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SCHOOL OF BUSINESS

**E-PROCUREMENT READINESS FACTORS IN KENYA'S
PUBLIC SECTOR**

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DECLARATION:

This has been approved for examination

I, the undersigned declare that this research project is my original work and affirm to the best of my knowledge that it has not been presented for any academic award in any University.

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DEDICATION

This dissertation is dedicated to my late dad, Mr. Andrew Orina and my lovely mother, Beatrice. Their devotion and dedication towards my education will remain stamped in my heart all the days of my life.

ACKNOWLEDGEMENT

I am gratefully indebted to all those who have contributed to the success of this dissertation. First and foremost I recognize and uphold my Almighty Lord whose power has made me come this far. May His name be praised and adored. My sincere gratitude goes to my supervisor, Dr. MurangaNjihia for tirelessly and willingly sharing his scholarly experience and for making this dissertation a success undertaking. He has been available for consultation, his professional guidance and supervision added value to this work.

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ABSTRACT

This study has examined the e-procurement readiness in Kenya's public sector, looking at how various factors impact on it. E-procurement in the public sector has been implemented, though not fully, with several modules being introduced to enable a full ERP system. Notable ERPs that are currently used by public institutions are the Integrated Financial Management Information System (IFMIS) and SAP software enabled them to procure online. The objective of the study was to determine the extent of e-procurement levels in public institutions in Kenya. With the objective of the study, relevant literature in relation to the objective was sought out. Similar studies in other countries were done and analyzed, with important aspects of readiness in these countries being noted. From these studies, important aspects were brought out and impacted the readiness of e-procurement readiness were procurement environment, legal environment, economic environment, organizational environment, and technological environment. The study compiled a questionnaire as a tool for primary data collection. Based on these readiness aspects the study sought to find whether the environmental aspects affected the readiness of e-procurement adoption in public institutions in Kenya. Data analysis was done using descriptive statistics and factor analysis. The sample of 50 units was selected from the various ministries and parastatals of which 46 responded and their responses analyzed. The study found that resistance to change, lack of enthusiasm, staff skills, and to some extent procurement policies impacted the readiness of e-procurement in public institutions. With factor analysis done on the responses, the KMO measure of sampling had a value of 0.565 which indicated that distinct factors can be formed. The extracted factors from the rotated component factor matrix were technology (factor 1), organization's finance (factor 2), leadership and integrity (factor 3), legal framework and technical preparedness (factor 4), international law and employee attitude (factor 5), procurement policy and national procurement law (factor 6), e-procurement adoption and staff I.T adequacy (factor 7), and online marketplace and government support (factor 8). It was therefore seen technology and legal framework and procurement policies were factors that respondents agreed to affect the readiness of public procurement institutions in Kenya. Also, the extent of procurement level in public procurement was low as there was no integration with other systems and low use in electronic commerce. Challenges encountered in e-procurement readiness were staff skills, resistance to change, and lack of enthusiasm by staff. Recommendations made were for the government and e-procurement stakeholders to improve the legislative framework and procurement policies as these were found to impact the readiness of e-procurement adoption in Kenya. The study concluded by suggesting that more needed to be done on the factors affecting e-procurement readiness in Kenya, and other factors that may affect preparedness of its adoption can also be analyzed in further studies. Also the study may be carried out in the private sector and similarities or disparities compared to this study. Other analytical techniques may also be used in other studies to find out the e-procurement readiness in Kenya's public sector.

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List of Abbreviations

B2B - Business to Business

DPS - Direct Procurement System

EDI - Electronic Data Interchange

ERP - Enterprise Resource Planning

G.O.K - Government of Kenya

IFMIS - Integrated Financial Management Information System

IPS - Indirect Procurement System

KNBS - Kenya National Bureau of Statistics

P2P - Procure-to-Pay

PPOA - Public Procurement Oversight Authority

PPDA - Public Procurement Directorate Authority

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

According to the Chartered Institute of Purchasing and Supply (CIPS), e-procurement is the “combined use of electronic information and communications technology, (ICT) in order to enhance the links between customer and supplier, and with other value chain partners, and thereby to improve external and internal purchasing and supply management processes”(CIPS, 2012). E-procurement refers to the use of internet-based (integrated) information and communication technologies (ICT) to carry out individual or all stages of the procurement process including search, sourcing, negotiation, ordering, receipt, and post purchase review (Croom and Brandon-Jones, 2004).

Companies are using e-procurement for various reasons among them: i) Increased efficiency due to competition, transparency, and lower transaction costs, ii) Reduced opportunity for fraud and corruption due to automated procedures, iii) Public procurement monitoring will be possible as all procurement transactions will be easily monitored from the beginning to end. Several reasons may be given for slow adoption of e-procurement systems by public institutions. These may be from the procurement officers or the institutional structure. Firstly, negative attitude by top management may prove a hindrance to e-procurement adoption. Top management attitude toward change significantly influences adoption decisions (Damanpour 1991; Dewar and Dutton 1986). E-business initiatives now constitute a core component of the strategic planning process in many businesses. Since top management plays a central role in shaping organizational strategies (Kohli and Jaworski 1990), the role of top management in the e-business context is likely to be significant. Specifically, top management has the power to reduce interdepartmental conflict and facilitate rapid e-business implementation by building an organization-wide strategic consensus related to e-business adoption.

Secondly, organizational learning ability describes its ability to evaluate, adopt, and exploit external knowledge, or equivalently, its ability to recognize the value of new information, assimilate it, and apply it to commercial ends (Cohen and Levinthal 1990). A high learning ability can facilitate e-business adoption in multiple ways. First, e-business adoption cannot be characterized in terms of a well-defined, clearly structured event that follows an established

procedural pattern, rather, it represents an ongoing process of assimilation and transformation. Therefore, a mere willingness to adopt may not in itself lead to high levels of e-business implementation. Such willingness must be backed by an adequate absorptive capacity that facilitates (a) the quick recognition of new developments in the e-business arena, (b) an understanding of how e-business initiatives can augment existing operations, and (c) a continuous scanning of the environment for successful implementation stories that can be replicated.

1.1.1 E-Procurement

E-procurement in the public sector is central because it supports all functions of government. As emphasized by Thai and Grimm (2000), one of the most important challenges in government is how to best utilize information technology in an age of communications revolution. The use of ICT in procurement processes may lead to reduced costs and time for managing information, to integration, comparability and rapid update of data coming from different sources (e.g., enhanced monitoring), and, finally, to disintermediation and reduction of discretion, hence to more transparent information, limiting opportunities for bribery (Corsi *et al.*, 2006).

According to Davilla, *et al.* (2002), the various strategies that companies are adopting towards e-procurement technologies are: (i) a “wait and see” approach. These companies are either aware of the developments, but are not committing resources, or investing selectively until the best e-procurement model can be identified. These companies do not perceive that the current state of development merits shifting their established procurement processes to the e-world. Nevertheless, they are closely following the developments of these technologies, acknowledging the perceived relevance of these technologies to their future and investing enough to understand them and gauge their maturity until the industry moves to the growth stage. These companies are conducting some level of business transactions with suppliers through the Internet or plan to do so over the next twelve months. The strategy reflects active experimentation but no sizeable investments until the best e-procurement model is defined; (ii) a “passive” strategy of observation without experimentation. The adequacy (and risk) of this strategy will depend on how quickly organizational learning can be absorbed by these e-procurement technologies without creating the “absorptive capacities” that the wait-and-see companies seem to be developing; (iii) an “aggressive” strategy towards e-procurement technology adoption by

companies. These companies declare that they are investing significantly to gain a competitive lead or moving fast into e-procurement solutions.

Public sector e-procurement is a complex socio-technical system embedded in multiple layers of government. It has the capacity to become a meaningful agent of transformation in procurement practices through the joint actions of different layers of government and cooperation across diverse agencies. In addition to inter-agency cooperation, cooperation between government agencies and technology service providers is crucial when implementing systems. Collaboration between buyers, suppliers and support staff is equally important, and users should be approached in a coordinated manner to understand how they may shape the system for their own purposes. E-procurement is also a strategic decision, and therefore, a good business design is vital (Australian Government, Department of Finance and Administration, 2005).

1.1.1.1 Benefits of E-Procurement

Companies that use e-procurement technologies report savings of 42% in purchasing transaction costs. This cost reduction is associated with less paperwork, which translates into fewer mistakes and a more efficient purchasing process. The simplification of the purchasing process that e-procurement technologies are credited with also has a favorable impact on the purchasing cycle time. While not directly quantifiable into dollars, faster cycle time provides increased flexibility and more up-to-date information at the time of placing a purchasing order. E-procurement technologies users also report a reduction in the number of suppliers—with the associated cost benefits of lower managerial complexity, lower prices, and a headcount reduction in the purchasing process.

1.1.4 E-Procurement Readiness

E-Procurement readiness is defined as a measure to which an organization or business may be ready, prepared, or willing to adopt, use and benefits arise from the digital economy such as e-procurement. The impact of e-procurement readiness success is also based on readiness assessment (Naseebullah et al., 2011). The Australian Government, Department of Finance and Administration (2005), defined e-procurement readiness as the current use and potential levels of adoption of e-procurement in government, shaped and constrained by technological and institutional environments and events at the local, national and trans-national levels. This concept

addresses why particular e-procurement activities have been implemented, incorporating issues such as (i) *the procurement environment* – structures (e.g., centralized versus decentralized), drivers (whole-of-government or e-government initiatives), and levels of support; (ii) *the legal environment* – national and international jurisdictions; (iii) *the economic environment* – supplier and buyer market forces; (iv) *organizational environment* – planned levels of adoption and financial considerations such as access costs for buyers and suppliers; (v) *technological environment* – existing infrastructure available at varying levels.

