A COMPARATIVE ANALYSIS OF ANTECEDENTS OF IMPLEMENTATION OF ELECTRONIC PROCUREMENT BETWEEN THE NATIONAL AND COUNTY GOVERNMENTS IN KENYA

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JOMO KENYATTA UNIVERSITY OF

AGRICULTURE AND TECHNOLOGY

2018

A Comparative Analysis of Antecedents of Implementation of Electronic Procurement between the National and County Governments in Kenya

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A Thesis Submitted in Partial Fulfilment for the Degree of Doctor of Philosophy in Supply Chain Management in the Jomo Kenyatta University of Agriculture and Technology

2018

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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To my wife Hellimina Lung'aho, children Gloria, Harriett, Jeff, Delta, Cybell and Gael, my brothers and sisters and Gladys Jepkoech, and not forgetting my late mother Agnes Shijehi for their encouragement throughout the study.

ACKNOWLEDGEMENT

I thank the Almighty God for seeing me through this course successfully. I owe my sincere gratitude to my supervisors Professor Henry Bwisa, Dr. Susan Were and Dr. David Kiarie for their guidance, detailed review, patience, and great efforts to explain things clearly. I also thank my family for being a source of encouragement during this period. Not forgetting my employer Office of the Controller of Budget for assisting with stationery and printing services and also allowing me time off to attend to classes and examinations.

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LIST OF ABBREVIATIONS AND ACROMYNS

A-I-E	Authority Incur Expenditure
AGV	-Auditor General Victoria
B2B	-Business to Business
B2G	-Business to Government
CSFs	-Critical Success Factors
E-Business	-Electronic Business
E-Commerce	-Electronic Commerce
EDI	-Electronic Data Interchange.
E-Government	-Electronic Government
e-MRO	-Electronic Materials Repairs and Operations
E-Procurement	-Electronic Procurement
ERP	-Enterprise Resource Planning
E-Tendering	-Electronic Tendering
HR	-Human Resource
ICT	-Information Communication and Technology
IFMIS	-Integrated Financial Management Information System
IT	-Information Technology
KNBS	-Kenya National Bureau of Statistics

KENAO	-Kenya National Audit Office
MDAs	-Ministry, Departments and Agencies
MRO	-Maintenance, Repairs and Operations
MRP	-Manufacturing Resource Planning
OCOB	-Office of Controller of Budget
PPDA	Public Procurement and Asset Disposal Act
P2P	-Procure to Pay
ROK	- Republic of Kenya
SCOA	-Single Chart of Account
TAM	-Technology Acceptance Model
TRA	-Theory of Reasoned Action
UATs	-User Acceptance Testing
UN	- United Nations
WB	-

OPERATIONAL DEFINITION OF TERMS

Accountability - Accepting responsibility and being answerable for actions or decision made. Includes obligation to report, explain and bear consequences of one's decisions, actions or behavior or decisions made (Asima & Februati (2014).

Antecedents - Something previously mentioned, or known factors of an event or happening that can lead to success or failure of the event (Arasa &Achuora, 2012).

Configuration: - The way a system is set up, or the assortment of components that make up the system. Configuration can refer to either hardware or software, or the combination of both that makes it compatible with existing infrastructure or processes in order to operate as one system (Asogwa, 2013).

Corruption: - Wrong doing on the part of an authority, individual or powerful party through means that are illegitimate, immoral, or incompatible with ethical standards. Corruption often results from patronage and is associated with bribery (Johnson, 2011).

E-Procurement:- The process of procurement using electronic medium such as the internet or other information and communication technologies (Republic of Kenya, 2015).

Ethics: - Critical, structured examination of how people and institutions should behave in the world of commerce. In particular, it involves examining appropriate constraints on the pursuit of self-interest, or (for firms) profits, when the actions of individuals or firms affects others (Basheka *et al* , 2012).

Governance:- Establishment of policies, and continuous monitoring of their proper implementation, by the members of the governing body of an organization. It includes the mechanisms required to balance the powers of the members (with the associated accountability), and their primary duty of enhancing the prosperity and viability of the organization. (Mutula, 2010).

Implementation: - Implementation is defined as a specified set of activities designed to put into practice an activity or program of known dimensions and whose processes are purposeful and are described in sufficient detail such that independent observers can detect the presence and strength of the specific set of activities related to implementation (Asogwa, 2013).

Innovation: - Radical and incremental changes to products, services, processes or services through introduction of new ideas that leads to an improvement in products, services or processes (Graham & Melvyn, 2011)

Management: - Management of an organization is the process of establishing objectives and goals of the organization periodically, designing the work system and the organization structure, and maintaining an environment in which individuals, working together in groups, accomplish their aims and objectives and goals of the organization effectively and efficiently (Khanapuri, Nayaka, Soni, Sharma & Soni, 2011).

Purchasing: - The activity of acquiring goods or services from external agencies in line with users requirements to accomplish the goals and objectives of an organization (Muinde & Shalle, 2014).

Procurement Entity: –An appointed public body engaged and responsible for the purchasing and awarding contracts for goods, services and works (Republic of Kenya, 2015).

Processes: - Sequence of interdependent and linked procedures which, at every stage, consume one or more resources into outputs. These outputs then serve as inputs for the next stage until a known goal or end result is reached. (Grahama & Melvyn, 2011).

Re-engineering:-: Fundamental rethinking and radical redesign of business process to achieve dramatic improvements in critical measures of performance such as cost, service, and speed (Treasury, 2014).

Reforms: – Refers changes and improvement especially to a law, social system or institution and such changes should lead to improvement in performance (Treasury, 2014).

Requisition:- Written order or a formal demand by the user(s) of a good or service (which is not made available without a specific request) to the organization's purchase (or stores) department. It generally includes the brand and model name or number, description, quantity, and the required delivery date. Also called purchase requisition. (Bof & Previtali, 2010).

Revolution: - A fundamental change in political power or organizational structures or in way of undertaking activities or tasks generally that brings meaningful change from the status quo(Asogwa, 2013).

Supplier: - A supplier is an entity that supplies goods and services to another organization. This entity is part of the supply chain of

a business, which may provide the bulk of the value contained within its products. (Choppra, 2010).

Supply Chain: - A supply chain is the network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product, from the delivery of source materials from the supplier to the manufacturer, through to its eventual delivery to the end user.(Choppra,2010).

Stakeholders:- Are people who have a stake or an interest in any events or activities of an organization and who can be affected by activities of the organization either positively or negatively. (Ochieng & Muehle, 2014).

Technology:- Refers the use of science in industry, engineering, etc., to invent useful things or to solve problems (Brammer & Walker,2011).

Training: – An organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill (Brandon & Carey, 2011)

Transparency: - Transparency is operating in such a way that it is easy for others to see what actions are performed (Asima & Februati, 2014).

Transactions: - Is an agreement between a buyer and a seller to exchange goods, services or financial instruments (Doherty & Ellis, 2013).

ABSTRACT

The purpose of this study was to compare antecedents of implementation of E-procurement between the National and County Governments as public entities in Kenya. Over the last few years, the internet has changed the way business is done in all sectors of the economy be they manufacturing or services industries. The Kenyan government has recognized the importance of adopting use of ICT in service delivery to the public and its citizens due to the benefits that accrue from using the system. One area that is of concern is procurement where introduction of E-procurement as a method of ICT service delivery in the public sector has dramatically changed the way traditional purchasing is done. Both public and private sector institutions have embraced use of E-procurement due to the benefits that come with it. However, even given the potential benefits of e-procurement, most of the Government Ministries and County Governments including parastatals have not effectively implemented the e-procurement practices despite the government efforts in putting the system in place. This study sought to analyze antecedents of implementation of e-procurement in the Ministries and County Governments. The variables under study included top management support, training in IFMIS, technology advancement, procurement laws application, organizational culture and how they impact on e-procurement implementation. The study adopted a descriptive design with a target population of 28,010 using stratified sampling and simple random sampling techniques to come up with sample size of 373 respondent's .The respondents consisted of staff from various public institutions and suppliers of goods, works and services to those public entities. Questionnaires were used as the main data collection instruments and were pretested using a pilot study for validity and reliability. Descriptive and inferential statistics data analysis results revealed that there were major differences in antecedents of implementation of e-procurement between National and County Governments despite all being Public entities using same procurement laws and regulations in the procurement processes. The study found out that all the variables achieved a percentage of less than 70% at all levels of governments starting with top management support accounted for 22.6% at national and 48.6% at County with training at 19.8% at national and 44% at county, technology 51% at national and 50% at County, procurement laws with 45% at national and 67% at county and

finally organizational culture with 56% at national and 46% at County. The study concludes that more efforts be but on all variables in order for e-procurement implementation to be successful at the two levels of goverments.The study recommends that the top management especially thee political class be brought in to support e-procurement and all other factors including technology advancement, training of suppliers and organizational cultural change will automatically fall in place. The study also recommends policy makers to review procurement laws so as to be in line with e-procurement since the current laws does not advocate use of e-procurement and favors manual procurement .The study also recommends future use of Meta-analysis research design to systematically evaluate and summarize the results from a number of various studies on e-procurement in order to develop a new understanding of a research problem using synoptic reasoning. The study further recommends that another research be conducted on benefits that have accrued since introduction of E-procurement which will involve return on investment(ROI) to find out if the system has benefited Kenyans or not.

CHAPTER ONE

INTRODUCTION

This chapter presents the background of the study, e-procurement status in other countries and in Kenya, statement of the problem, objectives and hypothesis of the study. It also presents the justification of the study, the scope and limitations of the study.

1.1 Background of the Study

In a competitive and globalized business environment, public sectors and business enterprises need to be at breast with new technological developments as well as manage reduction of operational costs while meeting the organizational goals and objectives. The advent of technological invasion into the market place, have created e-markets in every business sector.

This paved way for a faster connectivity between B2B and B2C exchanges. Today's technological business world has turned to an electronic procurement system (Stephen & Hellen, 2011). E-procurement has brought to prominence in recent years by the popularization and commercialization of internet. In addition to the customer oriented procurement of the internet, e-procurement is practiced through electronic markets and electronic data interchange (EDI).The electronic procurement system or e-procurement as it is called involves purchase and sale of products, supplies and services through the various networking systems such as electronic data interchange and internet. E-procurement does not mean just online purchasing decisions but it involves connecting the suppliers and organizations into the purchasing network companies that embark on e-procurement buying purchasing across multiple departments or divisions without removing individual control, reduce impulse buying, can get the best price and quality products from a wide range of suppliers. For the suppliers, E-procurement is a relief from manual procurement because they can be very proactive in their business proceedings (Asogwa, 2013).

Governments around the world are increasingly becoming concerned with the benefits of information technology in the delivery of services to the public. According to United Nations (2011), this innovation has been driven by two related variables, first the rapid pace of globalization, which has encouraged business cooperation and collaborations, financial opportunities, and investment among nations. This has led the world into business transactional networks and many countries are now seeking new areas to provide more competitive products and services to the people and secondly, the revolution in information technology, which has made an unprecedented amount of information available around the world and has contributed to an expanded global market place for goods and services (United Nations, 2011). Consequently, a paradigm shift has emerged in the name of e-procurement and it continues to affect and shape all sectors of the economy among nations.

The paradigm shift is that many countries around the world are adapting their public sector systems and procedures to be in line with the changing environment and especially in the arena of Information Technology (Asogwa, 2013). Information Technology applications are increasingly becoming the cornerstone of government operations and Information technologies have permeated all sectors of the economy and are fundamentally changing the orientation, tools, processes, principles, leadership style and patterns of communication within and outside governments. In advanced countries, e-government has replaced the bureaucratic principle of operations of organisations and brings user-satisfaction and control, information and Knowledge sharing, interdependent team work, and so on as means of meeting the needs of customers (Stephen & Hellen, 2011).

The concept of e-procurement is practical where all procurement processes from identification of supplier including delivery to the end user is undertaken electronically (procure to pay) is used leading to improved transactions and reduce costs of doing business. According to Uyarra and Flanagan (2010) electronic data Interchange, enterprise resource planning, e-sourcing, e-tendering, e-informing among others describes those aspects or forms that support the concept of e-procurement in achieving the above objectives. It therefore calls for integration of

existing traditional procurement process and procedures with the anticipated e-procurement process to be adopted then linkage of same with all departments within the organization so as to achieve the objectives of the technologies.

E-procurement can be used as a collaborative tool for procurement of goods, works and services using electronic methods at every stage (Federico, Ruggero, Davide & Stephano, 2010). Muinde and Shale (2014), indicates that various cost reductions and benefits have been already identified in the use of e-procurement which could not have been realized through manual procurement system. Procurement in the public sector has seen rapid growth in recent years not only in developed countries but even in developing nations. In order for e-procurement to thrive, all transactions in procurement have to be standardized, all bids for products and services to be tracked more easily so as to allow business owners to use such knowledge to obtain better pricing (Eadie, Millar, Perera, Heaney & Barton, 2012).One of the areas that e-procurement has promoted is development of and promotion of product life cycle.

Due to faster exchanges of information and delivery of goods and services, e-procurement has promoted shorter product- development cycles by ensuring that information about new products is communicated to users immediately the product is launched (Eadie *et al.*, 2012). E-procurement is not only meant for procuring entities but suppliers also form an integral part of the implementation process hence their attitude, integrity, transparency, capacity and willingness to comply play a major role in the success of the implementation process. Most institutions while implementing e-procurement have forgotten the role that suppliers play leading to miss match during the implementation since suppliers are not given a major role to contribute towards the implementation process (Eadie *et al*, .2012).

1.1.1 Global Perspective on E-Procurement Implementation.

In response to the evidence of successful e-procurement in the private sector and interest in its potential in the public sector to succeed, the UK Government commissioned a number of reviews to explore its potential within the public sector (Wahid, 2010). Following these reviews, the UK Government set an ambitious target whereby 90 per cent of routine items would be purchased electronically by March

2002 (Eadie *et al.*, 2012). Despite the compelling nature of the case for public sector e-procurement that had been made both by formal governmental-sponsored reviews and perhaps more importantly through the positive experiences of private sector organizations, there was very little evidence that it had been widely adopted within the UK public sector (Eadie *et al.*, 2012). A study of government purchasing strategies in UK found that only 13 per cent of orders were sent electronically, 3 per cent of invoices received and processed electronically and 6 per cent of tenders transacted electronically giving a very low absorption of e-procurement (Eadie *et al.*, 2012).

Wahid (2010) argues that there is little evidence of extensive use of e-procurement in the public sector and therefore its coverage in the academic literature is also very limited both in developed and developing countries. Although the public sector e-procurement remains rather neglected, literature is beginning to emerge with recent contributions focusing on its uptake as has been cited by various authors from various countries for example in Australia (Vaidya & Hyde,2011), (Brandon & Carey, 2011) in the UK, (Oketch, 2014) and (Mose, Njihia & Magutu, 2013) in Kenya among many others. It therefore means that E-procurement as an emerging concept is being a lot of focus as it contributes a lot in adding value to procurement processes and removes wastes from the supply chain.

According to a study by Boudijilda and Pannetto (2013), in Italy the use of e-procurement in Government had increased tremendously since its inception in the year 2000. The number of public administrations using e-shops and online auction (the frame contract system) had increased in four years from 648 in 2000, to 41,966 in April 2004.The number of public administrations using e-marketplace in April 2004 was 1042 from nil on introduction and the number of suppliers on e-procurement was 156, an increase of 22 percent since June 2004. There was a realized average saving on unit costs in e-shop of up to 10% since introduction of e-procurement. The average cost savings was based on the results of a survey that the Institute of Statistics conducted in 2003 (Boudijilda & Pannetto, 2013). Based on the average price of goods and services of public administrations in Italy, the calculated average saving in frame contracts was 19% as compared to prices before negotiated

contracts. E-procurement in the Italian Government appears to have fulfilled its economic justification while achieving additional benefits that included standardization, transparency, fairer competition and ease of ordering. However, it faced challenges in form of policy reforms, lack of centralized approach, cultural and political resistance to change among others (Boudijilda & Pannetto, 2013).

According to Bof and Previtali (2010), in the year 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 and implementing e-government and e-procurement strategies. The aim of the Project was to develop a coordinated approach to improve procurement practices across government and in so doing 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 .However, the Go-Procure an online procurement system that hosted catalogues and coordinated purchase-to-pay transactions did not achieve the originally desired objectives (Bof & Previtali, 2010). Only a small number of government agencies and suppliers benefited from using the Go Procure e-procurement system in the short time that the system was in use. Some of the challenges the system faced among others were inability to justify returns on investment (ROI), failure to understand the role of government in E-procurement and failure to gain confidence of suppliers in adopting the system. Faced with the above challenges the project was terminated with a view of coming up with a new strategy to drive e-procurement (Bof & Previtali, 2010).

In Africa, there are still bureaucratic principles and functional rationality leading to physical departmentalization and management by rule of mandate which is not in line with enterprise resource planning systems like e-procurement that allows sharing of information among departments hence removing the notion of departmentalization (Ndou, 2011). Countries in sub-Saharan Africa have not adequately restructured their public agencies in response to the demands of the information society and most of the governments are still hierarchical and lack accountability and transparency (Asogwa, 2013). In many developed countries, e-government is replacing the

traditional bureaucracies which are not accountable to the publics and citizens. According to Mutula (2010), in South Africa, E-procurement was in the formative stage of development and had not achieved much in terms of implementation. Key challenges facing the South African government in its implementation include creating external access, internal efficiency and human resource development.

A key factor that affects implementation of e-procurement is the strategy employed and the vision of the organization. For example, in Nigeria the mission of the e-government strategy for Nigeria was to build national information and communication infrastructure that would facilitate e-governance and provide ICT-facilitated deliveries for the benefit of the citizens (Adebiyi, Ayo, Charles & Marion, 2010). The vision of e-government in Nigeria was to implement e-government at multiple levels in such a way as to promote transparency and the efficient delivery of services with increased citizen-government interaction. The target areas included government, citizens, business, and employees or the workforce, meaning that the electronic interaction between government and these groups created an e-government web of relationships which was meant to lead to the success of the system in Nigeria (Adebiyi *et al.*, 2010). However, despite putting the strategy in place there to seemed to be little success towards implementation as many transactions in the public sector in Nigeria including procurement are still manual (Adebiyi *et al.*, 2010).

According to researchers, one of e-procurement policy drivers is re-engineering the processes so as to address gaps between expected and current situation (Asogwa, 2013). In most African countries including South Africa and Nigeria among others which have implemented the system, there has been experienced slow growth in absorption and usage of the system due to lack of re-engineering the processes (Asogwa, 2013). Lack of integration of government agencies into a single unit where there would be links to other ministries, departments, regions/states, local governments, institutions where the majority of the citizens could interact, including providing procurement opportunities through E-procurement has been another failure (Asogwa, 2013). There is therefore little progress on growth of E-procurement in in

most African countries due to lack of putting in place most policy drivers of e-procurement that would drive the e-procurement initiative (Adebiyi *et al.*, 2010).

1.1.2 Regional Perspective on E-procurement

In Tanzania, since 1994 the government of Tanzania has implemented an ambitious reform program to improve public sector financial management, which initially focused on introducing effective and efficient budget formulation and expenditure management systems and processes. According to Suleiman (2013), in 1998/99, the government of Tanzania decided to introduce an Integrated Financial Management System (IFMIS) in ten selected MDAs and e-procurement being one of the components of IFMIS. The system has now become the generic public sector financial management system used by the entire public sector. At the local government level, the system has been introduced to 32 local authorities, and a roll-out to an additional 30 authorities was expected to be completed by the end of 2004 (Mohammed, 2015).

According to Suleiman (2013), the benefits of the E-procurement in Tanzania have been extensive, with the restoration of expenditure control and improved levels of transparency and accountability. The Commitment Control System has led to the elimination of overspending and a substantial reduction in domestic arrears (pending bills). Currently, the e-procurement in Tanzania appears to be the most successfully implemented system in Anglophone African countries having fully implemented e-procurement in most MDAs which has consolidated components of budgetary, procurement and auditing at all stages (Mohammed, 2015).

According to Basheka, Oluka and Magurusi *(*2012), the government of Uganda is in the process of implementing a comprehensive financial management reform program to improve the budget and expenditure management processes at the central and decentralized government levels. In the early years, for a number of reasons, there were considerable delays in the completion of the design and development phase of the IFMIS which includes e-procurement module. Finally, the implementation of the system began with the mapping and necessary configuration followed by user acceptance and testing operations. The pilot implementation phase is currently in

progress in six line ministries and four local governments and an assessment of the pilot implementation is in progress before the system is rolled out to other line ministries (Basheka *et al*., 2012).

1.1.3 Local Perspective on E-Procurement

According to Treasury (2014) the procure to pay (P2P) system was part of the initial IFMIS system implementation. It has overcome significant challenges from the initial implementation that only covered the purchase order to the current end-to-end implementation which covers the entire procurement cycle from the development of the procurement plans to payments, reconciliation and resolution of supplier's issues (Treasury, 2014).In a report by Treasury (2014), the initial e-procurement implementation operated in a silo environment in Government departments and lacked a strategic vision at the organizational level. According to Ochieng and Muehle (2014), the purchase Order (PO) module was also not sufficiently interlinked with the Accounts Payable (AP) module and thus required significant manual interventions especially in the requisition and payable approval processes. The requisition menu within the Purchase Order (PO) module could also not be used due to legislative challenges. The e-procurement system was therefore not reliable and useful enough and required to be re-designed and re-engineered (Treasury, 2014).

The current implementation of the P2P system under the IFMIS Re-engineering Strategy (2013-2018) started by assessing the current state as well as identifying and documenting gaps in the e-procurement process (Ochieng & Muehle, 2014). The assessment factored in the requirements of the Public Procurement and Disposal Act (PPDA) of 2005 and the Procurement Regulation 2006, as well as International best practice in procurement (Treasury, 2014).The P2P implementation that is currently on going covers the Supplier Management, Requisition Management, Quotation Management, Contract Management, Purchase Order Management, Receipt Management, Invoicing and payment Management and Inventory Management modules (Ochieng & Muehle, 2014).All the above modules have been tested in 10 pilot ministries and the user acceptance testing (UAT's) are in the process of sign-off. However, the inventory management modules have not been fully tested. The

initial implementation plan was to roll out module by module but this has since changed to concurrent roll out of all the modules. User Acceptance Testing (UAT) will therefore need to be carried out and training conducted before the modules can be rolled out (Treasury, 2014).

The outcome of the mid-term review on the implementation of the IFMIS Re-engineering Strategic Plan (2013-2018) indicates that execution of e-procurement is on track with a number of key activities having been completed (Ochieng & Muehle, 2014). The key achievement in e-procurement include, business process reviews undertaken and revised business processes incorporated into the re-engineering IFMIS, successful rebranding of IFMIS Re-engineering, launch of IFMIS Academy training of over 2000 government officers on the IFMIS systems, standard codification of items, procure to pay system solution and generation of timely and accurate reports from the system among others (Ochieng & Muhela, 2014).

In a report by the Treasury (2014), during the mid-term review, key lessons were also drawn from both successes and challenges. Some of these lessons include the importance of implementation of change management strategies in facilitation of the adoption of the e-procurement systems, need for e-procurement system development and implementation to be based on a county's legislative and regulatory frameworks for public financial management reforms, need for quality assurance systems to sustain systems performance and integrity, involvement of key stakeholders in the development, testing and deployment of the system ensures adopting and ownership, skills transfer to the government team from vendors is paramount, appropriate communication regarding the system development and implementation, leadership and top management support is important for successful implementation of e-procurement (Treasury, 2014).Despite the above challenges, e-procurement has been rolled out in all Ministries, Departments and Agencies (MDAs), County Governments and government Parastatals in Kenya.

1.1.4 Devolution under the 2010 Constitution in Kenya

The Constitution of Kenya 2010 introduced ambitious devolution reforms that created two levels of governments (national and county) that are distinct but

interdependent (Kaburi, Omari & Sewe, 2017). Under these structural reforms, substantial political responsibilities, administrative roles and financial resources have been devolved to forty-seven (47) county units at the sub-national level (Ghai, 2008). The main objects of devolutions as stated in Article 174 of the Constitution of Kenya 2010 seeks to decentralized state organs to lower levels of governance; strengthening national unity via recognition of diversity, safeguarding the interest of the minority and marginalized communities and promoting equity in sharing of national resources; promoting public participation and democracy; and promoting social and economic development through the improved delivery of services (Kessy, 2013).

Article 10 of the Constitution of Kenya outlines devolution and sharing of power as one of the national values and principles of governance that should guide formulation and implementation of public policy decisions. In this regard, Devolution has played an important role in promoting the democracy, socioeconomic development, and equity in the sharing of national and local resources. Article 203 of the Constitution requires the national government to allocate at least 15 percent of the revenue raised nationally to the county governments and a further 0.5 percent of national revenue should be used as an "equalization fund" to fund selected projects in areas identified as marginalized among other sources of funds, (Kanyinga, 2016).

One major key aspect of Devolution is that it has hastened development in rural areas through construction of projects in infrastructure, health and even agriculture hence improving lives of citizens which is achieved through procurement of goods and services. Among the challenges faced by Counties is late of releasing of funds by National Government, less transparency in procurement of goods and services, failure to pay merchants and lack of qualified staff to run activities of Counties among so many other challenges. It is expected that with implementation of e-procurement most of the challenges to do with procurement will be addressed leading to proper accountability and transparency in application of public funds (Kaburi *et al.*, 2017).

1.2 Statement of the Problem

Public Procurement plays a key role in the economic, political and social development of any Country and is mostly commonly used in distribution of wealth among its citizens if undertaken in a transparent, accountable and competitive environment. According to Economic Survey in the financial year 2015-2016, 65% of government revenue was spent through public procurement (KNBS, 2017). Given the nature and importance of the amounts spent through Public Procurement, the Government in the year 2013 implemented E-procurement at both National and County Governments as a tool to enhance transparency and Accountability in public procurement procedures and processes.

However, in an assessment report on usage of e-procurement in public entities, it was found that less than 50% MDAs and County Governments had implemented E-procurement in procuring goods and services (PPOA, 2015). The consequences of failure to implement e-procurement have contributed to loss of Public Funds where MDAs were unable to account for Ks.60 billion and County Governments Ksh.80 billion (ROK(a),2016). The same contributed to Pending bills of Ksh.112 and 36 billion at National and County Governments respectively (OCOB, 2015) adversely affecting merchants who supply goods and services to Public Entities. Despite the government efforts, and studies on benefits of e-procurement use in Public Entities, the level of adoption in public entities in Kenya is still low(PPOA,2015).

Several studies have been done in the area of e-procurement implementation in public entities such as Ateto (2013), Mambo, Ombui and Kagiri(2015), Omanyi, Njeri and Mungai (2013), Korir, Afande, Ofunya, Maina and Paul (2015).However, there has been no comparative study between the National and County Governments on the antecedents of e-procurement implementation in Kenya.

This study shows that limited attention has been paid to comparing e-procurement implementation between National and County Governments in Kenya.

1.3 General Objective

The main objective of the study was to analyze the antecedents affecting implementation of e-procurement between the National and County Governments in Kenya.

1.3.1 Specific Objectives

The specific objectives were:

i. To assess how top management support affects e- procurement implementation between National and County Governments.
ii. To evaluate how training in IFMIS affects implementation of e- procurement between National and County Governments.
iii. To find out how technology advancement affects implementation of E-procurement between National and County Governments.
iv. To analyze how procurement laws application affects implementation of e-procurement between National and County Governments.
v. To determine how organizational culture affects e-procurement implementation between National and County Governments.

1.4 Research Hypothesis

i. **H_1**-There is significant difference in top management support on the implementation of e-procurement between the National and County Governments.
ii. **H_1**-There is significant difference on how training in IFMIS influences implementation of e-procurement between the National and County Governments.
iii. **H_1**-There is significant difference in Technology advancement on implementation of e-procurement between the National and County Governments.

iv. **H_1**-There is significant difference in Procurement laws application towards implementation of e-procurement between the National and County Governments.

v. **H_1**-There is significant difference in Organizational culture on implementation of e-procurement between the National and County Governments.

1.5 Justification of the Study

Effective implementation of the concept of e-procurement is an area that is prune to very dynamic changes as technology is also changing very fast and how we adopt and implement the concept is important. This study makes several contributions in the area of e-procurement as one of the emerging concepts in Supply Chain more specifically it will be useful to the following:

1.5.1. Government policy makers – the findings of this study provides the policy makers with information on the rankings of the antecedents that affect implementation of E-procurement so that priority can be given to the highest ranking challenge while addressing them. A comparative analysis on antecedents was drawn which shows level of government that is severely affected by each antecedent.

1.5.2. Public procuring entities – the findings also assess issues on e-procurement risk management from the supplier perspective. Procuring entities are better enlightened on the existing attitudes and propensity of suppliers to use e-procurement and this will assist them make informed choices on implementation of E-procurement and how to collaborate with suppliers

1.5.3. Suppliers

– Suppliers views and attitudes towards e-procurement have been captured which will assist towards training and their attitude towards e-procurement. This will assist policy makers on ways of ensuring suppliers play a crucial role in e-procurement implementation.

