ROLE OF E-PROCUREMENT STRATEGY ON THE PERFORMANCE OF STATE

CORPORATIONS IN KENYA

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DECLARATION

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

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DEDICATION

This thesis is dedicated to all my family members for their support.

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ACRONYMS

ANOVA	Analysis of Variables
APS	Advanced Planning and Scheduling
B2B	Business to Business
B2C	Business to Consumer
CCK	Communication Commission of Kenya
CRM	Customer Relationship Management
EAC	East African Community
EDI	Electronic Data Interchange
E-MRO	Electronic Maintenance Repair and Operations
EOQ	Economic Order Quantity
EP	Electronic Procurement
EPT	Electronic Procurement Technology
ERP	Enterprise Resource Planning
G2B	Government to Business
GDP	Gross Domestic Product
GOC	Government Owned Corporations
GOK	Governement of Kenya
GPC	Government Procurement Card
HR	Human Resource
ICT	Information Communication Technology
IFMIS	Integrated Financial Management Information System
IOS	Integrated Operating System
IS	Information System
ISBM	Institute for study of business markets

ISPs	Internet Service Providers
IT	Information Technology
ITT	Invitation to Tender
KICTANET	Kenya Information Communication Technology Action Net
KNBS	Kenya National Bureau of Statistics
MES	Manufacturing Execution Systems
METRIC	Multi Echelon Technique for Recoverable Item Controls
OECD	Organization for Economic Co-operation and Development
PLC	Public Limited Co-operation
POS	Point Of Sale
PP	Procurement Performance
PPR	Procurement Performance Research
R&D	Research and Development
RBT	Resource Based Theory
RFQ	Request for Quotations
SCM	Supply Chain Management
SCME	Supply Chain Management Enterprise
SERVQUAL	Service Quality
SMEs	Small and Medium Enterprises
SOE	State Owned Enterprise
SPSS	Statistical Package for Social Science
SRM	Supplier Relationship Management
SWOT	Strengths, Weaknesses, Opportunities and Threats
TCC	Target Cost Contracting
TCE	Transportation and Cost Economies

TCT	Total Cycle Time
TQM	Total Quality Management
UK	United Kingdom
USA	United Stated of American
WB	World Bank
WIP	Work in Process
WMS	Warehouse Management System

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DEFINITION OF TERMS

E- Procurement

E-procurement is the business-to-business or business-to-consumer or business-to-government purchase and sale of supplies, work, and services through the Internet (Tassabehji and Moorhouse, 2008).

E-business

E-business, is the application of information and communication technologies (ICT) in support of all the activities of business (Turban, LCC, King & Chung, 2005).

Business to Business

This is when companies buy from and sell to each other online. (Presutti, 2003).

Electronic Funds Transfer or EFT

Refers to the computer-based systems used to perform financial transactions electronically. (Venable et al, 2005).

Sustainability

This Refers to practice which can meet the needs for goods services and works not on a private cost-benefit analysis, but with a view to maximizing net benefits for the public and the wider community (Williams, 2006).

Transparency

Transparency is operating in such a way that it is easy for others to see what actions are performed. (Puschmann and Alt, 2005).

ABSTRACT

Since the internet arrived on the scene as a supply management tool in the mid-1990s enterprises have tried to gain the benefit e-procurement can deliver: cost reduction, process streamlining, improved contract compliance, increased spend under management, and more. State corporations play a major role in the development of the country through provision of public services and have become a strong entity in Kenya and very useful engines to promoting development. The overall objective of this study was to examine the role of e-procurement strategy on the performance of state Corporations in Kenya. A cross-sectional survey was used in this study. A descriptive statistics were used in this study aided by Statistical Package for Social Sciences (SPSS) version 21to compute percentages of respondents' answers. Inferential statistics using multiple regression and correlation analysis were applied to examine the relationship between research variables. Tables were used to present the analysed results. The study findings revealed that customer service level strategy, procurement cost reduction strategy, inventory optimizations strategy, buyer/ supplier collaboration strategy and audits and compliance strategy significantly affect performance of state corporations. The study recommends that state corporation should have a good e-procurement software system as it would help them greatly reduce the time and effort required to complete purchasing transactions by eliminating traditional paper chain of requisitions, approvals, receiving and payment reconciliation.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In a competitive and globalized business environment, corporate sectors and business houses 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. The benefits of online purchasing not only show cases of the costs of savings but also improve the way companies operate. It helps them to deal with a chosen few suppliers with better buying strategic as well as slash down the administration costs. Today's technological business world has turned to an electronic procurement system (Kaefer & Bendoly, 2000). 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). This creates the need for an efficient electronically enabled supply chain and value chain management (Weiss & Thurbon, 2006).

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. It involves connecting the suppliers and employees of the organizations into the purchasing network companies that embark on e-procurement buying programs will be able to aggregate purchasing across multiple departments or divisions without removing individual control, reduce

rogue buying, can get the best price and quality products from a wide range of suppliers. For the suppliers, E-procurement is a boom because they can be very proactive in their business proceedings.

Although, e-procurement is still in its infancy, some companies have made impressive savings through radical streamlining of their buying activities. E-procurement actually automates the purchasing and procurement process of a company and integrates the buyers and suppliers through relevant IT systems, which together forms a value network for the company. The automation of the end to end procurement work flow has taken over the traditional purchase order software. It helps to improve the organizational efficiency and control over the procurement activities and the need. The advent of cloud computing concepts and using the cloud process for e-procurement has automated the procurement process further. The management of agreements and contracts, price list verification product, comparisons, article selection has not only become simplified but also speedy Chau, (2006).

The impact of web based technology has added value/speed to all the activities and avenues of business in today's dynamic global competition. The ability to provide customers with cost effective total solution and life cycle costs for sustainable value has become vital. Business organizations are now under tremendous pressure to improve their responsiveness and efficiency in terms of product development, operations and resource utilization with transparency. With the emerging application of internet and information technology (ICT) the companies are forced to shift their operations from traditional way to a virtual e-procurement and supply chain philosophy to transfer the company's activity to automated one Carabello, (2007).