1.1.6 Kenya's Public Sector and Procurement

The Kenyan government consists of three arms: the executive, the legislative and the judicial. The executive arm of the government is responsible for the daily administration of the state and the administration is done through ministries and parastatals. The Kenyan Government's Procurement system was originally contained in the Supplies Manual of 1978, which was supplemented by circulars that were issued from time to time by the Treasury. The Director of Government Supply Services was responsible for ensuring the proper observance of the provisions of the Manual. Concerns had been raised over the transparency of procurement processes in government ministries and parastatals, and hence the introduction of the Public Procurement and Disposal Act of 2005, the procurement regulations of 2006, and recently the County Government Procurement Regulation (2013) introduced new standards for public procurement in Kenya. The Public Procurement Oversight Authority (PPOA) is a body that was created in 2005 from the Act to oversee that whenever a government body seeks to procure any goods or services, it is done fairly and transparently. Its main responsibilities include: ensuring that procurement procedures established under the PPDA Act are complied with; monitoring the procurement system and reporting on its overall functioning; initiating public procurement policy; and assisting in the implementation and operation of the public procurement system.

Currently the systems that are being used by public institutions in Kenya for e-procurement are Integrated Financial Management Information System (IFMIS) and SAP. The Government of Kenya's IFMIS is an Oracle based Enterprise Resource Planning (ERP) software initiated in the year 2003 as part of public management system reform. Enterprise Resources Planning (ERP) applications are large-scale computer software and hardware systems that attempt to integrate all data and processes of an organization into a unified system, housed in a centralized database

which is accessed through a secure network. Whereas the benefit of ERPs like Oracle Financials lies in their ability to integrate various aspects of the organizational business processes, the Kenyan government undertook a module by module approach and to-date there has been implementation of only the purchasing, accounts payable and the general ledger leaving cash management, accounts receivable, public sector budgeting unimplemented. This approach, however, does not promote the intended integration and creates many systemic weaknesses.

The government of Kenya, through IFMIS Re-engineering has introduced a procure-to-pay (P2P) system which contains end to end processes that commence from procurement of goods and services to payment of the suppliers. This may include a basic procurement processes such as: purchase requisitions, receipts matched to invoices when delivered, then payment; it may also entail a more complex cycle e.g use of different sourcing rules to determine suppliers, recording receipts into inventory according to supplier shipping notifications, creation of invoices from the inspection process and payment directly into the suppliers' bank accounts. IFMIS in this regard seeks to re-engineer seamlessly integrated procure-to-pay system that automates (i) procurement process, from requisition to generation of System Purchase; (ii) ordering, payment initiation, online approval, system generated payment Voucher to payment; (iii) online tendering to award of contracts; (iv) payment initiation, online approval and system generated payment vouchers; (v) enforcement of budgetary controls; (vi) elevation of IFMIS from data capture to integrated financial management. Full automation of this process will ensure that requisitions are entered by user departments, LPOs are printed from the IFMIS, Payments invoices are properly matched to LPOs, payments validated and PVs are also automatically generated from the system (IFMIS Re-engineering Strategic Plan 2011-2013: From Modular to Full Cycle End-To-End Processes).

SAP is an ERP system that integrates the key business functions of the organization. It is a system that has been widely adopted by private companies, but its adoption by public companies has been small. Currently the public institutions that are known to use SAP system include Ministry of Water (Kenya Water and Sewerage Reform Programme), Kenya Ports Authority, K.P.L.C and Kengen (Eim Solutions company profile, www.eimsolutions.co.ke). All these have fully integrated SAP except Ministry of Water which uses SAP Business One, a system that adopts several modules of the ERP. This system has SAP materials management (MM) module

which consists of all master data, system configuration, and transactions to complete the Procure-to-Pay process.

1.2 Statement of the Problem

E-procurement adoption is uncertain among procurement executives due to lack of organizational readiness. To address the issue of successful e-procurement adoption, an assessment by an institution of e-procurement readiness is important. Naseebullah et al., (2011) proposed a theoretical framework on e-readiness factors that lead to e-procurement implementation. These factors were categorized into perceived management readiness, perceived technological readiness, and perceived environmental readiness. There have been challenges in being ready for the adoption of e-procurement systems and this may be due to the institution's not being ready to adopt the system which may be brought about by several factors, among them organizational environment, technological environment, legal aspects, economic environment and other factors.

Mose, et al. (2013) did a study on critical success factors and challenges in e-procurement adoption among large scale manufacturing firms in Nairobi and analyzed the critical success factors that influence the success of e-procurement in these firms. The five critical success factors identified in the study were: employees and management commitment to success of adoption; reliability of information technology and supplier performance; monitoring the performance of e-procurement systems; user acceptance of e-procurement systems and top management support. In this study, it can be seen that these factors are important in e-procurement readiness in Kenya.

Nyadimo, (2012) in her study on organizational readiness for ICT on quality of public procurement management surveyed Kenyan government ministries. It was concluded that organizational readiness for ICT does affect the quality of public procurement management. The study also showed that not much has been done in investment in ERPs and e-procurement infrastructure.

According to Malela, (2010), the factors for slow adoption of e-procurement in Kenya include limited legislation, poor infrastructure, lack of awareness and top management support,

integration with internal systems/solutions, lack of technical standards, lack of cooperation on the part of suppliers, costs associated with adapting web-enabled purchasing system.

Thomson, et al., (2008) in a study of adoption of e-procurement in Singapore identified seven drivers of adoption of e-procurement in organizations. Their findings identified perceived indirect benefits, firm size, top management support, and business partner influence to have a significant association with adoption, whereas perceived direct benefits, perceived costs, and information sharing had no significant association with e-procurement adoption.

A study by Swanson (1994) examined the adoption of complex I.T innovations revealed that a facilitating portfolio, organizational factors such as slack resources, and a heavy importance placed on the strategic environment, are necessary for such technological adoption.

Corruption and maintenance of status quo, especially in Kenya is seen as a big impediment to adoption of e-procurement. The Global Corruption Barometer released in July 2013 by Transparency International showed that Kenya is the fourth most corrupt country in the world after Liberia, Sierra Leone and Yemen (Transparency International, 2013). Even though the Public Procurement and Disposal Act of 2005 brought transparency in procurement, not all loopholes have been sealed. With the current corruption which is entrenched in the system, the staff may like to maintain the status quo.

The studies have been able to show factors that influence e-procurement readiness, but have not been able to show how ready our companies and institutions are. This study therefore seeks to answer “What factors determine e-procurement readiness?,” “To what extent do these factors affect e-procurement readiness?” and “What are the challenges of e-procurement readiness and how can they be overcome?”

1.2.1 Research Objective

The objective of the study is to investigate the e-readiness of Kenyan companies and institutions towards adoption of e-procurement and the factors that affect their e-readiness.

1.2.2 Specific Research Objectives

- a) To determine factors that affects the e-procurement readiness in Kenya procurement departments.

- b) To determine the extent of e-procurement readiness levels of Kenya procurement departments towards the adoption of e-procurement system.
- c) To determine the challenges of e-procurement readiness and how can they be overcome.

1.3 Importance of the study

The study has value to various stakeholders who might benefit from it. These are:

To the public sector institutions, the study will be useful to government agencies and public sector organizations in order to know the general perception of procurement officers towards e-procurement in order to plan adequately in case of implementation. This will enable them know how they may change the attitudes of the staff in order to fully implement the system, and also other challenges that they may experience during the adoption of the system. They will therefore effectively implement the system that will make them more profitable and competitive.

To the policy makers and the government, the study will provide information that will provide information to the important policy makers who will come up with a framework of successful implementation of the e-procurement system. This will bring efficiency in the fiscal expenditure of the government as a big chunk of government expenditure is channeled towards procurement. Efficiency by policy makers and the government means that they can do more with the available funds and more can be done in development projects.

To researchers and scholars, the study will help to increase the general knowledge of the subject and will provide useful reference to future studies. The gaps identified in the study may be useful in coming up with a research problem and solve it.

The study looks at the perceptions, attitudes and challenges of e-procurement integration. With these, we would be able to state the limitations of the study and recommendations for further studies.

CHAPTER 2:LITERATURE REVIEW

2.1 Introduction

This section reviews the framework on the adoption of e-procurement in public sector and readiness of these institutions towards e-procurement. We shall also look at the e-procurement integration process in the various institutions that have implemented it, the technical aspects, its impact, and the benefits and challenges encountered by these institutions during implementation.

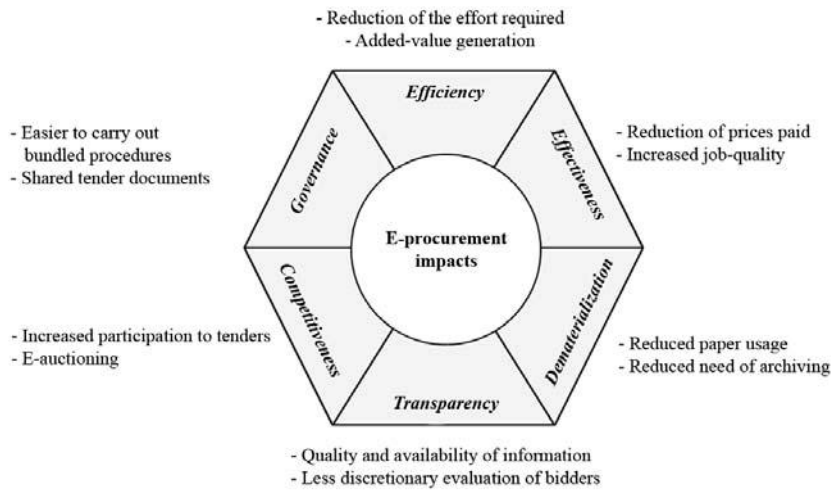
2.1.1 E-Procurement and its Impact on Organizations

Andersen, (2005) in the study e-government in action analyzes the specific effects of I.T on organizational processes in a broad perspective. (i) *Technology impacts*; (ii) *Processes impact*; (iii) *People will be impacted* ; and (iv) *Environmental impact*.

Several impact models have been used in assessing how e-procurement impacts the organization. Two of the most commonly used models are Davenport's model and the Six Dimensions model. Davenport, (1994) defines nine principal groups of specific effects of IT on organizational processes: *automating* (eliminating or reducing drastically the effort of human resources), *informative* (generating more information and allow a better understanding of it), *sequential* (modifying the sequence of the process and the activities that are part of them), *of control* (improving monitoring), *analytical* (improving the understanding of the phenomena), *geographical* (improving the ability to coordinate remote processes), *integrative* (assuring coordination among tasks and processes), *intellectual* (getting and spreading knowledge), *disintermediation* (reducing redundancy and intermediate activities).

