management companies in India and found out that it doesn't lead to performance improvement.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents a summary, conclusion and recommendations of the study where the objective was to determine the e-procurement implementation on the operational performance of parastatals in the ministry of energy and petroleum. Also discussed in this chapter are recommendations and suggestions for further research.

### **5.2 Summary of Findings**

The study's objective was to determine the effect of e-procurement implementation on the operational performance of parastatals in the energy and petroleum ministry. The study targeted the management of the parastatals and administered semi-structured questionnaires to them. Since the collected data was mainly quantitative, descriptive statistics techniques such as means, standard deviations and frequencies were used to analyse the data. The study output was reported using figures and tables. The researcher used regression analysis and Pearson Moment Correlation to establish the effect of e-requisition, supplier selection, e-tendering, tender evaluation, supplier relationship management and procurement record management on the operational performance of the parastatals in the ministry of petroleum and energy.

The study found out that all the parastatals in the ministry of energy and petroleum have adopted e-procurement. Consequently, they have trained the employees on how to use the related systems and this has greatly improved their e-procurement skills. This also points to serious commitment by the parastatals to providing its staff with the necessary competencies and skills to ensure the success of their e-procurement projects. This level of commitment stems from statutory requirements for state corporations to do all their procurements online. The study also found out that the parastatals in the ministry of energy and petroleum have implemented e-requisition, supplier selection, e-tendering, tender evaluation, supplier relationship management and procurement record management to very great extents.

The study found out that there is strong relationship ( $R = 0.710$ ) between e-procurement implementation and operational performance of parastatals in the ministry of energy and petroleum with e-procurement implementation influencing 50.4% of the total variance in the

operational performance of parastatals in the energy and petroleum ministry. The study also established that e-requisition, supplier selection, e-tendering, e-tender evaluation, supplier relationship management and procurement record management on the operational performance of parastatals in the ministry of petroleum and energy have a positive and statistically significant effect on the operational performance of parastatals in the ministry.

### **5.3 Conclusion**

The study concludes that all the the parastatals in the ministry of energy and petroleum have adopted e-procurement and are committed to equipping their staff with the necessary competencies and skills to ensure the success of their e-procurement projects. This level of commitment stems from statutory requirements for state corporations to do all their procurements online. The parastatals in the ministry of energy and petroleum have implemented e-requisition, supplier selection, e-tendering, tender evaluation, supplier relationship management and procurement record management to very great extents.

The study concludes that there is strong relationship ( $R= 0.710$ ) between e-procurement implementation and operational performance of parastatals in the ministry of energy and petroleum and that e-procurement implementation influencing 50.4% of the total variance in the operational performance of parastatals in the ministry of energy and petroleum.

The study also concluded that e-requisition, supplier selection, e-tendering, e-tender evaluation, supplier relationship management and procurement record management on the operational performance of parastatals in the energy and petroleum ministry have a positive and statistically significant effect on the operational performance of parastatals in the ministry.

### **5.4 Policy Recommendations**

The study established that e-procurement implementation (e-requisition, supplier selection, e-tendering, e-tender evaluation, supplier relationship management and procurement record management) affects the operational performance of parastatals in the ministry of energy and petroleum in a positive and statistically significant way. This study therefore recommends that all parastatals in Kenya should consider full implementation of e-procurement as this greatly improve their operational performance.

The study also established that commitment to training of employees in charge of e-procurement implementation is the key reason why the e-procurement implementation has succeeded. The study recommends that all the parastatals should set aside adequate budget for regularly training employees on e-procurement implementation and usage.

### **5.5 Limitations of the Study**

The researcher spent a lot of time convincing the Parastatals to avail the information since they were reluctant on the intended purpose of the data. The researcher obtained an introduction letter from the university so as to convince the respondents that the data being sought for academic use.

The respondents from the parastatals in the ministry of energy and petroleum were busy in theory areas of work which delayed the completion of the data collection process. The researcher handled this challenge by allowing the respondents adequate time to fill in the questions.

Since the responses were based on respondent's feelings, the researcher didn't have absolute control on the responses accuracy. The researcher beseeched the respondents to provide the information as accurately as possible to allow him to make proper conclusions.

### **5.6 Suggestions for Future Studies**

The study found out that e-procurement implementation influences 50.4% of the operational performance of parastatals in the ministry of energy and petroleum. This implies that there are other factors that greatly influence the remaining 49.6% of the operational performance of the parastatals. Therefore, there is need to establish these other factors through further studies.

The findings of this study cannot be generalized to private firms. The researcher recommends that a similar study should be conducted in the public sector. This will serve a comparative purpose on the impact of e-procurement implementation on the operational performance.

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