Electronic procurement is an ever-growing means of conducting business in many industries, around the world and is projected to reach $3trillion in transaction this year, up from $75 billion in 2002 (Venkatesh, 2000). In their discussion of competitive purchasing strategies required for the twenty first century, (Morosan & Jeong, 2008) stated that firms must maximize the use internet based technologies (including e-procurement) in every aspect of the business, linking across all members of the supply chain, increasing the speed of information transfer and reducing non-value adding tasks. Clearly, the use of electronic procurement is a relatively recent phenomenon; therefore a sound for electronic procurement strategy does not exist. The construct, "electronic procurement strategy" examined in this research represents a theoretical fusion of organizational moves and management approaches used to achieve organizational objectives and to pursue the organizational objectives and to pursue the organization's mission (Shakir *et al* 2007).

The procurement process has traditionally involved slow manual procedures and even slower systematic processes for handling procurement transactions Hawking, (2004). E-procurement has had an increasingly important role in business to business (B2B) procurement. Web- enabled B2B e-procurement enhances inter organizational coordination resulting in transactions cost saving and competitive sourcing opportunities for the buyer organization (Subramanian & Shaw, 2002). In recent years organizations are becoming more discerning about e-procurement decisions that need to be made and how they respond to the multitude of pressures and influences. The procurement process has traditionally involved slow manual procedures and even slower systematic processes for handling procurement transactions (Hawking *et al.,* 2004). E-procurement has had an increasingly important role in business to business B2B) e-

procurement enhances inter organizational coordination resulting in transaction cost savings and competitive sourcing opportunities for the buyer organization (Subramaniam & Shaw, 2002).

A number of public sector agencies worldwide have identified electronic procurement (e-procurement) as a priority e-government agenda and have implemented or are in the process of implementing buy-side e-procurement systems. What is e-procurement? Confusion exists in defining the term e-procurement (Vadapalli & Ramamurthy, 2007). While the terms 'e-procurement' and 'e-purchasing' have been used synonymously in many jurisdictions in an attempt to prove their involvement in the e-procurement revolution (s), the term 'purchasing' has a narrower scope.

E-procurement refers to the use of internet-based information and communication technologies (ICTs) to carry out individual or all stages of the procurement process including; sourcing, negotiation, ordering, receipt, and post purchase review (Croom & Brandon-Jones, 2004). While there are various forms of e-procurement that concentrate on one or many stages of the procurement process such as e-tendering, e-market place, e-auction/reverse and e-catalogue/purchasing, e-procurement can be viewed more broadly as an end to end solution that integrates and streamlines many procurement processes throughout the organization. Although the term 'end to end e-procurement' is popular, industry and academics analysts indicate that this ideal model is rarely achieved (Davenport, 2008) and e-procurement implementations generally involve a mixture of different models. As one of the core enablers of an e-business supply chain, e-procurement is conceptualized as a subset of e-procurement.

1.1.1Global Perspective of E-Procurement

Over the years the world has seen a massive change in the management of businesses; From conventional multipurpose service functions and have seen organizations replying more on specialized in-house service functions or on outsourced services. The information technology (IT) sector has ably responded to the ongoing change in the needs of the business. It has helped many businesses in improving their operational efficiencies by providing electronic solutions and internet based solutions for their supply chain networks. From the late 1990s a raft of new e-commerce technologies emerged which promised to revolutionize working practices, threatening existing business models (Chan & Lu, 2004). Following this growth in use of e-commerce in business-to-business market, there has been significant adoption of new supply chain related technology and applications by organisations globally (Sheng, 2002).

With the continuous advancement in technology and the transformation of business dynamics the world has seen an easy accessibility to reliable electronic support services available worldwide with an equal demand in almost all sectors. E-procurement which is one of the major instruments of e- procurement is still very new to many businesses around the world however it is now catching up in the race as many business managers and practitioners are beginning to realize its importance. According to (Subramani, 2004), the e-business paradigm has created an immense opportunity for firms to consolidate their buying processes. E-procurement opened new horizons for managing and operating businesses and it has given the stakeholders continuous options to make appropriate decisions on procurement of feedstock, engineering items, utilities or services. At present, worldwide e-procurement is being majorly carried out on web-based portals or exchanges managed by professional companies. In some cases manufacturing and service businesses have established their own online portals or web pages for the purpose of carrying out

their procurement activities without the need to involve third-party commission agents, trading companies or retailers (Taylor & Todd 2005)). It has also helped businesses to carry out procurement activities through business-to-business (B2B) and business-to- customer (B2C). With the increasing importance of e-procurement and its demand around the world there are so many examples of very reliable web-based e-commerce portals or web-pages which facilitate e-procurement also and are being operated by large business groups. One of the much known e-commerce companies is owned by the Ali Baba Group, which is operating its web-page by the brand name of Alibaba.com was founded in the Hangzhou, china in 1999; it is now one of the leading companies in e-commerce which provides internet based business-to-business trade solution to more than 50 million registered users on its portal in round 240 countries and regions (Irfan & Chun, 2008).

In many countries e-procurement is now a widely preferred option and it is believed that besides improving efficiencies it has also given businesses a better chance to reach the unexplored markets. Through e-procurement businesses have reduced their high-spending on their manufacturing costs and have had positive impact on their profitability in such way as now with the aid of web-based portals or exchanges many businesses can easily post their requirements or request for quotations (RFQs) online and in turn they get quotations from suppliers around the world without any hassle giving them so many options to choose the best and in most cost-effective one (Sheng, 2002).

1.1.2 State of e-procurement in Kenya

According to (Oke *et al*, 2006) e-procurement in Kenya is at the early adoption stage. Very few companies and state corporations have the pre-requisite ICT infrastructure that is necessary for the implementation of e-procurement. This has been attributed to the astronomical costs that are

involved in the setting up of the infrastructure as well the skill gap that exists in the labor market. The government of Kenya considers ICT as a key pillar in the success of vision 2030 which aims at transforming the country into an industrialized nation by the year 2030. To this end, a fully-fledged ICT board has been set up by the government to spearhead the ICT revolution in the country which is a positive signal for e-procurement (Oke *et al*, 2006). By April 2008, there were 73 registered ISPs, 16 of which were active approximately 1,500,000 internet users and over 1000 cyber cafes. There were also about 800,000 personal computers in active use.