Six dimensions of impact provide a more precise definition of the impact given on the basis of the criteria of measurability and exhaustiveness as compared to the two "dimensions of impact". They enable to catch the complexity of the phenomenon likely to be affected and changed by e-procurement: *efficiency, effectiveness, transparency, dematerialization, competitiveness, governance*.

Figure 1: E-Procurement Six Impact Dimensions



Source: Public E-Procurement – Define, Measure, and Optimize organizational benefits (Gardenal, 2010)

Both the models (Davenport model and Six Dimension model) cannot sufficiently describe real procurement processes, even if they are perfectly able to show the entity and multi-dimensionality of e-procurement impacts. Evidence is not easy to measure, therefore they can hardly be used to tailor a framework of indicators, in order to gather data and report results. Moreover, certain effects, clearly acknowledged in e-procurement use experiences, cannot fit properly in the above-mentioned models.

2.1.2 Readiness in E-procurement

For effective e-procurement adoption, the institution implementing it should be ready in terms of the operating environment, legal environment, economic environment, organizational environment, and technical environment (Australian Government, Department of Finance and Administration, 2005). These aspects should be clearly outlined by an institution so as to have minimal challenges during implementation.

In the operating environment, an institution may look at aspects such as the procurement structures, which may be centralized or decentralized, the drivers of e-procurement adoption, and the levels of support of e-procurement. The operating environment is critical in determining the readiness of adoption since it is the senior officers who create this environment. For the legal aspects, an institution will look at the national and international jurisdiction in terms of readiness.

National legislation may foster or hinder adoption of e-procurement and the government may be forced to amend some of its laws in order to accommodate e-procurement. International laws and charters may be a factor in readiness of e-procurement especially if the institution wants to deal with international firms. Economic environment in e-readiness means that both the buyer and the supplier will be able to meet the costs of implementing and running the e-procurement system through the demand and supply. E-procurement costs may be a factor in an institution being able to embrace the system as it may prove to be expensive for one of the parties, for example, a public institution may implement the system but there are no willing people to use the e-procurement system. Organizational level of e-readiness means that the planned level of adoption and financial consideration should be looked at. The level of adoption may be mild (introductory) or full-scale adoption which may be intense for an organization. For technological e-readiness, it means that the institution will have the required infrastructure at all levels in order to effectively disseminate the e-procurement service (Australian Government, Department of Finance and Administration, 2005).

Davila et al. (2002), in a study of the adoption and use of e-procurement technology models surveyed 168 respondents and wanted to understand the drivers of e-procurement adoption. The study results showed that the lack of an overall accepted standard is holding back a sizeable number of companies from adopting technologies. These companies fear buying into a “closed” technology that cannot communicate with other technologies and thus limits access to a broader network of supply chain constituencies.

2.1.1.1 Case Study of E-Procurement Readiness

E-procurement readiness in Italy

Prior to 2000, the use of e-commerce and IT in the Italian public sector was generally lower compared to France and the United Kingdom. This was interesting since Italy had the highest mobile telephone usage in any industrialized country. In 2000, the Financial Act mandated the Rationalization Program to generate savings and efficiencies in Italian Public Administrations. At the same time, the Italian Anti Trust Authority was focused on strengthening public procurement practices through fairer competition and audit recommendations that improved cost efficiencies in the purchasing of goods and services. The e-procurement model in Italy is comprised of electronic shops (e-shops), online auctions and the electronic marketplace

(e-marketplace). Primary objectives of developing this model were to reduce costs, simplify purchasing procedures and to increase transparency.

E-shops were initially built by *Concessionaria Servizi Informatici Pubblici* (CONSIP) in 2000 and later a European tender was made for two procurement systems. Since the savings to public expenditure currently exceed the cost of the e-procurement system, there are no (supplier or buyer) fees required to use the e-procurement platform. There are potentially 60,000 e-procurement users within public administrations. The estimated eligible expenditure for the Rationalisation Program is 40%. In 2003 that program covered approximately €16 billion.

Italy as a country was well prepared for adoption of e-procurement in terms of technological environment, legal environment, and procurement environment, all of which are on a macro scale.

E-procurement readiness in South Wales

The New South Wales Government Procurement Policy released in December 1998, sought to achieve the best value for taxpayers' money by leveraging the Government's full purchasing power. This included developing procurement strategies in line with broader policy objectives for economic, environmental and workforce development. The 2001 Strategy supported the strategies in the 1998 Procurement policy and provided a framework for the uptake of e-commerce in procurement. Key objectives of the 2001 Strategy were to (i) achieve better value for money; (ii) reduce costs of doing business for both government and industry; (iii) reduce duplication and improve purchasing efficiency within and between agencies and service providers; (iv) improve strategic information capture and operational data on procurement, e.g. purchasing patterns; (v) provide greater access for regional and small to medium enterprises (SME).

The scope of e-procurement in Government was defined by the 2001 Strategy. This whole-of-government initiative recognized that government agencies would make their business decisions on e-procurement, adopting a consistent and coordinated whole-of-government approach would promote industry confidence in dealing with government. In July 2004, the Treasury announced a new whole-of-government Procurement Reform Policy that would apply to all government departments, statutory authorities, trusts and other government entities. E-procurement itself

had very low visibility within this reform, and the primary focus related to simplifying procurement policy, reviewing key stages of the procurement cycle, improving aspects of construction projects and gaining financial support.

The government of South Wales also prepared for implementation of the e-procurement through legislative readiness. This was through policies enacted by the government.

E-procurement Readiness in New Zealand

In 2000 the New Zealand Ministry of Economic Development published a report outlining the government's e-commerce vision and strategy. The report emphasized the need for Government to lead by example in the area of e-commerce by developing e-government and e-procurement. In July 2000, the Project was established, and the mandate was given to the SSC e-Government Unit. The aim of the Project was to develop a coordinated approach to improving procurement practices across government; implement e-procurement in government agencies for the purchasing of goods and services. The e-procurement system was branded GoProcure. Best described as a transaction hub, GoProcure was an online procurement system that hosted catalogues and coordinated purchase-to-pay transactions. Originally, agencies had to decide whether to adopt the system; however in late 2002 participation became mandatory for all government agencies.

The government of New Zealand prepared itself in terms of technological environment, even though the legislative framework was not strong enough, which led to the change of the initial system

E-procurement readiness in Kenya

Few literatures have materials on e-readiness of e-procurement in Kenya. However, the government has started to show commitment in terms of embracing e-procurement. The public procurement in Kenya spends a lot of money and it accounts for a big chunk of the economy's expenditure. According to FSD Kenya (2008), it is understood that the GOK procured about KSh. 300 billion worth of goods and services in the 2006 financial year, while the Kenya National Bureau of Statistics (KNBS) estimated that the Kenyan budget for the year 2013/2014 will be Ksh.1.6 trillion shillings. A large chunk of this amount of money will go to the procurement of goods and services, both recurrent and capital expenditure through development contracts. Therefore, emphasis has to be laid on the efficiency of procurement processes because

it will save the economy a lot of money that can be used in other areas. With the country aiming to become a middle income country by the year 2030, efficiency in the procurement sector will have to become a necessity. The government should therefore ensure that the five aspects of e-readiness are adequately addressed so as the implementation will not be a failure.

From the e-procurement readiness case studies above, it can be seen that governments have to be fully involved from the onset in the preparation of adoption systems. It can be seen that these governments have visions and strategies for the system, and will therefore be able to provide an environment for the adoption of e-procurement. This is a critical element as the government provides the adoptive environment necessary for e-procurement readiness.

2.1.2 Benefits and Challenges of E-Procurement

According to Eakin (2003), e-procurement benefit analysis is a continuous measurement of the effectiveness of the key performance measures that is vital to the successful management and delivery of benefits realized. He further states that in order to calculate recurring benefits, key savings drivers need to be identified and measured against. These key drivers for e-procurement include transactional, payment, management information and price benefits. The main measures that will demonstrate a return on investment (ROI) in e-procurement are: hard benefits (directly measurable) that are required to deliver enhanced shareholder value and thus gain approval such as price savings and process cost reduction, soft benefits (indirect benefits) whose direct effect on cash flow may be difficult to quantify accurately but may well be indicative of progress; and intangibles which are beneficial but are not directly measurable in financial terms.

Corsi, (2006) stated that the e-procurement benefits can either be intermediate outcomes or final outcomes. Intermediate outcomes include better services, cost savings, and time savings while final outcomes include improvement of the labor productivity of the public sector, economic rationality (organizational efficiency), simplification, transparency and accountability, and GDP growth. The speed at which these benefits are experienced vary from one organization to another but generally all institutions that adopt e-procurement systems have an advantage over the others with regards to the benefits in question i.e efficiency, corruption cases and transparency.

Corsi, (2006) in his e-procurement overview stated that e-procurement implementation challenges may be broadly classified as organizational challenges or economic-legal challenges.

Some of the organizational challenges during implementation include: i) Users being resistant to change which is a natural human nature. Organizations that are implementing new systems are more often than not faced with this problem as the users always fear the unknown. ii) Also, users believe that e-procurement will make their job more difficult and cumbersome. This brings resistance during the implementation as the end users have not known how the system will work and have not been trained on how to use the system. iii) The end users will also believe that the current roles will change due to the impact of e-procurement. Adoption of a new I.T system is always believed to change the job structure of an employee especially if it is phasing out of a completely manual system. iv) Corruption in public institutions is a hindrance to successful adoption of e-procurement. According to Transparency International report (2013), Kenya is the fourth most corrupt country in the world and the public procurement sector has been on the spot with regards to issuance of tenders. Transparency that comes with the adoption of e-procurement has brought resistance from users in the system and hence frustrating the implementation.