1.5.4. Scholars and Researchers

– the findings of the study will assist other academicians to find gaps in literature on the topic and the study can also be used as a reference point for other related studies especially in the devolved units of Government because it has ventured into a new area of ranking and comparing the antecedents at the two levels of governments.

1.6 Scope of the Study

The study was undertaken seeking to compare antecedents affecting implementation of e-procurement in public entities both at the National and County Governments in Kenya. The study involved procurement personnel, Accounts and finance, senior administrative officers and ICT officers as well as Suppliers of various goods, works and services to the public entities with a population size of 28,010.The variables under the study included top management support, training in IFMIS-e-procurement, technology used in e-procurement, procurement laws on e-procurement and organizational culture and their impact on implementation of e-procurement. The comparison period was from July 2015 when the government declared that all public entities be on e-procurement (IFMIS) and March 2017 when the data collection for the study collection was completed.

1.7 Limitations of the Study

The challenges experienced included unwillingness by respondent's to reveal information which was deemed to be confidential, misunderstanding the questions, not filling all sections of the questionnaire, This was mitigated through assurance that the information offered was confidential and was to be used for academic purposes, assisting the respondents complete the unfilled parts and also explaining the questions where respondents were unable to understand.

The introduction letter from the university assisted the study in mitigating against any suspicion both from organizations and respondents. This assisted in achieving a high rate of responses as respondents had been assured of the objectives of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the literature review and reviews what other writers and researchers have found out on the research topic. The literature review contains information on e-procurement and the antecedents that affect its implementation. The chapter also gives the conceptual framework empirical review, critical review and research gaps of the study.

2.2 Theoretical Literature Review and Relevant Theories

According to Vishanth, Ramzi and Shaff (2011), as a major part of supply chain management, supply chains in procurement are traditionally supported by information technology. With the implementation of enterprise resource planning (ERP) or manufacturing resource planning (MRP) systems in the 1980s electronic data interchange (EDI) connections with suppliers were established. The diffusion of e-procurement systems in the late 1990s has created the potential for reorganizing the maintenance, repairs and operations (MRO) in supply chains. Compared to ERP, these systems were considerably less expensive and more flexible due to increased standardization on a technical level.

The main idea of e-procurement is to include the end-user (requester) in the procurement process via an electronic multi-vendor catalog and to close the process gaps in the supply chain for direct and indirect goods (Neef, 2001).In order to understand the appropriateness of the theoretical framework, the study was grounded in theories addressing specific variables identified which include top management support, training in IFMIS, technology advancement, procurement laws application, organization culture and E-procurement implementation. In this study, unless the context otherwise requires, all theories were applied in the context of E-procurement.

A Theory is a set of statements or principles devised to explain a group of facts or phenomena especially one that has been repeatedly tested or is widely accepted and

can be used to make predictions about natural phenomena (Camp, 2010).Theories are analytical tools for understanding, explaining, and making predictions about a given subject matter. A formal theory is syntactic in nature and is only meaningful when given a semantic component by applying it to some content (i.e. facts and relationships of the actual historical world as it is unfolding (Camp, 2010). This study was based on five theories related to. They included; Re-enforcement Theory, Human Capital Theory, Technology Acceptance Theory, Institutional Theory and Hofstede Theory which are discussed here below.

2.2.1 Reinforcement Theory

Reinforcement theory suggests that successes in achieving goals, rewards act as positive incentives and reinforces the successful behavior, when if repeated the next time a similar need arises. The proponents of reinforcement theory argue that for there to be a heightened motivation to perform, individuals have to able to change their behavior**,** feel confident that a change in their behavior will produce a reward and value the reward sufficiently to justify the change in behavior (Redmond , 2010).

Organizations can apply this theory by using positive reinforcement through reward system, negative re-enforcement by withdrawing rewards, punishment for wrong doing and extinction of unwanted behaviors (Redmond, 2010). The theory suggests that employees are encouraged to do better as they know when each desired behavior is shown they are rewarded and that both the external and internal environment of the organization must be designed effectively and positively so as to motivate employees (Coates, 1994). The re-enforcement theory assists in determining how organizations introduce and establish changes through their employees and especially where new technology is being introduced which can face resistance from users.

The rapid change in technology requires that changes be monitored and where necessary adoption through implementation be immediate e-procurement being a new technology that is susceptible to changes requires that both players (buyers and supplier's) be motivated with rewards in order to do more better even in future

(Redmond, 2010). Institutions have to develop incentives both to buyers and suppliers in form of rewards in order to sustain e-procurement implementation in public institutions

Top management in any organizations plays a crucial role in formulation and implementation of policies like use of e-procurement tools as a policy in an organization. According to Coates (1994), top management has to create a good enabling environment that employees will feel part of so as to drive the agenda of the organization hence re-enforcement theory can be used by the top management as a controlling mechanism towards gauging individuals behavior and in so doing determine what kind of re-enforcement(reward or punishment) that can be applied to individual employees towards e-procurement implementation This theory was used for the variable top management support since it shows how top management can support E-procurement implementation through application of different reinforcement strategies towards individuals while implementing E-procurement in Public Entities .

In conclusion, this theory is relevant to implementation of e-procurement in public entities as it advocates not only rewarding but punishment also where there is non-compliance. Supply chain is regulated by laws and procedures which are all applicable in e-procurement hence need of application of reinforcement theory. The study therefore adopted the re-enforcement theory as it provides theoretical foundation for this research on how e-procurement management support can influence e-procurement implementation.

2.2.2 Human Capital Theory

Today, the concepts of human capital and strategic management of human resources are very common in organizations in terms of philosophy and technique. The term human capital is considered as a key element in improving the assets of an organization, since it is a sustainable competitive advantage and increases the employee's efficiency. Some organizational theorists apply the rules of human capital theory to prove the ability to create wealth and profits for the organization (Becker, 1962).

E-procurement being a new concept requires continuous training in order to enhance the rate of implementation. According to Jamal (2011), institutions that invest in training of employees have a more competitive edge than those institutions which does not invest in training. Most public institutions have heavily invested in training their staff who plays a crucial role as buyers in the e-procurement system and suppliers should also follow suit since they also play a crucial role in the procurement process and any shortfall from either party will hinder the success of implementation.

The theory argues that a person's formal education determines his or her earning power. The proponents of human capital theory holds that it is the key competences, skills, knowledge and abilities of the workforce that contributes to organizations competitive advantage hence focuses attention on resourcing, human resource development, and reward strategies and practices. According to Human Capital Theory, education is an investment because it is believed that it could potentially bestow private and social benefits. Human capital theorists believe that education and earning power are correlated, which means, theoretically, that the more education one has, the more one can earn, and that the skills, knowledge and abilities that education provides can be transferred into the work in terms of productivity (Jamal, 2011).

One of the most important ideas in labor economics is to think of the set of marketable skills of workers as a form of capital in which workers make a variety of investments. Human capital theory as formalized by Becker (1962) is the dominant perspective on-the-job training. This theory views training as an investment as it raises expected future productivity but at a cost. Due to technological advances, continuous training is vital as it equips the human capital with necessary skills to manage the changing technology. Effective training in terms of human capital can help the organization minimize on learning costs, improve individuals performance and in so doing help the organization to achieve its objectives by adding value to its key resources-the people it employs (Armstrong,2012).

This study adopted the human capital theory since it analyses how employees are useful in the production process after acquiring the necessary skills through training. Among the features of human capital is creativity and innovation which are very useful in implementation of new technology hence relevant to e-procurement implementation as a new technological concept in the Public sector. The theory supports the variable on training in IFMIS in the sense that the organization must invest in employees a set of marketable skills as a form of capital through training which the workers apply while implementing e-procurement in the Public sector now and in the future. Human Capital theory was therefore useful in measuring the influence of e-procurement training on implementation of e-procurement in public entities.

2.2.3 Technology Acceptance Theory .

The theory of Technology Acceptance Model (TAM) was developed and validated as an extension of the Theory of Reasoned Action (TRA) to explain the mechanisms that influence and shape user's acceptance of new information technology by Davis (1993).

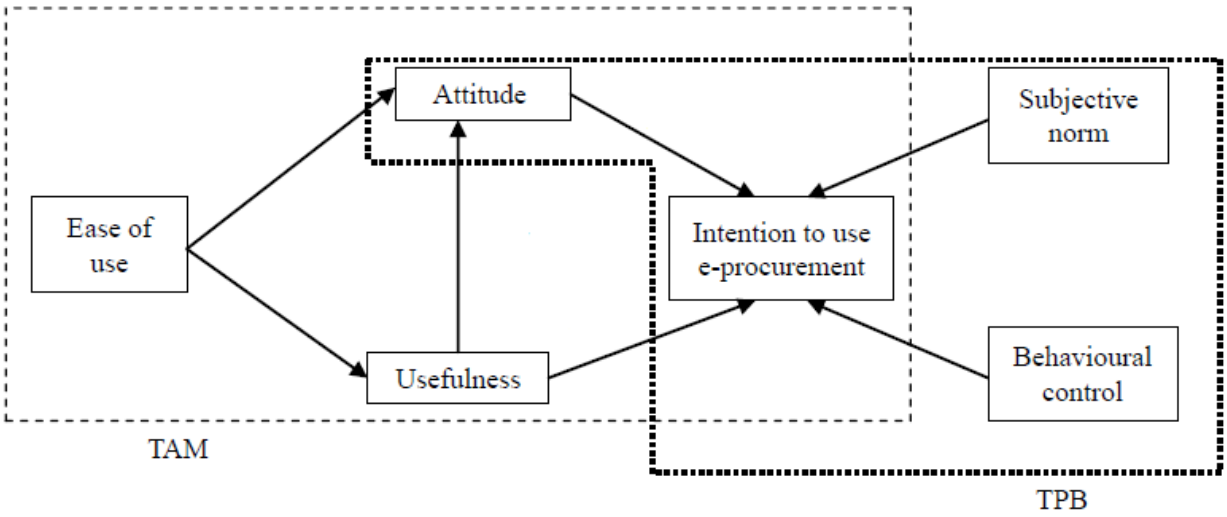

Figure2.1: Technology Acceptance model, adopted from Davis *et al,* (1989*)*

According to TAM, there are two specific variables that are fundamental determinants of user's attitude toward using information technology and actual use of

the system being perceived usefulness and perceived ease of use of relatively to new information system design features. In this context, the model focuses on the consideration of various attitudes that may affect the usage of technology. Previous studies such as that of Turner, Kitchenham, Brereton, Charters and Budgen (2010) showed that user resistance to technology was a major driver for its non-adoption, thus establishing a relationship between the Do I and the TAM framework. E-procurement as a technological concept must be analysed from the ease of use since it underlines the degree to which a person believes that using a particular system would be free from effort hence contributing a larger percentage to towards acceptance by the users.In summary it is noted that the extent of e-procurement

Implementation remains in a formative stage, the hence the importance of understanding and gauging the attitude and usefulness in relation to ease of use early enough during implementation stage, (Turner *et al*,2010)

The technology acceptance model (TAM) relies on the theory of reasoned action, which posits that behaviour is logically processed in the following order- belief-attitude-intention-behaviour. The relationships between perceived usefulness, perceived ease of use, attitude and intentions have been supported in the information technology literature (Hsiao & Yang, 2011). E-procurement as a vehicle through which objectives of supply chain are achieved must therefore be seen in the context of ease to use and its usefulness so as to gain a positive attitude among the users. Within an organizational context, perceived usefulness is defined as the prospective user's subjective probability that using a specific technology will increase job performance, while perceived ease of use refers to the degree to which the prospective user expects the technology to be free from over excessive effort during application**,** (Hsiao & Yang, 2011).

The theory is useful in analyzing the attitude of users and whether they will perceive it as being useful or not. Attitude would contribute to either acceptance or resistance to the adoption .Intention to use the system is in terms of increasing transparency and reduction of costs which are the main concerns of all players in procurement. The technology should also be anchored within the law which the theory is able to

analyze through subjective norms leading to behavior controls of individuals since actions are controlled through statutes (Sumak, Hericko & Pusnik, 2011). Supply chain can therefore be analyzed using the technology acceptance theory in finding out the attitudes and practices of the implementing personnel as well as the users of the technology and also the extent of usage in different public institutions as a result of acceptance or non-acceptance of e-procurement technology

Drawing from the above views and owing to fact that technology plays a crucial role in e-procurement implementation which determines the success or failure of the concept. Technology Acceptance Theory therefore provided a theoretical foundation on understanding how e-procurement technology advancement impacts on e-procurement implementation.

2.2.4 Institutional Theory

The institutional theory is the traditional approach that is used to examine elements of public procurement (Obanda, 2010). According to Gioia, Patvardhan & Hamilton (2013), there are three pillars of institutions being regulatory, normative and cultural cognitive. The regulatory pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism, with expedience as basis for compliance. According to Scott (2004), institutions are composed of cultural-cognitive and regulative elements that, together with associated activities and resources give meaning to life. The normative pillar refers to norms (how things should be done) and values (the preferred or desirable), social obligation being the basis of compliance. The cultural-cognitive pillar rests on shared understanding (common beliefs, symbols, shared understanding (Gioia *et al*, 2013).

Obanda(2010) envisage that institutional theory is concerned with the influence of external forces on organizational decision-making and it emphasizes the role of social and cultural pressures imposed on institutions that influence practices and structures. According to Gioia et al 2013) Institutional Theory is "Policy-making that emphasizes the formal and legal aspects of government structures. Scot (2004) envisages that regulatory pressure occurs when governmental agencies directly or indirectly force firms to change their strategy. Scot (2004) posit that the strength of

Institutional Theory is that it offers explanations of why certain practices are chosen without an obvious economic return. Further, the institutional perspective allows for the focus on the role of conformity, regulatory and social pressures in driving organizational actions. Ocasio, Loewenstein and Nigam (2015) posit that institutional theory is relevant to the implementation of e-procurement because public institutions operate in a way that meets social and legal expectations and that not all service or business choices are as a result of rational economic decisions.

In Kenya, public procurement is guided by the PPADA Act 2015, regulations and guidelines which are from time to time issued by the Public Procurement Regulatory Authority as well as the National Treasury which must be complied with by all the public entities and suppliers. From the three pillars of institutions propounded by Scott (2004), organizational culture, social influence, organizational incentives and enforcement are identified as antecedents of compliance to procurement laws and rules.Institutional theory focuses on processes by which structures, including schemes, rules, norms, and routines, become established as authoritative guidelines for social behaviour. Ocasio, Loewenstein and Nigam (2015) indicated that different components of institutional theory explain how these elements are created, diffused, adopted, and adapted over space and time and how they fall into decline and disuse. Supply chain is anchored in laws, regulations, procedures and practices hence e-procurement must be used as a platform which meets the regulatory, normative and cultural cognitive as explained by the institutional theory

The study adopted institutional theory in order to determine if the e-procurement processes are in line with procurement laws and procedures and the level of compliance (application) with the laws as regards e-procurement implementation. Institutional theory states that organizations exist in an institutional environment which defines and delimits its social reality. The institutional theory emphasises use of laws as enforcement mechanisms with expedience as a basis for compliance hence the variable was used to assess whether the procurement laws support e-procurement and to what extent the laws have been applied towards e-procurement implementation and the level of compliance by the enforcers at both levels of governments.

Drawing from the above and given the fact that procurement is regulated; it therefore goes without saying that e-procurement must conform to procurement statutes and regulations to enable smooth implementation. Without e-procurement being anchored in law then it becomes difficult leading to challenges in implementation. The study adopted the institutional theory in support of procurement laws application since the theories provides a framework within which institutions must adhere to laws while performing tasks.

2.2.5 Hofstede Theory

The theory of Hofstede's cultural dimensions constitutes a framework revolving around cross-cultural communication in which all the dimensions collectively portray the impact of the culture ingrained in society on the values of the members of that society (Hofstede & Bond, 1984). They also describe the relationship between these values and behavior, with the help of a structure based on factor analysis. The cultural dimensions according to Hofstede and Bond (1984) are power distinction, uncertainty and avoidance, individualism vs collectivism, masculinity and feminity, long term vs short term orientation and indulgence vs restraint which affects operations of organizations leading to achievement or non-achievement of organizational objectives.

Most institutions are moving from the culture of manual operations to digital or electronic operations and e-procurement is not an exception. Some of the advantages of electronic which can be traced to e-procurement include less paper work, ease of audit trail, less records stored, increased competition and more transparency achieved among more benefits. There culture in most public institutions is use of manual system which has been much embraced at the expense of electronic system. In procurement, resistance especially from the audit function on insistence of where they require manual documents has hampered efforts in implementation of e-procurement. Further, the electronic system is not easy to manipulate as compared to manual system hence more favored as opposed to the electronic system in the public sector (Bond, 1984).

Organizational culture to a large extent determines the performance of the employees hence, it is in the interest of organizations to eliminate negative factors that slow down employee performance in order to foster a positive workplace environment or a positive organizational culture (Fakhar, Rana, Ayesha & Lalarukh, 2012). Every person or employee in the organization own different values and beliefs that he/she works with in achieving organizational objectives. Whenever one joins any organization he/she is allowed to internalize first with the organization's culture to know whether to cope up with them or not. Culture has been investigated to impact and found to have a major impact on organizational process .Results of these studies mostly show positive association between strong culture and performance improvement (Fakhar *et al.* 2012).

Studies shows that every individual in the organization has different culture and he/she first try to adjust with the norms and values of the organization. Procurement in the public sector has a tag of corruption culture hence plays a crucial role the management and operations of supply chain activities. The adoption of culture of the organization is helpful for the employees to do their work efficiently and effetely. It is therefore important that e-procurement is implemented fully in public institutions which will bring in a new culture of transparency and accountability (Fakhar *et al.* 2012).

From the above literature the study adopted the Hofested theory to determine the culture of the public servants and suppliers and how it impacts on e-procurement implementation in Public. This theory hence is better placed in exploring the cultural effects and offers opportunity to understand the contextual factors and their implication towards e-procurement implementation in line with organizational culture.

2.2.6 Resource Based View Theory

Resource based view aspired to explain the internal sources of a firm's sustained competitive advantage (Barney, 2012). The Resource Based View (RBV) of the firm postulated that, resources internal to the firm were sources of competitive advantage (Schiele, Velderman & Huttinger, 2011). Such resources were valuable, rare, unique

and difficult to substitute. Resources believed to be valuable were those that were capable of facilitating conception or implementation of strategies that improved performance, exploited market opportunities or neutralized impending threats (Odhong', Were & Omolo, 2014).The two assumptions for RBV theory were, resources and capabilities were heterogeneously distributed among firms; and resources and capabilities were imperfectly mobile, which made firms" differences remained stable over time (Wernerfelt, 1984). Every firm was different (heterogeneous) from other firms in terms of the resources and capabilities a firm possesses or accesses. These differences differentiated one firm from another and a firm's success was due to its firm-specific resources (Schiele *et al*, 2011). Accordingly, individual resources, competencies and capabilities of the organization were a bundle of the firm's resources or the essence of the resource-based view (Schiele *et al,* 2011). For instance, in e-procurement, a resource is described as a basic element or a prerequisite for the development and operation of e-procurement technologies; and it is required for building up a firm's capabilities (Crook,Ketchen,Combs & Todd., 2008).

The resource-based view (RBV) of firms mainly emphasized their internal strengths and weaknesses, in contrast to industrial organization economics which focused on firms' external opportunities and, because when the external environment is unstable, a firm's own resources and capabilities may be easier to control threats (Cardeal & Antonio2012). The resource focused perspective contends that a firm was a collection of tangible and intangible resources (Barney, 2012). This collection was unique to each firm so that each firm could be considered different (heterogeneous) from each other within the same industry i.e. no two companies possess the same experiences, or had acquired the same assets or skills or built the same organizational culture (Barney, 2012).Such differential endowment of resources among firms was the ultimate determinant of implementation decisions (Crook *et al.*, 2008). Cardeal and Antonio (2012) used the RBV to explain the importance of e-procurement to a an institution. According to Cardeal and Antonio (2012) , e-procurement was considered to be a source of competitive advantage for an institution. Ownership of

firm-specific assets enabled an institution to develop a competitive advantage. They also found out that an institution competitive advantage was derived from the its ability to assemble and exploit an appropriate combination of resources In their study, Odhong',Were and Omolo(2014) confirmed that, RBV focused on the idea of costly-to-copy attributes of the firm as sources of business returns and the means to achieve superior performance and competitive advantage.

The RBV had been used in the strategic literature for the analysis of business performance. It was important to highlight that the RBV had recently been employed in e-procurement studies to examine the resources and capabilities on e-procurement implementation and adoption (Schiele *et al*, 2011). Schiele, Velderman and Huttinger, (2011). from e-procurement literature, argued that the RBV theory was an appropriate theory for supply chain and logistics management research. These studies found institutional resources and capabilities to be significantly positive related to implementation of e-procurement. Therefore the RBV provided a theoretical foundation for this research to compare the antecedents of implementation of e-procurement between National and County Governments in Kenya.

2.3 Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Bugadan & Biklen, 2003). In conducting the study, a conceptual framework was developed to show the relationship between the independent variables and dependent variable. In this study, the dependent variable is e-procurement implementation and independent variables are; top management support, training in IFMIS, technology advancement, procurement laws application and organizational culture. The constructs and relationships between research variables are illustrated in the following figure 2.2.

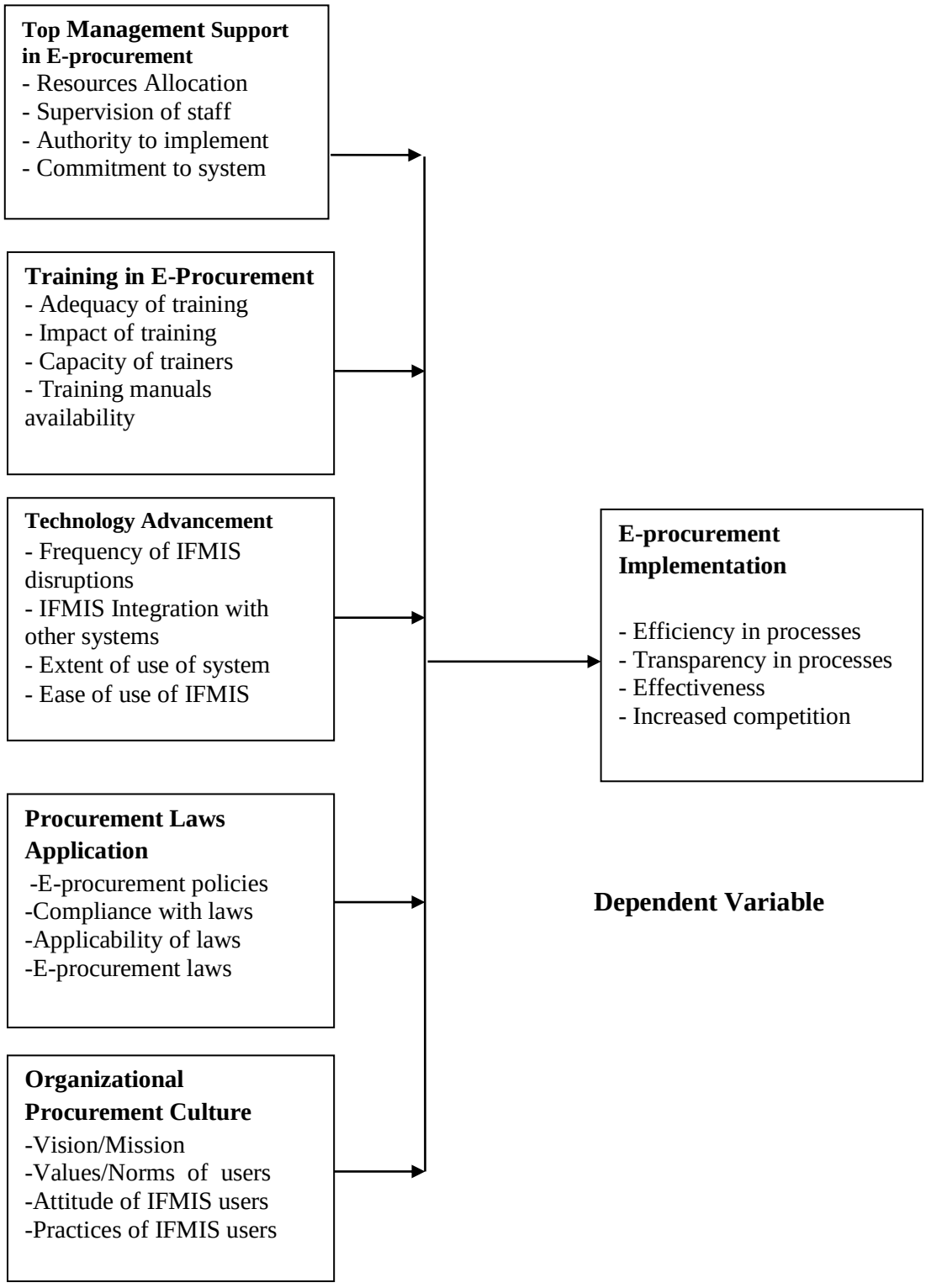

Figure2.2: Conceptual Framework

2.3 Summary of Variables

This section discusses the theoretical review of the variables under the study. The independent variables are top management support, training in IFMIS, technology advancement, procurement laws application and culture. The dependent variable is E-procurement implementation.

2.3.1 Top Management Support in E-procurement

Research into the implementation of information system (IS) innovations considers management support as a critical factor in successful implementation (Dorasam, Kaliaman, Halima & Raman, 2012). The research argues that management support is critical because the implementation of IS innovations is resource intensive hence substantial material and managerial resources are required not only to develop IS applications and infrastructures, but also to support end users during implementation. Such resources are more likely to be forthcoming when the change enjoys management support. In addition, symbolic actions of support by senior managers contribute to successful implementation.

These actions legitimize IS innovations, signal management commitment to successful implementation, and serve to convince end users to expend the effort required to adopt the innovations (Nyadimo, 2011).Such actions could be in the form of a visible association with the project, active championship, organizational communications, or personal use of technologies. This is supported by Shalle and Irayo (2013) who states that top management supervision of end users during implementation also contributes to implementation success. Managers need to work closely with end users to mandate, negotiate, persuade, motivate, and support them in adopting IS innovations. Management support is also considered critical for conceptualizing work processes and for changing existing routines and processes that are critical for successful implementation (Shalle & Irayo, 2013).

Arasa and Achuora (2012) in their study on antecedents to successful adoption of e-procurement in textile and apparel firms in Kenya explored ways in which institutional context and individual actions interact to shape the implementation of IS

innovations. Key aspects of the institutional context, such as workflow patterns, work procedures, routines, reward systems, and control and coordination mechanisms both constrain the implementation of technology and are adapted to accommodate new technology. According to Mose *et al.* (2013), the process of mutual adaptation of technology and institutional context involves two distinct sets of processes. The first includes actions taken by users to appropriate technology features and the other one to adapt technologies to accomplish work. The structuration of technology by users in this manner draws upon and reproduces existing institutional contexts. The second set of processes includes actions to reshape the institutional context (Mose *et al.*, 2013).

These meta-structuration actions include changes to key aspects of the institutional context, such as workflow patterns, work procedures, successful IS Implementation routines, organization structures, control and coordination mechanisms, and reward structures According Mose *et al.* (2013) Meta-structuration actions are critical to the successful implementation of new technology in organizations. The importance of the above findings is that, it is proposed that management support is critical in undertaking meta-structuration actions for change so that implementation can be successful. Structuration which is to do with conditions governing the continuity and transformation of structures in an organization is a top management function hence very crucial during e-procurement implementation since it involves transformation of structures.

The development of institutional mechanisms, including control and coordination mechanisms to regulate task performance, is a key management responsibility (Aboelmaged, 2010). Further, managerial interventions are undertaken, in part, to regulate organizational performance, which is sensitive to the fit between task requirements and the mechanisms to regulate task performance. It follows that management interventions that shape the institutional context are powerful influences on implementation success as in the case of e-procurement, (Osmonbekov, Bello & Gilliland, 2012).

2.3.2 Training in IFMIS

Organizational knowledge is widely recognized as a valuable resource that impacts on innovation significantly (Njuki & Kagiri, 2015). Organizational knowledge development is a path-dependent and socially complex process that is resistant to easy imitation. Thus, due to the heterogeneity and inimitability of organizational knowledge, firms that possess knowledge can use it to exploit new and innovative technologies easily whereas other firms may face significant barriers in using innovative technologies. A firm's ability to innovate is largely a function of prior related knowledge. Such knowledge enables firms to easily acquire and retain new knowledge, which is necessary for innovation whereas the need to acquire such knowledge presents considerable challenges to firms that lack it (Basheka *et al.*, 2012).

Two prominent dimensions of knowledge have been discussed in the literature being the depth of knowledge and the breadth or the diversity of knowledge. Although both dimensions impact on innovations in firms, recent studies have found that the breadth of knowledge has a more significant impact than the depth (Makinen, Kahakonen & Lintukangas, 2011). Therefore, in this study, we focus on the diversity of procurement knowledge possessed by a firm. Fredrico *et al.* (2010) argues that the diversity of knowledge contributes to absorptive capacity as well as the ability to recognize the value of new information, assimilate it, and apply it to commercial ends. The diversity of knowledge enhances the likelihood that new information will be related to what is already known, and facilitates the innovation process by enabling novel associations and linkages. The diversity also facilitates easier acquisition of new knowledge essential for using the innovation effectively, and enables more creative and complex combinations of knowledge (Vishanth *et al,* 2011).