The high costs of satellite connections, slow speeds and low band width capacity have delayed the adoption of e-procurement though some companies through their massive financial capacity were able to gain a competitive advantage in terms of getting connected early enough. However, this could be a thing of the past. Many companies embraced the technology thanks to the landing of the high speed and high capacity fiber optic cable in the country. The cable is expected to boost the efficiency of internet making e-procurement a reality (Public Procurement Oversight Authority, 2009). The government through the ministry of finance has initiated an e-procurement project that aims at having an e-procurement system running in a few selected ministries before full implementation in all government departments (Republic Of Kenya, 2010).

Previous studies by Kalathur, (2002) on business value and technology adopted exploratory approach as their underlying methodology. The current study will adopt descriptive approach while exploring into the role of e-procurement strategy. Studies suggest that organizations are being strategic in their e-procurement implementation. However, such studies are fragmented across both developed and developing countries. The benefits achievable from e-procurement render it an important consideration for any business and in addition a wide range of challenges

continue to deter e-procurement implementation. The depth of the research prevents the validation of these points, in the context of Kenyan state corporations in.

1.1.3 History of State corporations

A government owned corporation, state owned company, state owned entity, state enterprise, publicly owned corporation, government business enterprise, and commercial government agency and parastatal is a legal entity created by a government to undertake commercial activities on behalf of an owner government (R.o.K, 2009). Their legal status varies from being a part of government into companies with a state as a regular stock holder (R.o.K, 2010). There is no standard definition of a government owned corporation (GOC) or state owned enterprise (SOE), although the two terms can be used interchangeably Kamanda (2001).

The definition characteristics are that they have a distinct legal form and they are established to operate in commercial affairs Makau (2010). While they may also have public policy objectives, GOCs should be differentiated from other forms of government agencies or state entities established to pursue purely non-financial objectives. Government owned corporations can be fully owned or partially owned by government (R.o.K, 2010). As a definitional issue, it is difficult to determine categorically what level of state ownership would qualify as an entity to be considered as "state-owned" Since governments can also own regular stock, without implying any special interference Onyango (2010).

The public procurement in Kenya has been undergoing reforms starting with the public procurement and disposal act, 2005 that saw the creation of public procurement oversight authority (R.o.K, 2010). The next step was the implementation of e-procurement for the public sector. According to e-government strategy paper 2004, e-procurement was one of the medium term objectives which were to be implemented by June 2007, but the process has been very slow

(R.o.K, 2009). There have been significant changes in the information and communications technology (ICT) sector in Kenya over the last ten years, despite the lack of a legislative framework to guide it Makau (2010).

While it is difficult to capture all the developments in details, the formation of the multi-stakeholder Kenya ICT action network (KICTANET) has been a remarkable achievement. Through the network, an inclusive policy process has been catalyzed, resulting in the country's first draft ICT policy document, approved by cabinet in February 2006 (Republic of Kenya, 2006). However, electronic procurement (e-procurement) tend to be multi-ministerial, in Kenya is under the ministry of information and communication and ministry of Trade and Industry. The communication commission of Kenya (CCK) specially regulates it. CCK is charged with revitalizing and transforming the economy into modern market oriented through e-procurement, (R.o.K, 2009).

According to Min & Galle (2002), the most common forms of e-procurement in Kenya market are e-procurement, e-banking and of lately m-banking. Of the three, e-procurement which is a user friendly, internet based purchasing system (Nagle *et al*, 2006) has generated a lot of interest due to its ability in improving efficiency and transparency, thereby reducing the cost of operation within and between business parties (De-Boer, *et al*., 2002).

A research by Handfield (2003) revealed that in Kenyan market, conducting e-procurement is mostly meant for provisions that enable firms to identify trading partners that they could contact off-line with a view of doing business. The follow-up to an initial contact generally is taking place through other channels such as e-mail, hyperlink, the telephone, fax or the post. According to (Kim *et al*, 2008), only 33% of firms in private sector have implemented e-procurement

strategy to improve services in Kenya. It would therefore be of importance to identify the underlying factors impeding the private and public sector in Kenya from integrating their procurement activities electronically so that they can achieve the full benefit of e-procurement.

As the East African Community (EAC) member states prepare to improve their procurement systems by adopting the e-procurement platform, the element of having legislative structures that will monitor and allow for an effective implementation of the systems is still an impediment to its success Murambi (2005). Recently, the East African community converged in Nairobi to discuss the challenges and opportunities arising from this new system that is expected to promote transparency and ensure efficiency during procurement transactions (R.o.K, 2010).

1.2 Statement of the Problem

State corporations play a major role in the development of the country through provision of public services and have become a strong entity in Kenya and very useful engines to promoting development. On the international scenes the global economy recorded a growth of 5.1% in 2006 compared to 4.5% (World Bank, 2003). In Kenya state corporations accounted for 20% of the country's Gross Domestic Product (GDP), provided employment opportunities to about 300,000 people in the formal sector and 3.7 million persons in the informal sectors of the economy (GOK 2004). The government through sessional paper no. 10 of 1965 established state corporation by an act of parliament to meet both commercial and social goals, that was to correct market failure, to exploit social and political objectives, provide education, health and redistribute income or develop marginal areas. One aim of making Kenya a newly industrialized, middle income country by providing quality life for all its citizens is by the Kenyan Vision 2030 (R.o.K, 2010).