Economic-legal challenges faced by an organization during implementation include i) The level of economic development in the country. A weak economy is susceptible to manipulation during procurement as there are loopholes in the system. Also, the regulatory framework that governs e-procurement is a factor that may hinder implementation of e-procurement. Procurement framework that may hinder e-procurement may pose a challenge. Technological scenario may hinder e-procurement adoption, as well as existence of private competitor services who may offer e-procurement service may make public e-procurement reluctant.

2.1.3 Models of E-Procurement

According to Timmers, (1998), a model is architecture for a product, service, and information flows, including a description of the various business actor and their roles. Davillaet *al.* (2002) in their study identified the following models of e-procurement technologies:

E-procurement software which is any internet-based software application that enables employees to purchase goods from approved electronic catalogs in accordance with company buying rules, while capturing necessary purchasing data in the process. The employee's selection of a good for purchase from a supplier catalog is automatically routed through the necessary approval processes and protocols. E-procurement software investment may take several forms, including purchase of a software package from a third party technology provider (e.g., Ariba,

CommerceOne), use of an e-procurement system embedded in an Internet market exchange, subscription to e-procurement software hosted and supported by an application service provider (ASP), or development of a proprietary in-house system.

Internet market exchanges model are web sites that bring multiple buyers and sellers together in one central virtual market space and enable them to buy and sell from each other at a dynamic price that is determined in accordance with the rules of the exchanges.

Internet B2B auctions model are events in which multiple buyers place bids to acquire goods or services at an Internet site. There are a variety of e-auction formats. The two most popular auction formats are the Dutch auction (where the sellers control the minimum bid and prices move upward from the minimum bid) and the reverse auction (where buyers post “requests for quotations” and sellers bid the price down).

Internet purchasing consortia model are internet services that gather the purchasing power of many buyers to negotiate more aggressive discounts. Some organizations aggregate buying power for manufacturing inputs (such as FOB.com), while others perform similar functions for indirect goods (such as BizBuyer.com).

Corsi, (2006) identified models in a different perspective. He identified some of the widely used e-procurement models as:

Activity-based model. This model includes Indirect Procurement System (IPS) and Direct Procurement System (DPS). An indirect procurement system is where the contracting subject does not coincide with the ordering administration while a direct procurement system is when a contracting subject coincides with the ordering administration.

Organization-based model. This includes the Centralized Model and Decentralized Model. A centralized procurement model is where the purchasing procedures are centralized while a decentralized model is where the purchasing procedures depend on each administration unit.

2.2 Conceptual Framework

The conceptual framework provides a basis for the scope of the study. It takes cognizance of e-readiness by public institutions and factors that affect e-readiness. It helps identify all the variables in the study and the interrelations between the dependent and independent

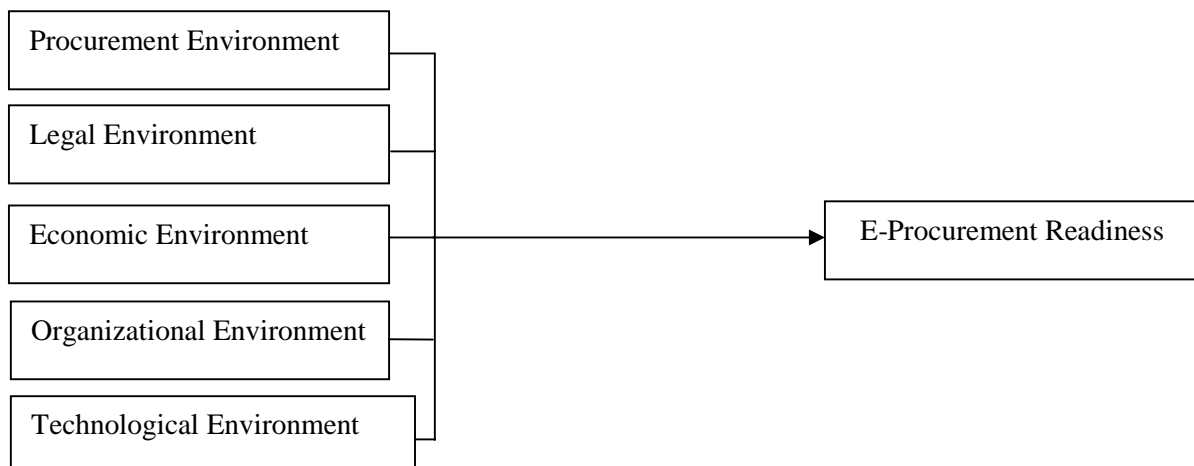
variables. This study will use the Australian Government, Ministry of Finance model in coming up with our variables for the conceptual framework. The factors that influence e-procurement readiness in the study include procurement environment, legal environment, technological environment, economic environment, and organizational environment.

The conceptual framework shows the diagrammatical relationship between e-procurement readiness and e-procurement environments (i.e. procurement environment, legal environment, technology environment, economic environment, and organizational environment) affecting the outcome of the dependent variables.

2.3 Summary

Public institutions have been adopting e-procurement systems even though the rate has been slow. An institution that adopts e-procurement is seen to have benefits as has been elaborated by several studies. However, for a public institution to effectively implement e-procurement system, it should be ready in various aspects in order to do so. These aspects are operating environment, legal environment, economic environment, organizational environment, and technical environment. Models of procurement, as well as benefits and challenges of e-procurement implementation have also been outlined, together with the conceptual framework that will assist us in coming up with variables that will be used in data analysis.

E-Procurement Environment



CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the methodology, which was used in the study. Section 3.2 begins with the overall research design. Section 3.3 explains the target population and the sampling procedure, which was used to arrive at the appropriate sample size. Section 3.4 will present the procedure and the data collection instrument used in data collection and the justification for the choices. The technique of data analysis will be expounded in Section 3.5. This section describes data cleaning and preparation for analysis, the appropriateness for the statistical methods used for analysis.

3.2 Research Design

The study employed cross-sectional descriptive design. According to Cooper and Schindler (2003), a descriptive study finds out who, what, where, and how of a phenomenon which is the aim of this study. The descriptive design enabled the study to define the unit of analysis and provide characteristics in terms of means and standard deviation. This is appropriate for this study since the researcher collects detailed information through descriptions and is useful for identifying variables. A cross-sectional design enables collection of data at the same time from public institutions which may or may not be at different stages, (Mann, 2003).

3.3 Population

The population was 171 government agencies which are 18 ministries and 153 parastatals from (MCL, 2013). MCL is a marketing firm that specializes in developing marketing concepts, brand management, media & PR, Team Building and advertising strategies for regional and local clients.

This population will be important since it identifies respondents who would provide the correct information and are capable of using the ERP systems, IFMIS or SAP.

3.4 Sampling

The study employed a stratified random sampling technique with the ministries and parastatals constituted the strata to be used. According to Kothari, (1990), the factors used to determine the appropriate sample size are: purpose of the study, population size, the level of

precision, the level of confidence or risk, and the degree of variability in the attributes being measured.

The general rule relative to acceptable margins of error in educational and social research is 5% for continuous data (Cochran, 1977). He stated that a sample size can be determined using a table, with the size of the sample determined using population size, margin of error, and alpha level of each tail. Using the Bartlett et al. (2001) table, with a margin of error of 0.05 and an alpha of 0.50, our study shall use a sample size of 50 respondents.

Table 1: Sample Size Determination

	No. of respondents	Sample size (39.24%)
Ministries	18	5
Parastatals	153	45
Total	171	50

The questionnaire was administered to the 50 respondents in the institutions who are procurement staff and ICT staff.

3.5 Data Collection

The study utilized both primary and secondary data collection methods. For the primary data, a questionnaire was used and contained both structured and open ended questions to capture both quantitative and qualitative data. The questionnaire consisted of demographic information section which gives information about the respondents, e-procurement readiness challenges section which highlighted the readiness challenges from the public institution, and the e-procurement environments which helped find the relevant factors for the study. The questionnaire was administered to procurement officers in ministries and parastatals.

3.6 Instrument Validity and Reliability

A pilot study of 10 respondents was used to test the face validity, construct validity and content validity of the questionnaire. The respondents were also asked to confirm if the questionnaire was generally okay with them and their feedback was used to improve on the quality of the questionnaire.

3.7 Data Analysis

The first objective of the analysis was to analyze the descriptive data, which elaborated on the sample in question. These characteristics were then inferred on the population. The second

objective of the data analysis was to examine how closely the various variables and how they form factors. e.g. procurement environment will comprise the following: the procurement policy is inhibitive of implementation of e-procurement system; the structure of the procurement system conducive for adoption of e-procurement. The third objective was to identify how the independent and dependent variables were correlated so as to infer the same on the population.

Data collected was coded and analyzed. This stage involved data capture, processing, cleaning and tabulation. Data was analyzed with the aid of the Statistical Package for Social Sciences, (SPSS). Statistical techniques were applied to the data and descriptive statistics such as mean, standard deviation and other descriptive data were extracted. The study also used correlation (r) to see how the independent variable related to the dependent variable (e-procurement readiness). The study employed factor analysis among the set of independent variables: e-procurement environment, legal environment, technological environment, economic environment, and organizational environment. The significance of the data was analyzed using critical P-values. The resulting P values were compared with the critical P Value. The results were presented in percentages, tables and charts.

Once the data was received from the public institutions, relevant analytical tools were used to analyze the data and findings given. Descriptive statistics gave us the overall characteristics of the data present while cross-sectional data enabled us compare the adoption readiness in different ministries and parastatals.

CHAPTER 4: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.0 Introduction

The main purpose of this study was to investigate the e-procurement readiness of public sector institutions. This chapter contains the findings and the interpretation of the study results that attempted to answer the research questions as derived from the objectives. It is organized on the basis of research objectives and research questionnaire.

4.1 Response Rate

The study target population was 50 ministries and parastatals, 5 ministries and 45 parastatals in Kenya. Of this target, 46 respondents participated by filling and returning the questionnaire. This yielded a response rate of 92%. The other 8% of the target population did not respond to the questionnaire because they were not available when we returned to collect the questionnaire.

4.2 Demographic Characteristics

A profile of the respondents was cross tabulated in order to look at the relations of age group, gender, education level, and internet knowledge level.