The diversity of procurement knowledge refers to the range of procurement situations over which a firm has knowledge. It reflects the variety of requests that may be placed on the procurement process and the consequent knowledge a firm gathers through such opportunities. The broader a firm's experience with search and

ordering requirements, the more extensive its insights are into the procurement process and the greater its ability to exploit this knowledge to use an innovative procurement solution (Basheka *et al.*, 2012). Firms that have diverse procurement knowledge are able to analyze, process, and comprehend the functional features of the innovation in terms of e-procurement technologies in a more efficient way and innovate more effectively than firms with low diversity of procurement knowledge. Their experiences with and the knowledge obtained from different procurement scenarios in the past enable them to create associations with different procurement requirements and the features offered by e-procurement solutions. Such firms are more likely to recognize those Internet technologies with important features in terms of diversity towards achieving e-procurement implementation, (Vishanth *et al,* .2011).

2.3.3 E-Procurement Technology Advancement

Perceptions of high technological uncertainty are likely to be associated with expectations of frequent changes in product design and specifications, and regular product innovations. Such perceptions lead to environmental scanning and interpretation, and consequent actions by firms (Panda & Sahu, 2012). Thus, firms with perceptions of high technological uncertainty are likely to engage in search for input goods on a regular basis, to exchange technical information with new and existing suppliers regularly, enter into new contracts with suppliers, and negotiate prices and delivery schedules and purchase goods frequently. This helps in helping the organization to manage and maintain changes in technology.

According to Aboelmaged (2010), other researchers argue that managers facing uncertain environments tend to be more proactive and use more innovative strategies than managers in less-turbulent environments. They attempt to anticipate events and implement preventive actions rather than merely respond to prior events. They seek to identify and adopt new products and processes proactively. Aboelmaged (2010) found that the environmental uncertainty was directly related to a firm's product variety and innovativeness in order to survive in the unpredicted and competitive environment. Technology advancement is so critical due to rapid changes in

technology which means that firms must always be on the lookout on changing technology

Firms perceiving high technological uncertainty are likely to be proactive about identifying and exploiting innovative technologies such as e-procurement solutions that enable easier product and supplier search while providing the foundation on which increased information search and processing can take place. In addition, such firms are also likely to exploit transactional capabilities of these solutions to negotiate prices, delivery, and other terms, and complete the purchasing transaction efficiently. In contrast, firms that do not perceive high levels of technological uncertainties are likely to adopt a passive approach, (Aboelmaged, 2010).

2.3.4 Procurement Laws Application

The main starting point from the legal policy perspective is whether the legal framework in the system concerned in fact permits the use of e-communications, or whether further provision is needed (Takamuhabwa,2012). For example, when the Public Procurement and Disposal Act was adopted in 2005, it was not anticipated that information technology and e-communications would become widespread at least in the short term, and so it was not considered appropriate to provide expressly for the use of e-communications or e-procurement. However, the change and need in use of E-commerce has been so quick that the public entities had or have no choice but to embrace the new concept whether supported by law or not.

Although some provisions of the 2005 procurement Act arguably accommodated e-communications for example, Article 9(1) refers to a form of communication that provides a record of the content of communication, rather than to written communication, other provisions of the Act generally reflected a paper-based rather than an electronic procurement system (PPDA, 2005). Another example, there are references to documentary evidence and other documents, the rules on preparation, modification, withdrawal, submission and opening of tenders clearly indicating a paper-based environment, particularly in view of the requirements that tenders be submitted in a sealed envelope (ROK(b),2015). It therefore does not help matters

when it comes to implementation of E-procurement since the procurement laws and regulations stipulates use of manual system as opposed to electronic system.

A second policy issue is whether permitting the mandatory use of communications is always desirable. It is generally considered that the needs of the procuring entity (rather than those of suppliers) drive the basis of procurement regulation, and procuring entities are obviously keen to reap the efficiency rewards of e-communications (Onyinkwa, 2013). There are cases where players in procurement have no knowledge and if any inadequate in procurement laws and regulations. This is especially with all suppliers to the National and County Governments who may not be conversant with procurement laws and regulations and on the relevancy and effectiveness towards e-procurement implementation. In the light of the objectives of non-discrimination and fair and equitable treatment of all suppliers in procurement systems and in order to ensure and broaden market access, the procuring entity should not be permitted to selectively apply procurement laws and procedures that would in effect exclude suppliers or otherwise restrict competition while implementing e-procurement in the public sector (Fabrizio, Missikoff & Nicola, 2011)

A third, and related, main policy issue is how the use of e-communications should be provided for in the procurement laws and regulations. The extent to which Individual Counties can use e-communications in procurement depends on the enactment of appropriate laws and regulations on electronic commerce, and the extent of standardization within the County concerned (Fabrizio *et al,* 2011). The general legal environment in a County as opposed to measures specific to government procurement might or might not provide adequate support for electronic procurement. For example, laws regulating the use of written communications, electronic signatures, what is to be considered an original document and the admissibility of evidence in court might be inadequate to allow e-communications to be used in procurement with sufficient certainty (Fabrizio *et al,* 2011)

2.3.5 Organizational Culture

The different attributes of culture have been arranged on basis of norms and attitudes which help in differentiating one firm from another (Dorasam Kaliaman, Halima & Raman, 2011). The process of thinking helps in differentiating one member from another on basis of cognitive thinking. There are different success guidance factors based upon different values and norms that make culture effective. Culture can be looked at in terms of beliefs, behaviours, norms and values that help in making culture most effective. The knowledge of culture has been gained through understanding and beliefs on basis of large groups (Chau & Tam, 2011).

Culture is defined as a mixture of values, sets, beliefs, communications and explanation of behaviour that provides guidance to people. The main idea of culture comes from sharing in learning processes that have been based upon systematic allocation of resources. (Ahu Genis, 2011) The cognitive systems of human that helps in improving thinking and decision making were based upon organization culture. (Ahu Genis, 2011) The multifaceted set of beliefs, assumptions and values helps in presenting different level of culture by conducting business in an effective manner. The normative glue based upon organization culture helps in holding overall management effectiveness .The concept of effective organization culture helps in improving business decisions. The survival of culture in an organization lies upon national and foreign culture differentiation in culture management. (Ahu Genis, 2011) The culture of organization has been affected by attitudes, norms and beliefs that lead to strong communication between employees.

According to Dorasam *et al.* (2014), in the last decade organization culture has generally been interrelated to management. The two essential factors that lead to effective culture management include structural stability and integration of superior standard of organization culture. Certain characteristics of organization culture have been established in which set of norms, values and beliefs helps in perfect association between them, (Arasa & Achuora, 2012). At different levels of organization culture, different background, ethics and racial differences impact upon performance. Similar organization culture with different backgrounds has common

set of values and beliefs to be effected by organization systems. The attraction of organization norms, values and beliefs have strong effect upon performance and sustainability.

The norms of employees impact upon sustainable performance and proper management of organization culture leads to attainment of profitability. According to Orori (2011), the degree of an achievement to which an employee's fulfill the organizational mission at workplace is called performance. Performance has been perceived differently by various researchers, but most of the scholars relate performance with measurement of transactional efficiency and effectiveness towards organizational goals. The job of an employee is to build up the degree of achievement of a particular target or mission that defines boundaries of performance (Panda & Sahu, 2012). Certain researchers have identified different thoughts, attitudes and beliefs of performance as it helps in measurement of input and output efficiency measures that lead to transactional association.

Voet, Higgs, Tummers and Kuipers(2014) states that performance measurement system as an organizational culture helps in improving organization to achieve goals and objectives in an effective manner .The strategic planning based upon development of goals and objectives help organization to focus on non-financial or intangible assets. The quality, performance and services linked with customers have financial and non-financial rewards. The financial and non-financial reward management systems can be enabled by measurement and evaluation of performance measurement system. The different values and beliefs based upon employee performance helps in organization association. The organization culture helps in internalizing joint relationship that leads to manage effective organization processes (Panda & Sahu, 2012)

According to Dorasam *et al*. (2012), the job performance of organization has a strong impact on strong organization culture as it leads to enhance productivity. The norms and values of organization based upon different cultures influence on work force management. In an organization strong culture enables to enforce effective and efficient management of work force employees. The net profit in an organization

helps in enhancing performance of employees. The common path for making perfect use of resources in same cultural association helps in positive development of organization. On the basis of particular conditions organizational culture is helpful in improving and providing competitive edge (Dorasam *et al.*, 2012). The employee commitment and group efficiency helps in improving performance based upon organization sustainability. The nature and power of organization culture influence upon sustainability and effective of organization

2.3.6 E-Procurement Implementation

Suppliers' sales-process digitization refers to the availability and prior use of IT infrastructure and solutions among a firm's suppliers to support efficient sales to the firm. In the context of inter-organizational processes, the availability of IT infrastructure and applications among partners constitutes an important source of technologies that impact innovation opportunities for firms. The ability of firms to use IT in inter-organizational processes is dependent on their partners' ability to use IT to support these processes (Graham & Melvyn, 2011). High digitization levels in partners enable firms to leverage IT resources in the entire process, whereas low digitization levels can reduce connectivity and impede firms efforts to digitize boundary-spanning processes (Graham & Melvyn, 2011). Due to the significant differences in the IT infrastructure available to the suppliers and their prior experiences with IT solutions, the digitization levels differ significantly among the suppliers of different firms. Such deficiencies among suppliers may be difficult to fix easily or quickly and the difference in digitization levels may persist, thus providing firms with different abilities to exploit innovative IT applications (Doherty, McConnell & Ellis-Chadwick 2013).

In the context of procurement, digitized suppliers help firms enhance the efficiency of the procurement process, and become a valuable external resource for the firm. Such suppliers have the capability to electronically exchange and process information, to auto mate routine tasks such as order management and customer service, to conduct transactions, and to collaborate with buyer firms. These capabilities in suppliers enable firms to use e-procurement solutions to exchange

information and initiate and complete transactions online. Doherty *et al*. (2013) found that supplier readiness significantly impacts e-business use in firms.

2.4 Empirical Literature Review

This section contains empirical review on studies concerning e-procurement activities based on the chosen conceptual framework so as to show its appropriateness and relevance. The review evaluated reports of previous studies including observations, conclusions and recommendations related to e-procurement. This assisted the study in understanding and appreciating the research that has already been done in the area of e-procurement both in the public and private sectors of the economy. Before e-procurement strategy is adopted, the top management of the organization must perceive its impact on the organization processes and how it will be integrated within the existing organizational structures without disrupting the activities of the organization at large.

2.4.1 Top Management Support in E-procurement

The top management team is responsible for setting the vision and goals of the organization, bringing about collective commitment for change in processes and organizational structures, and formulating the policies and strategies necessary to put an e-procurement initiative in place (Muinde & Shale, 2014). The importance of the above statement is that if the concept of adopting e-procurement system does not have the full support of the top management team, there is every reason for it to fail. It is important to make sure that the top management has given full support for the adoption of e-procurement. Considerable attention and support should be provided by senior management to ensure that procurement reforms have been well understood in the agency (Khanapuri, Nayaka, Sharma & Soni, 2011).

Doherty *et al.* (2013) in a study on institutional response to electronic procurement in the public sector used the term top management championship to define managerial beliefs about e-commerce initiatives in firms and participation in those initiatives. Top management championship positively influences extent of organizational assimilation of web technologies in e-commerce strategies and activities. Managerial

productivity and strategic decision aids are defined in the study by Oketch, (2014) as important factors in e-commerce adoption in organizations. Strategic decisions like implementation of e-procurement can only be achieved when supported by top management. The top management would be able to avail funds to implement such strategic decisions like e-procurement.

In a study on e-procurement readiness factors in Kenya's Public sector by Orina, (2013), it was found out that top management support is also a crucial factor that influences success of e-procurement implementation. There is little doubt that senior management leadership is critical to the success of an e-Procurement implementation strategy. The top management team (steering committee) must involve the project manager, any consultants working with the committee, and agency staff to develop an implementation strategy. Furthermore, the executive management team is responsible for setting the vision and goals, bringing about collective commitment for change in process and organizational structures, and formulating the policies and strategies necessary to put an e-Procurement initiative in place.

In a study on predicting e-procurement adoption in a developing country, Aboelmaged (2010) suggested that top management can stimulate change by communicating and reinforcing values through an articulated vision for the organization. Top management support is critical for creating a supportive climate for the adoption of new technologies. Top management support, organizational adaptation, and training of employees are examples of issues for the successful implementation of an organization IT system (Shalle & Irayo, 2013). Jeyaraj, Rottman and Lacity, (2010) in a review on linkages and biases in IT innovations found out that top management support to be one of the best predictors of organization adoption of Information System innovations. Top management can stimulate change by communicating and reinforcing ideas concerning changes from the status quo to what is required now and in future.

According to Shalle and Irayo (2013) in a study on factors affecting e-procurement practices in the public sector states that top managers nowadays continuously emphasize to adapt to the Internet applications, they often advise employees to be

sensitive to competitors initiatives with regard to e-business, insist that their employees must bring more of their business practices online in order to meet customers future needs, they are willing to try to provide the necessary resources for implementing e-business practices and they often advise employees to keep track of the latest developments in Internet technology and Internet related business practices while incorporating e-business practices in company. Top manager emphasis on e-business, can facilitate performance gains from e-business adoption.

Busheka and Sabitii (2011) in a study on compliance to public procurement reforms in developing countries found out that Supply chain managers and internal stakeholders can easily drive user adoption and system compliance through significant change management efforts and ongoing education of end users. This is because of the interactions between suppliers and businesses entities supplied to and those that manufacture or supply to them in a web known as tiering of suppliers. Suppliers therefore become highly active internal marketers of e-procurement systems because of several interactions especially in the case of public procurement. Suppliers if involved early in e-procurement initiatives are therefore able to play an active role in the process's refinement and efforts in change management (Basheka & Sabitii, 2011).

According Vaidya and Hyde (2011) particular benefits of e-procurement in the public sector are thought to include greater transparency in procurement through electronic publishing of tender notices and contract awards. This in turn is likely to enhance accountability and reduce the instances of corruption benefits and costs associated with the process or processes to be automated in order to understand the probable outcomes of e-procurement adoption or enhancement. There is little doubt that top management support is critical to the success of an e-Procurement implementation strategy. This study therefore established the relationship between top management support and e-procurement implementation in public entities.

2.4.2 Training in IFMIS

Armstrong (2010) points out that training is the formal and systematic modification of behavior through learning which occurs as a result of education instruction

development and planned experience. The fundamental aim of training is to help the organization achieve its objectives by adding value to its key resources the people it employs. Training means investing in people to enable them to make the best use of their natural as well as acquired abilities. The objectives of training are to develop the skills and competence of employees and improve their performance, help employees to grow within the organization as higher as possible in new job, appointment, transfer or promote and ensure that they become fully competent as quickly and economically as possible (Njuki & Kagiri, 2015).Effective training can minimize learning costs, improve individual, terms and co-operate performance in terms of output, quality speed and overall productivity. Operational flexibility is improved by extending the shape of skills possessed by employees through multi-skilling which increases the commitment of employees by encouraging them to undertake several or various tasks within the project with a view of achieving the mission and objectives of the organization and to provide high level of services to customer (Onyinkwa, 2013)

Njoroge (2010) in a study on factors influencing e-procurement in the construction industry in Kenya suggests that it is important to evaluate training in order to assess its effectiveness in producing the learning outcomes specified when the training intervention was planned and to indicate where improvements or changes are required to make the training even more effective. It is at the planning stage that the basis upon which each category of training is to be evaluated should be determined. At the same time, it is necessary to consider how the information required will be used in evaluating events, how it should be obtained and analyzed. Brandon and Carey (2011) discusses the process of evaluating training in the context of an attempt to obtain information (feedback) on the effects of a training programme and to assess the value of the training in the light of that information. Evaluation leads to control which means deciding whether or not the training was worthwhile. Preferably in cost benefit terms and what improvement is required to make it even more cost effective.

In a study on benefits and barriers of e-procurement in Malaysia, Eei, Husain and Mustaffa (2012), found out that due to the increase in technological advancement, constant training on the skills to handle all kinds of problems in communication so as

to achieve effective communication is essential. Training of staff plays quite an important role in the organization. It comprises of monitoring and planning, welcoming change and equipping people to adapt in any needs of the organization. Training ensures that an organization has people with the correct mix of attributes which is achieved by the provision of appropriate learning opportunities and enabling them to perform to the highest levels of quality and service delivery (Eei *et al*, 2012).

Gupta and Norian (2012) in a study on barriers to adoption of e-procurement and measurement performance in public entities suggests that if training is positioned correctly with rewards for outstanding performance, comparing satisfaction results achieved by various training programs between different groups can create a natural competitiveness among peers and elevate service levels, It can also help employees better understand the importance of their jobs and how their individual performance correlates to higher customer satisfaction levels and service delivery. To achieve productivity in any sector including the security sector, employees should be analyzed to determine their training needs and the relevant training offered to enable them perform as required (Gupta & Norian, 2012).

Quesada, Gonzalez, Muller and Muller (2010) in a study of e-procurement practices and performance found out that effective execution of organization procurement procedures greatly depends on the level of employees training since lack of professional trained staff on procurement functions limits the ability of the organizations to embrace procurement best practices through benchmarking. Brandon and Carey (2011) contend that lack of professional training is a key impediment to maintenance of high level of professionalism in the execution of procurement procedures in many public sector organizations. According to Andrew (2011), new training ideas are developed because trends are towards making training more practical, realistic and pertaining to employees′ jobs. Training must give employees broader knowledge to enable them to effectively use new technology and integrate it into the workplace.

A study by Emanuel (2011) training needs in the public sector showed that in Africa, training of procurement personnel could greatly support effective implementation of procurement practices in many public training institutions. This is supported by Asogwa (2013) in a study on electronic government as a paradigm shift for efficient service delivery in Nigeria who found that in many African government institutions, many procurement managers are not trained on implementation of effective procurement practices and this contributes to wastage of public funds. This study established why and how training plays a critical role in E-procurement implementation

2.4.3 E-Procurement Technology Advancement

E-commerce as one of the innovations provided for by the internet has been widely accepted by different sectors worldwide and is therefore not a new concept. E-Procurement applications focus on creating efficiencies with the goal being to make the traditional purchasing procedures more efficient and cost effective (Muinde, 2015). The development and implementation of electronic commerce business models such as a procurement portal in organizations is a challenge that goes beyond mere technological functionality (Bof & Previtali, 2010). Adopting of a new technology needs skill and knowledge to operate in the organizations and most organizations do not implement because organizations' employees are not familiar with new technology.

Grahama and Melvyn (2011) in a study on the effectiveness of information systems in supporting the extended supply chain found out that technological resources have been consistently identified as an important factor for successful information systems adoption. Technologies have changed and redefined the way organizations and government corporations operate. Organizations adopt new technologies to improve the efficiency and effectiveness of various work processes. Unfortunately, many technology-based products and services never reach their full potential, and some are simply rejected (Grahama & Melvyn, 2010). Failed investments in technology may not only cause financial losses, but also lead to dissatisfaction among employees. Hence, explaining and predicting user adoption of new technology is important and

also coming up with a framework that will address failure in case it occurs, (Khanapuri *et al.,* 2011).Information Technology (IT) is a technology that involves use of computers, software and internet connections infrastructure for supporting information processing and communication functions (Wiengarten,Fynes, Humphreys, Chavezand & McKittrick, 2010)

According to Wiengarten *et al.* (2010), the use of information technology in public sector has not been effectively implemented and especially the procurement functions which are mostly subjected to manual procedures that are slow, inaccurate and infective. This has negatively impacted on procurement procedures since the public sector organizations cannot effectively monitor and coordinate procurement procedures of all procurement projects in various sectors which includes communication and infrastructure because of lack of computerized procurement procedures as most of procurement functions are prone to manual operations which are slow and ineffective. The use of computerized procurement systems demonstrates effective use of information technology hence meeting timely reporting objective (Wiengarten *et al.,* 2010).

Fabrizio *et al.* (2011) in a study on methods for business process and informal business rules and compliance argues that Internet-based e-procurement systems and B2B electronic market solutions need to be compatible to the greatest possible extent with the existing technologies so as to have a reasonable chance to be widely adopted in the marketplace. Balridge and Burnham,(2012) identified internal business risks arguing that implementing an e-procurement solution not only requires that the system itself successfully performs the purchasing process, but it integrates with the existing information infrastructure. In addition companies are uncertain whether they have the appropriate resources to successfully implement an e-procurement solution to meet its demands. In order for E-procurement technologies to succeed, suppliers must be accessible via the Internet and must provide sufficient catalogue choices to satisfy the requirements of their customers. Suppliers, especially in low margin industries, may be hesitant or even unable to meet such demands without guarantee of future revenue streams or return on investments. Davila, Gupta and Palmer (2003) also identified technology risks in e-procurement explaining that companies also fear

the lack of a widely accepted standard and a clear understanding of which E-procurement technologies best suit the needs of each company.

In a study on adoption of electronic commerce tools in business procurement, enhanced buying centre and process, Osmonbekov *et al.* (2011) states that use of ICT in business is associated with less vertical integrations meaning that a business is able to conduct more transactions without the need to increase or invest more in physical capacity. The concept of e-procurement can therefore be used to improve transactions and reduce costs in a business. Cicirello (2010) and Johnson (2011), indicated that various cost reductions and benefits have been already identified in the use of e-procurement hence need to implement the technology in firms that want to achieve a competitive advantage.

According to Osmonbekov, Bello and Gilliland (2012), IT plays a great role towards supporting adoption of centralized procurement systems in public sector organizations. Centralized procurement system leads to a central procurement data base that creates a favorable environment for effective automation of procurement processes. Mota and Filno (2011) affirms that there are two primary types of procurement systems being electronic procurement and standard procurement. Both types of systems are widely available and are often included in an enterprise resource planning (ERP) or accounting software product which can be easily integrated in existing organizations procurement structures. Johnson, (2011) concurs that, as purchasing departments have become larger and more complex, most organizations have adopted IT based systems that have created a platform for installation of automated procurement systems. These procurement systems provide efficient and extensive cost savings and other business benefits by automating many of the purchasing processes.

According to Mburu (2011) in a study on the role of e-procurement in enhancing efficiency in the telecommunications sector in Kenya, it was found out that integration of procurement functions with ICT has enabled many public and private organizations to improve the level of effectiveness in the execution of procurement practices. The study found that implementation of ICT based procurement methods

in many public institutions in Africa is hindered by lack of effective e-procurement methods, lack of automated procurement systems, lack of supportive ICT infrastructure and absence of ICT skills amongst procurement staff.

A study by Darin (2010) found that in Canada, innovation in technology has played a major role in enabling many organizations to adopt effective procurement practices both in developed and developing countries hence the importance of adopting the correct technology when implementing e-procurement practice. Orina (2013) indicates that the public sector undertakes e-procurement initiatives because it is believed that certain cost reductions and benefits including those related to public policy imperatives will arise without the considerations of the implications. The items involved in public procurement range from simple items or services such as office clips or cleaning services to large commercial projects such as the development of infrastructure including roads, military equipment and airstrips which can all be sourced through e-procurement. With government as a service provider, a basic measure of a successful or failed public e-procurement will be manifested through quality and magnitude of the services it provides and this can be made easier by automating procurement.

Wahid(2010) in a study on examining adoption of e-procurement in the public sector in Indonesia found out that E-procurement has become an avenue for improving effectiveness through cost savings and productivity improvements in business transactions that involve the purchase of goods, services and works . E-procurement solutions have widened the range of Business to Business (B2B) as well as Business to Government (B2G) transactions by introducing innovative processes in public administration based on information and communication technologies. This study determined the role of technology in E-procurement implementation in the public sector.

2.4.4 Procurement Laws Application

Legal framework is a basis of any business transaction whether in Public sector or private businesses. It defines the obligations and responsibilities of the partners transacting business with the objectives of fulfilling each other's desired goals.

Kheng and Al-Hawandeh (2012) found that the laws governing B2B commerce, crossing over to e-procurement, are still undeveloped. For instance, questions concerning the legality and force of e-mail contracts, role of electronic signatures, and application of copyright laws to electronically copied documents are still unresolved. Inadequacies in government policies and legislation can affect the uptake of an ICT system. For example, the standard procedure for governmental tendering process mandates the buying of printed tender documents in physical offices by interested parties in person. According to Varney (2011) this effectively prohibits the use of e-tendering system and presents a huge setback for the government's attempt to establish an electronic government system. Wide-spread use of e-procurement system also depends on the availability of supporting infrastructures, such as sufficient broadband coverage which is a challenge in developing countries.

Brandson and Carey (2011), in a study on the impact of user-perceived e-procurement quality on system and contract compliance examined the organizational context in terms of the suppliers' involvement and perception towards the adoption of the public e-procurement system. Four main constructs were analyzed namely, organizational leadership, organizational perceived usefulness, organizational perceived ease of use and organizational facilitators involving 502 registered suppliers who were eligible to supply goods and services to the various ministries and federal government agencies. The overall results indicated that organizational perspectives played an important role in ensuring the success rate of implementation and use of e-Procurement system. However, to achieve greater level of adoption and usage, the government must pursue a dual policy of coercion and persuasive. Incentives and prompt payment to the suppliers and datelines for adoption must not be extended any further as has been the case before (Brandson & Carey, 2011).All the above conclusions were based on the fact that it would be possible if laws pertaining to use of e-procurement are supportive of the strategy.

According to Greunen, Herselman and Niekerk (2010) in a study on implementation of regulation based e-procurement, sound e-procurement policies and practices are among the essential elements of good governance hence must be put in focus during

implementation. The study further notes that irregular e-procurement activities in public institutions provide the biggest loophole through which public resources are misappropriated due to lack of stringent laws governing procurement and especially e-procurement. According to Basheka and Sabiitii (2011), the basic principles of good e-procurement practice include accountability, where effective mechanisms must be in place in order to enable procuring entities spend the limited resources carefully, knowing clearly that they are accountable to members of the public. The procurement process should also uphold integrity by ensuring that there are no malpractices, informed decision-making, which requires public bodies to base decisions on accurate information and ensure that requirements are being met. More still, the e-procurement practice should be responsive to aspirations, expectations and needs of the target society. Finally, there is need for transparency to enhance openness and clarity on procurement policy and its delivery which can be achieved through e-procument laws that supports its implementation (Basheka & Sabiitii, 2011)

According to Zubcic and Sims (2011), in a study on the examination of the link between enforcement activity and corporate compliance by Australian Government, enforcement action and increased penalties lead to greater levels of compliance with laws. Corruption among government procurement officials in developing countries such as Bangladesh, India, Sri Lanka, Nigeria and Venezuela has been linked to a weak enforcement of the rule of law (Tukamuhabwa, 2012; Sang and Mugambi, 2014). A study on corporate governance in Africa revealed that countries such as Nigeria and Ghana suffer from weak law enforcement mechanisms (Asogwa, 2013).Where low levels of compliance are exhibited, it becomes a major embedment in achieving objectives of the organization-procurement should be therefore anchored in law so that implementation is improved as employees will be forced to comply with the law.

In line with Sang and Mugambi (2014) in a study on factors affecting compliance with public procurement and regulations in the public sector, it is recommended that laws on procurement be reviewed to be in line with e-commerce. Firms might choose to implement effective compliance systems if legal violations may be punishable in

cases where the legal system enforces them but in a situation where either penalty are set too low or because detection is imperfect or ineffective then the levels of compliance will be low. Lisa, (2010) argue that the threat of legal sanctions is essential to regulatory compliance and that enforcement action has a cumulative effect on the consciousness of regulated companies and it reminds companies and individuals that violators will be punished and to check their own compliance programs. This is also supported by Rossi, (2010) who opined that the outcome of sustained enforcement action instilled a culture of compliance had a direct impact on corporate compliant behavior.

Thanju and Thanju (2013) in a study on factors affecting compliance of public hospitality industry entities to public procurement laws and regulations in Kenya found that the procurement policies employed by many public institutions determines the level of effectiveness in execution of the procurement practices. The study also found that the level of procurement regulations compliance and especially by the top management determines the nature of the kind of procurement practices employed in any public institution and also the level of compliance. A study by Onyinkwa (2013) on factors influencing compliance with procurement laws and regulations in the public sector noted that in Africa, many government corporations lack systems of effecting procurement laws policies that are in place and this has contributed to implementation of ineffective procurement practices. Further, findings by Fabrizio *et al.* (2011), revealed that low level of procurement regulations compliance in many public training institutions in developing nations hampers effective execution of procurement functions and this impedes implementation of institutional development projects. This study has established to what levels laws and policies affect implementation of E-procurement.