However, in addition, State Corporations in Kenya has been experiencing a myriad of problems including corruption, nepotism and mismanagement (R.o.K, 2009). For example a world bank report (2003) stated that a key area for corruption busting reform is the parastatal sector which when compared to similar economies are a drain on public resources and are locus of corruption that thrives in public monopolies especially when coupled with lax oversight, mismanagement and fiduciary control procedures. An area of State Corporations dominance that cries out for reforms is the financial sector and other support and service provision sectors. The public investment committee reports out of 130 reports examined by the Auditor General, only 23 Corporations managed a clean bill of health (R.o.K, 2004). The general story is one of loss, fraud, theft and gross mismanagement which are hampering improved and sustained performance and service delivery. In view of the myriad challenges. Budgetary allocations, staffing, and deterioration and near collapse of infrastructure, negative travel advisories issued by the governments in the main international source markets, coupled with actual and perceived concerns regarding safety and security. Results in negative publicity affecting marketing efforts. (Emiliani et al, 2004). Private and public sector organizations have been experiencing challenges on their procurement processes but organizations which have enhanced their performance through embracing e-procurement strategy have been able to supersede others in terms of accountability and transparency (Subramaniam & Shaw, 2002)

Productivity of state corporations was quite low in 2003 while at the same time they continued to absorb excessive portion of the budget, becoming a principal cause of long term procurement problems (Heijden, 2003). State Corporations' operations had become inefficient and non-profitable, partly due to multiplicity of objectives, stifled private sector initiatives and failing of joint ventures requiring the government to shoulder major procurement burdens (McCrudden,

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2004). 31% of state corporations rely on old records in selecting their suppliers, while 69% search through internet catalogue in selecting suppliers (Chau *et al* 2007).

A study by (Chan & Lu, (2004) found that organizations which adopted e-procurement strategies have reduced costs through transactional and process efficiencies and thereby promoting their procurement performance. However, in Singapore, previous research by (Lai & Li, 2005) on the survey of the role of e-procurement adoption strategy shows that global state corporation use of the internet is high, while in Kenya, previous research by (Kim *et al*, 2008) on usage, obstacles and policies on e-procurement show that only 33% of state corporations have implemented e-procurement as a strategy to improving services. The million dollar question was the use of e-procurement as a strategy to enhance or deteriorate the performance of the procurement function, but none of the existing research explores further how e-procurement strategy affects the procurement performance. This study therefore determines the role of e-procurement strategy in enhancing procurement performance in State Corporations in Kenya.

1.3 Objectives of the Study

1.3.1General Objective

The main objective of this study was to examine the role of e-procurement strategies on the procurement performance in state Corporations in Kenya.

1.3.2 Specific Objectives

The specific objectives of this study were:

1. To establish the role of customer service level strategy on performance of state Corporations in Kenya.

2. To evaluate the role of procurement cost reduction strategy on the performance of state Corporations in Kenya.

3. To establish the role of inventory optimization strategy on the performance of state Corporations in Kenya.

4. To determine the role of buyer/supplier collaboration strategy on the performance of state Corporations in Kenya.

5. To examine the role of compliance and auditability strategy on the performance of state Corporations in Kenya.

1.4 Research Hypothesis

1. H_{01}: Customer servive level strategy has no significant influence on the performance of state corporations in Kenya.

2. H_{02}: Procurement cost reduction strategy has no significant influence on the performance of state corporations in Kenya.

3. H_{03}: Role of inventory optimization strategy has no significant influence on the performance of state corporations in Kenya.

4. H_{04}: Buyer/supplier collaboration strategy has no significant influence on the performance of state corporations in Kenya.

5. H_{05}: Compliance and auditability strategy has no significant influence on the performance of state corporations in Kenya.

1.5 Significance of the study

1.5.1 Public sector

Public sector organizations use e-procurement for contracts to achieve profits such as increased efficiency and cost savings (faster and cheaper) in government procurement and improved transparency (to reduce corruption) in procurement services. E-procurement projects are often part of the country's larger e-government efforts to better serve its citizens and businesses in digital economy.

1.5.2 State corporations

State corporations might use the findings from the study to improving their performance in e-tendering, e-auctioning, vendor management, catalogue management and in contract management through the internet as well as other information and networking system, such as electronic data interchange and enterprise resource planning.

1.5.3 Vendors

E-procurement is the business to business purchase and sale of supplies and services over the internet. An important part of many B2B sites. Typically e-procurement websites allow qualified and registered vendors to look for buyers and other registered users to look for both buyers and sellers of goods and services. Depending on the approach, buyers or sellers may specify prices or invite bids. Transactions can be initiated or completed. Ongoing purchases may qualify customers for volume discounts or special offers.

1.5.4 Academicians and researchers

Increasingly, academics are positing the view that user perceptions of E-procurement appear to play a significant role in influencing levels of compliance (Croom, 2005)). In this regard further insights in this issue are of great importance to scholars in supply chain management and procurement generally.

1.5.5 Stakeholders

The stakeholders might use the research findings to evaluate the managerial strategies and the extent to which they affect the procurement process in advent of improving its performance.

1.6 Scope of the study

This study focused on the role of E-procurement strategy in enhancing organizational performance, with specific reference to state corporations in Kenya. The e-procurement roles include: improved customer service levels strategy, cost reduction, inventory optimization, buyer/supplier collaboration and auditability and compliance strategy of the procurement performance. This is supported by Patterson *et al*,(2003) who proposed that there is need to integrate the procurement and supply chain activities and that technologies to accomplish supply chain competitiveness. Information technology including e-procurement has the potential to play a pivotal role in business outcomes and competitiveness, it is critical for managers to understand which e-procurement applications best suit their firm's goals in achieving intra- and inter-firm integration.

These aspects are all related to the role of e-procurement performance in organizations. This study has ignored alternative antecedents and consequences of e-procurement strategy enhancement and its negative application that may result from e-strategy application, whereas in practice antecedents and consequences are inevitable. The study population shall be all the 380 managers working in the 190 state corporations based in Nairobi. Nairobi County is selected because they form the bulk of state corporations.