4.2.1 Age Group

Table 2: Distribution of Age Group

	Age Group	N	Percent	Valid Percent
Valid	22 to 30 Years	13	28.3	28.3
	31 to 45 Years	20	43.5	43.5
	Over 45 Years	13	28.3	28.3
	Total	46	100.0	100.0

As shown in Table 2, 28.3% (N=13) of the respondents were between the ages of 22 to 30 years, 43.5% (N=20) of them were between 31 to 45 years, while the remaining 28.3% (N=13) of the respondents were over 45 years. The age distribution of the respondents seems to be balanced and normal.

4.2.2 Gender

Table 3: Distribution of Gender

	Gender	N	Percent	Valid Percent
Valid	Male	33	71.7	71.7
	Female	13	28.3	28.3
	Total	46	100.0	100.0

With regards to gender distribution as shown in Table 3, a majority 71.7% (N=33) of the respondents are men while 28.3% (N=13) of the respondents are women. This shows that many of the procurement employees are men as compared to women.

4.2.3 Educational level

Table 4: Distribution of Education Level

	Education Level	N	Percent	Valid Percent
Valid	High School	1	2.2	2.2
	College Education	8	17.4	17.4
	First Degree	29	63.0	63.0
	Masters Degree	8	17.4	17.4
	Total	46	100.0	100.0

With regards to education level as shown in Table 4, a majority 63.0% (N=29) of the respondents have had First Degree education while the rest of the respondents (37%) have had either College, High School or Masters Degree education. This shows that almost everyone in public procurement is literate in terms of education as over 97% of the respondents have at least college level education.

4.2.4 Internet Knowledge Level

Table 5: Distribution of Internet Knowledge Level

	Internet Knowledge	N	Percent	Valid Percent
Valid	Poor	1	2.2	2.2
	Average	8	17.4	17.4
	Good	25	54.3	54.3
	Very Good	12	26.1	26.1
	Total	46	100.0	100.0

In terms of internet knowledge of the respondents as shown in Table 5, 80.1% (N=37) have at minimum good knowledge of internet usage. This is important especially in the study which looks at e-procurement readiness and therefore shows that most of our respondents are able to use and interact using the internet.

4.2.5 Internet Purchase Level

Table 6: Level of Internet Purchase

Level of Internet Purchase		N	Percent	Valid Percent
Valid	Always	1	2.2	2.2
	Sometimes	14	30.4	30.4
	Rarely	21	45.7	45.7
	Never	10	21.7	21.7
	Total	46	100.0	100.0

With regards to gender distribution as shown in Table 6, 30.4% (N=14) of the respondents rarely purchase through internet, 45.7% (N=21) of the respondents are rarely purchase through the internet, while 21.7% never purchase online. This shows that adoption of e-procurement in public sector is still very low.

4.2.6 Website Ordering Level

Table 7: Level of Website Ordering

Level of Website Ordering		N	Percent	Valid Percent
Valid	Always	1	2.2	2.2
	Sometimes	4	8.7	8.7
	Rarely	20	43.5	43.5
	Never	21	45.7	45.7
	Total	46	100.0	100.0

With regards to gender distribution as shown in Table 7, 45.7% (N=21) of the respondents have never placed an order online from another company's website, while 43.5% (N=20) of the respondents rarely order from other companies' websites. This shows the apathy of utilizing online procurement system despite some institution having the systems.

4.2.7 Electronic Ordering Level

Table 8: Level of Electronic Ordering

Level of Electronic Ordering		N	Percent	Valid Percent
Valid	Always	1	2.2	2.2
	Sometimes	2	4.3	4.3
	Rarely	16	34.8	34.8
	Never	27	58.7	58.7
	Total	46	100.0	100.0

With regards to level of electronic ordering as shown in Table 8, 58.7% (N=27) of the respondents have never place orders through any electronic means, while 34.8% (N=16) of the respondents rarely place orders through any electronic means.

4.2.8 ICT Integration Level

Table 9: Level of ICT Integration

Level of Integration		N	Percent	Valid Percent
Valid	Yes	3	6.5	6.5
	No	43	93.5	93.5
Total		46	100.0	100.0

Table 9 above shows that the level of integration of ICT system with that of the supplier is very low, with 93.5% (N=43) of the respondents stating that their systems are not integrated with any ICT system. The integration of system with that of supplier enables easy procurement and even the supplier can monitor and know when to restock.

4.2.9 Extent of Online Purchases

Table 10: Extent of Online Purchases

Extent of Online Purchase		N	Percent	Valid Percent
Valid	11 up to 25%	3	6.5	100.0
	Missing System	43	93.5	
Total		46	100.0	

Table 10 above shows the extent of online purchase for those who have integrated their online system. Since the number of respondents who stated to the affirmative were 3, all of them stated

that they use online purchase within a range of 11 percent and 25 percent. This figure is low even for organizations that have integrated online procurement systems.

4.3 E-Procurement Readiness Challenges

The e-procurement readiness challenges were identified and the response given using a likert scale to show the impact of each identified challenge. Descriptive statistics were as summarized in the table below.

Table 11: Descriptive statistics

	N	Mean	Std. Deviation	Mean Ranking
Staff skills	46	3.83	0.38	1
Resistance to change	46	3.64	0.605	2
Lack of enthusiasm	46	3.32	0.515	3
Proc. Policies	46	3.32	0.887	3
Transparency of staff	46	2.81	0.537	5
Corruption	46	2.4	0.614	6
Perc cost running sys	46	2.13	0.397	7
Legal issues	46	2.13	0.536	7
Loss on confid.	46	2.13	0.448	7
Tech compatibility	46	2.06	0.485	10
Competition from competitors	46	2.04	0.509	11
Cost of system acquisition	46	1.98	0.571	12
Overall mean		2.65	0.54	

The descriptive statistics gives us the nature and characteristics of the data. The mean rankings show the degree with which the respondents agree or disagree with the questions and are based on the mean of the responses. The means were calculated from the coded responses, with a value of 1 having represented strongly disagree and 5 having represented strongly agree. From the table, the results showed that most of the respondents agreed that staff skills were the biggest challenge to e-procurement readiness with a mean of 3.83, followed by resistance to change by staff which had a mean of 3.64. Cost of system acquisition was the least ranked challenge in terms of affecting e-procurement readiness which had a mean of 1.98.

With regards to resistance to change, 63.8% of the respondents stated that resistance to change is a challenge to e-procurement readiness. This shows that in many public institutions that there is

resistance to change and people are satisfied with the current system, hence maintaining a status quo.

A majority 83% (N=39) of respondents agree that staff skills in relation to e-procurement is an impediment to readiness of e-procurement adoption. This indicates the gap that is required to successfully implement the e-procurement systems in the public sector, either through indoor trainings or staff attending courses with relation to e-procurement.

With regards to transparency of staff as a challenge to e-procurement readiness, 68.1% (N=32) of the respondents neither agree nor disagree with transparency being an e-procurement readiness challenge, while 25.5% (N=12) of the respondents disagree with transparency of staff being a challenge to e-procurement readiness.

With regards to lack of enthusiasm among the staff, 34% (N=16) of the respondents agree that lack of enthusiasm is a challenge to e-procurement readiness, while 63.8% (N=30) neither agree nor disagree. From this it can be concluded that lack of enthusiasm is not a big challenge to e-procurement readiness in public institutions

With regards to competition from competitors, 85% (N=40) of the respondents disagree or strongly disagree that competition from competitors is a challenge to e-procurement readiness. From this it can be concluded that competition from competitors is not a challenge to e-procurement readiness in public institutions. It therefore means that public institutions do not have rivals from whom they can benchmark their performance.

With regards to corruption among the staff, 66% (N=31) of the respondents disagree that corruption is a challenge to e-procurement readiness, while 27.7% indicated that they neither agree nor disagree. This result is contrary to our expectation as was stated in the literature review as corruption being an impediment to implementation of e-procurement due to its transparency nature.

With regards to cost of system implementation, 85% (N=40) of the respondents disagree or strongly disagree that cost of e-procurement system acquisition is a challenge to e-procurement readiness.

With regards to perceived cost of running an e-procurement system, 85% (N=40) of the respondents disagree or strongly disagree that cost of running an e-procurement system is a challenge to e-procurement readiness. This indicates that public procurement institutions do not see cost of running the systems as a challenge to e-procurement readiness.

With regards to technological compatibility, 85% (N=40) of the respondents disagree or strongly disagree that technological compatibility is a challenge to e-procurement readiness. This result shows that the ICT system is/perceived to be good in terms of technological compatibility with other systems.

With regards to procurement policies as a challenge to e-procurement readiness, 51% (N=24) of the respondents agree or strongly agree that procurement policies are a challenge to e-procurement readiness. This result shows that public procurement policies influence the readiness of e-procurement implementation.

With regards to legislative framework, 83% (N=39) of the respondents disagree or strongly disagree that the legislative framework is a challenge to e-procurement readiness. This result shows that there are proper procurement laws that assist in readiness of e-procurement implementation.

With regards to perception of loss of confidentiality, 87% (N=31) of the respondents disagree that loss of confidential information is a challenge to e-procurement readiness. This result shows that loss of confidential information is not a hindrance for public institutions to procure online.

4.4 Factors for E-procurement readiness

4.4.1 KMO and Bartlett Test Table

Table 12: KMO and Bartlett Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.508
Bartlett's Test of Sphericity	Approx. Chi-Square	1278.737
	df	378
	Sig.	.000

This test measures the strength of relationship among variables. From Table 23 above, the Kaiser-Meyer-Olkin measure has a value of 0.508. Kaiser (1974) recommends accepting values

greater than 0.5 as acceptable. This indicates that the variables will yield distinct and reliable factors which can be analyzed independently.