2.4.5 Organizational Culture

Due to regulatory reforms and changing community expectations, the role of culture in organizational compliance has gained momentum (Lisa, 2010). Basing on the competing values model (hierarchical culture), which involves enforcement of rules, conformity and attention to technical matters, individual conformity and compliance

are achieved through enforcement of formerly stated rules and procedures (Michele, Gelfland, Lisa, Leslie, Keller & Carsten, 2012). Although there is no single definition of culture, one can define it as the structure of behaviors, ideas, attitudes, values, habits, beliefs, customs, language, rituals, ceremonies, and practices of a particular group of people that provides them with a general design for living and patterns for interpreting behavior (Matindi & Ngugi, 2013).

According to Lisa, (2010) in a study on culture compliance, it was found out that culture plays a central role in the compliance process and associated outcomes based on the multifaceted set of beliefs, values and assumptions that determine ways organizations conduct its business. According to Lisa (2010), organizational culture is known as "normative glue" means to hold the overall organization together. The concept of organizational culture also makes available a base for determination the differentiation that may survive in-between the organizations that are doing business in the same national culture. Lisa (2010) found that Organizational culture could be build up by two essentials factors of social group being structural stability of a group and integration of single item in superior standard.

In a study conducted on culture in Uganda's public sector it was found out that culture was a hindrance to reforms in the public sector (Basheka *et al*, 2012). It is also contended that in a specific type of culture, characterized by specific values such as openness, trust and honesty, employees are more likely to engage in compliance behaviors, which collectively will contribute to organizational compliance. Arasa and Achuora (2012) further indicated that awareness of the nature of public organizational culture is vital in explaining and assessing the appropriateness and outcome of the current reform process. This applies to developing countries where waves of procurement reforms have resulted into enactment of procurement rules and regulations. The laws and regulations in the long term becomes the culture of the organization because of being practiced aver a long period of time.

Wanyama and Zheng (2010) in a study on the fit between organisational structure and IS implementation, the case of IFMIS in Kenya, found out that organization culture has a strong influence on e-procurement implementation. The identification

and understanding of meanings, norms and power in organization was an important consideration during the implementation of e-procurement. Organizational culture could be build up by two essentials factors.Alharbi and Alyahya (2013) on impact of organisational culture on employee performance posited that organizational characteristics and organizational influences were significant motivators to the implementation of any change in an organisation hence can be useful in implementation of e-procurement. This study has analysed how organizational culture has a significant influence on implementation of e-procurement in public institutions.

2.4.6 E-procurement Implementation

Implementation itself, which is broader than co- ordination, may be described most briefly as the stage between a decision and operations (Panda & Sahu, 2012; Doherty *et al* 2013). Implementation is a process of strategic interaction among numerous special interests all pursuing their own goals, which might or might not be compatible with the goals of the policy of the organization (Khanapuri *et al*, 2011). It seems that this is exactly what is happening in Kenya with E-procurement implementation, within the framework of competing interest groups in the administration and politicians whereby each group is backed up by political and or business interests.

Asima and Februati (2014) in a study on e-procurement model have indicated that implementation is the carrying out of a basic policy decision. Consequently, effective implementation requires that a program's objectives be understood by those individuals responsible for their achievement. It will be enhanced by the clarity with which standards and objectives are stated and by the accuracy and consistency with which they are communicated. However, successful implementation often requires institutional mechanisms and that implementers will act in a manner consistent with a policy's standards and objectives. Asima and Februati (2014) have summarized the problems of implementation as lack of adequate authority, too much delegation of powers, and lack of clear-cut instructions to the coordinating and coordinated agencies and lack of effective communication among agencies in the implementation

process. This results in the misunderstanding of each other's role and in the intensification of inter-agency conflicts. These factors impede the effective performance of horizontal and vertical co-ordination functions as socio-cultural traditions will play a significant role. Traditional acceptance of authority and reluctance to openly disagree with superiors leads to situations in which individual initiative is negatively affected, (Asima & Februati, 2014).

According to Baldrige and Burnham (2012) in a study on organizational innovation found that co-ordination during implementation takes the form of domination through centralized controls rather than through mutual adjustment, agency's conflicts, jealousies and bickering which all impede implementation. In most cases these factors will occur either in the process of planning, budgeting or implementation management. Organizational designs and authority patterns in most developing countries are characterized by a high degree of centralization, which is the enemy of local coordination) and bureaucratic attitudes and behavioral patterns constrain effective programme co-ordination and implementation.

Vaidya and Hyde. (2011) carried a critical review of literature determining critical factors that influence e-procurement implementation success in the public sector. The study presented the results of a literature survey developed to support a proposed model of the Critical Success Factors (CSFs) likely to impact the success of e-Procurement initiatives in the public sector. It identifies a number of relevant variables for each CSF and presents a model for future research. It also analysed the relative importance of different CSFs and observes that organization and management factors are the most important category for success of e-Procurement initiatives. The study revealed that top management support was among the significant CSF that affects implementation of e-Procurement in the public sector.

Gardenal (2010) in a study on e-procurement define measure and optimize organizational benefits investigated the barriers to e-procurement implementation in public entities, identified and ranked the barriers in order of importance as inadequate technical infrastructure, lack of skilled personnel, inadequate technological infrastructure of business partners, lack of integration with business

partners, implementation costs, company culture, inadequate business processes to support e-procurement, regulatory and legal controls, security, cooperation of business partners, inadequate e-procurement solutions and upper management support. This study analyses and states how the antecedents are affecting E-procurement implementation in the Public sector.

2.5 Critique of Literature

Although extensive research has generally been documented on e-procurement, few studies have been undertaken in Kenya to compare factors affecting the implementation at the two levels of Governments being National and County. (Mburu, 2011) looked at the factors that have driven the adoption of e-procurement in telecommunication sector with a special focus on Safaricom Kenya ltd. The study found out that despite the potential demonstrated by various researchers in the area, e-procurement implementation and its general adoption got off to a slow start. The use of new technology for procurement has generated great excitement because of its potential to reduce procurement costs and improve its strategic sourcing (Muinde & Shalle 2014). However, little attention has been given to the status of e-procurement at the two levels of Government's. In addition, the role of e-procurement attributes to benefits such as cost reduction, improved buyer/buyer collaboration, promotes compliance with respect to audits by all the drivers in supply chain management but no study has been undertaken in spite of the disadvantages that its adoption and implementation would confer to the organizations and their supplies (Njuki & Kagiri, 2015).

In measuring the challenges facing adoption of e-procurement in the public sector, a study by Makau (2014) found that there was a slow pace of adoption of e-procurement in the public sector due to lack of correct e-procurement technology being applied and also no proper procurement regulations to guide e-procurement implementation. The study was only conducted in one public institution Nairobi Water and Sewerage Company without benchmarking the study with other public institutions. There is no empirical work on benchmarking of public institutions implementing e-procurement leading to mistakes in generalizing status of e-

procurement in public entities. Benchmarking is therefore important in that it will serve as a means of identifying status of e-procurement in public entities (Makau, 2014).

Korir,Afande,Ofunya and Maina (2015) on constraints facing the use of e-procurement applications in Public Organizations found that many public institutions are adopting e-procurement to maximize on benefits that come with the electronic system like cost reduction, increased transparency, ability to audit the system and increased competition. The research identified potential factors in adoption of as e-procurement process as organizational structure, organizational readiness, supply strategic objectives and policy factors. The study concluded that most public institutions are still cautious in application of e-procurement because the concept is still new and they do not want to be early adopters but want to wait and learn from others. This may not be true due to the fact that the study was only undertaken in one public institution. Notwithstanding the above, the study only involved respondents from procurement staff and not other key stakeholders in procurement. The process of procurement involves participants from other departments like Accounts and ICT.It is therefore crucial that such research involves other key stakeholders who are involved in e-procurement implementation and not only staff from procurement

It is important to note that most of the previous studies on e-procurement implementation including Makau(2014),Korir(2015) and Njoroge (2010) have researched e-procurement from a narrow perspective by not considering implementation factors from a broad perspective. Some of factors considered mostly have been training, technology, management support and procurement laws.However,there are some broad factors like political, social, environmental and economical which consists of smaller themes within them which have not been explored. By exploring the broad factors the study will determine whether the institutions were ready to implement the concept of e-procurement or not. Readiness factor plays an important role in implementation since it affects all other factors like technology, training and even legal aspects.

As argued by Basheka, Oluka and Mugurusi (2012), the political structural context needs to be considered as much as the economic rationalities to better explain E-Procurement adoption. Politicians whose primary objective is to support local providers are unlikely to support public managers improving transparency and competition through E-Procurement. In contrast, when local politicians give fairness and cost-effectiveness goals priority over concerns for local providers, it is more likely that E-Procurement capabilities are further developed.

In a study by Mambo *et al.* (2015) on factors influencing implementation of e-procurement in the National Government, it was recommended that a comparative study be undertaken in devolved units of Government. Most previous studies have been undertaken in one public institution and generalized to all public institutions which is not a true picture of e-procurement implementation. The study found out that a number of requirements relating to e-procurement adoption was technology, staffing and skills. However, the requirements make the adoption face a number of challenges such as compatibility, integration and lack of capacity. It is therefore important that a study on requirements to implement and adopt e-procurement in public entities be undertaken since some of the challenges manifested might be due to insufficient implementation requirements (Mambo *et al*, 2015). The other important aspect is a comparative study is in devolved units of government. Due to uniqueness of each county depending on geographical location and previous injustices from National Government, there exists a major differences in the status of development between the counties hence need for a comparative study on e-procurement in the devolved units to determine differences in challenges.

E-procurement as noted by Korir (2015) involves many stake holders and all previous studies have concentrated to either upstream or downstream activities of procurement and forgotten an important sector of suppliers. Korir (2015) appreciates the important role suppliers play in supply chain because without them the chain will not be completed. The study further reveals that capacity building in e-procurement is only aimed at the government officials and if any then very few suppliers are trained. The study found it difficult to fully implement e-procurement without involving suppliers. The importance of involving suppliers which the not only makes

it possible to find their views, attitudes and practices about e-procurement but will assist in the ownership of changes to be brought about and assist in implementation process. The study therefore involved suppliers as a departure from previous studies.

2.6 Summary of Literature

The chapter begins by discussing the theories that supports the independent and dependent variables on e-procurement. The main basic objective of e-procurement is to automate all procurement processes and activities from end to end so that the traditional manual system is not used. The re-enforcement theory as used in this study mainly focused on ways of motivating employees in order to perform more than is expected. This theory was used to show the relationship between top management and other workers in the organization and how top management can apply the theory while implementing new changes in the organization. One way through which top management team in the organization can use the re-enforcement theory is through reward system so as to achieve the implementation of e-procurement in the public sector.

Technological acceptance theory analyses the attitude of users towards technology being introduced and whether the users will accept or resist the technology. The technology acceptance theory is important in the context that e-procurement concept technology is being introduced in the public sector to undertake all procurement processes hence its importance towards e-procurement implementation. . Human capital theory emphasizes on the on-job training so as to enable workers acquire skills to enhance performance. The theory stresses the need for proper training so as to enable the users of e-procurement in the implementation. Changes in technology like any other profession requires continuous training so that workers can keep abreast with new developments in areas of specialty. Human Capital theory was used to assess the kind of training offered to workers and if it was beneficial in implementation of e-procurement.

Public Procurement is prescribed under laws and regulations which regulate its operations which are discussed under the Institutional theory. The institutional theory examined laws and regulations that are in use and whether the laws and regulations

support or inhibit implementation of e-procurement. Organizations exist in environment and the environment affects them in their operations and organizational culture has been found to be one of the factors that affect organisations. The hofestede theory describes and analyses how culture can hinder or assist in acceptance of new technology implementation. Resistance to change which is a culture in most organizations has impacted negatively on operations of most organizations. The resource based view theory helps in identifying firm's resources that are distinctive to the organization and which gives a competitive edge that enables the organization achieve its objectives in a cost effective manner. In order to implement e-procurement, public entities were examined in view of the resources at their disposal which drives e-procurement implementation.

In the empirical review, the importance of top management support is critical in achieving the objectives of an organization. This can be achieved through allocation of resources and giving directions among other roles of top management. The use of technology relates to less vertical integration meaning that a business can be able to conduct more transactions without need to increasing investments in physical capacity. Use of technology in procurement also brings about transparency and accountability. Training is said to be a process of increasing knowledge and skills of employees in particular jobs designed to create a change in the thinking and behavior of people to enable them carry out their specific tasks in a more efficient way. Training in e-procurement will lead to achieving the desired objectives of e-procurement implementation. Sound procurement laws will help in enforcing compliance with e-procurement.

Procurement laws and regulations plays a crucial role in how we manage procurement procedures. A critical look at of the existing laws will determine if e-procurement is embedded in procurement laws for enforcement purposes and if not then a review to make e-procurement to be in tandem with the laws. In order to manage change effectively it is important to understand the culture of an organization. Culture can be a hindrance to reforms and can also be used to institute reforms. Organizational culture therefore has a strong influence on e-procurement implementation. Effective implementation will require that everybody understands

the objectives and responsibilities of achieving them. Successful implementation will require institutional mechanisms and implementers must act in a manner consistent with the institutions policies.

There are many studies done on e-procurement both locally and internationally. Some of the limitations found were that most of the studies would sample one organization out of fifty organizations in the study and then generalize the findings to all the fifty organizations. Findings from one organization cannot be used to generalize findings for fifty firms .Respondents play a critical role for they provide data for analysis. Wrong choice of sample of respondents will lead to capturing of irrelevant data which would eventually lead to wrong conclusions. In some of the studies wrong choice of respondents for example from respondents working in human resource department were sampled and none from procurement to give views on e-procurement. Others decided to interview only one respondent from a whole organization to give views on e-procurement for that organization. The others limitations were manifested in failure to link title with objectives, wrong interpretation of results, model used in the research not adequate for analysis and wrong sampling methods among others.

On research gaps, various studies have been undertaken on e-procurement both in the public and private sectors but comparison of same variables or factors between various public entities has not been undertaken to find out whether the results will be same or not. A comparison of the same variables or factors between National and County Governments was undertaken to find out to what extend they affect the two distinct levels of Governments. All previous studies have concentrated on interviewing employees of various organizations on e-procurement and left out the suppliers who play a crucial role in e-procurement hence the sample for this study included suppliers of various goods, works and services to the Public Entities as a departure from previous studies.

2.7 Research Gaps

Despite the importance of e-procurement use in public entities in Kenya, all studies on e-procurement have either concentrated on a Ministry, Parastatal or County but no single study has been undertaken to compare and contrast e-procurement at the two levels of Governments(National & County). Makau (2014) researched on Challenges facing adoption of electronic procurement in Nairobi water company, Njuki and Kagiri (2015) researched on E-procurement implementation in Nairobi County, Mambo *et al.* (2015) conducted a research on factors influencing implementation of E-procurement in the Interior and National Co-ordination Ministry, Omanyi *et al.* (2013) carried out a research on constraints to effective implementation of E-procurement in selected firms in Kisii town. From the above it can be clearly seen that research on E-procurement use has been conducted in various Public Sectors of the economy. However, since the introduction of County Governments, no comparative study has been conducted both at National and County Governments to establish differences in antecedents affecting implementation being experienced at the two levels of Governments. The study was therefore carried out to determine if there were any significant differences in the antecedents experienced at the two levels of governments while implementing e-procurement.

All the above studies together with Kinoti (2013), Omanyi *et al* (2013) have come up with results on variables like technology, training among others in terms of percentage on the contribution toward E-procurement implementation but no ranking of the same variables to find out which one stands out from the rest. The study has ranked the variables in order of priority and not percentages for purposes of policy making. There is knowledge gap in terms of ranking the variables under previous studies. This study therefore aimed at filling the missing gaps by undertaking a comparative analysis between National and County Governments under the stated antecedents and then ranked the antecedents to determine which one has a higher contribution which helped the researcher make recommendations towards e-procurement implementation at National and County Governments.

CHAPTER THREE

RESEARCH METHODOLGY

3.1 Introduction

This chapter describes and justify the research design used in this study. It also describes the population, sample size, sampling procedures, instruments used for the piloting, validity and reliability of the instruments and data collection procedures. A description of the data analysis and statistical techniques utilized in the study is provided.

3.2 Research Design

Cooper and Schindler (2003) defines a research design as a strategy, plan or outline that is used to avail answers to research questions. It constitutes the blue print for the collection, measurement and analysis of data, (Kothari, 2014).The study adopted descriptive research design. According to Cooper and Schindler (2003), a descriptive study is concerned with finding out the what, where and how of a phenomenon. This is supported by Nachmias and Nachmias (2009) who states that the descriptive survey method if used provides reliable, valid and theoretical meaningful information. This design was considered suitable because it aided in collecting information from respondents on their attitudes, awareness and opinions in relation to the subject area. The design was also suitable because the study collected quantitative and qualitative data. The descriptive research design sought to establish antecedents affecting implementation of e-procurement in National and County Governments in Kenya.

3.2.1 Research Philosophy

Research philosophy refers to the systematic search for existence, knowledge, values, reason, mind, and language. The study used research philosophy as it deals with source, nature and development of knowledge which was important in completing the thesis especially in the collection of primary data, analysis and answering of the hypothesis which formed the basis of creation of new knowledge. These assumptions

reflected the authors important assumptions which served as the base for the research strategy and the methods chosen as part of that strategy.

This study was guided by positivism philosophy which ensured that the study was independent from the beliefs and assumptions of the author hence achieved the principles of objectivity. This was evidenced by the fact that there was minimal interaction between the respondents and the researcher as the questionnaires were dropped and picked after completion hence achieving positivism philosophy. Positivism perspective hold that there is objective reality which can be expressed numerically based on explanatory and predictive power (Neuman, 2000). Understandably, knowledge from this perspective is valid since it is based on values of reason and facts, generated from data gathered through data collection, measured using quantitative methods and subjected to statistical analysis to explain causal relationships as conceptualized (Saunders, Lewis & Thornhill, 2015).Thus the philosophical foundation underpinning this study was positivism where the scientific processes followed in hypothesizing and deducing the observations in a manner X causes Y under certain circumstances so as determine the correct relationships of the hypotheses.

3.3 Target Population of the Study

A population is considered to be any group of people, events, or items that are of interest to the researchers that they wish to investigate (Kothari, 2014). Target population is a complete set of individual, cases or objects with some common observable characteristics (Mugenda & Mugenda, 2008). In this study, the population of interest was 55,100 (Ministry of Planning and Statistics and IFMIS Suppliers Portal, 2016) public officers working in various public entities both at National and County Government offices across the Country and suppliers of goods, works and services to the public entities who play roles in E-procurement. The choice of the population was influenced by the fact that Supply chain management officers are the key players in e-procurement since they are the ones who undertakes the procurement process and makes approvals at various stages of the procurement process in the system. The other key players in e-procurement are finance and

accounts staff who commit funds in e-procurement, Administrative offices as AIE Holders who commits organisations resources for expenditure by approving purchase orders in the e-procurement system. Registered suppliers also formed an important part of respondents since they use the e-procurement system in the bidding process.

To further get a convenient sample, the stata were sampled further using proportions of 10% of the stratum population. Through this method, a smaller and more manageable population was developed for sampling. Table 3.1 below presents a breakdown of the target population.

Table 3.1: Population of the Study

Respondents:	Population Size	Percentage selected (%)	Target Population
Supply Chain Management Officers	8700	10	870
Finance & Accounts	15400	10	1,540
Administrative officers (A-I-E)	2000	10	200
ICT Officers	4000	10	400
Registered Suppliers	25,000	10	2,500
Total	**55,100**		**5,510**

Source: Ministry of Planning and Statistics and IFMIS Suppliers Portal (2016)

3.4 Sampling Frame

The sampling frame was drawn from Supply Chain Management Officers, ICT, Finance and Accounts and Administration officers (Authority to Incur Expenditure holders) and registered suppliers of various goods, works and services to both National and County Governments.

3.5 Sample Size and Sampling Techniques

Stratified sampling and simple random sampling techniques were applied in selection of respondents because of the heterogeneous nature of the population and institutions under the study. First, the Ministries and County Government were treated as strata upon which the respondents were selected. Ministries were stratified into ten (10) economic sectors and County Governments into two (2) categories after which one (1) ministry from each economic sector was sampled and also ten (10) counties were selected basing on the proportion of Counties in each strata by use of simple random selection. The suppliers were stratified into Youth, Women and People living with disabilities known as the disadvantaged groups. Stratification was used because the population was structured into various heterogeneous units, hence the need for sample diversity.

The main advantage of simple random sampling is that it eliminates bias in selection of respondents (Kothari, 2014). In a study involving a simple random sample, as indicated by Yamane (1967), the sample size required was calculated according to the following formula below. The study had a sample size of respondents as illustrated in Table 3.2 below.

$$n = N / [1 + N (e)^2$$

$$n = 5510 / [1 + 5510*0.05]^2$$

$$n = 373$$

Where:

N= Target Population

n=required size

e= error term

Table 3.2: The Sample Design

Officers	Target Population Size	Sample Proportion	Sample Size
Supply Chain Management officers	870	0.158	59
Finance & accounts	1540	0.279	104
Administrative officer	200	0.036	14
ICT Officers	400	0.073	27
Registered Suppliers	2,500	0.454	169
Total	**5,510**		**373**

From the above table, the target population required for the study was 5,510 whereas the sample size was 373 respondents. Supply chain management officers contributed 59 respondents at a sample proportion of 0.158, Finance and Accounts 104 at 0.279, Administrative Officers 14 at 0.036, ICT Officers 27 at 0.073 and Registered Suppliers 169 at 0.454 respectively. This made it possible to achieve sample diversity in line to the population under study.

3.6 Data Collection Instruments

The study used questionnaires because they were flexible and facilitated the capture of in-depth knowledge of the respondents, promoted respondent cooperation and allowed the study to probe further for clarification of issues. As a method of data collection questionnaires were appropriate because they were easy to analyze and cost effective (Kothari, 2014). The questionnaire was also applied due to the fact that it was found convenient for the respondents as they could fill them during free times or when workloads were manageable.

With regard to the antecedents of implementation of e-procurement in public institutions in Kenya, the study used a survey questionnaire that was administered to each member of the sampled population. The questionnaire had both open and close-

ended questions. The closed-ended questions provided more structured responses to facilitate tangible recommendations. The closed ended questions were used to test the rating of various attributes and this assisted in reducing the number of related responses in order to obtain more varied responses. The open-ended questions provided additional information that may not have been captured in the closed-ended questions.

The questionnaire was structured based on the study objectives. Each variable in the study formed its own sub-section in the questionnaire. The questionnaire contained open-ended and closed-ended questions with the quantitative section of the instrument utilizing an ordinal scale format. The ordinal format was selected because according to Kiess and Bloomquist (1985), this format yields equal-interval data, a fact that allowed for the use of more powerful statistical tools to test the research variables. The whole process of coming up with the correct data instruments was guided by the objectives of the study which ensured that the subject matter was captured under all the variables that were tested. Consideration was also given to restricting length of questions by only asking relevant questions and also the target population was very important so as to get meaningful and relevant responses.

3.7 Data Collection Procedure

According to Morris, (2001), data collection procedure is the process of gathering pieces of information that are necessary for research process. This study adopted primary data collection by administering questionnaires to respondents who had been sampled from a large sample of a pre-determined population of interest .The study used the survey method and according to Nachmias (2009), the survey is more efficient and economical than observation as information can be gathered by a few well-chosen questions that will take less time and effort as compared to observation which requires patience and time. A survey method is most appropriate where the respondents are uniquely qualified to provide the desired information. For purposes of this study, the target population and sample had been uniquely selected in order to effectively answer the research questions. The study adopted drop and pick questionnaire method so as to enhance the response rate and was guided by the

principles that data was being collected from a large sample of pre-determined population, data was collected in a standardized form using same questions to all respondents and no control or manipulation of variables was exercised.

3.8 Pilot Testing

Prior to the actual study, pilot test of the study was conducted against prospective sample population. According to Mugenda and Mugenda (2008), the recommended pilot sample is one percent to ten percent (1% to 10%) of the sample size. Five percept of the sample size was used in the pilot survey which gave approximately 20 respondents. The 20 questionnaires were distributed to the potential respondents who were not part of the main study. The questions were re-examined to ensure that they were not ambiguous or confusing to the respondents which could lead to biased responses. Also the pilot study was done to determine the relevance of the mode of administration to be self-administered. This helped to arrange for the actual data collection exercise. The pilot study also helped the researcher to determine the level of non-response expected as well as secure command of possible co-operation of the respondents.

3.9 Reliability of Instrument

Reliability measures the degree to which a research instrument yields consistent results or data after repeated trials. It refers to the consistency of scores or answers provided by an instrument. According to Shapiro and Wilk (1965) reliability also is the tendency towards consistency) and therefore, different measures of the same concept or the same measurements repeated over time should produce the same results. This is also supported by Treiman (2009). Reliability is synonymous with the consistency of a test, survey, observation, or other measuring device. Reliability was increased by including many similar items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. It is commonly used in relation to the question of whether the measures that are devised for concepts in business are consistent.

In this study, Cronbach's alpha (Cronbach coefficient alpha), which is based on internal consistency was calculated using SPSS version 22 to establish the reliability of the survey instrument. This methodology measures the average of measurable items and its correlation. Drost (2012) contended that Cronbach's alpha value that is at least 0.70 and above suffices for a reliable research instrument. Similarly, in this study, the threshold value of Cronbach Alpha was 0.7.

3.10 Validity of Instrument

The most important criterion of research is validity. Validity is concerned with the integrity of the conclusions that are generated from a piece of research. Validity is the degree to which an instrument measures what it purports to measure. It estimates how accurately the data in the study represents a given variable or construct in the study (Mugenda & Mugenda, 2008). Validity suggests fruitfulness and refers to the match between a construct, or the way a study conceptualizes the idea in a conceptual definition, and the data. It refers to how well an idea about reality fits in with actual reality. Mugenda and Mugenda (2008) contended that the usual procedure in assessing content validity of a measure is to use a professional or expert in a particular field. Furthermore, Mugenda and Mugenda (2008) further indicated that the quality of a research study depended to a large extent on the accuracy of the data collection procedure. The instrument or tools used to collect data must yield the type of data the study can use to accurately answer the questions. The following approaches were used to determine the validity of the study instrument:

To ensure content validity, the questionnaire was formulated and operationalized as per the study variables to ensure adequacy and representativeness of the items in each variable in relation to the purpose and objectives of the study. Further, content validity was verified through expert opinion from supervisors and practitioners. Face validity was ensured by subjecting the study tools to expert analysis and opinion from at least two external experts who thoroughly checked the representativeness of the research instrument at face value.

Lastly the researcher tested for construct validity. Construct validity is the degree to which, a test measure an intended hypothetical construct (Mugenda & Mugenda, 2008). Using a panel of experts familiar with the construct is a way in which this type of validity can be assessed; the experts can examine the items and decide what the specific item is intended to measure (Kothari, 2014). Construct validity was achieved through restricting the questions to the conceptualization of the variables and ensuring that the indicators of each variable fell within the same construct. The purpose of this check was to ensure that each measure adequately assessed the construct it purported to assess.

3.11 Data Analysis and Presentation

After data collection, the questionnaires were edited and coded for purposes of transcribing the findings into the computer. The coded data was then processed using the Statistical Package for Social Sciences (SPSS version 22). Data analysis was done using descriptive statistics. Quantitative data analysis involved generation of descriptive statistics namely frequencies and percentages. Qualitative data analysis was performed through segregation of field notes according to the themes of the study and presented in prose form. The data was presented using tables, charts and cross tabulations. Tables were used to present responses and facilitate comparison. Cooper & Schindler, (2003) notes that the use of percentages is important because it simplifies data by reducing all the numbers and translates the data into standard form with a base of 100 for relative comparisons.

Descriptive statistics mean and standard deviation and z-scores was used to determine the extent to which the antecedents affect e-procurement in public entities. Inferential statistics, regression and correlation was applied to determine the extent to which the antecedents impact implementation of e-procurement in public entities while correlation analysis was carried out to examine the association between the variables.For qualitative data, which was mainly gathered from open ended questions a qualitative data checklist was developed. The checklist clustered along main themes of the research to ease consolidation of information and interpretation and then analysed through content analysis. Content analysis is the process of

analysing verbal or written communications in a systematic way to measure variables qualitatively.

3.12 Inferential Analysis

Based on the objectives, this study made use of multiple regressions analysis to help generate a weighted estimation equation that was used to predict values for dependent variable from the values of several independent variables. The study sought to predict the relationship between antecedent affecting e-procurement and e-procurement implementation in public entities in Kenya. Correlation coefficient and coefficient of determination (goodness of fit test) was used as a statistical measure to determine the extent to which the independent variables and dependent variable relates to each other. T test was used to test the hypothesis on the significance differences of a variable in national and county governments. The t-test is a test for significance of an independent variable (Hair *et al.,* 2010). The study used t-statistics to test whether the hypothesized model was significant at 95% significance level. Analysis of variances (ANOVA) /F-test was used to test the overall significance of the model parameters. The research hypothesis was also tested at 95% level of confidence in order to provide for drawing conclusions.