1.7 Limitations of the study

Confidentiality

The organizations confidentiality policy restricted most of the respondents from answering some of the questionnaires since it was considered to be against the organization confidentiality policy to expose the organization confidential matters. The suspicion normally associated with any kind of a research study. This was solved by assuring the respondent of utmost confidentiality and disclosing the academic purpose and intention of the study. Other challenges included some of the respondents not filling or completing the questionnaire or some issues being misunderstood, inadequate responses to questions and unexpected occurrences like respondents proceeding on leave before completing the questionnaire. This was mitigated through constant reminder to the respondents during the period they were having the questionnaire. The researcher presented an introduction letter obtained from the university to the organization management and this helped to avoid suspicion and enable the organization management to disclose much of the information sought by the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the relevant theoretical and empirical literatures. It comprises of the conceptual framework, concept of e-procurement, theories and models of e-procurement and the research gaps.

2.2 Theoretical framework

According to (Evenett & Hoekman, 2005), theories can be classified according to their scope, function, structure and levels. Several theories and models have been put forward by scholars to explain the field of e-procurement. However these theories and models have their roots in e-procurement performance, supply chain and information technology perspective (Croom, 2000). The relationship depicted by these theories and models is therefore reflected in this section of the literature concerning role of e-procurement strategy in procurement performance.

2.2.1 Electronic procurement strategy

Electronic procurement strategy as conceptualized and defined in the introduction does not represent a radical departure from the traditional concept of purchasing strategy; the only difference is that internet based technologies are used as tools to carry out the firms purchasing and corresponding corporate strategies (William *et al*, 2006). This assertion can be illustrated by different research on the strategic objectives of the purchasing function and information regarding the objectives that purchasing organizations pursue when using internet based technologies.

(Brun *et al*, 2004)) Identified a number of strategic objectives of the purchasing function; These objectives were continuous quality management, tool cost management, time based competition, technology access and control, and risk reduction. A purchasing magazine survey of consultations revealed a number of objectives that firms pursue when employing internet based technologies (including electronic procurement) (Emiliani, 2000). They included driving the lowest possible purchase price, identifying sources of high quality products/services, simplifying the purchasing and supply management processes and reducing transaction costs "Beyond the e-auction hype" metals, computer equipment, measuring and analyzing instruments, and electrical equipment (Zairi & Al-Mashari, 2005). In addition, the institute for the study of business markets (ISBM) provided individual contacts at five member firms. One thousand, twenty five surveys were mailed to individuals working in firms with known reputations for the use of electronic procurement tools, as reported in the popular business press.

E-procurement is the usage of online technology to assist with the procurement function. It is considered an operational imperative in today's competitive environment, it is also a growth area and one of the key issues purchasing and supply executives need to face now and in the near future (Davila & Palmer, 2003). Although forecasts on the use of e-procurement have been downgraded with the burst of the internet bubble in 2001 (Davila, 2003), statistic still show an increased growth in the use of e-procurement, for example a recent survey indicated that e-procurement of direct goods is is now exceeding that of indirect goods (Bartels, 2004). Reason for the continued growth in e-procurement use is due to the significant benefits both supplier and buyer organizations achieve through its use. Benefits include; lower transaction costs, lower staffing requirements, shorter procurement cycles, reduced inventory levels, higher degree of transparency and increased communication between supplier and buyer organizations (Davila *et*

al., 2003). Yet, for all the benefits outlined there are many organizations that are taking a 'wait and see' approach to the implementation of e-procurement technologies (Davila et al., 2003).

According to (Bielefied, 2006)), electronic procurement is the business-to-business purchase and sale of supplies and services through the internet, as well as other information and networking systems, such as EDI and ERP. As an important part of many business sites, e-procurement is sometimes referred to by other terms, such as supplier exchange. Typically, e-procurement websites allow qualified and registered users to look for buyers or sellers of goods and services.

2.2.2 The E -Technology Perspective Theory

E-procurement lacks an overarching definition and encompasses a wide range of business activities. For example, (Choi & Rungtusanatham, 2001),) state that e-procurement remains a first generation concept aimed at buyers, which should progress into e-sourcing and ultimately into e-collaboration. E-collaboration allows customers and suppliers to increase coordination through the internet in terms of inventory management, demand management and production planning (Lee, 2003). This facilitates the so-called frictionless procurement paradigm (Brousseau, 2000). This research recognizes the extensive nature of e-procurement and uses the definition provided by (Min & Galle 2002,) where e-procurement is a business-to-business (B2B) purchasing practice that utilizes electronic procurement to identify potential sources of supply, to purchase goods and service, to transfer payment, and to interact with suppliers. The authors believe that this definition provides the scope to investigate the basic level of e-procurement in the Irish ICT manufacturing sector.

The internet has been widely adopted by companies with the aim of improving performances both in internal processes and in processes going beyond their boundaries (Barratt & Rosdahl, 2002). Despite the fact that business-to-business (B2B) trade has enjoyed a quieter existence online than business-to-consumer (B2C) (Barratt & Rosdahl, 2002) the benefits of e-procurement in a B2B setting are significant (Min & Galle, 2001),). Indeed it has been claimed that e-procurement has become the catalyst that allows companies to finally integrate their supply chains from end-to-end, from supplier to the end user, with shared pricing, availability and performance data that allows buyers and suppliers to work to optimum and mutually beneficial prices and schedules (Morris *et al*, 2000).

Usually companies adopt e-procurement systems to manage the purchase of low critical products and services (Min & Galle, 2002). In summation it is noted that the extent of e-procurement adoption remains in a formative stage, falling short of the type of e-sourcing and e-collaboration suggested by (Morris *et al*, 2000). Common e-procurement tools are online catalogues and direct auctions, where reverse auctions remain unpopular with sellers (Basheka & Bisangabasaija, 2010). E-procurement implementation is characterized by the direct and indirect procurement divide, where firms tend to use online systems for uncritical items (Min & Galle, 2001). The transition to modern e-procurement calls for strategic adaptation. It is one strategy, though, that requires much organizational change (Macinnis & Jaworski, 2009). The above theory instigated the third research question: How does inventory optimization affect the procurement process in state corporations' performance.