4.4.2 Communalities Test Table

Table 13: Community Test

	Initial	Extraction
Proc. Env.1	1.000	.747
Proc. Env.2	1.000	.401
Proc. Env.3	1.000	.741
Proc. Env.4	1.000	.570
Leg. Env.1	1.000	.815
Leg. Env.2	1.000	.583
Leg. Env.3	1.000	.845
Leg. Env.4	1.000	.870
Leg. Env.5	1.000	.579
Econ. Env.1	1.000	.872
Econ. Env.2	1.000	.841
Econ. Env.3	1.000	.897
Econ. Env.4	1.000	.903
Econ. Env.5	1.000	.911
Org. Env.1	1.000	.664
Org. Env.2	1.000	.718
Org. Env.3	1.000	.927
Org. Env.4	1.000	.644
Org. Env.5	1.000	.956
Org. Env.6	1.000	.612
Tech. Env.1	1.000	.744
Tech. Env.2	1.000	.865
Tech. Env.3	1.000	.906
Tech. Env.4	1.000	.944
Tech. Env.5	1.000	.653
Tech. Env.6	1.000	.714
Tech. Env.7	1.000	.919
Tech. Env.8	1.000	.940

Extraction Method: Principal Component Analysis.

Communalities in factor analysis show how much of the variance in the variables has been accounted for by the extracted factors. In this instance, 74.7% of the variance in *procurement policy being inhibitive of implementation of e-procurement system* (Proc.Env.1) is accounted for, 81.5% of the variance in *national laws hinder the adoption of e-procurement* (Leg.Env.1) is accounted for. Table 13 shows all the variance accountability of each variable in the study.

4.4.3 Rotated Component Factor Matrix

Table 14: Rotated Component Factor Matrix

Critical Success Factors	Component							
	1	2	3	4	5	6	7	8
Proc. Env.1						-.812		
Proc. Env.2								
Proc. Env.3								.830
Proc. Env.4							-.585	
Leg. Env.1						.829		
Leg. Env.2					.610			
Leg. Env.3				.856				
Leg. Env.4				.878				
Leg. Env.5								.599
Econ. Env.1		.912						
Econ. Env.2		.860						
Econ. Env.3		.887						
Econ. Env.4		.940						
Econ. Env.5		.947						
Org. Env.1					.643			
Org. Env.2					.595			
Org. Env.3			.947					
Org. Env.4			.592					
Org. Env.5			.957					
Org. Env.6					.640			
Tech. Env.1				.623				
Tech. Env.2	.911							
Tech. Env.3	.936							
Tech. Env.4	.969							
Tech. Env.5							.756	
Tech. Env.6	.827							
Tech. Env.7	.943							
Tech. Env.8	.963							

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

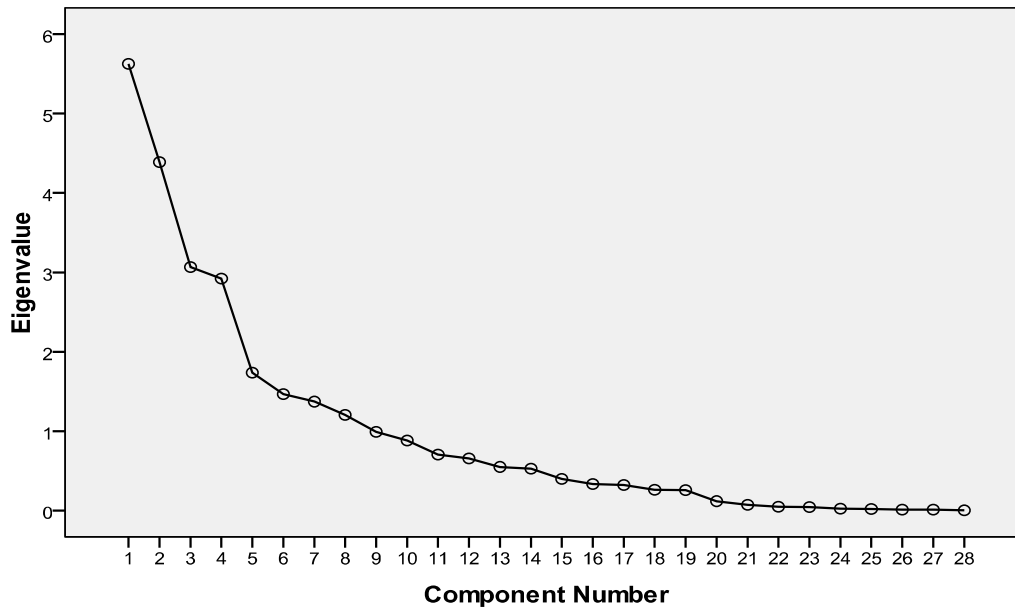
a. Rotation converged in 20 iterations.

Table 15: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.625	20.090	20.090	5.625	20.090	20.090	5.396	19.272	19.272
2	4.390	15.678	35.768	4.390	15.678	35.768	4.401	15.717	34.989
3	3.066	10.950	46.718	3.066	10.950	46.718	2.503	8.938	43.927
4	2.921	10.430	57.149	2.921	10.430	57.149	2.453	8.762	52.689
5	1.737	6.205	63.354	1.737	6.205	63.354	2.169	7.748	60.437
6	1.465	5.232	68.585	1.465	5.232	68.585	1.805	6.447	66.884
7	1.372	4.899	73.484	1.372	4.899	73.484	1.527	5.454	72.337
8	1.204	4.299	77.784	1.204	4.299	77.784	1.525	5.446	77.784
9	.991	3.540	81.324						
10	.881	3.146	84.470						
11	.703	2.511	86.981						
12	.655	2.340	89.321						
13	.549	1.961	91.282						
14	.526	1.878	93.160						
15	.398	1.421	94.582						
16	.334	1.193	95.775						
17	.321	1.146	96.921						
18	.261	.932	97.852						
19	.256	.915	98.767						
20	.118	.421	99.188						
21	.072	.256	99.444						
22	.046	.165	99.610						
23	.043	.154	99.764						
24	.024	.087	99.850						
25	.019	.066	99.917						
26	.012	.044	99.961						
27	.010	.035	99.995						
28	.001	.005	100.000						

Extraction Method: Principal Component Analysis.

Figure 2: Scree plot



The components matrix table shows the loadings of the variables on the factors extracted, which is eight in number. The higher the absolute value of the loading the more the factor contributes to the variable. In a rotated matrix, as is in Table 14, the number of factors is reduced on which variables have high loadings. From this, the eight factors that can be created from this are technical factor, economic factor, leadership and integrity, legal framework, ethics and attitudes, procurement policy and national law, e-procurement adoption and staff I.T adequacy, and online marketplace and government support that might affect e-procurement readiness. These were the new variables that were used to study the e-procurement readiness.

From the total variance explained table, it can be seen that factor 1 contributed to a variance of 20% of the total variance while component 2 contributed to a variance of 15.7% of the total variance. The extracted eight factors have a combined total variance of 77.8% of the total variance.

The scree plot is a graph that assists in determining how many of the extracted factors to retain. The point at which the curve begins to flatten or has an inflexion is the point where the number of factors we should pick. From the scree plot above, we should take seven factors, even though eight factors may still be allowed. This is also explained by the total variance explained table which extracted eight factors.

4.5 Discussions

The study's first objective was to determine the factors that affected e-procurement readiness in Kenya's public procurement departments. From the study findings, these were technology, organization's finance, leadership and integrity, legal framework, ethics and attitudes, procurement policy and national law, e-procurement adoption and staff I.T adequacy, and online marketplace and government support.

Factor No.1 -Technology: Technology of an institution is the most critical success factor. Both hardware and software systems, I.T system incompatibilities and integration form a key part to success of e-procurement. Procurement departments should ensure that there are no system incompatibilities when implementing new I.T systems, have proper systems software infrastructure, train staff on I.T skills, and have proper systems network. The case study literature showed that the interoperability of systems and standards is an ongoing challenge facing all e-procurement systems. Managing this integration is difficult without technical standards, specifically in the area of data format. This was also the case in Kenya where technology is a challenge in e-procurement readiness.

Factor No.2 -Organization's finance: An organization's ability to afford e-procurement systems is also a critical factor to successful e-procurement readiness. The organization should therefore ensure that the cost of e-procurement transaction is not prohibitive to supplier and the buyer, and have adequate financial capability to acquire the e-procurement system. The case study literature showed that there was no challenge in financing of e-procurement system. E-procurement initiatives require a large financial commitment and assessing the benefits from the financial investment is a complicated task. This was also the case in Kenya as the study showed that finance is not a challenge in e-procurement readiness.

Factor No.3 -Leadership and integrity: An institution's leadership and integrity forms a good success factor for e-procurement readiness. This success can be ensured through ensuring transparency by staff in regards to e-procurement issues, people having accountability for their work, and providing leadership in the organization. The case study literature indicated a challenge of communication and change management of e-procurement adoption. This was not the case in Kenya as the study showed that leadership and integrity was not a challenge in e-procurement.

Factor No.4 -Legal framework and technical preparedness: Another factor that is important in the success of e-procurement readiness is legal framework and technical preparedness. This can be enabled in the organization by ensuring that the current and expected legal frameworks are favorable to the organization in its quest for e-procurement readiness. The case study literature showed that legal framework was not an issue in adoption of e-procurement. The case studies indicated that countries have had to change their legislative framework in order to implement e-procurement. This is contrary to Kenya, where legal and technical preparedness was a challenge in e-procurement readiness. The country therefore has to amend its legal framework so as to suit e-procurement readiness.

Factor No.5 -International law and employee attitude: This was also identified as a factor in the success of e-procurement readiness. Therefore an organization should ensure this is done through training of staff on ethics and attitude towards e-procurement systems, and adhering to international laws with regards to procurement.

Factor No.6 -Procurement policy and national procurement law: Procurement policy and national law is an important factor in e-procurement readiness. The institutions should ensure that this factor is implemented by ensuring that the national laws are favorable to the e-procurement system, and ensuring that the organization's e-procurement policy enhances e-procurement adoption. According to the case study literature, government agencies often have competing priorities and e-procurement is not always one of them. E-procurement has been successful in governments where these priorities along with policy reform have been clearly stated and maintained. This is also in Kenya where procurement policy and national procurement law is not a major challenge.