Factor analysis as a statistical method was used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. The study applied Exploratory Factorial Analysis (EFA) technique so as to enable the study reduce a large number of correlated variables to a smaller number with respect to antecedents affecting implementation of e-procurement in public entities in Kenya . This enabled the study to establish the antecedents as a latent variable that had a great impediment to e-procurement in public entities in Kenya. A latent variable using SPSS identifies a significant proportion of the variance in the data. A large number of variables may contribute to the effectiveness of a particular factor in describing variance in antecedents affecting implementation of e-procurement in public entities in Kenya. The study conducted a simple linear regression for each variable to establish the effect of that specific

variable on the dependent variable and a multiple linear regression to determine the effect of all the factors together on the dependent variable.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where;

Y = Implementation of E-procurement

X_1= top management support

X_2= training in IFMIS

X_3= Technology

X_4= Procurement laws

X_5= organization culture

β_1, β_2, β_3, β_4, and β_5 = Beta coefficients and

ε = Error term

3.13 Tests of Assumptions /Diagnostic Tests

3.13.1 Test of Normality

Statistical procedures require that the assumption of normality is tested. This is to assist the graphical tests to be performed about the normality of the data to check for skewness and kurtosis coefficients. It helps to confirm whether the data follows a normal distribution or asymmetrical distribution. If the normality is not achieved, the results may not depict the true picture of the relationship amongst the variables. In this study the normality was tested using Kolmogorov-Smirnov Test and the Shapiro-Wilk Test. They are more reliable test for determining skewness and kurtosis values of normality. The normality test was used so as to address discrepancies that were to arise where developed theoretical aspects of the study were based on the assumption that population from where the sample was drawn followed normal law only for the contrary to happen.

3.13.2 Test for Multicollinearity

Multicollinearity is a test that evaluates whether two or more independent variables in a regression model exhibit a close linear relationship. It occurs when two or more predictors in the model are highly correlated leading to unreliable and unstable estimates of regression coefficients hence causing strange results when attempting to study how well individual independent variables constitute to an understanding of the dependent variable (Kock & Lynn, 2012*)*. The consequences of Multicollinearity are increased standard error of estimates of the Betas, meaning decreased reliability and often confusing and misleading results.

The test for Multicollinearity was conducted to assess whether one or more of the variables of interest was highly correlated with one or more of the other independent variables. The variance inflation factor (VIF) was used to evaluate the level of correlation between variables and to estimate how much the variance of a coefficient was inflated because of linear dependence with other predictors (Cohen, Cohen & West, 2003). As a rule of thumb if any of the VIF is greater than 10 then there is a probability of a problem with Multicollinearity and consequently they are poorly estimated (Newbert, 2008). Hence the variable will be dropped from the model.

3.13.3 Test of Heteroscedasticity

Homoscedasticity assumes that there is constant variance of the errors. Violations of homoscedasticity (Heteroscedasticity- the variance of the error term changes in response to a change in the value of the independent variables) make it difficult to gauge the true standard deviation of the forecast errors, usually resulting in confidence intervals that are too wide or too narrow (Gupta & Tang, 1984). In particular, if the variance of the errors is increasing over time, confidence intervals for out-of-sample predictions will tend to be unrealistically narrow. The importance of testing heteroscedasticity is that it assists in not invalidating the significance of statistical tests (t-test, F-test) which are very important in drawing conclusions (Greene,1993).The study used heteroscedasticity tests so as to uphold homoscedasticity during the analysis stage.

3.14 Consideration of Ethical Issues

Caution was taken to ensure that the study met the highest standards of research ethics and professionalism. Efforts were made to ensure that all sources referred to in the study were recognized and that important research licenses were procured before initiation of field work. A permit to conduct research was obtained from the Ministry of Education (MOE) and National Commission for Science, Technology and Innovation (NACOSTI) to conduct the research. Also an authorization letter from the University was obtained and sent to all agencies to seek permission to collect data from them. The respondents consent to participate in the study was sought to ensure they gave information voluntarily. The researcher explained the need for the study and assured them of anonymity and confidentiality for them to participate in the study without fear of intimidation or breach of privacy.

3.15 Operationalization / Measurement of Variables

To operationalize the research variables, the study first determined the indicators/parameters of each independent variable and then used ordinal/Likert scale to measure the independent variables. Based on theories and models in the literature review, the scale comprised an ordinal scale of 1-5 (1= not at all, 2 = small extent, 3 = moderate extent, 4 = large extent, 5 = very large extent). The study will operationalize the variables as follows:

Table 3.3: Operationalization of study variables

Variable	Indicator	Measurement	Scale	Instrument
Top Management Support	-Resource Allocation - Supervision - Authority to Implement -Commitment	Likert/Ordinal/ Nominal	Scale of 1-5 point	Questionnaire
Training in IFMIS	- Adequacy - Impact - Capacity -Training Manuals	Likert/Ordinal/ Nominal	Scale of 1-5 point	Questionnaire
Technology	-Disruption Frequency - Integration - Extent of use - Ease of Use	Likert/Ordinal/ Nominal	Scale of 1-5 point	Questionnaire
Organizational Culture	-Vision/Mission - Values/Norms - Practices - Attitude	Likert/Ordinal/ Nominal	Scale of 1-5 point	Questionnaire
E-procurement Implementation	- Efficiency - Transparency - Effectiveness -Increased competition	Likert/Ordinal/ Nominal	Scale of 1-5 point	Questionnaire

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents findings and their interpretation. The chapter is subdivided into several sections based on the research objectives of the study. Each of the findings is accompanied by a brief synthesis and cross-examination with existing literature for better understanding. The chapter has sections on background information diagnostic tests, and findings on the specific objectives of the study.

4.2 Response Rate

The sample size of the study was 373. The study distributed a total of 373 questionnaires which was the sample size of the study. Out of the 373 questionnaires distributed, a total of 308 questionnaires were filled and collected representing a response rate of 83%. According to Mugenda and Mugenda (2008) a response rate of more than 70% is excellent for anaysis. Thus, a response rate of 83% was considered adequate enough for analysis. The data on response rate is as analysed in table 4.1 below

Table 4:1 Response Rate

Questionnaires	**Number**	**Percentage**
Filled and Collected	308	83%
Uncollected /unfilled	65	17%
Total	**373**	**100**

4.3 Reliability Results

This section has discussions on the methods used to check for reliability and generalization of the findings. For data results to be generalizable, the sample size should be adequate, representative and reliable. In this section, each variable was tested independently as shown in the following discussions. According to Zinbarg (2005), an alpha coefficient of 0.70 or higher implies that the data is reliable and generalizable. In this study, the threshold value of alpha value was 0.7. From the results, all the variables had Cronbach Alpha value of more than 0.7. This implied that they were consistent and reliable for the study. The results are as tabulated in table 4.2 below.

Table 4.2: Reliability Analysis

Variable	Coefficient	No of Items	Remark
Top management system	0.911	5	Accepted
Training	0.933	7	Accepted
Technology	0.775	4	Accepted
Procurement laws	0.960	4	Accepted
Organisational culture	0.969	5	Accepted
E-procurement Implementation	0.957	4	Accepted

4.4. Background Information (Demographic findings)

This section covers the background information of the study respondents with a view of understanding the study results better.

4.4.1 The Constituents of the Respondents

The respondents who took part in this study constituted different stakeholders involved in procurement either as a staff member or supplier. The staff members were useful as they gave the experience with the implementation of e-procurement in

their respective areas of work while the suppliers were equally important in giving information on the experience of using e-procurement while submitting tenders and bids (Mambo *et al.,* 2015). According to table 4.3, majority of the staff members were drawn from the County governments (66.7%) while majority with 33.3% of the suppliers were from the disadvantaged group of youths. Women accounted for 33.3% of the suppliers while people with disability accounted for 20.5%. The sample shows a highly representative sample consisting of suppliers and staff members working in both levels of government. According to Paul and Eleanor (1995) in a research on occupational stress intervention in a public agency, opines that staff members can provide information and communication which is accurate, adequate and complete. Thus the high involvement of staff members in both counties and at national level was an avenue for the study to have reliable, enough, complete information and significant information for the study. The high representation of the disadvantaged groups as suppliers shows that the study gave them an opportunity to engage in the study and submit their views as well which is one of the cardinal goals of equity and inclusion of ensuring equal chance to each person to take part in decision-making processes that may influence, policy creation and implementation (Gioia *et al*, 2013).

Table 4.3: Designation of the Respondents

		Percentage
Staff		
	National government	33.3%
	County government	66.7%
	Total	100%
Suppliers		
	Youth	46.2%
	Women	33.3%
	People with disability	20.5%
	Total	100%

4.4.2 Gender of the Respondents.

The study comprised of both male and female respondents. The participation of male respondents was 60.9% while that of female respondents was 39.1% as in table 4.4 below. This shows relatively high number of males to females but a good representation of females too. The findings are in line with Luthra, Kumar, Kumar, and Haleem (2011) and Asogwa (2013) in their research on e-procurement in India and Nigeria respectively who concluded that the above findings might be attributed to strong male dominance in the public sector .This implies that majority of the officer's in charge of e-procurement implementation and suppliers who use e-procurement are male dominated in the Public Sector in Kenya. Other studies have also found identified that male domination in the public sectors in terms of employment resulting in gender disparities (Trip, 1994).The study findings implied that perhaps the e-procurement implementation in public entities in Kenya may improve if the gender distribution was kept at the same percentage for both males and females at 50%. It may also imply that women are not good in adopting new technological concepts like the e-procurement concept. However, further studies may need to be done to validate these views.

Table 4.4: Gender of the Respondents

	Frequency	Percent
Male	185	60.9
Female	119	39.1
Total	304	100.0

4.4.3 Education Level

In this study, table 4.5 below shows that most of the respondents had post university graduate qualifications at 41.3% from the combined 36.3% university graduate qualifications and 20.1% tertiary education level. The high level of education exhibited by the respondents could be attributed to the need for strategic relationships building skills due emergence of new concepts in area of supply chain

like e-procurement. It could also be credited to the accessibility of education facilities in Kenya leading to availability of skilled workforce needed to keep abreast with new supply chain concepts. Highly skilled employees will ensure things are done right first time, and will promote and stainable innovative ideas in e-procurement implementation. A study by Hungi and Thuku (2010) on education implications and policy in Kenya found that the education of employees is positively related to the success of the new ideas in an institution. Consistent with the findings of this study, majority of the respondents were well above diploma level. Highly skilled employees are an asset that can guarantee e-procurement implementation.

Table 4.5: Education Level of the Respondents

	Frequency	Percent
Primary Level	1	.6
Secondary Level	3	1.7
Tertiary college Level	36	20.1
University Undergraduate	65	36.3
University Postgraduate	74	41.3
Total	179	100.0

4.4.4 Experience level of Respondents

The level of experience is an indicator of how well a person has knowledge on something. In this study, most of the respondents had years of experience between 1-5 year (47.2%) followed by those who had experience of between 5-10 years (27.7%). In cumulative terms, majority of the respondents with 56.8% of the respondents had more than 5 years' experience in procurement related activities as in table 4.6 below. This was in tandem with findings by Brandgate (2005) that respondents with a high working experience assist in providing reliable data on the problem in hand since they have technical experience on the problem being investigated by the study. This is because an experienced person is considered more knowledgeable and able to do certain things better compared to the less experienced.

Table 4.6: Experience Level of the Respondents

Duration	Frequency	Percent
1-5 years	145	47.2
5-10 years	85	27.7
10- 15 years	38	12.4
15- 20 years	21	6.8
20 years and above	18	5.9
Total	307	100.0

4.5 E-Procurement Implementation

The study collected data on the extent to which both the National government entities and the County governments had implemented the e-procurement. The findings on the same are shown in table 4.7.

Table 4.7: E-Procurement Implementation

Indicator	**Level**	**0-20%**	**20-30%**	**30-40%**	**40-50%**	**Over 50%**
Efficiency of procurement procedures since implementation of e-procurement (IFMIS)	National	21	13	21	31	16
	County	21	16	12	24	27
Degree to which (IFMIS) e-procurement contributed towards enhanced transparency in procurement processes	National	21	12	16	28	23
	County	19	16	14	19	31
The percentage of the effectiveness of procurement procedures since (IFMIS) e-procurement implementation	National	23	11	21	23	21
	County	18	19	11	27	25
Extent to which (IFMIS) e-procurement increased competition among suppliers	National	25	14	14	29	18
	County	23	19	10	20	28

Table 4.7 shows implementation of the e-procurement in both national and county governments. From the findings, the efficiency of 31% of the procurement activities at the national government had improved by 40-50% compared to 24% of the procurement activities at the counties which recorded an improved efficiency of 40-50%. Also 16% of the entities at the national level recorded efficiency in e-procurement of more than 50% compared to 27% recorded at the county governments. The implementation of e-procurement contributed towards enhanced transparency in procurement processes by over 50% in 23% of the entities at national government and 31% of the counties. The use of IFMIs had contributed towards enhanced transparency by 40-50% in procurement processes in 28% of the national entities and 19% of the county governments. This shows that the use of e-procurement had contributed to efficiency and transparency in both levels of the government. The results supports those of Eei *et al.* (2012) in a study on benefits and barriers of e-procurement in Malaysia where it was found that transparency had increased by over 50% since introduction of E-procurement.

The percentage of effectiveness of procurement procedures since e-procurement was adopted was 40-50% in 23% of the entities at the national government and 27% of the county governments. Also 21% of the entities at national level recorded effectiveness level of over 50% compared to 25% in counties. This shows that the use of IFMIS was slightly more effective at counties than at national level. This is in line with findings of Graham and Melvyn (2011) on effectiveness of information systems in supporting the extended supply chain where up-to 40% had been realized in terms of effectiveness of e-procurement in supporting supply chain activities.

One of the main principles of procurement is to allow free competition among bidders. The study found that e-procurement increased competition among suppliers in the range of 40-50% by 29% at the national entities and 20% in the counties. E-procurement increased competition among suppliers by approximately over 50% by 18% at the entities at the national level and 28% in the county governments. The findings corroborates those of Makinen *et al. (*2011) in a study on e-procurement as a success factor where the results revealed that competition had increased by 30% since introducing e-procurement in the bidding process.

4.6 Exploratory Factor Analysis (EFA)

4.6.1 Top Management Support

Factor analysis is a data reduction method of grouping indicators into smaller groups to allow better management of the data. According to Tabachnick and Fidell (2006) factors with factor loadings of 0.55 and above were good for interpretation. From the table 4.8, the factor with the least factor loadings was 0.685 which was more than 0.55, thus all the factors were retained for further analysis on top management support.

Table 4.8: Factor Loading Analysis –Top Management support.

	Factor loadings
Percentage of the total budget of the organization allocated to (IFMIS) e-procurement implementation activities	.685
Positive level of commitment of top management towards allocation of other resources (finance, human resource and time) towards e-procurement (IFMIS).	.915
What percentage of (IFMIS) e-procurement implementation does top management contribute?	.923
What is the positive level of commitment of top management towards e-procurement implementation (IFMIS)?	.919
What is the level of supervision by top management towards e-procurement implementation (IFMIS)?	.852

4.6.2 Training in IFMIS

Table 4.9 shows the factor loadings for training in IFMIS. According to Hair, Anderson, Tathan and Black (1998) factors with factor loadings of above 0.7 are excellent and can be retained for further data analysis. The factors under training variable had factor loadings of more than 0.7 and thus were all retained. Thus all the indicators used under training were considered in the analysis since they could generate generalizable findings.

Table 4.9: Factor Loading Analysis - Training in IFMIS

	Factor loadings
How adequate is the training offered in relation to e-procurement (IFMIS)?	.837
What is the level of the impact achieved in terms of performance after training in e-procurement (IFMIS)?	.890
What is the capacity of the trainers in handling e-procurement (IFMIS) training?	.864
How useful are the reference manuals given during training in e-procurement (IFMIS)?	.873
How many reference materials were you given towards training on e-procurement (IFMIS).	.830
How many of those reference materials do you still have?	.806
How many of those reference materials are useful towards e-procurement (IFMIS) implementation?	.825

4.6.3 Technology Advancement

Table 4.10 shows factor loadings of indicators used under technology advancement. As shown in the table, all the factor loadings were more than 0.8 except the factor loading for indicator 4 on frequency of disruptions experienced by e-procurement (IFMIS) system in a month which was 0.339 implying that the indicator had no strong association with the latent variable (in this case technology aspect of e-procurement). Stevens (1992) suggested a cut-off of factors with factor loading above 0.4, irrespective of sample size. In this case the factor loading value was 0.339 was way low below the threshold mark. Thus the factor was excluded from further analysis while other factors were retained for further analysis.

Table 4.10: Factor Loadings Analysis -Technology Advancement

No.	Indicator	Factor loadings
1	What is the level of integration of the (IFMIS) e-procurement processes with the other existing processes in other departments?	.892
2	How would you positively rate the extent of (IFMIS) e-procurement use by all stakeholders?	.894
3	How easy do you find using (IFMIS) e-procurement in your transactions?	.902
4	What is the frequency of disruptions experienced by the e-procurement (IFMIS) system in a month	.339

4.6.4 Procurement Laws Application

The factor loadings for all the indicators under factor procurement laws were all above 0.7. as indicated in table 4.11.Tabachnick and Fidell (2006) indicated that 0.7 was a good threshold for factor loadings to be considered for interpretation. As a result, all factors were retained since they had strong association with the latent variable. This meant that the findings could be generalized for the target population.

Table 4.11: Factor Loading Analysis- Procurement Laws Application

Indicator	Factor loadings
How effective are e-procurement policies helping e-procurement (IFMIS) implementation?	.932
What is the level of compliance of procurement laws and e-procurement (IFMIS)?	.942
How applicable are the procurement laws in relation to e-procurement? (IFMIS)	.957
To what level (extend) are the procurement laws consistent with e-procurement (IFMIS)?	.946

4.6.5 Organizational Culture

Organizational culture was broken down into five sub-factors which were subjected into factor analysis. Table 4.12 shows the respective factor loadings for the indicators. Hair, Anderson, Tathan and Black (1998) indicated 0.7 as an excellent value for consideration in determining the factors to be retained for further analysis. According to the results shown in table 4.12, all the indicators had factor loadings of more than 0.7 and they were all retained.

Table 4.12: Factor Loading Analysis - Organizational Culture

Indicators	Factor loadings
What is the contribution (positive) of vision /mission of the organization towards (IFMIS) e-procurement implementation?	.904
How would you rate (positive) the values that the staff attaches to e-procurement (IFMIS)?	.949
How would you rate the norms (positive) of staff towards e-procurement (IFMIS) ?	.960
In terms of positive attitude, how would you rate the staff towards e-procurement (IFMIS) implementation?	.959
In terms of positive practices, how would you rate the staff in implementation of e-procurement (IFMIS) ?	.947

4.6.6 E-Procurement Implementation.

Table 4.13 shows that all the indicators which were used to study and measure implementation of e-procurement had factor loadings of more than 0.8 and thus were retained and used in further analysis of the data since they met the threshold of 0.55 rule set by Tabachnick and Fidell (2006).

Table 4.13: Factor Loadings Analysis on E-procurement Implementation

	Factor Loadings
How would you rate the efficiency of procurement procedures since implementation of e-procurement (IFMIS)?	.946
To what degree has (IFMIS) e-procurement contributed towards enhanced transparency in procurement processes?	.953
What is the percentage of the effectiveness of procurement procedures since (IFMIS) e-procurement implementation?	.964
To what extend has (IFMIS) e-procurement increased competition among suppliers?	.902

4.7 Diagonistic tests

Exploratory tests were done before the data was analysed to ascertain whether the data met the minimum conditions for inferential tests. Kothari (2014) highlights that violation of assumptions lead to serious biases and meaningless results. Having selected the indicators for further analysis, the indicators were scored and averaged to get a one score for each factor. The factors generated were then subjected to exploratory test to check their suitability in inferential testing. The following discussions are based on some tests done to ensure the data met the basic assumptions for inferential tests.

4.7.1 Testing for completeness of data and MCAR test (Missing completely at Random)

Proper handling of missing values is important in all statistical analyses. Improper handling of missing values will distort analysis because, until proven otherwise, the researcher must assume that missing cases differ in analytically important ways from cases where values are present (Landerman, Keneth & Carl, 1997). The study did test to check completeness of the data and randomness of the missing values so that it does not affect the regression tests of the study. According to figure 4.1, out of the 258 cases, 83.77% were complete and 16.23% were incomplete. This shows there existed quite a number of cases which had missing values could affect the inferential

tests. The researcher did a MCAR test to test for randomness of the missing values and found that the missing values were random in nature. Although the missing values were random in nature, the researcher used listwise deletion so that only the available information for all the factors were used (Landerman, Keneth & Carl, 997).

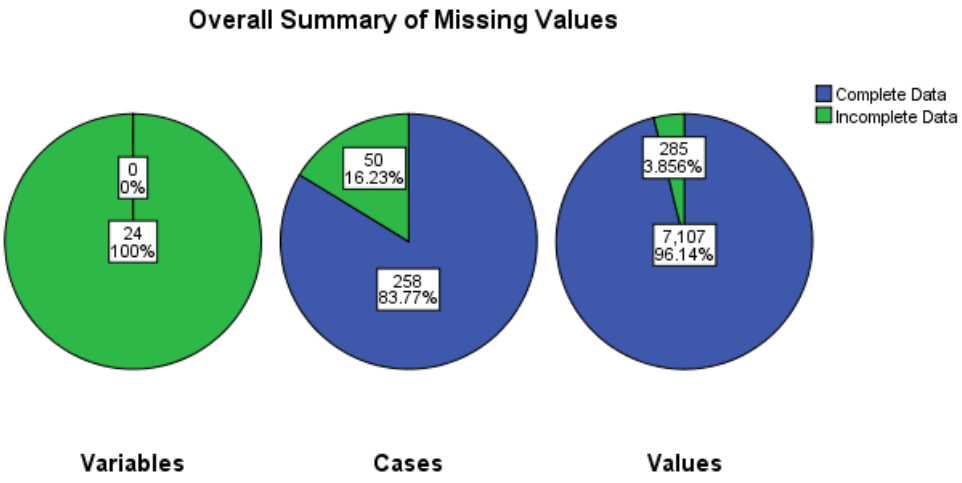

Figure 4. 1: Overall summary of missing values

4.7.2 Multicollinearity Test

A multicollienearity test was done to determine whether the independent variables had collinearity problem which occurs when predictors are highly correlated amongst themselves. This was tested through Tolerance values and Variance Inflation Factor (VIF). Tolerance values shows the amount of variation of the variable which is shared with other variables while VIF shows how much variance of the estimated regression coefficients would be inflated as compared to when the predictor variables are not linearly related(Gujarat & Porter, 2009). Conventionally, multicollinearity is present when Tolerance values are less than 3.0 as this means that 70% of the variable variation is accounted for by other variables. The VIF of more than 3.0 is considered high and could imply multicollinearity. Table 4.14 shows Tolerance values of more than 3.0 but the VIF of organizational culture was slightly high compared to the rest.

Table 4.14: Multicollinearity Test (I)

	Tolerance	VIF
Top Management	.423	2.365
Training	.571	1.752
Technology	.539	1.854
Procurement Laws	.394	2.538
Organization Culture	.314	3.185

As shown in table 4.14, all the independent variables had some relationship. However, organizational culture had the highest correlation with the rest of the factors. The same factor (organizational culture) had the lowest Tolerance value and the highest VIF meaning that it shared its variation with most of the factors. This presented multicollinearity problem in the multiple linear regression. As a remedy to that, the variable was dropped from the multiple linear regression equation but its relationship with the dependent variable would be tested through simple linear regression (Gujarat & Porter, 2009). A multicollinearity test was done for the second time without organizational culture as shown in table 4.15.

Table 4.15: Multi-Collinearity Test (II)

	Tolerance	VIF
Top Management	.538	1.859
Training	.589	1.698
Technology	.567	1.763
Procurement Laws	.465	2.151

The results of the second multi-collinearity test done in table 4.15 without Organizational culture shows that all values of Tolerance were all more than 4.0 while VIF values were all less than 3.0 indicating lack of multi-collinearity. This implies that dropping organizational culture from the model solved the problem of

collinearity. Thus, the study adopted a multiple regression model without organizational culture as an independent variable to determine the casual effect relationship between independent variables and the dependent variables (Gujarat & Porter, 2009).

4.7.3 Test of Normality

Normality is important in knowing the shape of the distribution and helps to predict dependent variables scores (Gel, Miao & Gastwirth, 2007). Normality is a critical characteristic in parametric tests. In this study, Normality test was done numerically using Shapiro –Wilk test. From the results in table 4.16, the p values were all more than 0.05 meaning they were not significantly different from a normal distribution. According to Shapiro and Wilk (1965), the test to reject the hypothesis of normality is when the p-value is less than or equal to 0.05.Thus the data for the respective variables were normally distributed hence the data collected was ideal for running a regression test (Shapiro &Wilk, 1965).

Table 4.16: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Top Management	.146	288	.125	.905	288	.412
Training	.119	288	.215	.931	288	.325
Technology	.103	288	.135	.938	288	.125
Procurement Laws	.140	288	.121	.892	288	.258
Organization Culture	.152	288	.523	.897	288	.367
E.Procurement.Implementation,	.167	288	.312	.890	288	.127

a. Lilliefors Significance Correction

Also a normality plot showed that the data used to estimate the dependent variable assumed a bell shaped curve distribution which is a characteristic of a normal distribution as shown in figure 4.2. Thus, the distribution of the data used was normally distributed and thus could be used for advanced inferential tests.

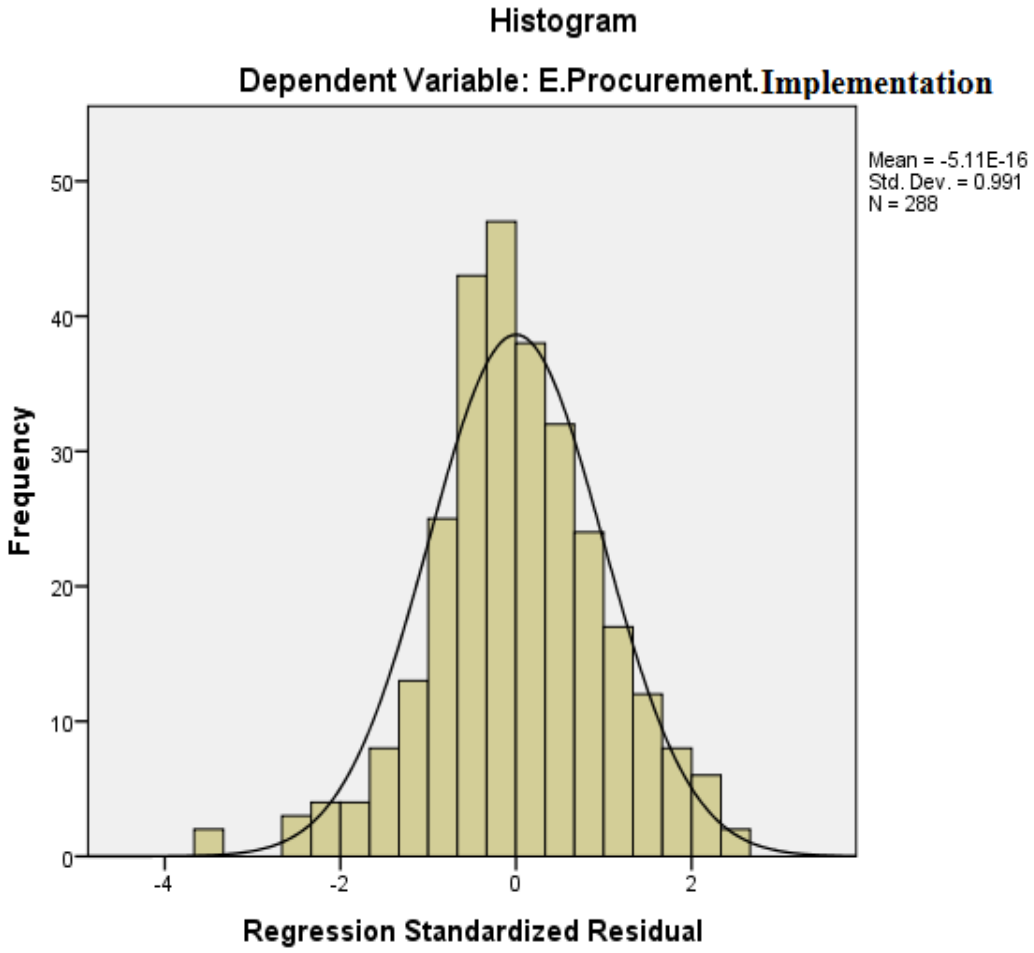

Figure 4.2: Normal distribution curve

Although it is assumed in multiple linear regressions that the residuals are normally distributed it is a good practice making final conclusions to review the distributions through a histogram. In figure 4.2 above, this shows a normal distribution of the data collected.

4.7.4 Test of Heteroscedasticity

An important assumption of the classical linear regression model is that the disturbance entering the population regression function all has the same variance (Gujarat & Porter, 2009). Heteroscedasticity is when the variance of the errors from the predicted line is the same regardless of the value of the dependent variable. To

test for heteroscedasticity, the study used a graphical illustration to study the locations of the dots as shown in figure 4.3. According to figure 4.3, the pattern of the dots was same and was not changing with increase in the values of Z predicted. According to Gujarat and Porter (2009), thus the data was heteroskedastic and ideal for doing regression test to determine the effect of the independent variables on the dependent variable (implementation of e-procurement).