2.2.3 Resource-based theory

The quest for Information Technology has long been a central tenet of the field of procurement and supply chain management (Pressutti, 2003)). Within this field, resource-based theory (RBT)

has emerged as a promising new framework for analysing the sources and sustainability of Information Technology (Baily, 2008)). According to RBT, Information Technology- measured as economic rent (Caridi *et al*, 2004) - derives from strategic resources. Such Information Technology is sustainable to the extent that the resources on which it is based are valuable, rare, inimitable, and non-substitutable (Bales & Fearon, 2006). Further, RBT rests on the premises that resources controlled by firms are heterogeneous and relatively immobile (Pearcy & Guinipero, 2008). The imperfect mobility of resources (including inimitability and non-substitutability) is due to a variety of isolation mechanisms (Roth, 2001) which include co-specialization of assets (Teo & Benbasat, 2003) unique historical conditions (Berger & Calabrese, 2005), causal ambiguity (Liao *et al*, 2007), social complexity (Barnes *et al*, 2002), and tacit knowledge and skills (Puschmann & Alt, 2005),). Given that organizational learning and resource-based theory both seek the objective of creating and sustaining competitive advantage as far as information technology is concerned, it seems logical for organizational learning to be identified as a strategic resource within the resource-based view.

This equilibrium definition of sustained Information Technology is problematic for two reasons. First, it is impossible to know with certainty that all current and potential competitors have ceased to attempt to duplicate one's Information Technology or will not seek to do so in the future. Second, despite Barney's inclusion of capabilities in the broad definition of resources, his "equilibrium" definition of sustainable Information Technology focuses on outcomes and precludes the modeling and measurement of processes. In other words, the equilibrium definition does not recognize the dynamic nature of processes related to continuous improvement or organizational learning. Firms often derive Information Technology from resources (e.g. new knowledge and capabilities) which have been developed based on lessons from prior experiences

and over time. Information Technology derived from such resources might be sustained because other firms which attempt to duplicate them do not have the necessary organizational knowledge, the learning capability, or the time required to accumulate them. Given the dynamic nature of the IT, we believe that the sustainability of such an advantage must be defined in dynamic, time-sensitive terms.

2.2.4 Transaction cost theory

The use of information technology (IT) has facilitated the reduction of coordination costs, which has been extensively documented in the literature (Bakker *et al*, 2008). For example, electronic market places, facilitated through IT, reduce the cost of searching for obtaining information about product offerings and prices (Bakker *et al*, 2008). Also, collaboration facilitated by information sharing can lower transaction costs (in particular coordination costs) as companies can thereby reduce supply chain uncertainty and thus the cost of contracting. This can be explained with an example: If a supplier is unable to accurately predict the price of its product inputs, it will be reluctant to enter into a contract, which locks it into a fixed price for an extended period of time (Arrowsmith, 2002).

Uncertainty in the context of supply chains and more specifically in manufacturing is caused by supply uncertainty, demand uncertainty, new product development uncertainty, and technology uncertainty (Koufteros, 1999). Supply uncertainty relates to unpredictable events that occur in the upstream part of the supply chain. Among the causes to supply uncertainty are shortages of materials and late deliveries. Clearly, supply uncertainty can disrupt manufacturing and have an adverse affect on sales, where distributors and retailers down the chain are also affected. Demand uncertainty can be defined as unpredictable events that occur in the downstream part of the supply chain (Koufteros, 1999). Demand uncertainty (or demand risk) can result from

seasonality, volatility of fads, new product adoptions, or short product life cycles (PLCs) (Johnston, 2005). Furthermore, (Choi & Krause, 2005) identify three sources for the uncertainty of demand arising.

Another uncertainty related to manufacturing concerns new product development. New product development uncertainty can stem from unpredictable events during the process of market research, product design, and product prototyping. Finally, technology uncertainty refers to the fuzziness in the selection of a suitable technology platform (Koufteros, 1999). An example is the trade-off between a fool-proof manufacturing technology (perhaps dated), compared to a prospective technology offering better price to performance but whose viability is not certain (Klein, 2007). Furthermore, uncertainty can also arise from political (e.g. fuel crisis), natural (e.g. fire, earthquake), and social uncertainties (e.g. strikes) (Johnston, 2005).

Approaching the concept of uncertainty from the transaction cost economics (TCE) point of view might provide further insight into the value of information sharing between organizations. The concept of uncertainty is central to TCE, which assumes that individuals have bounded rationality and act opportunistically. The early transaction cost literature did not make a distinction between different forms of uncertainty. More recent literature has disaggregated the construct of uncertainty (Melville *et al*, 2004). For example, (Wendin, 2001). Who built on (Khalifa & Shen, 2008), distinguished between primary and behavioral (or secondary) uncertainty. Primary uncertainty refers to the underlying transaction and arises from mainly exogenous sources such as uncertainty relating to natural events, consumer preferences, regulations, and technology (Sulek *et al*, 2006). Primary uncertainty may lead to problems of communication, technological difficulties, and coordination problems that can as a consequence

adversely impact the execution of transactions (McManus, 2002). Behavioral uncertainty refers to the risk of opportunism on transactions that are executed through incomplete contracts.

Similarly, (Sulek *et al*, 2006) classified uncertainty as primary, competitive, and supplier uncertainty. Primary uncertainty is consistent with Wendin, C. (2001) and refers to the "lack of knowledge of states of nature" (Sulek *et al*, 2006). Competitive uncertainty arises from the innocent or strategic actions of potential or actual competitors (McManus, 2002). Supplier uncertainty is essentially behavioral uncertainty and refers to possible opportunism by upstream or downstream partners. In organizational theory uncertainty is often referred to as environmental uncertainty (Trent, 2007)) and includes a number of factors such as uncertainty regarding suppliers and competitors actions, as well as uncertainty in regulations and technology, which captures both primary and behavioral uncertainty. Based on the reviewed literature, the definitions of the various types of uncertainty are not consistent. Some definitions overlap, whereas others ignore certain factors.