Factor No.7 -E-procurement adoption and staff I.T adequacy: This factor is important in e-procurement readiness and organizations can ensure that the national e-procurement adoption levels do not affect the institution's ability to implement its own e-procurement system, and also the staff is adequately prepared to work with new I.T systems and internet. The case studies from the literature showed that ongoing professional development for procurement personnel is lacking and identified a need for skilled resources. The Italian government in conjunction with several universities has developed a post graduate program for procurement professionals. There was no challenge in Kenya with regards to e-procurement adoption and staff I.T adequacy.

Factor No.8 - Online marketplace and government support: The last factor extracted that is useful in e-procurement readiness is online and government support. Government and institutions can ensure this is achieved through embracing use of online market tools in e-procurement, and the government providing favorable legal framework for e-procurement adoption. From the case study literature, it showed that harnessing good information is demanding and requires the development of information policies and procedures to ensure this occurs. There was government support in these countries as was the case in Kenya.

The second objective of the study was to determine the e-procurement readiness levels of public procurement departments. These were analyzed from the ICT integration levels, share of electronic ordering and purchasing perspectives. With regards to ICT integration levels, majority of the respondents stated that they did not have their systems integrated with that of the supplier. Also, with regards to extent and levels of electronic purchases, the findings showed that there were very little electronic ordering and purchases from the procurement departments with most stating that they do not make use of online purchases. These findings imply that public procurement departments have a lot of sensitization as far as the benefits of e-procurement are concerned. Since the study showed that there are no economic challenges with acquisition of e-procurement systems, the only issue remaining is making use of the human resource in the adoption of the system.

The third objective of the study was to determine the challenges of e-procurement readiness in Kenya's public procurement departments and how these challenges can be overcome. The study identified three main challenges (in order) from the responses and the mean scores to e-procurement readiness:

- 1. *Staff skills:*** Majority of the respondents agreed that staff skill is the biggest challenge to e-procurement readiness. This is because they have not been trained on how to work with the e-procurement systems. This challenge may be addressed by training of staff on e-procurement use and I.T skills on how to transact over the internet.
- 2. *Resistance to change:*** This was also a challenge to e-procurement readiness in institutions with many respondents stating that it is a challenge to their readiness. It is natural for human resistance to new system. The government procurement departments should prepare the staff

for new systems so that they may easily embrace them. This may be through training of staff so that they may be proactive with systems and have change agents within them.

3. *Lack of enthusiasm*: This was the third challenge with respondents agreeing that it was a challenge to e-procurement readiness. From the study findings, the staff is not enthusiastic about the adoption of e-procurement system in their departments. This is a challenge since it makes learning of the e-procurement system difficult. Public institutions should engage and train their staff and find ways to make accepting new systems interesting for them. Rewards can also be used to motivate them and make them enthusiastic when implementing new systems.

Corsi (2006), in his study identified some of the challenges of e-procurement readiness to include (i) user resistance to the new system, (ii) user perception of cumbersome or difficulty in the new system, (iii) corruption in the administration, (iv) fear of change of roles in the new system, and (v) economic strength of both the institution and country. From his study, it can be seen that they are not the same challenges as those encountered in public institutions in Kenya. These challenges vary from one country to another, and also from one institution to another.

CHAPTER 5: SUMMARY, DISCUSSIONS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter summarizes the interpretations of the findings in Chapter 4 and draws conclusion and offers recommendation for the study. The data was analyzed using descriptive statistics and factor analysis. These techniques are believed to provide useful information in finding out the e-procurement readiness in Kenya's public sector.

5.2 Summary

The use of e-procurement system has been introduced in public institutions, albeit at a slow pace. With the government's strategy of the vision 2030, governmental departments have been urged to improve on procurement efficiency since it takes a huge chunk of the national budget. The study's literature and results show that public procurement departments have some of these systems (IFMIS strategic plan, 2008) but they are not utilizing them. This has been shown from the results which show majority of these departments are not using these systems and also have not integrated their systems with that of the suppliers.

The main objective of the study was to investigate the readiness of Kenyan companies and institutions towards adoption of e-procurement. With the objective of the study, literature review was carried out and similar studies in other countries were done and analyzed, with important aspects of readiness in these countries being noted. From the data analysis, important variables that were able to be brought out and impacted the readiness of e-procurement readiness were technical factor, economic factor, leadership and integrity, legal framework, ethics and attitudes, procurement policy and national law, e-procurement adoption and staff I.T adequacy, and online marketplace and government support..

Primary data was collected through a questionnaire, and was structured to satisfy the research objectives. Based on these readiness aspects the study sought to find whether the environmental aspects affected the readiness of e-procurement adoption in public institutions in Kenya. Data analysis was done using descriptive statistics and factor analysis. The sample of 50 units was selected from the various ministries and parastatals of which 47 responded and their responses analyzed.

From the factor analysis test that was done, eight factors were extracted which were used for e-procurement readiness. These were technology, organization's finance, leadership and integrity, legal framework and technological preparedness, international law and employee attitude, procurement policy and national procurement law, e-procurement adoption and staff I.T adequacy, and online marketplace and government support. These factors/ new variables were analyzed to see if they impacted on e-procurement readiness in Kenya's public institutions.

It was therefore concluded that technology, and procurement policy and national procurement law were factors that affected the readiness of public procurement institutions in Kenya while the other factors (organization's finance, leadership and integrity, legal framework and technical preparedness, international law and employee attitude, e-procurement adoption and staff I.T adequacy, and online marketplace and government support) did not.

5.3 Conclusion

This study has proposed other techniques to be used in the analysis, and also the readiness and challenges in the private sector should be analyzed to provide more insights.

The study's first objective was to determine the factors that affect the e-procurement readiness levels of Kenya's procurement departments. From the data analysis that was done, several factors that affected e-procurement adoption in Kenya were created using factor analysis. These were technology, organization's finance, leadership and integrity, legal framework and technical preparedness, international law and employee attitude, procurement policy and national procurement law, e-procurement adoption and staff I.T adequacy, and online marketplace and government support. These variables were extracted according to how they relate to each other. These variables from the findings can therefore be used by procurement departments to analyze e-procurement readiness in future and also in other institutions that the study did not sample.

The second objective of the study was to determine the extent of e-procurement readiness levels from the research variables. The results of the study showed that public procurement departments did not use e-procurement systems, nor integrate them with those of their suppliers. This is despite having systems such as IFMIS and SAP which are capable of system integration with those of suppliers. The functionalities of the ERP systems show that they are very much underutilized and so efforts should be made to enable the effective use of these systems.

The third objective of the study was to determine the challenges of e-procurement readiness and how they can be overcome. From the data findings that were done from the responses given showed that challenges that affected e-procurement readiness were staff skills, resistance to change, and lack of enthusiasm by staff. These three challenges were the ones that affected e-procurement readiness the most. With these findings, it was seen that there was a big gap in organizational staff trainings and attitude towards e-procurement systems. As long as there is no training of staff, adoption of e-procurement system will be difficult in implementation as resistance and sabotage will be high. It is therefore important for public institutions to train their staff to be able to overcome these challenges as all of them are organizational and not economic.

E-procurement adoption is important for institutions since the benefits are enormous. The public institutions should be adequately prepared to implement e-procurement systems, with the factors challenging adoption requiring to be adequately addressed. It is upon these institutions to address the challenges being encountered in e-procurement readiness so that national growth can be experienced through efficiency in procurement.

5.4 Recommendations of the Study

From several studies, it has been shown that countries have been able to prepare themselves adequately in order to successfully implement e-procurement systems. From the challenges encountered in e-procurement readiness, public institutions should ensure that public institutions fully integrate their systems with those of the suppliers. Since the ERP software used has the capability of supplier integration, this can be done and integrated with those of suppliers. However, training has to be done to ensure maximization of the system.

Also, the public procurement departments should ensure that staff are adequately trained and prepared to work with ICT and e-procurement systems as it has been seen as a hindrance to e-procurement readiness.. This will enable them to work effectively and efficiently with the systems.

5.5 Limitations of the study

The study provided an opportunity to look at the e-procurement, its challenges and more importantly e-procurement readiness in Kenya's public procurement departments. In the course of carrying out the study, a few limitations were experienced. One of the challenges experienced

was the administration of questionnaires to the public procurement staff. Some of the staff were reluctant in the answering of questionnaires, and others took long to submit back the questionnaires affecting the time schedule of the analysis.

5.6 Suggestions for Further Research

The study suggests that more insight research should be done on e-procurement and other factors that may affect e-procurement readiness and its challenges; including factors which may have an impact other than those currently analyzed and may provide further knowledge in the research area.

Other research techniques such as Chi-square might also be used to analyze the study and provide results and insights from a different perspective.

Studies of e-procurement challenges and e-procurement readiness should also be carried out in private institutions so as to compare them to these of public institutions. Some of those findings might be useful even in the public sector.

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APPENDIX I: QUESTIONNAIRE

PART A: DEMOGRAPHIC INFORMATION OF THE ORGANIZATION

Job position of respondent: _____

Department: _____ Date: _____

Age group	22 to 30 years	<input type="checkbox"/>
	31 to 45 years	<input type="checkbox"/>
	Over 45 years	<input type="checkbox"/>
Gender	Male	<input type="checkbox"/>
	Female	<input type="checkbox"/>
Education Level	High School	<input type="checkbox"/>
	College Education	<input type="checkbox"/>
	First Degree	<input type="checkbox"/>
	Masters Degree	<input type="checkbox"/>
Internet Knowledge Level	Poor	<input type="checkbox"/>
	Average	<input type="checkbox"/>
	Good	<input type="checkbox"/>
	Very Good	<input type="checkbox"/>

With the statements below, please tick the box you agree with.

	Always	Sometimes	Rarely	Never
Does your institution use the internet or other online services to purchase goods or services?				
Does your institution order from websites of other companies?				
Do you as an institution place orders through electronic means on the internet?				

(i) Is your I.C.T system integrated with that of a supplier for placing orders?

Yes No

(ii) If yes in above, to what extent is it integrated?