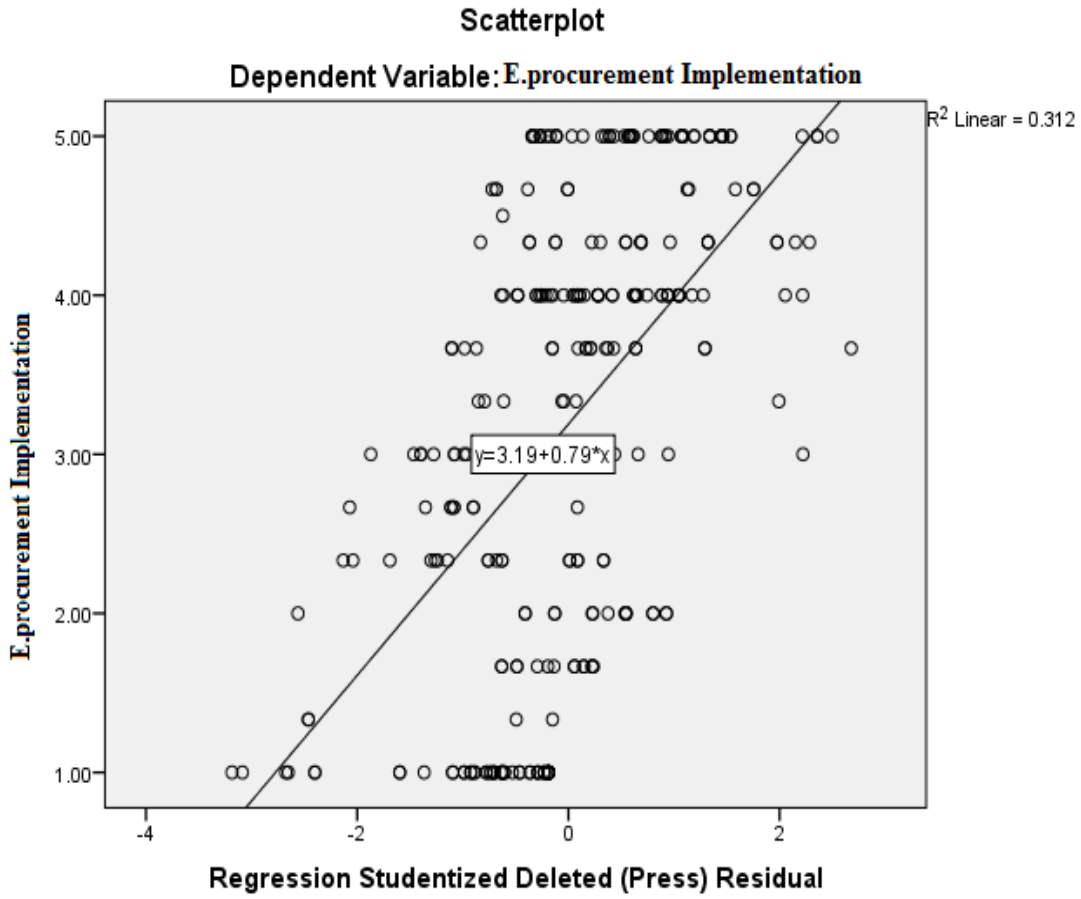

Figure 4.3: Scatter plot- Z-predicted vs Z-residual

4.8 Descriptive statistics

This section presents a description of the study variables.

4.8.1 Top Management Support

This section has information on the support from the top management on the implementation of the e-procurement (IFMIS) system in their places of work. The study inquired from the respondents on which level of management was responsible for the implementation of e-procurement. The results are shown in table 4.17.

Table 4.17: Level of Top Management responsible on Implementation of E-procurement

	National government	County government
Top Management	33	37
Middle Management	43	43
Low Management	6	10
Don't know	11	7
None	7	3
Total	100	100

Table 4.17 shows that 33% of the top managers and 43% of the middle managers were responsible for implementing e-procurement in national government agencies implying that top and middle managers in approximately 76% of the national government agencies were responsible for implementing e-procurement. In the Counties, 37% of top managers and 43% of the middle managers were responsible for implementing e-procurement systems through IFMIS. Voet *et al.* (2014) argued that top management support was a critical factor for the success of enterprise resource planning systems especially during change management. From the results, it shows the implementation of e-procurement in both levels of the government was a responsibility of top and the middle level management which reflects high degree of support towards the system.

Table 4.18: Top Management support

Indicator	Government	0-20%	20-30%	30-40%	40-50%	Over 50%	MD	M	SKW
Percentage of the total budget of the organization allocated to (IFMIS) e-procurement implementation activities	National	41%	11%	15%	16%	16%	2	1	0.4
	County	41%	15%	14%	7%	24%	2	1	0.5
Positive level of commitment of top management towards allocation of other resources (finance, human resource and time) towards e-procurement (IFMIS)	National	26%	15%	18%	15%	27%	3	5	0.0
	County	28%	10%	19%	22%	21%	3	1	-0.1
Percentage of (IFMIS) e-procurement implementation contributed by top management	National	20%	8%	14%	30%	9%	3		-0.2
	County	23%	10%	15%	28%	25%	4	4	-0.4
Positive level of commitment of top management towards e-procurement implementation (IFMIS)	National	25%	15%	18%	17%	25%	3	5	0.0
	County	23%	8%	15%	24%	30%	4	5	-0.4
Level of supervision by top management towards e-procurement implementation (IFMIS)	National	28%	14%	12%	19%	28%	3	1	0.0
	County	28%	9%	18%	17%	29%	3	5	-0.2

Key: MD=Median, M=Mode, SKW=Skewness

Table 4.18 shows the level of management support on implementation of e-procurement system. The data was collected in a likert scale of five points and thus it was categorical in nature (ordinal). Thus it used median as the average or central value of the respondents and assessment. The mode was used to indicate the response which had majority of the respondents prescribed into.

According to the results, approximately same proportion of respondents in both national (41%) and county (41%) governments allocated less than 20% of their total budgets towards implementation of e-procurement (IFMIS) related activities implying some low resource support from both levels of governments. This is contrary to Khanapuri *et al*. (2011) who argued that considerable attention and support (resource) should be provided by senior management to ensure that procurement reforms have been well understood in the agency. The median and modal values for both levels of government were the same implying almost the same levels of resource allocation towards implementation of the IFMIS. However, slightly more respondents at the counties (24%) compared to national level (16%) indicated that their counties allocated more than 50% of their budget towards implementation of IFMIS perhaps showing more financial support was at the counties than at national level.

On the level of commitment of the top management in allocating resources (such as finances, human resources, time among others) towards implementation of e-procurement. The study found that slightly more respondents at the county governments (28%) compared to national government (26%) agreed that top management showed less than 20% commitment of the resources to implement e-procurement. Also less number of respondents at the counties (21%) compared to 27% at national level indicated a top-management commitment level of more than 50% in allocation of resources to support e-procurement. The median values were same but the modal value for the county was 1 while that of the National government was 5 implying that top management were more committed at the national level than at county governments to allocate resources to support implementation of the e-procurement. Orina (2013) cited top management support as a crucial factor that influenced success of e-procurement implementation and thus less support and

allocation of resources by the top management was a setback towards organizational success.

A close examination of the contribution of the top management on implementation of the e-procurement shows that less contribution of the top management was approximately the same in both counties (23%) and national government (20%). However, more respondents at counties (25%) compared to national level (19%) indicated that a better contribution (over 50%) of the top management towards implementation of e-procurement. The median values were more at county governments than at national government. This may imply that top management at the counties had made more contribution than at the national government. The findings agree with the views of Dorasam, Kaliaman, Halima, and Raman (2012) who asserted that management support was a critical factor in successful implementation of information system (IS) innovations.

The commitment levels of the top management towards implementation of e-procurement was almost the same in both national and county governments. The least commitment was more at national government (25%) than at the county level (23%). More commitment was at county level (30%) than at national level (25%). The median values were also more at the county level compared to national level implying that commitment of the top management was more in the counties than at the national government. According to Dorasam, Kaliaman, Halima and Raman (2012) some actions and commitment of the senior managers contribute to successful implementation of IT related innovations.

Supervision is a critical component in any activity and may contribute to successful implementation of IS innovations (Shalle & Irayo, 2013). The results show almost the same level of supervision on implementation of the e-procurement in both levels of the government. The highest level in terms of supervision experienced was in the range of over 50% with National at 28% while County with 29%.The median value was 3 for both levels indicating that central position of supervision of the top management was between 30-40 %. This shows the low level of supervision by the

top management in both levels of government. The findings implies that support by the management on implementation of e-procurement was not adequately supported.

4.8.2 Training in IFMIS

This section presents the descriptive tests' results on training and the relationship between training and implementation of e-procurement in both levels of the governments.

Table 4.19: Proportion of Respondents trained in E-procurement (IFMIS)

Category		Frequency	Percent
National government	Trained	77	57.0
	Untrained	58	43.0
	Total	135	100.0
County government	Trained	107	69.0
	Untrained	48	31.0
	Total	155	100.0

Table 4.19 shows the proportion of respondents trained on e-procurement. The results show that a relatively higher portion of respondents at the counties (69%) than at the national level (57%) have been trained in e-procurement processes. Training and exposure broadens organizational knowledge which in turn impacts on innovation significantly (Njuki & Kagir, 2015). Thus having more staff trained could influence the success of implementation.

Table 4.20 shows more results on the nature of the training on e-procurement which is a module in IFMIS. The results are descriptive in nature, they include frequencies, median, mode and skewness.

Table 4.20: Descriptive statistics-Training in IFMIS

	Government	0-20%	A	30-40%	40-50%	A	MD	M	SKW
How adequate is the training offered in relation to e-procurement (IFMIS)?	National	38.7	12.7	23.2	17.6	7.7	2	1	0.4
	County	22.2	13.3	27.2	22.8	14.6	3	3	-0.1
What is the level of the impact achieved in terms of performance after training in e-procurement (IFMIS)?	National	33.6	13.9	13.9	24.8	13.9	3	1	0.1
	County	17.1	11.4	17.7	33.5	20.3	4	4	-0.5
What is the capacity of the trainers in handling e-procurement (IFMIS) training?	National	31.9	13.3	19.3	23.0	12.6	3	1	0.1
	County	15.8	12.0	17.1	28.5	26.6	4	4	-0.5
How useful are the reference manuals given during training in e-procurement (IFMIS)?	National	37.0	17.0	14.8	15.6	15.6	2	1	0.4
	County	15.9	19.1	17.8	19.7	27.4	3	5	-0.2
	Government	**None**	**1-2**	**3-4**	**5-6**	**Over 6**	**MD**	**M**	**SKW**
How many reference materials were you given towards training on e-procurement (IFMIS).	National	38.4	26.1	26.1	6.5	2.9	2	1	0.6
	County	31.4	30.2	25.2	9.4	3.8	2	2	0.4
How many of those reference materials do you still have?	National	36.3	31.1	17.0	8.9	6.7	2	1	0.7
	County	29.6	30.8	22.0	10.1	7.5	2	1	0.6

Table 4.20 shows that relatively bigger portion of respondents (37%) at national level than at Counties (22.2%) indicated that training was inadequate at less than 20%. Also larger proportion of respondents at the counties (14.6%) than at national level (7.7%) agreed that training by more than 50% was adequate. This shows that more respondents at the national level than at counties had received inadequate training. This may be true because most of the officers who had been trained by the national government when IFMIS was introduced had been seconded to work in counties resulting into more staff members having the skills. This implies that implementing e-procurement could be easier at the counties than at the national level because of the knowledge with the staff. Fredrico *et al.* (2010) argued that the diversity of

knowledge contributes to absorptive capacity as well as the ability to recognize the value of new information, assimilate it, and apply it to commercial ends.

According to Eei *et al*. (2012) training ensures that an organization has people with the correct mix of attributes which is achieved by the provision of appropriate learning opportunities and enabling them to perform to the highest levels of quality and service delivery. In terms of the impact of the training on performance, big portion of respondents at the national level (33.6%) than at the County governments (17.1%) reported less performance of less than 20%. On the other side of the performance, big portion of respondents at the counties (20.3%) than at national level (13.9%) reported more impact of more than 50% implying that the training on e-procurement had more impact at county governments than at national level. The findings cement the earlier findings on training, that more staff at the counties had been trained on the use of IFMIS and there could work using the system more effectively than those at the national government.

The study found that a large proportion of respondents at the national level (31.9%) compared to 15.8% at the counties reported having capacity of less than 20%. On the higher side, a big portion of respondents at county level (26.6%) than at national (12.6%) reported a capacity of more than 50%. The value of the mode was 1 at the national and 4 at the counties indicating that majority of the respondents at the national level felt the capacity of the trainers was less than 20%. This shows the need to have more training to improve the capacity of the staff. Eei, Husain, and Mustaffa (2012) argued that constant training on the skills to handle all kinds of problems in communication so as to achieve effective communication was essential. On usefulness of the reference materials, there was relatively bigger proportion of respondents at the counties (27.4%) than at the national level (15.6%) who indicated that the reference manual given during training was more than 50% useful. The findings imply that training at counties had more influence on use of IFMIS system than at national level.

The results further shows that a larger proportion of respondents at national level (38.4%) compared to 31.4% in the counties did not receive reference materials during their training but 30.2% of the respondents at the counties compared to 26.1% at national level agreed to having received 1-2 reference materials. This shows that relatively more respondents at the county government than at national government were given reference materials. Also the proportion of respondents who had not kept the reference materials given during training was more at national level (36.3%) compared to 29.6% at the counties. This implies that training and reference materials were useful at the counties than at national level. This shows that use of reference materials was very minimal at the national level. According to Andrew (2011), training needs to be more practical, realistic and pertaining to employees′ jobs to guarantee good performance.

4.8.3 Technology Advancement

Technology is the platform upon which implementation of e-procurement rides which is facilitated through e-commerce. It provides the means through which IFMIS works on. This is facilitated by the presence of the equipment, devices and even internet. It also depends on the operational efficiency of the equipment. The respondents provided information on the level of technology in their organizations. This enabled the research in gathering data to determine the level and extend of technology advancement between the National and County Governments.

Table 4.21: Descriptive statistics- Technology Advancement

	Government	0-20%	20-30%	30-40%	40-50%	Over 50%	MD	M	SKW
What is the level of integration of the (IFMIS) e-procurement processes with the other existing processes in other departments?	National	16.1	16.1	26.3	20.4	21.2	3	3	-0.1
	County	17.6	23.9	23.9	20.8	13.8	3	2	0.1
How would you positively rate the extent of (IFMIS) e-procurement use by all stakeholders?	National	21.6	20.9	16.5	21.6	19.4	3	1	0.0
	County	21.4	14.5	22.0	25.2	17.0	3	4	-0.1
How easy do you find using (IFMIS) e-procurement in your transactions?	National	22.3	17.3	15.8	23.7	20.9	3	4	-0.1
	County	22.9	14.0	15.3	31.2	16.6	3	4	-0.2
What is the frequency of disruptions experienced by the e-procurement (IFMIS) system in a month	National	15.7	9.0	22.4	21.6	31.3	4	5	-0.5
	County	6.8	12.9	21.1	21.8	37.4	4	5	-0.6

Table 4.21 shows that a relatively larger proportion of respondents at national level (21.2%) than at counties (13.8%) indicated more than 50% level of integration of e-procurement processes with other existing processes in other departments. Also the modal value was 3 representing that more respondents at national level rated integration at 30-40% compared to most of the respondents in the counties who rated level of integration at 20-30%. This implies that there was more technological integration at the national level than at the county level. This challenge had been pointed out by Bof and Previtali (2010) who argued that development and implementation of electronic commerce business models such as a procurement portal in organizations was a challenge that went beyond mere technological functionality. Therefore it was perhaps a big challenge at the county level than at national level due to the financial strength attached to the national government institutions.

On use of e-procurement (IFMIS) by stakeholders, a bigger percentage of respondents at national government level (19.4%) indicated they used e-procurement system compared to respondents at county level (17.0%). The results indicate that technology had made e-procurement easier at national level than at county governments. This agrees with the views of Grahama and Melvyn (2011) that technological resources improve the efficiency and effectiveness of various work processes. Also bigger portion of the respondents at national (20.9%) than at county (16.6%) indicated that use of e-procurement had made the procurement transactions easy by more than 50%. This shows that there more agencies at national level used e-procurement compared to counties. The results further illustrates that 15.7% of the respondents at national level had not experienced disruptions compared to 6.8% at county level. Similarly, a larger proportion at counties (37.4%) than at national level (31.3%) experienced over 6 disruptions. This shows that the frequency of disruptions was more at the counties than at the national level. The results imply that there exists periodic disruptions of power and technological processes which render technology less effective. These results concur with those of Sang and Mugambi (2014) that the use of information technology in public sector has not been effectively implemented and especially the procurement functions which are mostly subjected to manual procedures that are slow, inaccurate and infective.

4.8.4 Procurement Laws Application

Public Procurement is governed by laws, rules and regulations so as to instill discipline and bring about uniformity in procedures and process while undertaking activities in public procurement. Further the study collected views and opinions from the respondents on whether the Public Procurement and Asset Disposal Act 2015 was in line with the e-procurement in IFMIS. The results are shown in table 4.22.

Table 422: Whether Public Procurement and Asset Disposal Act 2015 is in line with E-procurement (IFMIS)

Response	National government	County government
Yes	27.3	57.5
No	52.7	17.9
Don't Know	20	24.5
Total	**100**	**100**

Table 4.22 shows that majority of the respondents at national government opined that Public Procurement and Asset Disposal Act 2015 is not in line with the e-procurement and thus implementation of e-procurement would be difficult. At the counties, majority of the respondents (57.5%) felt the Act was in line with the e-procurement system. This implies that there is a major difference in understanding the Procurement Act between respondents at National and County Governments.

Table 4.23: Procurement Laws Application on Implementation of E-procurement

Indicator	Goverment	0-20%	20-30%	30-40%	40-50%	Over 50%	MD	M	SK
Effectiveness of e-procurement policies in influencing e-procurement (IFMIS) implementation	National	27.7	13.5	21.3	21.3	16.3	3	1	-0.03
	County	27.2	10.8	19.6	23.4	19	3	1	-0.09
Compliance of procurement laws with e-procurement (IFMIS)	National	24.8	21.3	17	23.4	13.5	3	a	0.09
	County	27.2	7	13.9	27.2	24.7	4	a	-0.3
Applicability of the procurement laws in relation to e-procurement (IFMIS)	National	26.6	14.4	18.7	28.1	12.2	3	4	-0.07
	County	25.9	12	14.6	12	35.4	3	5	-0.18
Extend to which procurement laws are consistent with e-procurement (IFMIS)	National	24.1	19.9	15.6	25.5	14.9	3	4	0.01
	County	27.6	10.9	14.1	16	31.4	3	5	-0.16

Table 4.23 shows the results on procurement laws and implementation of e-procurement system in both national and county governments. From the results, most of the respondents at 27% both national and county government at 27.7% and 27.2 respectively indicated that procurement policies were less than 20% effective in influencing the implementation of e-procurement system. The average or central position of the respondents was that policies were 30-40% effective on e-procurement. A close examination of the results shows that 19% of the respondents at county level felt the policies were more than 50% effective compared to 16.3% at the national government. This could be interpreted to mean that procurement policies at county level are more applied in implementation of e-procurement system more than at national level. Varney (2011) indicated that sound e-procurement policies and practices were among the essential elements of good governance hence must be put in focus during implementation.

On compliance with the procurement laws, the results shows 24.7% of the respondents at counties and 13.5% at national levels indicated that procurement laws are complied with e-procurement. This shows that the understanding level of compliance was slightly more at the county level than at national level. This is probably due to the fact that since the commencement of the new procurement laws, more induction workshops have been held at national government as compared to county governments hence staff at national government might be having proper understanding of procurement laws in e-procurement implementation as compared to staff at county level. To promote transparency and enhance openness and clarity on procurement policy and its delivery, e-procurement laws that supports its implementation should be enacted and enforced (Basheka & Sabitii, 2011).

Zubcic and Sims (2011) indicated that enforcement action and increased penalties lead to greater levels of compliance with laws. The study results on the applicability of the procurement laws on e-procurement system shows that 35.4% of the respondents at county level felt the procurement laws were applicable in relation to e-procurement. This was against a 11.6% of the respondents at the national level. This therefore shows that more staff and suppliers at counties felt procurement laws were applicable than those at national level. The highest percentage in terms of

applicability of procurement laws at not more than 20% was at National with 26.6% as compared to County with 25.9 % indicating low levels of those who stated that the procurement laws were not applicable to e-procurement implementation.

On consistency of procurement laws with e-procurement system, majority of the respondents (31.4%) at county government indicated that the procurements laws were over 50% consistent with e-procurement. This proportion was much larger than that at the at national level whose proportion was 13%. The values of skewness show a positive distribution at national level and a negative distribution at the county level. This further illustrates that more respondents at the counties felt the laws were more consistent compared to those at the national level whose distribution clustered on lower proportion of consistency. The results indicate that users of the system at National level rated lowly application of procurement laws towards e-procurement implementation as compared to those at County level.

4.8.5 Organizational Culture

The study examined culture of the organizations from which the respondents were drawn from to study the effect of organizational culture on the adoption and use of e-procurement system. The data was gathered so as to determine if any differences in culture at National and County Goverments.

Table 4.24: Descriptive Analysis-Organizational Culture

Indicator	Government	0-20%	20-30%	30-40%	40-50%	Over 50%	MD	M	SK
What is the contribution (positive) of vision /mission of the organization towards (IFMIS) e-procurement implementation?	National	29.6	16.9	12.7	16.9	23.9	3	1	0.1
	County	25.5	13.7	10.5	34.6	15.7	4	4	-0.2
How would you rate (positive) the values that the staff attaches to e-procurement (IFMIS)?	National	24.6	14.1	17.6	27.5	16.2	3	4	-0.1
	County	22.2	16.3	14.4	27.5	19.6	3	4	-0.2
How would you rate the norms (positive) of staff towards e-procurement (IFMIS)?	National	24.1	16.3	19.9	26.2	13.5	3	4	0.0
	County	24.7	12.0	13.3	36.0	14.0	3.5	4	-0.3
In terms of positive attitude, how would you rate the staff towards e-procurement (IFMIS) implementation?	National	24.6	16.2	19.7	23.2	16.2	3	1	0.0
	County	24.8	17.6	10.5	25.5	21.6	3	4	-0.1
In terms of positive practices, how would you rate the staff in implementation of e-procurement (IFMIS)?	National	26.1	11.3	18.3	23.9	20.4	3	1	-0.1
	County	26.1	13.7	13.7	22.9	23.5	3	1	-0.1

Table 4.24 shows the contribution of vision and mission towards implementation of e-procurement in both levels of the government. From the results contribution of the vision and mission on the implementation of the e-procurement in the range of up to 29% was 29.6 and 25.5 for National and Counties respectively. This means that it was less significant at national level agencies than at the counties. On the upper side, more national government agencies (23.9%) compared to Counties (15.7%) reported that the vision and mission had contributed more than 50% towards implementation of e-procurement. The median at the national level was 3 and for county governments was 4 implying that central range of contribution was more at the counties than at national level. On the value staff attached to the e-procurement, the

results shows that a larger proportion of staff at the counties (19.6%) compared to 16.2% at county level attached more than 50% commitment and importance to e-procurement. This shows that e-procurement was a priority at the counties than at National level. According to Lisa, (2010) in a study on culture compliance, it was found out that culture plays a central role in the compliance process and associated outcomes.

The norms were more positive towards e-procurement at the county level (median 3.5) compared to National level (median 3.0). In terms of positive attitude, the study shows that 21.6% of the staff at the counties had better (over 50%) attitude compared to 16.2% of the staff working at national level. The mode at the national level was 1 while at county level was 4 implying more people at the counties had positive attitude and more people at national level had a bad attitude towards e-procurement. Wanyama and Zheng (2010) noted that organization culture had a strong influence on e-procurement implementation. However, in the range of up to 20% all respondents at the two levels in terms of positive attitude towards e-procurement at 24.6 and 24.8 for national and county levels meaning that there was a low positive attitude at the two levels.

When the researcher studied the positive practices by the staff in both levels of the government, a larger proportion of the respondents at the county level (23.5%) compared to 20.4% at National level had best practices of more than 50% rating. This shows that staff at the counties showed more commitment and had better positive practices on e-procurement than at national level. This could be reflecting the reality on the ground where all county governments have embraced use of IFMIS while some MDAs have not started using the system. On the same indicator, a higher proportion of 26.1 at both levels was registered indicating that e-procurement practices had up to 20% approval rating by the users which is may be contributing to low levels of e-procurement implementation at the two levels.

4.9 Inferential Statistics

This section provides inferential tests done in this study such as correlation tests, independent t test, simple linear regression tests and lastly multiple linear regression test.

4.9.1 Correlation

Table 4.25 shows the correlations of the variables in the study. According to Stevens (1996), correlation is moderate if the coefficient is between 0.41 and 0.70 and high if the value is between 0.71 and 0.91. From the results, all the factors such as top management support (r=0.861), training (r=0.834), Technology (r=912), Procurement rules (r=902) and organizational culture (r=0.886) had strong correlation with implementation of e-procurement. This shows that as any of the factors improved the implementation level of e-procurement also improved.

Table 4.25: Correlation

Variables	TP	TR	TC	P	OC	I
Top management support	1					
Training in IFMIS	.849**	1	1			
Technology Advancement	.842**	.797**	.864**			
Procurement laws application	.829**	.824**	.850**	1		
Organization Culture	.910**	.852**	.912**	.875**	1	
Implementation of e-procurement	.861**	.834**		.902**	.886**	1

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

Key:
TP= Top management support
TR=Training in IFMIS
TC=Technology advancement
P=Procurement laws application
OG=Organizational culture
I= E-Procurement Implementation

4.9.2 Hypothesis Testing

i) Hypothesis Testing 1

The study did an independent t-test to examine the statistical differences on the extent of top management support on e-procurement in both levels of government. This was useful in testing the 1st hypothesis of the study which was stated as:

> H_1-There is significant difference in top management support on the implementation of e-procurement between the National and County Governments.

The results show no significance statistical differences on level of support of the management on e-procurement in both county governments and the National government.

Table 4.26: Independent t-test-Top Management Support

	Levene's Test for Equality of Variances		t test for Equality of Means				
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.777	.379	-.753	300	.452	-.12042	.15996
Equal variances not assumed			-.754	299.129	.451	-.12042	.15967

The test was conducted at 95% confidence level. From table 4.26, the Levene test of equality of variances shows that the variances were equal ($p>0.05$). The corresponding t statistics value was $t(300) = -0.753$, $p=0.452$. Thus there was no significant statistical difference between top management support on e-procurement between National and County governments. Thus, the study failed to reject the null hypothesis that there was no significant statistical differences on the level of top management support on e-procurement in both levels of the government. This

implies that the degree of top management support towards implementation of e-procurement was almost the same in both national and county governments. Muinde and Shale (2014) opined that top management team brings out about collective commitment for change in processes and organizational structures, and formulates the policies and strategies necessary to put an e-procurement initiative in place.

ii) Hypothesis Testing 2

The second hypothesis of the study was testing on the training on e-procurement. The researcher sought to investigate the extent of training in e-procurement at both levels of government. The hypothesis was stated as shown:

> H_1-There is significant differences on how training on IFMIS influences implementation of e-procurement between the National and County Governments.

Table 4.27: Independent t-test-Training in IFMIS

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	4.487	.035	-3.400	299	.001	-.46171	.13582
Equal variances not assumed			-3.384	288.289	.001	-.46171	.13643

An Independent t-test was used to test the hypothesis at 95% confidence level as in table 4.27. The alpha (α) value was 0.05. A t-test detects significance if the p value is less than 0.05. Table 4.28 shows a Levene's test that the variances were significance ($p<0.05$). The p value of the t statistic was $p=0.001$ ($p<0.05$). This showed there existed significant differences between training on e-procurement between the

National and County governments. Therefore, rejected the null hypothesis and adopted the alternate hypothesis that there is a significant difference on how training in IFMIS influences implementation of e-procurement between the National and County Governments. This is probably due to the fact that more staff members at the counties had been rained on IFMIS and could implement e-procurement system with ease.

iii) Hypothesis Testing 3

The third hypothesis of the study was a comparative between technology level between National and County governments. This was tested through Independent t-test to establish whether there was any significance statistical differences between technological advancements in both National and County governments. The hypothesis was stated as:

i. H_1-There is significant difference in Technology advancement on implementation of e-procurement between the National and County Governments.

The test was conducted at 95% confidence level. The criteria of inferences was that the null would be adopted if the value of p would be less than 0.05 and vice versa.

Table 4.28: Independent t-test-Technology Advancement

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.973	.325	.517	296	.606	.07642	.14794
Equal variances not assumed			.515	287.25	.607	.07642	.14834

From table 4.28, the Levene test of equality of variances shows that the variances were equal ($p>0.05$). The corresponding t statistics value was $t_{(296)} = 0.517$, $p=0.606$.