The presence of demand uncertainty and the lack of information sharing in the supply chain can lead to a problem known as the bullwhip effect: the amplification of demand variability as orders move up the supply chain (Featherman & Pavlov, 2003). (Johnson & Whang, 2002), provide evidence for this finding from the food industry, whereas (Nagle *et al*, 2006) report on the bullwhip effect in the automotive sector. There are four sources of the bullwhip effect:

The bullwhip effect can be alleviated through sharing demand information in the supply chain, which reduces information asymmetry and uncertainty (Lee *et al*., 2003). Thus, limiting uncertainty through information sharing can in turn reduce companies' internal risk as companies' can optimize inventory, production, and capacity planning. Although, information

sharing seems to bring with it many benefits, it can simultaneously increase transaction risk, as higher levels of business transparency can lead to opportunistic behavior. Nevertheless, uncertainty as a factor might affect companies' incentives to share information. This also agrees with contingency theory, which states that the amount of uncertainty and rate of change in an environment affects the development of internal features in organizations (Larsson *et al*, 2008).

2.2.4 Business-to-Business Interaction Model

Business-to-Business (B2B) technologies pre-date the Web (Dooley, 2007). They have existed for at least as long as the Internet. B2B applications were among the first to take advantage of advances in computer networking (Dooley, 2007). The Electronic Data Interchange (EDI) business standard is an illustration of such an early adoption of the advances in computer networking. The ubiquity and the affordability of the Web have made it possible for the masses of businesses to automate their B2B interactions (Dooley, 2007). The growth of the Web is revolutionizing the way businesses interact with their partners and customers (Dooley, 2007). Millions of organizations are moving or have already moved their main operations to the Web to take advantage of the potential of more automation, efficient business processes, and global visibility (Dooley, 2007).

B2B applications include procurement, Customer Relationship Management (CRM), billing, accounting, human resources, supply chain, and manufacturing. B2B E-procurement far exceeds B2C E-procurement both in the volume of transactions and rate of growth (Harink, 2003). Despite the dot-com debacle that shook the US economy, B2B E-procurement is still strong and predictions agree that B2B E-procurement future looks even brighter (Hamner & Qazi, 2009). While B2B E-procurement has been around for at least as long as the Internet, it reached its full

potential with the emergence of the Web as a conduit for efficient B2B transacting (Hamner & Qazi, 2009).

Numerous organizations started using the Web as a means to automate relationships with their business partners (Hamner & Qazi, 2009). This has elicited the formation of alliances in which businesses joined their applications, databases, and systems to share costs, skills and resources in offering value-added services (Hamner & Qazi, 2009). The ultimate goal of B2B E-procurement is therefore to have inter- and intra-enterprise applications evolve independently, yet allow them to effectively and conveniently use each other's functionality (Puschmann *et al*., 2005). An important challenge in B2B E-procurement model is interactive consisting of its interoperation and integration with both internal and external enterprise applications (Freeman, 2006).

Business to business (B2B) E Procurement solutions are important for many companies as they are expected to deliver many purchasing benefits like leveraged buying, process transparency and purchasing overall cost reductions (Hamner & Qazi, 2009). To gain these benefits a successful implementation of the E Procurement solutions is required and for this the end user adoption plays an important role, which is captured by many of the success and failure factors of E Procurement systems found in literature (Angeles *et al*, 2007). The end user also plays an important role in the success of websites in the online business to consumer (B2C) world. This online B2C world has grown tremendously in the last decade as many consumers have discovered the benefits of online purchasing. Many companies have developed websites which offer many services and features to attract new and attain existing customers (Hung *et al*, 2006). The large increase of popularity of the online B2C world gave rise to the idea that there are opportunities from the online B2C world to improve the user adoption of B2B E Procurement solutions within companies (Hung *et al*., 2006).

To demarcate the scope of the research, this study focused on ease of use as an important success factor of user adoption of E Procurement solutions and focused on functionalities offered to consumers in the online B2C world. This study assumed that including more user preferred functionalities will increase the ease of use of the E Procurement solution and thereby increase the user adoption of the E Procurement solution. The goal of this study was thereby to identify the most promising functionalities offered in the online B2C world for usage within B2B E Procurement solutions and to assess a fit for usage of these functionalities within a B2B E Procurement environment (Hung *et al*., 2006).

2.2.5 E-Procurement Adoption Model

A review of the literature suggests that the Technology-Organization. Environment Framework as proposed by (Tatsis *et al*, 2006) may provide a useful starting point to explore E-Procurement adoption (Chau *et al*, 2006). According to the framework, a technological innovation decision is mainly driven by the organizational, technological and environmental context of the organization.

The framework is already successfully used in and adapted to other information systems contexts. The organizational context is labeled Organizational Readiness to reflect that organizational factors lay the foundation for the successful adoption of E-Procurement among municipalities (Iacovou *et al*, 2004). The impact of E-Procurement is influenced by the level of integration in existing IT systems. However, integration is costly due to organizational reorganization and costs for hardware and software. In the context of EDI adoption, (Chwelos *et al*. 2001) show that while benefits and external pressure motivate adoption, motivated

organizations must have capabilities like Financial Resources or IT Sophistication before the technology can be adopted.

a) Procurement and the internet

Importance of E-Procurement in the information of an E-supply chain in today's IT-enabled global economy with ever increasing international competitive pressures, improvement at any stage of supply chain interaction is welcome (LePine, 2005). As such, procurement becomes the core function in supply chain management, which can harvest the benefits of the internet.

The fact that procurement and fulfillment are the key processes in the supply chain coordination and integration is well mentioned in the literature (LePine, 2005).

Being the business processes providing the critical link between the supplier and the corporate procurement and fulfillment activities lie at the core of the supply chain integration. (McCloskey, 2006) quote those with the advent of the internet, procurement become the main process to be redesigned and reorganized.Since the procurement or supplier relationship processes consist of a relationship between businesses and needs a large amount of information sharing and transfer, the use of internet has had major impact on the procurement process. As such the e-procurement process supports the procurement and sourcing activities via internet technologies and enables an efficient negotiation between buyers and suppliers (Gebauer & Seveg, 2001).

b) Electronic Procurement

Several definitions have been put forward to describe e-procurement. The Federal Procurement Commission 2008, notes that what e-procurement stands for from the buyer's viewpoint is the same as e-commerce from the seller's viewpoint. E-procurement is the operational procurement process supported by information and communication technologies (ICT). E-procurement supports the process and relationship of an enterprise with its suppliers through the sue of computer based systems. For the smooth functioning of e-procurement, IT systems are necessary. These solutions support the procurement procedures and relations between the various parties involved. The use of the Internet moreover, opens up additional possibilities for keeping the procurement process lean (Federal Procurement Commission, 2008).