Low

Medium

High

(iii) In your estimation, how large a share of your total purchases is conducted online?

a) More than 50%

b) 26 up to 50%

c) 11 up to 25%

d) 10% or less

PART B: E-PROCUREMENT READINESS CHALLENGES

With a scale of 1 to 5 with 1 = ‘**Strongly Disagree**’ and 5 = ‘**Strongly Agree**’, how much do you agree that the following are challenges in relation to your organization E-Procurement readiness.

	1	2	3	4	5
Resistance to change.					
Staff skills.					
Transparency of staff.					
Lack of staff enthusiasm.					
Competition from competitors.					
Corruption.					
The cost of acquiring the e-procurement system.					
The perceived cost of running the e-procurement system.					
The technological compatibility of e-procurement system and hardware.					
Procurement policies.					
Legal issues.					
The perception on loss of confidentiality.					

PART C: E-PROCUREMENT ENVIRONMENT

a) Procurement Environment

With a scale of 1 to 5 with 1 = ‘**Strongly Disagree**’ and 5 = ‘**Strongly Agree**’, indicate the extent to which you agree with the following statements.

	1	2	3	4	5
The procurement policy is inhibitive of implementation of e-procurement system.					
The structure of the procurement system conducive for adoption of e-procurement.					
The using of online marketplace to source for supplies inhibits the adoption of e-procurement system.					
The overall e-procurement adoption level in the country affects your decision to implement the system in your organization.					

b) Legal Environment

With a scale of 1 to 5 with 1 = ‘**Strongly Disagree**’ and 5 = ‘**Strongly Agree**’, indicate the extent to which you agree with the following statements.

	1	2	3	4	5
National laws hinder the adoption of e-procurement.					
International laws hinder the adoption of e-procurement in the institution.					
The current legal framework is favorable to the adoption of e-procurement.					
There are expected legal changes that have affected your adoption of a new e-procurement system.					
The government has assisted in providing favorable legal framework in order to adopt e-procurement.					

c) Economic Environment

With a scale of 1 to 5 with 1 = ‘**Strongly Disagree**’ and 5 = ‘**Strongly Agree**’, indicate the extent to which you agree with the following statements.

	1	2	3	4	5
The cost of e-procurement is inhibiting the supplier from using the system.					
The cost of e-procurement is prohibitive to the buyer from using the system.					
Financial challenges have hindered adoption or speed of implementation of e-procurement system.					
There are perceived hidden costs (short-term or long-term) that hinder the adoption of e-procurement.					
There are economic challenges sourcing for clients to use the e-procurement system.					

d) Organizational Environment

With a scale of 1 to 5 with 1 = ‘**Strongly Disagree**’ and 5 = ‘**Strongly Agree**’, indicate the extent to which you agree with the following statements.

	1	2	3	4	5
There are ethical challenges in the organization that hinders adoption of e-procurement.					
The attitude of employees towards adoption of e-procurement system is a hindrance to implementation.					
There are/were transparency challenges in the organization with regards to adoption of e-procurement.					

There are/were accountability issues in the adoption of e-procurement systems.					
Leadership gap in the organization is a hindrance to adoption of e-procurement.					
System implementation is a problem in the organization.					

e) ***Technological Environment***

With a scale of 1 to 5 with 1 = ‘**Strongly Disagree**’ and 5 = ‘**Strongly Agree**’, indicate the extent to which you agree with the following statements.

	1	2	3	4	5
There are challenges in regards to preparedness when migrating from one system to another one.					
There are system incompatibilities when implementing new I.T systems in your organization					
The organization is not well equipped in terms of systems software infrastructure.					
The organization’s network system isnot adequate for e-procurement operations.					
The staff is not adequately prepared to work with new I.T systems and the internet.					
The staff isnot adequately skilled in ICT to deal with current systems.					
The organization integrates the I.T systems with other departments in the organization.					
There are other technical challenges in the e-procurement system that hinders adoption of the system					

APPENDIX II: LIST OF GOVERNMENT AND PARASTATALS

Ministries

1. The National Treasury (formerly Ministry of Finance)
2. Ministry of Energy and Petroleum
3. Ministry of Health
4. Ministry of Information and Communication
5. Ministry of Defence
6. Ministry of Transport and Infrastructure
7. Ministry of Education
8. Ministry of Foreign Affairs
9. Ministry of Interior and Coordination of National Government
10. Ministry of Land, Housing and Urban Development
11. Ministry of Agriculture, Livestock, and Fisheries
12. Ministry of Environment, Water, and Natural Resources
13. Ministry of Commerce and Tourism
14. Ministry of Devolution and Planning
15. Ministry of Sports, Culture, and the Arts
16. Ministry of Information, Communication, and Technology
17. Ministry of Labour, Social Security and Services
18. Ministry of Mining

Parastatals

1. Kenya Ports Authority
2. Kenya Medical Supplies Agency
3. Kenya Wildlife Service
4. Kenya Forest Service
5. Kenya Power and Lighting Corporation
6. National Council for Science & Technology
7. Public Universities Inspection Board
8. University of Nairobi
9. Moi University
10. Egerton University
11. Jomo Kenyatta University of Agriculture & Technology
12. Kenyatta University
13. Maseno University
14. Kenya National Examination Council
15. Kenya Literature Bureau
16. Jomo Kenyatta Foundation
17. Kenya Institute of Education
18. Kenya Education Staff Institute

19. Commission for Higher Education
20. Higher Education Loans Board
21. Teacher's Service Commission
22. Western University College of science and Technology
23. Kenya Power and Lighting Company
24. Kenya electricity Generating Company (KenGen)
25. Kenya Pipeline Company
26. National Oil Corporation of Kenya
27. Kenya Petroleum Refinery
28. Electricity Regulatory Board
29. The Energy Tribunal
30. Rural Electrification Authority
31. Energy Regulatory Commission
32. Kenya Airports Authority
33. Kenya Railways Corporation
34. Kenya Ports Authority
35. Kenya Ferry Services Limited
36. Transport Licensing Board
37. Kenya Civil Aviation Authority
38. Transport licensing Appeal Tribunal
39. Kenya National Shipping Line
40. Communication Commission of Kenya
41. Postal Corporation of Kenya
42. Telkom Kenya Ltd.
43. Kenya Broadcasting Corporation
44. Kenya Film Commission
45. The Kenya Information & Communication Technology
46. Numerical Machining Complex
47. Kenya National accreditation service
48. Anti-Counterfeiting Agency
49. Kenya Industrial Property Institute
50. Kenya Agricultural & Development Institute
51. East Africa Portland cement
52. Kenya Industrial estates
53. Kenya Bureau of Standards
54. Industrial development bank Capital Limited
55. Kenya Investment Authority
56. Export Processing Zones Authority
57. Kenya National Trading Corporation
58. Kenya Wine Agencies Limited

59. Industrial & Commercial Dev. Corporation (ICDC)
60. Industry Property Tribunal
61. Kenya Marine & Fisheries Research Institute
62. Kenya Dairy Board
63. Kenya Meat commission
64. Kenya Veterinary Board
65. Co-operative College of Kenya
66. New Kenya Co-operative Creameries Ltd
67. EwasoNgiro North Development Authority
68. EwasoNgiro South Development Authority
69. Lake Basin Development Authority
70. Coastal Development Authority
71. Kerio Valley Development Authority
72. Tana&Athi River Development Authority
73. National Housing Corporation
74. Kenya Roads Board
75. National Sports Stadia Management Authority
76. Kenya Cultural Centre
77. Kenya National Library services
78. National Disability Council
79. Gender commission
80. Ministry of Health
81. Kenyatta National Hospital
82. Kenya Medical Training College
83. National Hospital Insurance fund
84. Moi Teaching & Referral Hospital, Eldoret
85. Kenya Medical Research institute
86. Kenya Medical Supplies Agency
87. Radiation protection board
88. Kenya Tourist Development Corp.
89. Kenya Tourist Board
90. Catering Training & Tourism Development levy Trustees
91. Kenya Utalii College
92. Kenya Wildlife Services
93. Kenyatta International Conference Centre Corporation
94. Hotels& Restaurants Authority
95. Kenya Forest Service
96. Kenya Forestry Research Institute
97. National environmental Management authority
98. Public Complaints Standing committee

99. Poverty Eradication Commission
100. Kenya National Bureau of Statistics
101. Public Archives Advisory Council
102. National Museums of Kenya
103. Betting Control and Licensing Board
104. N.G.O. Co-ordination Bureau
105. Kenya Revenue authority
106. Retirement Benefits Authority
107. Kenya Re-Insurance Corp.
108. Capital Markets Authority
109. Consolidated bank of Kenya
110. Deposit Protection Fund Board
111. Kenya Post Office savings Bank
112. Kenya Accountants & Secretaries Examination Board (KASNEB)
113. Kenya National Assurance (2001) Limited
114. Central Bank of Kenya
115. Capital Markets Tribunal
116. State Corporations Appeals tribunal
117. Kenya Institute for Public Policy Research and Analysis
118. National Water Conservation & Pipeline Corporation
119. National Irrigation Board
120. Kenya Water Institute
121. Water Services Regulator Board
122. Lake Victoria South Water Services Board
123. Coast Water Services Board
124. Northern Water Services Board
125. Water Services Trust Fund
126. Rift Valley Water Services Board
127. Lake Victoria North Water Services Board
128. Athi Water Services Board
129. The Tana Water Services Board
130. Water Resources Management Authority
131. Tea Board of Kenya
132. Pyrethrum Board of Kenya
133. Horticultural Crops development authority
134. Coffee Board of Kenya
135. Agricultural Finance Corporation.
136. National Cereals & Produce Board
137. Kenya Plant Health Inspectorate Board
138. Kenya Sugar board

139. Nzoia Sugar Company
140. Chemilil Sugar Company
141. Kenya Sugar research foundation
142. Pests control Products Board
143. Central Agricultural Board
144. Nyayo Tea Zones Development Corporation
145. Agricultural development Corporation
146. Kenya Seed Company
147. Kenya Agricultural research Institute
148. Coffee Research Foundation
149. Tea research foundation
150. Sugar Arbitration board
151. Agricultural Information resource Centre
152. Kenya Sisal Board
153. Bukura Agricultural College