Thus there was no significant statistical differences between technological advancement on e-procurement between National and County governments. Thus, the study failed to reject the null hypothesis that there was no significant statistical differences on the level of technological advancements on e-procurement in both levels of the government. Osmonbekov, Bello and Gilliland (2012) had argued that IT plays a great role towards supporting adoption of centralized procurement systems in public sector organizations in this case both levels of government.

iv) Hypothesis Testing 4

The fourth hypothesis was meant to test the extent to which procurement laws influence implementation of e-procurement at both levels of government. The hypothesis was given as:

> H_1-There is significant difference in Procurement laws application towards implementation of e-procurement between the National and County Governments.

The hypothesis was tested through Independent t-test at a significance level of 0.05. The decision rule was that the null would be rejected if the p value was found to be less than 0.05($p<0.05$) and adopted if the value was greater than 0.05 ($p>0.05$).

Table 4.29: Independent t-test-Procurement Laws Application

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	7.904	.005	-1.687	297	.093	-.27764	.16460
Equal variances not assumed			-1.700	296.827	.090	-.27764	.16331

In table 4.29, the Levene's test of equality in variance shows there the variances were significant and thus the reading corresponded to the t value of unequal variances which was t (296.827) = - 1.700, p=0.090. Since the value of p was more than the 0.05, it means that there was no significance difference between the procurement laws on e-procurement at both levels of government. The study thus failed to reject the null hypothesis that there was no statistical difference between procurement laws at both levels of government. Greunen *et al.* (2010) had supported the idea of having relevant laws supporting implementation of e-procurement.

v) Hypothesis Testing 5

The fifth hypothesis of the study was meant to establish whether there were significance differences between National government and the County governments on how organizational culture influenced implementation of e-procurement. The hypothesis was stated as given:

> H_1-There is significant difference on the influence of Organizational culture on implementation of e-procurement between the National and County Governments.

The hypothesis was tested through an Independent t-test at a significance level of 0.05. According to the decision rule, the null hypothesis would be rejected if the p value was found to be less than 0.05 and vice versa. The independent t-test results are shown in table 4.31.

Table 4.30: Independent t-test-Organizational Culture

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	1.764	.185	-.543	293	.587	-.08856	.16303
Equal variances not assumed			-.544	292.582	.587	-.08856	.16280

From the results shown in table 4.30 the levene's test for equality of variances had a p-value of 0.185.Thus the reading of the independent test was done with an assumption of equal variances. This corresponded to a p value of 0.587 ($p>0.05$). Thus the study failed to reject the null hypothesis that there was no significance difference on the influence of organizational culture on implementation of e-procurement. Takaumbwa (2012) found that culture plays a key role in any change in procurement procedures and systems.

4.9.3 Simple Linear Regression Tests

i) Top Management Support

The study adopted a simple linear regression to test the effect of top management support on adoption and implementation of e-procurement system.

Table 4.31: Model Summary- Effect of Top Management Support on Implementation of e-procurement

Goverment	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
						R Square Change	F Change	df1	df2	Sig. F Change
National government	1	.476[a]	.226	.221	1.23680	.226	40.387	1	138	.000
County government	1	.697[a]	.486	.482	1.03112	.486	145.510	1	154	.000

a. Predictors: (Constant), top.mngt support2

The model summary shows the values of R and R square. The R shows the correlation between the dependent variable and the independent while the R square shows the amount of variation the independent variable accounts for the dependent variable. The results are split for both levels of government to allow comparison and inferences. According to table 4.31, the R square for National government is 0.226 and for Counties is 0.486. This means that top management accounts for 22.6% and 48.6% of changes in implementation of e-procurement in National and County governments respectively. However, top management is not the only predictor of the e-procurement implementation. Thus other variables may be added into the model.

Table 4.32: ANOVA -Effect of Top Management Support on Implementation of e-procurement

Goverment	Model		Sum of Squares	df	Mean Square	F	Sig.
National government		Regression	61.778	1	61.778	40.387	.000[b]
		Residual	211.094	138	1.530		
		Total	272.872	139			
County government		Regression	154.708	1	154.708	145.510	.000[b]
		Residual	163.734	154	1.063		
		Total	318.442	155			

Table 4.32 shows the ANOVA table of the regression model. This confirms whether there is any independent variable or variables in a model which are significant predictors of the dependent variable. If there is, then the model is deemed fit. In this case, the F statistic had a p value of 0.000 for both levels of government. This means that top management was statistically significant ($p<0.05$) in influencing the implementation of e-procurement in both levels of the government. This implies that the extent of implementation of e-procurement is highly influenced by willingness of the leaders and the managers at the helm. The more supportive they are the better the progress and vice versa.

Table 4.33: Coefficients- Effect of Top Management Support on Implementation of e-procurement

			Unstandardized Coefficients		Standardized Coefficients		
Goverment	Model		B	Std. Error	Beta	t	Sig.
National government	1	(Constant)	1.614	.258		6.247	.000
		top.mngt support	.491	.077	.476	6.355	.000
County government	1	(Constant)	1.006	.203		4.966	.000
		top.mngt support	.710	.059	.697	12.063	.000

The coefficients of the regression output were examined to determine the exact contribution of top management support on implementation of e-procurement in both levels of the government as shown in table 4.33. The coefficients of the output at National government was 0.491 while that at Counties was 0.710. This shows that a unit increase in the efforts of management support holding other factors constant lead to increase in implementation of e-procurement by 0.491 units at the national level and 0.710 units at the county level. This shows the support of the top management at County governments was more than that at the National government. Thus the willingness of the county executive to adopt e-procurement could bear more success at the counties than at the national government. This is perhaps due to the fact that,

counties are relatively smaller and the top management can easily implement programs and projects unlike the national government which has a lot of other Semi-Autonomous Government Agencies (SAGAs).

ii) Training in IFMIS

A simple linear regression test was run to establish the effect of training on implementation of e-procurement.

Table 4.34: Model Summary- Effect of Training in IFMIS on Implementation of E-procurement

						Change Statistics				
Goverment	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
National government	1	.445[a]	.198	.192	1.26477	.198	33.542	1	136	.000
County government	1	.663[a]	.440	.437	1.07595	.440	121.070	1	154	.000

a. Predictors: (Constant), Training in IFMIS 2

In table 4.34, the value of the R square as reflected in the model summary for the National government was 0.198 while that at County government was 0.440. Thus the effect of training on implementation accounted for 19.8% at National governments and 44.0% for the County government.

Table 4.35: ANOVA- Effect of Training in IMIS on Implementation of E-procurement

Goverment	Model		Sum of Squares	df	Mean Square	F	Sig.
National government	1	Regression	53.656	1	53.656	33.542	.000[b]
		Residual	217.552	136	1.600		
		Total	271.208	137			
County government	1	Regression	140.160	1	140.160	121.070	.000[b]
		Residual	178.283	154	1.158		
		Total	318.442	155			

The ANOVA table 4.35 shows that the effect of training on implementation of e-procurement was significant at both levels of government ($p<0.05$). This is further confirmed by the coefficient table results.

Table 4.36: Coefficients-Effect of training in IFMIS on Implementation of E-procurement

			Unstandardized Coefficients		Standardized Coefficients		
Government	Model		B	Std. Error	Beta	t	Sig.
National government	1	(Constant)	1.856	.245		7.580	.000
		Training in IFMIS	.509	.088	.445	5.792	.000
County government	1	(Constant)	.787	.239		3.298	.001
		Training in IFMIS	.835	.076	.663	11.003	.000

The beta Coefficient of training on implementation of e-procurement at national level was 0.509 and 0.835 at County governments as results in table 4.36 indicates. Thus holding other factors constant, a unit increases in training increases the implementation of e-procurement by 0.509 units at national level and by 0.835 units at county level. This shows that training has more influence on implementation of e-procurement at County government than at National government.

iii) Technology Advancement

A simple linear regression test was done to determine the effect of technology on the implementation of e-procurement.

Table 4.37: Model Summary- Effect of Technology Advancement on Implementation of E-procurement

Goverment	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
						R Square Change	F Change	df1	df2	Sig. F Change
National government	1	.718[a]	.516	.513	.98523	.516	145.086	1	136	.000
County government	1	.713[a]	.509	.506	1.00783	.509	159.515	1	154	.000

a. Predictors: (Constant), Technology advancement 2

In table 4.37the model summary of the test shows a R square value of 0.516 at National government and 0.509 at County governments. This shows that technology accounted for 51.6% of the implementation of e-procurement at National level and 50.9% at County level.

Table 4.38: ANOVA- Effect of Technology Advancement on Implementation of E-procurement

Goverment	Model		Sum of Squares	df	Mean Square	F	Sig.
National government	1	Regression	140.832	1	140.832	145.086	.000[b]
		Residual	132.012	136	.971		
		Total	272.845	137			
County government	1	Regression	162.022	1	162.022	159.515	.000[b]
		Residual	156.420	154	1.016		
		Total	318.442	155			

The ANOVA table 4.38 showed that technology was a significant predictor of implementation of e-procurement at both levels of government ($p<0.05$). Thus technology was a valuable predictor affecting the extent of implementation of e-procurement. The result shows that technology was a significant factor affecting implementation of e-procurement in both County and National governments.

Table 4.39: Coefficients- Effect of Technology Advancement on Implementation of E-procurement

			Unstandardized Coefficients		Standardized Coefficients		
Government	Model		B	Std. Error	Beta	t	Sig.
National government	1	(Constant)	.719	.216		3.326	.001
		Technology advancement	.782	.065	.718	12.045	.000
County government	1	(Constant)	.801	.209		3.835	.000
		Technology advancement	.824	.065	.713	12.630	.000

The beta coefficient at National level was 0.782 and 0.824 at County level results are shown in table 4.39. This shows that an improvement of technology by 1 unit in both levels of government increases implementation of e-procurement in National by 0.782 units and County governments by 0.824 units. The result implies that advancing technology at both levels of government influenced the extent of implementation of e-procurement However, the value of the coefficients shows that technological advancement would speed-up implementation of e-procurement at the counties than at the national level.

iv) Procurement laws Application

The exact effect of procurement laws on implementation of e-procurement was determined through a simple linear regression at 95% confidence level for both levels of government.

Table 4.40: Model Summary- Effect of procurement Laws on Implementation of E-procurement

Government	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
						R Square Change	F Change	df1	df2	Sig. F Change
National government	1	.677[a]	.459	.455	1.03845	.459	116.201	1	137	.000
County government	1	.818[a]	.670	.667	.82666	.670	311.987	1	154	.000

a. Predictors: (Constant), Procurement. Laws application2

According to table 4.40, the R square at National government was 0.459 and 0.670 at county government meaning that the laws on procurement influenced the variations on implementation of e-procurement by 45.9% at National level and 67% at County governments. This shows that laws accounted for a big proportion of variation on the implementation of e-procurement.

Table 4.41: ANOVA- Effect of procurement Laws Application on Implementation of E-procurement

Government	Model		Sum of Squares	df	Mean Square	F	Sig.
National government	1	Regression	125.309	1	125.309	116.201	.000[b]
		Residual	147.738	137	1.078		
		Total	273.047	138			
County government	1	Regression	213.203	1	213.203	311.987	.000[b]
		Residual	105.239	154	.683		
		Total	318.442	155			

The ANOVA results in table 4.41 shows that procurement laws was a significant predictor of implementation of e-procurement at both levels of government ($p<0.05$). According to table 8, the effect of procurement laws on the implementation of the e-procurement was significant at both national and county levels ($p<0.05$).

Table 4.42: Coefficients- Effect of procurement Laws Application on Implementation of E-procurement

Government	Model		Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
National government	1	(Constant)	1.060	.210		5.050	.000
		Procurement. Laws application	.723	.067	.677	10.780	.000
County government	1	(Constant)	.826	.152		5.449	.000
		Procurement. Laws application	.780	.044	.818	17.663	.000

Table 4.42 shows the coefficient of the regression on the effect of procurement laws on the implementation of e-procurement. The beta coefficient was 0.723 at National government and 0.780 at County government. This implies that a unit increase in procurement rules increases the implementation of e-procurement by 0.723 units at the national level and by 0.780 units at the county level. Therefore, enactment of one e-procurement law improved the implementation of e-procurement by 0.723 units at National level and by 0.780 at County level. This shows that the laws have more influence at the County level than at the National level.

v) Organizational Culture

The researcher used a simple linear regression to ascertain the actual effects of organizational culture on the adoption and use of e-procurement system in both levels of the government.

Table 4.43: Model Summary- Effect of Organizational Culture on Implementation of E-procurement

Government	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
						R Square Change	F Change	df1	df2	Sig. F Change
National government	1	.678[a]	.460	.456	1.02964	.460	118.578	1	139	.000
County government	1	.749[a]	.562	.559	.95906	.562	193.471	1	151	.000

a. Predictors: (Constant), Organizational Culture2

According to table 4.43, the resulting model summary shows R Square value of 0.460 for National government and 0.562 for the County government. Therefore, organizational culture accounted for 46.0% of the changes in implementation of e-procurement system in the National government and 56.2% of changes in the implementation of e-procurement system in the county governments. The remaining percentages were explained by other factors which were not in the model.

Table 4.44: ANOVA- Effect of Organizational Culture on Implementation of E-procurement

Government	Model		Sum of Squares	df	Mean Square	F	Sig.
National government	1	Regression	125.711	1	125.711	118.578	.000[b]
		Residual	147.362	139	1.060		
		Total	273.073	140			
County government	1	Regression	177.953	1	177.953	193.471	.000[b]
		Residual	138.889	151	.920		
		Total	316.842	152			

The ANOVA test in table 4.44 indicated that the influence of organizational culture on the implementation of e-procurement system was significant for both levels of government ($p<0.050$). This meant that organizational culture affected the

implementation of e-procurement significantly at the national government level and also at county government level. It further shows that the data fitted the model well.

Table 4.45: Coefficient- Effect of Organizational Culture on Implementation of E-procurement

			Unstandardized Coefficients		Standardized Coefficients		
Government	Model		B	Std. Error	Beta	t	Sig.
National	1	(Constant)	1.090	.205		5.314	.000
		Organization Culture	.689	.063	.678	10.889	.000
County	1	(Constant)	.920	.183		5.030	.000
		Organization Culture	.760	.055	.749	13.909	.000

The coefficient table 4.45 shows the coefficients of organizational culture on implementation of e-procurement system. The results implied that a unit change in the organizational culture resulted into improvement in the implementation of the e-procurement by 0.689 and 0.760 in National and County governments respectively. This shows that culture is an important factor influencing the implementation of e-procurement system in both levels of government but the influence was more at the counties than at national level.

4.9.4 Multiple Linear Regression (Combined Effect Analysis)

The researcher did a multiple linear regression to determine the combined effect of all the factors on implementation of the e-procurement system in both levels of government. This was done to reflect a normal situation where all factors were at play and would influence the implementation of e-procurement system differently. Organizational culture was omitted from the regression model to give better coefficients of the other predictors due to the problem of multicollinearity between organizational culture and the rest of the factors.

The independent variables included top management support, training on e-procurement, technology and procurement laws and regulations. The dependent variable was implementation of e-procurement system. The hypothesized multiple linear regression was stated as:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$

Where;

Y = Implementation of E-procurement

X_1= top management support

X_2= training in IFMIS

X_3= Technology

X_4= Procurement laws

β_1, β_2, β_3 and β_4= Beta coefficients and

ε = Error term

4.9.5 First Model

This first model was run with constant included and assuming the center as the origin

Table 4.46: Model Summary- Combined Model

Government	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
National government	1	.780	.608	.594	.88082
County government	1	.864	.746	.739	.73178

Predictors: (Constant), Procurement. Laws, Technology, Training, top.mngt

Predictors: (Constant), Procurement. Laws, Training, Technology, top.mngt

Predictors: (Constant), Procurement. Laws, Technology, top.mngt, Training

The model summary of the test in table 4.46 was 0.608 for National government and 0.746 for County government. This means that top management support, training on e-procurement, technology on e-procurement and procurement laws explain 60.8% of the variations in implementation of e-procurement system at the National level of government and 74.6% at county level. This shows the factors left out of the model accounted for less variation of the dependent variable.

Table 4.47: ANOVA-Combined Model

Goverment	Model		Sum of Squares	df	Mean Square	F	Sig.
National government	1	Regression	135.795	4	33.949	43.757	.000
		Residual	87.671	113	.776		
		Total	223.466	117			
County government	1	Regression	237.582	4	59.395	110.916	.000
		Residual	80.861	151	.536		
		Total	318.442	155			

Dependent Variable: E.Procurement.Implemtation

Predictors: (Constant), Procurement. Laws, Technology, Training, top.mngt

Predictors: (Constant), Procurement. Law, Training, Technology, top.mngt

Predictors: (Constant), Procurement. Laws, Technology, top.mngt, Training

The ANOVA table 4.47 shows a F statistic value of F(4,113)=45.757, p=0.000 for National government and F (4,151)=110.916, p=0.000 for the County governments. This means that at least one of the predictors in the model was significantly influential to the dependent variable which in this case was the implementation of e-procurement.

Table 4.48: Coefficient-Combined Model

Government	Model		Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
National government	1	(Constant)	.227	.250		.908	.366
		top.mngt support	.039	.077	.039	.513	.609
		Training in IFMIS	.139	.077	.126	1.804	.074
		Technology advancement	.497	.081	.459	6.176	.000
		Procurement Laws application	.339	.083	.324	4.091	.000
County government	1	(Constant)	.164	.174		.941	.348
		top.mngt support	.195	.059	.192	3.287	.001
		Training in IFMIS	.046	.079	.037	.584	.560
		Technology advancement	.282	.070	.244	4.054	.000
		Procurement Laws application	.482	.062	.506	7.800	.000

According to the beta coefficient results shown in table 4.48, the models were not optimal due to the inclusion of the constant into the equation. The constant values in both National and County models were insignificant. A better and optimal model was thus run to permit for discussions.

4.9.6 Optimal Model

This model was used since the first model which included a constant was not optimal. However, this model rectified that anomaly by omitting the constant in the models. Thus the regression model used was given as:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y = Implementation of E-procurement

X_1= Top management support

X_2= Training in IFMIS

X_3= Technology

X_4= Procurement laws

β_1, β_2, β_3 and β_4= Beta coefficients and

ε = Error term

The test was run at 95% level of confidence and thus the level of significance was 0.05 for the test. The results of the multiple linear regression are shown in the following sections.

Table 4.49: Model Summary-Optimal Model

Government	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
National government	1	.969	.939	.937	.86115
County government	1	.979	.958	.957	.73150

For a model which passes through the origin, the R square measures the proportion of variability of the dependent variable about the origin which is explained by the regression. The values of the R square shows that the regression about the origin explains 93.9% of the variation of e-procurement at National level and 95.8% of the variation in the County governments in table 4.49. The value of the adjusted R square was close to the R square values showing that the data perfectly fits the model. Adding more variables would not significantly change the results.

Table 4.50: ANOVA-Optimal Model

Government	Model		Sum of Squares	df	Mean Square	F	Sig.
National government	1	Regression	1501.298	4	375.324	506.117	.000[c]
		Residual	97.147	131	.742		
		Total	1598.444[d]	135			
County government	1	Regression	1870.804	4	467.701	874.049	.000[e]
		Residual	81.335	152	.535		
		Total	1952.139[d]	156			

In table 4.50, the values of the F statistics obtained were F(4,131) =506.117, p=0.000 for National government and F(4,152)=874.049, p=0.000 for County governments. This shows in both models at least one of the predictor variable had a significant influence on the implementation of the e-procurement systems. This further affirmed that the models were good.

Table 4.51: Coefficients-Optimal Model

Goverment	Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
National government	1	Top.mngt support	.038	.070	.037	.543	.588
		Training in IFMIS	.156	.071	.126	2.189	.030
		Technology advancement	.537	.068	.518	7.912	.000
		Procurement Laws application	.345	.077	.315	4.468	.000
County government	1	Top.mngt support	.207	.058	.201	3.555	.001
		Training in IFMIS	.072	.074	.064	.970	.333
		Technology advance	.297	.068	.269	4.376	.000
		Procurement Laws application	.479	.062	.465	7.766	.000

The resulting regression equation was fitted using the coefficients from the regression output. According to the results the resultant equation models were given as shown:

$Y = 0.038X_1 + 0.156X_2 + 0.537X_3 + 0.345X_4$……... (i) (National government model)

$Y = 0.207X_1 + 0.072X_2 + 0.297X_3 + 0.479X_4$…… (ii) (County government Model)

From the results, the support of the top management (X_1) had a coefficient of 0.038 at the National level and 0.207 at County governments. However, the values of p shows that top management support at the National government was insignificant ($p>0.05$) but significant at the county governments ($p<0.05$). The results imply that a unit increase in top management support would increase the ease of implementation of e-procurement by 0.207 units at the County governments. The results indicate that support of the top management had a positive influence on the adoption and use of e-procurement. This can be deduced to mean that the support of the management was more important on implementation of e-procurement in the counties than in National government.

Findings on training (X_2) show a coefficient value of 0.156 at National government and 0.072 at County level. A further examination shows that training was significant at National government ($p<0.05$) and not in the County governments ($p>0.05$). Therefore, a one unit increase in training holding other factors constant would increase implementation of the e-procurement system by 0.156 at National government level. This further shows that training had a positive influence on the implementation of e-procurement system at National government. This agrees with the views of Quesada, Gonzalez, Muller and Muller (2010) that effective execution of organization procurement procedures greatly depends on the level of employees training. Although, training was insignificant in Counties when a simple regression was run, the effect of other factors seems to overshadow the significance of training. This could mean that there exists some very important factors which need to be sorted before training is done to the staff on e-procurement.

The results show that the influence of technology on implementation of e-procurement in the two levels of government was significant. Mburu (2011) had similar views that integration of procurement functions with ICT has enabled many public and private organizations to improve the level of effectiveness in the execution of procurement practices. The results show that the influence of technology on implementation of e-procurement in the two levels of government. From the coefficient table, the coefficients were 0.537 at National government and 0.297 in the county governments. Since technology was significant at both levels of the government, the researcher used standardized coefficients which reflects the actual effect of changes in the independent factors on the dependent variable. The standardized coefficients shows that a unit increase in standard deviations in the technology increases the implementation of e-procurement by 0.518 standard deviations at National level and by 0.269 standard deviations at County level. This shows that although technology was found to be a significant predictor of e-procurement implementation, the effect was more at National government than at County governments.

Basheka and Sabitii (2011) stated that openness and clarity on procurement policy and its delivery which can be achieved through e-procument laws that supports its implementation. In this study, the effect of procurement laws on e-procurement was significant. From the table, the coefficient of procurement was 0.345 at National level and 0.479 at County level. Standardized coefficient were 0.315 at National level and 0.465 at County level. This shows procurement laws influenced implementation of e-procurement more at County levels than at National level. Thus enacting or enforcing procurement laws had more impact at County level than at National level. This could be explained by the fact National government agencies were more compliant than Counties and had implemented e-procurement system. A law compelling them to adopt e-procurement system would be more influential at counties than at National level since they already had the systems in place.

4.10 Discussion of findings

4.10.1 Top management support and e- procurement implementation in National and County Governments.

The first objective of the study was to compare the influence of the top management on the implementation of the e-procurement in National and County governments. The study found that in both governments, implementation of e-procurement was mostly undertaken by the middle managers. Dorasam *et al* (2012) indicated that management support is critical because the implementation of IS innovations is resource intensive.

From the study, in most of the government agencies implementation of e-procurement is allocated less than 20% of the total budget. The level of commitment by top management towards allocation of other resources (finance, human and time) on implementation of e-procurement was less than 20% for the most of the government agencies. This shows that the level of management support on the implementation of e-procurement was low and thus likely to derail the implementation of the e-procurement. According to Khanapuri et al, 2011) considerable attention and support should be provided by senior management to ensure that procurement reforms have been well understood in the agency. Despite the seemingly dismal commitment of the top management on implementation of the e-procurement, the study found that in most of the agencies the top management had contributed towards implementation of e-procurement by around 40-50%.

Comparing the top management support in both levels of the government on implementation of e-procurement, the study found that in both levels of the government most of the entities allocated less than 20% of the total budget towards implementation of e-procurement. However, more commitment of the top managers was seen at national government than in the counties to allocate resources on implementing e-procurement. Orina (2013) argued that top management support was a crucial factor that influenced success of e-procurement implementation through setting the vision and goals, bringing about collective commitment for change in

process and organizational structures, and formulating the policies and strategies necessary to put an e-Procurement initiative in place.

The contribution and commitment of the top management on the implementation of the e-procurement was approximately the same in both levels of the government. However, it was slightly higher in the county governments meaning that the top managers at the county governments had quite some influence on the implementation of the e-procurement. Ruth (2012) argued that management support was considered critical for conceptualizing work processes and for changing existing routines and processes that are critical for successful implementation. Thus the higher the level of commitment at the county level relative to that at national level would imply that if the factors remained constant, the county governments would be slightly more successful in implementing e-procurement than national governments agencies.

Shalle and Irayo (2013) held that support and supervision of end users during implementation of programs contributed to the success of the implementation efforts. In this study, the level of supervision by the top management was low in both levels of government implying that although the managers were perceived to be committed to implement e-procurement, they did little to allocate resources and even supervise the implementation of the e-procurement in both levels of the government. This further showed that commitment of the top management on the implementation of the e-procurement largely low.

An independent t test on the effect of the top management support in both National and County governments showed no significant statistical differences. This shows that the extent to which top management influenced implementation of e-procurement was almost the same in both levels of government. The regression test showed that top management influenced the implementation of the e-procurement more in the County governments than in the National government. This is possibly true because in the County government, the use of IFMIS can be highly influenced by the County executive who have direct influence while in the National Government, the heads of corporations, agencies and ministries may not have that direct influence to affect implementation of the IFMIS system. The results imply that

management interventions provide powerful influences on implementation success (Osmonbekov *et al.,* 2012). It was thus extremely critical for top manage to be involved in management, implementation and supervision of the e-procurement.

4.10.2 Training in IFMIS and implementation of e- procurement in National and County Governments

The study found that a percentage of 57% had been trained on e-procurement at national level and 69% from the counties. This shows that in both levels of government, there has been training and majority of the staff, suppliers and other stakeholders had received training. This practice of training was lauded by Emanuel (2011) who showed that in Africa, training of procurement personnel and other players could greatly support effective implementation of procurement practices in many public training institutions.

According to Quesada *et al.* (2010) effective execution of organization procurement procedures greatly depends on the level of employees' training. On adequacy of training, a relatively larger proportion of staff members and stakeholders at the county governments than at the national governments agreed that their training on e-procurement was adequate. This could possibly be due to the fact that most staff seconded to counties by the national government were already in e-procurement hence the national government lost trained personnel to counties.

Njoroge (2010) suggested that it was important to evaluate training in order to assess its effectiveness in producing the learning outcomes specified when the training intervention was planned and to indicate where improvements or changes. In this study, the researcher tried to investigate the extent of influence of the training on the performance and implementation of e-procurement. The impact was more in the counties than at the national level. This could possibly be due to the fact that at the counties it was done to enable counties get access to the national shareable revenue while at the national level it was perceived as a transformative process and thus not contingent to the MDAs as such.

On the perceived usefulness of the reference manuals and materials given during the training, a relatively bigger proportion at the counties indicated that the reference materials were useful to them compared to those at national level. The study found that more staff members at the county governments were given more reference materials compared to those at national level. Similarly, more stakeholders at the counties compared to those at the national level still used the materials and had them. This implied that usefulness of training on IFMIS was more successful and impactful at the counties than at the national level. This was also reinforced by the results of the regression test where the effect of a unit of training had more influence at the county level compared to national level.

4.10.3 Technology and implementation of E-procurement in National and County Governments

The findings on technology and implementation of e-procurement at both levels of government showed that there was more integration of the e-procurement with other processes at the national government compared to the county governments. Grahama and Melvyn (2011) in a study on the effectiveness of information systems in supporting the extended supply chain found out that technological resources had been consistently identified as an important factor for successful information systems adoption. Thus having more integration of e-procurement with other systems could possibly be due to the fact that most of the national government MDAs were well established and could easily integrate their processes compared to the counties which were new and their processes were still at the formative stages of development.

On the extent of usage of the e-procurement by all stakeholders, the study shows that the system was used more at the national level than at the county level. This is possibly due to the integration with other departmental activities thus receiving a wide use across different departments. Fabrizio *et al.* (2011) argued that Internet-based e-procurement systems and B2B electronic market solutions should be compatible to the greatest possible extent with the existing technologies. This could be the reason as to why there was more usage of e-procurement systems at national level compared to counties due to the integrated IFMIs with other existing systems.

The ease of use was more experienced at the national level compared to the counties. This shows that the use of the e-procurement was friendlier to the staff and stakeholders at the national level compared to the staff at the county governments. This is attributable to the fact that most of the MDAs were in urban center's where the level of technology was highly assimilated compared to that in the counties. These is in line with the findings from Mburu (2011) who concluded that integration of procurement functions with ICT enabled many public and private organizations to improve the level of effectiveness in the execution of procurement practices.

Lastly, the results shows the use of the e-procurement was smoother at the national level which experienced less outages, better connectivity and less disruptions compared to the county governments. This may reflect the discrepancies in the level of technological establishments referred to as the digital divide where the MDAs at the national level were well established compared to those at the counties. The results resonate with the views of Darin (2010) found that that innovation in technology has played a major role in enhancing many organizations to adopt effective procurement practices especially urban centres. In terms of the effect of technology on implementation of e-procurement, the regression test shows that improving the level of technology could be more influential at the county level compared to the national level.

4.10.4 Procurement laws affect implementation of e-procurement in National and County Governments

This study sought to compare the influence of procurement laws on implementation of e-procurement at national and county governments in Kenya. Varney (2011) held that sound e-procurement policies and practices are among the essential elements of good governance. The study found that more transactions at the national government than at the county governments were done outside e-procurement system This could be attributed to the fact that some of the MDAs (such as Ministry of Defense, NIS, TSC partly on IFMIS, ministry of Foreign Affairs and a number of SAGAs) had not started using IFMIs as opposed to county governments. When asked whether The Public Procurement and Asset Disposal Act 2015 (PPADA, 2015) was in line with e-

procurement (IFMIS), majority of the respondents at county government indicated that PPADA (2015) was in line with e-procurement while majority at national government indicated it was not in line. This agrees with the observation of Oketch (2014) who had argued that as at 2014 the process of implementing e-procurement had been very slow with over 90% of procurement processes in Kenya public organization being carried out manually. Onyinkwa (2013) found that the laws governing B2B commerce, crossing over to e-procurement were undeveloped.

A close examination of the procurement policies showed that the policies were slightly more effective at county level than at national level. This could be attributed to the positive attitude reported at county level through the respondent's acknowledgement of the procurement laws and e-procurement system which was positive compared to the attitude at national level which was negative. Gioia *et al*. (2013) argued that cultural and normative orientations of the people influence the extent to which such people implement some things. In this case, the norms and general views held by the respondents on e-procurement in either level of the government influenced the extent to which such people implemented the electronic procurement system (Schneider, 2008).

In their study on the examination of the link between enforcement activity and corporate compliance by Australian Government, Zubcic and Sims (2011) found that enforcement action and increased penalties lead to greater levels of compliance with laws. The study found that there was more compliance with the procurement laws and e-procurement at the county governments than at national level (MDAs). This could be linked with the views of the county staff and suppliers who held that procurement laws were applicable and consistent with the e-procurement system. According to the regulatory pillar of Institutional theory, use of rules, laws and sanctions as enforcement mechanism as basis for compliance (Gioia *et al.*, 2013).This shows that positive perception on both procurement laws and e-procurement by staff, e-procurement users and suppliers at county level might have influenced their compliance with the laws and policies governing e-procurement.

The independent test showed insignificant statistical differences between the influence of e-procurement at the county and national levels. This was also in line with the findings from the regression test which found that procurement laws at both levels of the government had significant influence on the implementation of the e-procurement. However, looking at the amount of influence, the influence of laws at the county level was more than the amount of influence at national level implying that procurement laws were more influential at the county level compared to national level.

4.10.5 Organization culture and implementation of e-procurement in National and County Governments

Another important factor considered in this study was the relationship between organizational culture and the implementation of e-procurement in both levels of government. The culture is characterized by vision and mission of an organization. According to Lisa (2010) in a study on culture compliance, it was found out that culture played a central role in the compliance process and associated outcomes. In this study, culture contributed towards adoption of e-procurement more at the counties than at the national government.

The staff at the county governments attached more value to e-procurement at county governments than at the national government. Similarly, the norms at the county governments were more supportive of e-procurement than at national level. These norms dictated the extent to which staff attitude and behavior contributed towards use of e-procurement. Wanyama and Zheng (2010) noted that organization culture has a strong influence on e-procurement implementation and that identification and understanding of meanings, norms and power in organization was an important consideration during the implementation of e-procurement.

Looking at the attitude of the staff in both levels of government, the study found that staff members at the counties were more positive about e-procurement than those at the national government. This was also reinforced by the fact that more staff members at the county government had better positive practices on e-procurement than at the national government. The findings of Basheka *et al*, (2012) were similar

to the current study findings that attraction of organization norms, values and beliefs had strong effect upon performance and sustainability.

In a nutshell, the results show that there was good and enabling culture at the counties than at the national government. The vision, mission, norms, attitude and practices at the county level were more enabling and encouraging than at the national government. The results were further cemented by the linear regression which found that culture was more influential towards e-procurement at the county governments than at the national level. These results concur with the views of Michael and Robyn (2016) who opined that organizational characteristics and organizational influences plays a crucial role as motivators towards change hence can also be significant motivators to the implementation of e-procurement.

4.11 Summary of hypothesis

The results of hypothesis testing show that all the five hypothesized by the researcher at the beginning of the study in table 4.52 below. The hypotheses were testing significance differences between National and County governments on various factors affecting implementation of e-procurement in both levels of governments. From the results, top management support, technology, procurement laws and organizational culture were all significantly different in both levels of governments and thus all their null hypotheses were not rejected. However, training on IFMIs was found to be the same in both levels of government and thus the hypothesis was rejected.

Table 4.52: Summary of Hypothesis

Hypothesis	t	P - value	Conclusion
There is significant difference in top management support on the implementation of e-procurement between the National and County Governments.	.753	.452	Fail to reject null
There is significant differences on how training on IFMIS influences implementation of e-procurement between the National and County Governments.	3.384	.001	Reject null
There is significant difference in Technology Advancement on implementation of e-procurement between the National and County Governments.	.517	.606	Fail to reject null
	1.700	.090	Fail to reject null
There is significant difference in Procurement Laws Application towards implementation of e-procurement between the National and County Governments.			
	.543	.587	Fail to reject null
There is significant difference on the influence of Organizational culture on implementation of e-procurement between the National and County Governments.			

4.12 Revised Conceptual Framework

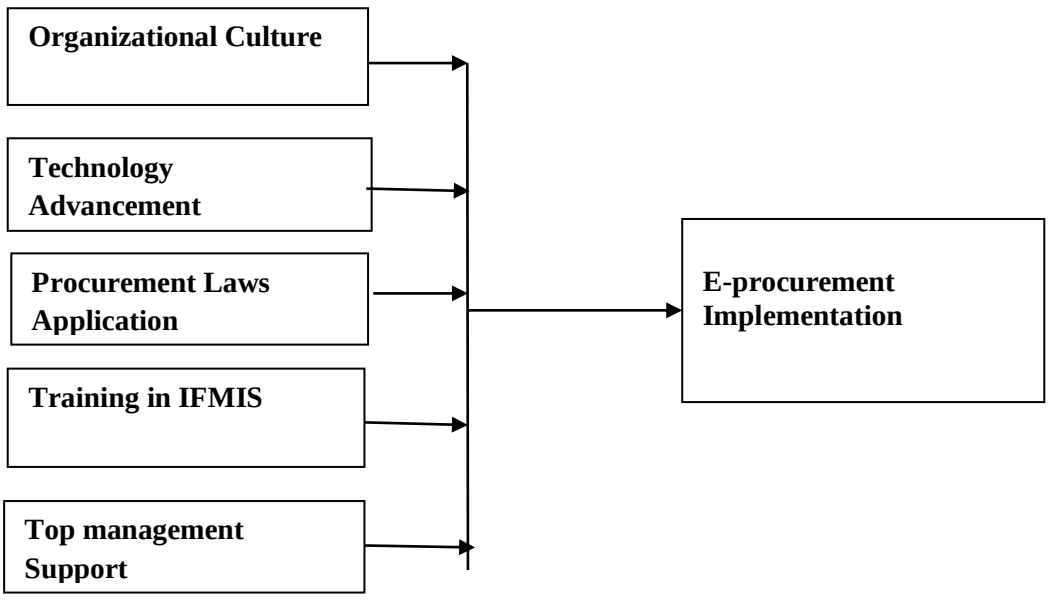

Figure 4.4: Revised Conceptual Framework at National level

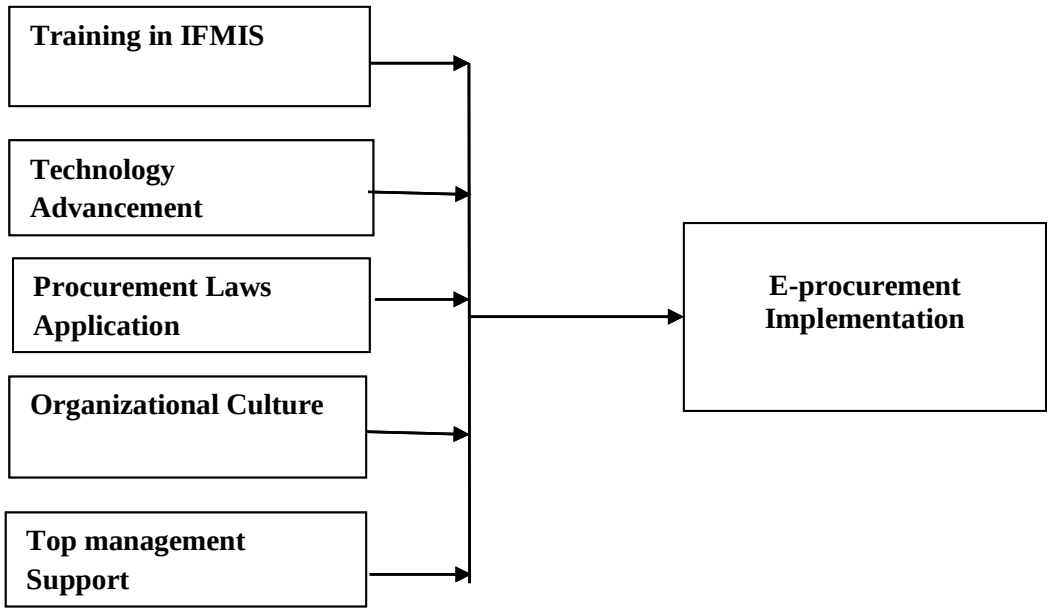

Figure 4.5: Revised conceptual framework at County level

The frameworks show how the variables (antecedents/factors) influence in counties varies from those in National government. At national government level, the variable which had the highest influence was Organizational culture, then Technology, and procurement laws and then training in IFMIS in that order. At the County governments, the variable with the highest influence was training in IFMIS, then technology, procurement laws and organizational culture in that order. This shows that procurement laws, training on IFMIS and technology were the factors which most influenced the implementation of the e-procurement at both levels of goverments with top management support being the least.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The summary of the study is presented in this chapter as guided by the specific objectives. This is followed by conclusion and recommendations. The chapter finally gives direction on areas of further research based on the findings

5.2 Summary of the findings

The main objective of the study was to compare and analyze the antecedents affecting implementation of e-procurement between the National and County Governments in Kenya. The study sought to carry out a comparative analysis to establish how different factors influenced the implementation of e-procurement between Counties and the National government. The results are summarized in the following sections according to the objectives of the study.

The study that found actual commitment of the management towards implementation of e-procurement in both the national and county levels was low. The study found that management willingness to support implementation of e-procurement and level of supervision of the management in both levels was low. The comparative extents in commitment were approximately the same. However, action of the management on the implementation of the e-procurement was found to have a significant influence on the process. The extent of influence the top management can have on the process was found to be more at the Counties than at the national government.

The second objective was the relationship between training in IFMIS and implementation of e-procurement. The findings show that effective, adequate and timely training affected the process of implementation of the e-procurement at both levels of government. Other aspects of training such as use of reference materials and the quality of the materials affected the process of implementation of e-procurement. Further the influence training had on the process was more at the Counties than at the National level.

Technology was found to affect the extent to which County Governments and the MDAS implemented e-procurement. The findings showed more adoption and advancement in the use of technology at national government compared to the County governments. The usage of the e-procurement system at the time of the study was more at the national level compared to the usage at the counties. The attitude on the use of the system was more positive at the national level than at the county levels. Fewer disruptions were experienced at the national government than at the county levels.

On the procurement regulations and laws, more users at the national level felt PPADA 2015 was not in line with the IFMIS compared to at the counties. This could be due to the fact that there was more usage of the technology at national level understand aspects of procurement law more than those at Counties. This is due to the fact that more trainings on procurement laws have been held at National Level as compared to Counties and also that the regulatory body Public Procurement Oversight Authority as well as the procurement policy developers and implementers are centralized at National Level and not at County level leading to lack of trickling down to counties relevant knowledge on legislation and how it relates with e-procurement technology.

The last factor examined in this study was the organizational culture and how it influenced the implementation of the e-procurement in both levels of government. The study found that culture influenced adoption of e-procurement in the counties than at the national government. The staff at the counties attaches more value to e-procurement than at the national level. The vision, mission, norms, attitude and practices at the county level were more enabling and encouraging than at the national government. The results were further cemented by the linear regression which found that culture was more influential towards e-procurement at the county governments than at the national level.

5.3 Conclusions of the study

5.3.1 Top management Support

The support and commitment of the top management in both levels of government was low. Although the management creates an illusion that they support the implementation of the e-procurement, the commitment on the amount of financial allocation against the total budget, the willingness of the management and even the level of supervision of the management on the implementation of the IFMIS was generally low. The extent of commitment of top management in both levels of government was approximately more or less the same. The top management has significant influence on how government entities implement e-procurement. Noticeably, the influence of top management on the implementation of e-procurement was more at the county government than at the national level.

5.3.2 Training on IFMIS

Training affects the extent of implementation of e-procurement. If training is done effectively, adequately, timely and using the right referencing materials, then it serves the purpose and contributes more on the usage and implementation of the e-procurement. The study found that training was more effective at the counties than the national government and the resulting influence was more at the county governments than at the national level. This might be as a result of the fact that most employees at county level are permanently stationed at counties where as the national staff are transferred from one entity to another and in so doing some entities loose trained staff in e-procurement.

5.3.3 Technology Advancement

The extent to which an organization has adopted technology affects the extent to which such an organization or entity picks and utilizes e-procurement. The study found that national government entities adopted, used and easily worked with e-procurement smoothly compared to the counties because most of the entities had been in operation for long and were well established compared to the counties whose

technological networks were still at formative stages. Digital divide in terms of e-procurement between MDAs and counties might also be a contributing factor on the variations between the two levels of governments on technology.

5.3.4 Procurement laws Application

The use of e-procurement has unparalleled benefits in public sector. It is efficient, easy to use and easy to manage and trail transaction as well as generating reports. It is also a good way of ensuring that operations in both national and county governments in Kenya are undertaken using same format for ease of accounting and tracking and monitoring. The use of procurement laws and policies seeks to enforce the usage and implementation of e-procurement system. Although the procurement laws had slightly more impact on the implementation of the e-procurement system at county governments compared to MDAs at national level, the influence of the laws was significant in both levels and thus the laws need to be enforced to impact on the compliance and subsequent implementation of the e-procurement through IFMIS.

5.3.5 Organizational culture

The study concludes that the culture of an organization influences the extent to which organizations in public sector implements e-procurement. The positive culture at the county levels, the commitment to vision, norms and the attitude of the staff had more influence on the adoption of e-procurement at the county government than at national level. This might be due to the fact that most county employees are from the counties hence would want to be associated with anything good for the county as a way of belonging to the society as opposed to staff at national level where it does not count where you come from and no need to associate with anything good about the national government

5.4 Recommendations of the study

Based on research findings, the study recommends the following:

5.4.1 Top management Support

In order for E-procurement to be successfully implemented both at the National and County Governments, priority area is top management support. Top Management which will involve political appointees as well as the executives managing the Public institutions must be brought on board. Cases of politicians especially Governors who by virtue of their positions head County Governments not supporting E-procurement have been reported in mass media in Kenya. With top management support, training of staff in e-procurement will be fully funded, it will boost the culture of the organization in terms of e-procurement support since the culture of any organizations is defined by the culture of top management and even funds will be channeled in purchasing the best technology to be used in e-procurement.

5.4.2 Training on IFMIS

Effective implementation requires building of capacity of users of the system and E-procurement is no exception. There are two types of users i.e the government employees and the suppliers. Most of the training has been centered on government employees and not suppliers leading to disconnect in the use of the system. It requires that both government employees and the suppliers are trained so as to achieve the concept of procure to pay in public procurement. The management should therefore focus training programs for both users of the system in order to enhance e-procurement uptake and hasten its implementation in the public sector.

5.4.3 Technology Advancement

E-procurement is built on IFMIS technology and the procedures and processes of completing a bidding process are cumbersome and it takes so many steps to complete the process. The system developers should develop a simple system which is easy to use and understand. At the same time, there are so many changes in procedures from year to year leading to confusion and failure for users to get experience as a result of

working on the system over time. It requires new training every time a procedure is changed leading to wastage of resources. The current technology in use is so cumbersome with many steps which should be refined and simplified to meet the ease of use as advocated by the Technology Acceptance Theory.

5.4.4 Procurement laws Application

Procurement laws play a critical role in the roles and practices in procurement. Effective implementation of procurement therefore relies on laws and regulations governing procurement .The current Public Procurement and Asset Disposal Act 2015 advocates mostly for use of the manual procedures and processes while procuring goods, works and services for public entities. Sections 73 to 89 of the Act outline manual procedures to be used in tendering processes with limited reference to E-procurement. It is therefore important that all procedures and processes in bidding/tendering should refer to use of E-procurement in order to improve the uptake of the system in all public entities.

5.5 Suggestions for further areas of research

The purpose of this study was to find out the extend of e-procurement usage between the National and County Governments in Kenya. The study has demonstrated why a comparative analysis between the two government entities was important as there have been major differences in factors affecting e-procurement between the public entities and they are not the same hence cannot be generalized to all public entities. Existing literature shows that e-procurement is an emerging concept and especially in developing countries. There is therefore need for another comparative study among parastatals which are public entities to but were not considered in the sample.

Another area that requires research is on return on investments. The Government has invested a lot of funds in terms of infrastructure development and training of personnel in IFMIS (e-procurement) but we have no data on savings as a result of investments in e-procurement. Research on return on investments and what the Government has saved since introduction of e-procurement is necessary due to the

principles of accountability to the publics and also justify introduction of the e-procurement strategy.

Capacity building especially in the area of transfer of skills is critical. There are various aspects in technology which revolve around technical and non-technical issues. E-procurement (IFMIS) consists of the technical operations and non-technical which are critical. Training has mostly been centered on non-technical (routine operations) without efforts to train the technical aspects with a view of transferring technical knowledge is critical for future maintenance and operations of the system. A study on training, abilities, infrastructural capacities, training of trainers and the accessibility of technology can be done to inform policies on training in IFMIS system which houses e-procurement system. The above recommended studies can adopt Meta-analysis research design to systematically evaluate and summarize the results from a number of various studies on e-procurement in order to develop a new understanding of a research problem using synoptic reasoning.

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APPENDICES

Appendix i: Introduction Letter

Dear Respondent,:

RE: COLLECTION OF DATA

I am a student at the Jomo Kenyatta University of Agriculture and Technology, School of Human Resource Development currently pursuing a Doctor of Philosophy (PhD) IN Supply Chain Management. I am undertaking a research on **A COMPARATIVE ANALYSIS OF ANTECEDENTS OF IMPLEMENTATION OF E-PROCUREMENT IN NATIONAL AND COUNTY GOVERMENTS IN KENYA.** Your organization is among those chosen for the study in the Public Sector.

Therefore kindly seek for your assistance by filling the attached questionnaire which is being used in the research. The information in this questionnaire will be strictly confidential and is only meant for academic purposes. The information will not be used for any other purpose other than for this research.

Your assistance in facilitating the same will be highly appreciated.

Thank you in advance.

A L Lusuli

Appendix II: Questionnaire for staff

Type of Government	**Code**	
National Government	1	
County Government	2	

Section A: Background Information

1) 1. Gender
   i. Male [ ]
   ii. Female [ ]
2) Age category
   i. 30 years and below [ ]
   ii. 31 – 40 years [ ]
   iii. 41 – 50 years [ ]
   iv. Over 50 years [ ]
3) Highest level of education attained
   i. Primary Level [ ]
   ii. Secondary Level [ ]
   iii. Tertiary college Level [ ]
   iv. University Undergraduate [ ]
   v. University Postgraduate [ ]
4) What is your designation in the organization? _____
5) Years of experience in your department
   i. 1-5 years [ ]
   ii. 5-10 years [ ]
   iii. 10- 15 years [ ]
   iv. 15- 20 years [ ]
   v. 20 years and above [ ]

Section II. Main Issues

Top Management Support

6. In your organization, what level is the person in-charge of e-procurement implementation?

i).Top Management [ ] ii) Middle Management [ ] iii) Low Management [ ]

iv).Don't know [ ] v) None [ ]

7. Please tick the percentage applicable to your institution with respect to top management support for e-procurement implementation

	0-20%	20-30%	30-40%	40-50%	Over 50%
What percentage of the total budget of your organization is allocated to e-procurement implementation activities?					
What is the level of commitment of top management towards allocation of other resources (finance, human resource and time) towards e-procurement?					
What percentage of e-procurement implementation does top management contribute?					
What is the level of commitment of top management towards e-procurement implementation?					
What is the level of supervision by top management towards e-procurement implementation?					

Give suggestions on how to improve on top management support on e-procurement implementation at your institution……..

Training in IFMIS

8. Are you trained in e-procurement (IFMIS)?

Yes [ ] ii) No [ ]

9. How many members of staff do you have in Procurement in your institution?

How many of those staff in procurement are trained in (-IFMIS) e-procurement?

10. How often are the employees trained on e-procurement?

Very Often	
Often	
Rarely	
Never	

11. Please tick the category that is relevant to your institution in terms of e-procurement training

	0-20%	20-30%	30-40%	40-50%	Over 50%
How adequate is the training offered in relation to e-procurement?					
What is the level of the impact achieved in terms of performance after training in e-procurement?					
What is the capacity of the trainers in handling e-procurement training?					
What is the level of supervision by top					

management towards e-procurement implementation?					
How useful are the reference manuals given during training in e-procurement?					
	None	1-2	3-4	5-6	Over 6
How many reference materials were you given towards training on e-procurement					
How many of those reference materials do you still have?					
How many of those reference materials are useful towards e-procurement implementation?					

12. Give suggestions to improve on training in e-procurement at your institution……
……

Technology Advancement

13. Do you use e-procurement fully or partially at your institution?

i).Fully [ ] ii) Partially [ ] iii) None [ ]

14**.** Please tick the category that is relevant to your institution in terms of e-procurement technology in use by your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
What is the level of integration of the e-procurement processes with the other existing					

processes in other departments?					
How would you rate the extent of e-procurement use by all stakeholders?					
How easy do you find using e-procurement in your transactions?					
	Never	1-2	3-4	5-6	Over 6
What is the frequency of disruptions experienced by the e-procurement system in a month?					

15. Suggest ways to improve the technology being used in e-procurement……
……

Procurement Laws Application

16. Is the Public Procurement and Asset Disposal Act 2105 in line with e-procurement?

i) Yes [ ] ii) No [ ] iii) Don't Know [ ]

17. Please tick the category that is relevant to your institution in terms of procurement laws and e-procurement implementation in your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
How effective are e-procurement policies helping e-procurement implementation?					

What is the level of the level of compliance of procurement laws and e-procurement?					
How applicable are the procurement laws in relation to e-procurement?					
To what level are the procurement laws consistent with e-procurement?					

18. In your own opinion, comment on the procurement legal framework and how it affects e-procurement your institution……..

Organization Culture

19. Do all the staff in the organization understand the importance and role of E-procurement?

i). Yes [ ] ii).No [ ] iii)..Don't know [ ]

20**.** Please tick the category that is relevant to your institution in terms of role of organization culture towards e-procurement in your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
What is the contribution of vision /mission of the organization towards e-procurement implementation?					
How would you rate the values that the staff attaches to e-procurement?					
How would you rate the norms of staff					

towards e-procurement?					
In terms of positive attitude, how would you rate the staff towards e-procurement implementation?					
In terms of positive practices, how would you rate the staff in implementation of e-procurement?					

21.Give suggestions to improve on culture change towards e-procurement implementation at your institution……..

E-Procurement Implementation

22. What is the percentage use of e-procurement transactions in your institution in the last one year?

i) 100% [ ] ii) 80% [ ] iii) 50% [ ]

iv) Less 50% [ ] V) No Extent [ ]

23**.** Please tick the category that is relevant to your institution on e-procurement implementation in your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
How would you rate the efficiency of procurement procedures since implementation of e-procurement?					
To what degree has e-procurement contributed towards enhanced transparency in					

procurement?					
What is the percentage of the effectiveness of procurement procedures since e-procurement implementation?					
How far has e-procurement increased competitiveness among suppliers?					

24.Give suggestions towards improving on e-procurement implementation in your institution……

25. What other factors affect effective e-procurement at your institution……
……

Appendix III: Questionnaire for Suppliers

Code

Youth	**1**	
Women	**2**	
People living with Disability	**3**	

Section A: Background Information

1. Gender

i. Male
ii. Female

2.Age category

i. 30 years and below
ii. 31 – 40 years
iii. 41 – 50 years
iv. Over 50 years

3. Years of experience in Supply business

i. 1-5 years
ii. 5-10 years
iii. 10- 15 years
iv. 15- 20 years
v. 20 years and above

Section II. Main Issues

Top Management Support

4. Please tick the percentage applicable to the institution you supply to with respect to top management support for e-procurement implementation

	0-20%	20-30%	30-40%	40-50%	Over 50%
What percentage of the total budget of the organization is allocated to e-procurement implementation activities?					
What is the level of commitment of top management towards allocation of other resources (finance, human resource and time) towards e-procurement?					
What percentage of e-procurement implementation does top management contribute?					
What is the level of commitment of top management towards e-procurement implementation?					
What is the level of supervision by top management towards e-procurement implementation?					

Give suggestions on how to improve on top management support on e-procurement implementation at the institution……

Training in IFMIS

5. Are you trained in e-procurement (IFMIS)?

Yes [ ] ii) No [ ]

6. Please tick the category that is relevant to the institution that you supply to in terms of e-procurement training

	0-20%	20-30%	30-40%	40-50%	Over 50%
How adequate is the training offered in relation to e-procurement?					
What is the level of the impact achieved in terms of performance after training in e-procurement?					
What is the capacity of the trainers in handling e-procurement training?					
What is the level of supervision by top management towards e-procurement implementation?					
How useful are the reference manuals given during training in e-procurement?					
	Never	1-2	3-4	5-6	Over 6
How many reference materials were you given towards training on e-procurement					
How many of those reference materials do you still have?					
How many of those reference materials are useful towards e-procurement implementation?					

7.Give suggestions to improve on training in e-procurement at the institution……
……

Technology Adavancement

8. Do you use e-procurement fully or partially to the institution that you mostly supply to?

i).Fully [ ] ii) Partially [ ] iii) None [ ]

9. Please tick the category that is relevant to the institution that you supply to in terms of e-procurement technology in use by your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
What is the level of integration of the e-procurement processes with the other existing processes in other departments?					
How would you rate the extent of e-procurement use by all stakeholders?					
How easy do you find using e-procurement in your transactions?					
	Never	1-2	3-4	5-6	Over 6
What is the frequency of disruptions experienced by the e-procurement system in a month?					

10. Suggest ways to improve the technology being used in e-procurement……
……

Procurement Laws Application

11. Please tick the category that is relevant to the institution that you supply to in terms of procurement laws and e-procurement implementation in your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
How effective are e-procurement policies helping e-procurement implementation?					
What is the level of the level of compliance of procurement laws and e-procurement?					
How applicable are the procurement laws in relation to e-procurement?					
To what level are the procurement laws consistent with e-procurement?					

12. In your own opinion, comment on the procurement legal framework and how it affects e-procurement the institution.

……
……
……

Organization Culture

13. Please tick the category that is relevant to the institution that you supply to in terms of role of organization culture towards e-procurement in your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
What is the contribution of vision /mission of the organization towards e-procurement implementation?					
How would you rate the values that the staff attaches to e-procurement?					
How would you rate the norms of staff towards e-procurement?					
In terms of positive attitude, how would you rate the staff towards e-procurement implementation?					
In terms of positive practices, how would you rate the staff in implementation of e-procurement					

14.Give suggestions to improve on culture change towards e-procurement implementation at the institution……..

E-Procurement Implementation

14. What is the percentage use of e-procurement transactions that you have used with the institution that you mostly supply to in the last one year?

i) 100% [ ] ii) 80% [ ] iii) 50% [ ]

iv) Less 50% [ ] V) No Extent [ ]

15**.** Please tick the category that is relevant to the institution that you mostly supply to on e-procurement implementation in your institution

	0-20%	20-30%	30-40%	40-50%	Over 50%
How would you rate the efficiency of procurement procedures since implementation of e-procurement?					
To what degree has e-procurement contributed towards enhanced transparency in procurement?					
What is the percentage of the effectiveness of procurement procedures since e-procurement implementation?					
How far has e-procurement increased competitiveness among suppliers?					

16.Give suggestions towards improving on e-procurement implementation in the institution…….

17. What other factors affect effective e-procurement at the institution…….