E-procurement is viewed as value-added application of e-commerce solutions that facilitates, integrates and streamlines the procurement process – from the initial stages, contracting and payments (Lysons & Gillingham, 2003). (Handfield, 2003) describe e-procurement as means of purchasing goods and services over the Internet. Its aims at shifting the procurement process online, linking buyers with their preferred suppliers and facilitating a smooth purchasing process. The public procurement oversight authority (2009) notes Electronic Procurement is the business to business (B2B) or Government to Business (G2B) purchase and sale of supplies and services through the internet. It applies ICT in the management, processing and reporting for the acquisition of goods, works and services through the internet. Lysons & Gillingham (2003) define e-procurement as the application of technology electronically to improve the process of acquisition of goods and services. Technology has applications that boost the acquisition process making it more efficient.

c) The benefits of E-procurement

E- Procurement has several benefits to organizations that apply it in the purchase of products. Kothari, Hu and Roehl (2004) have identified some of the gains below that come with e-procurement. A variety of e-procurement benefits have been reported as achieved, or expected, in the academic literature. Among different benefits listed in the literature, the most common are: transaction cost and buying price reduction, process shortening, improvement of information exchange, and control. Despite the drivers that aim at operational and strategic improvements, as well as the initial expectation that e-procurement would realise both operational and strategic benefits, the literature is dominated by the benefits at operational levels (Davila et al., 2003), but does not widely present the benefits at a strategic level. E-procurement benefits were grouped into several taxonomies that include; operational and strategic (Croom, 2000), operational, strategic and opportunity (Ashurst *et al,* 2008), operational, tactical and strategic; direct and indirect (De Boer *et al,* 2002), market efficiency, process efficiency and effectiveness (Batenburg, 2007). Subramaniam and Shaw (2002) distinguished between immediate and performance measures, while (Bendoly, 2001) looked at variability, bottleneck and waste reduction from implemented systems and process changes. Gunasekaran and Ngai (2008) noted impact on short and long-term organisational performance, cost-performance, competitiveness, alliances and networking.

At the operational level, benefits include categories related to operational efficiency and effectiveness (Gebauer *et al,* 2008). Mukhopadhyay and Kekre (2002) distinguished between direct operational impacts based on transaction process improvement, direct strategic impact through sales increases, and long-term indirect strategic impact. (Stockdale & Standing, 2002), did not look at benefits and their categories in their e-procurement review, but listed some of

them, such as: reduced transaction costs, more efficient negotiation with, and identification of suppliers, workflow automation, organisational spending control and leverage, improved process monitoring, co-ordination and control, information sharing and integration.

d) Lower Administrative Costs.

E-procurement automates the administration involved in purchasing, making it a paperless process. Procurement has traditionally been regarded as a complex paper chase running throughout an organization. Relieving staff of the administrative burden and automating key tasks saves them time and therefore saves the organization money. Requisitioning officers are often staff in departments outside of purchasing who have a need for goods or services to perform their daily duties. They spend a great deal of time filling in paper-based forms, passing them on for authorization and then chasing the authorizers or purchasing department.

E-procurement offers requisitioners quick and simple means of raising a requisition directly on-line, which is then automatically routed to the necessary authorizer's and then converted into a purchase order and electronically transmitted to the supplier. These orders can then be automatically integrated into the organization's financial management information system (IFMIS) to enable the receipting and payment functions to be completed (Kothari, Hu & Roehl 2004).

e) Strengthening supplier relations

According to (Liao & Cheung, 2001), e-procurement empowers the organization to strengthen its supplier relations in the following ways: By introducing a system that people can use easily and are happy to use it is possible to ensure that everyone in the organization adheres to preferred supplier rules and therefore increased the buying power of the organization with its chosen suppliers. When transacting with a supplier electronically, suppliers are more likely to give

discounts, because their own administration costs are less. By reducing 'maverick buying' suppliers become more committed to their agreements as there is more assurance of obtaining a greater share of the organizations spends.

Owing to the globalization of markets, the diversification of customer needs, and the complexity of product components, the efficiency of supply chain management has become an important factor in an enterprise's competitiveness. It is recognized that properly managing the supply chain cannot only diminish risks and uncertainty, but can also optimize the inventory level and process cycle time, so that enterprises are able to satisfy customers and make a good profit (Shim et al, 2001). In order for supply chain management to perform successfully, the purchasing function must be properly considered, where the significance of the purchasing function increases as the purchasing and outsourcing costs assume a greater portion of the total costs of the manufacturing process (Wang *et al*, 2004). In response to this effect, companies have focused more interest on the supplier relationship management (SRM) system.

However, until recently, researchers in this area have dealt with the SRM system by focusing solely on specific subjects, such as purchasing strategy, supplier selection, collaboration, and supplier development. Interestingly, these subjects are rarely dealt with from a holistic perspective (Crenshaw & Robison, 2006),). In regard to purchasing and related activities, it is critical that the relevant departments cooperate, and thus it is also very important to build an information system (IS). To build an integrative system, managers should be equipped with a comprehensive knowledge of each team's work, how the related works influence each other, and what is important in each department to provide a good overall result.

We suggest a framework for an integrative SRM system that consists of purchasing strategies, considerations for suppliers, collaboration in product development and production activities, and supplier assessments (Ulrich & Barney, 2004). In addition, this system should support collaboration tasks by seamlessly connecting with an advanced planning and scheduling (APS) system, an enterprise resource planning (ERP) system, a manufacturing execution system (MES), a warehouse management system (WMS), a product lifecycle management system, and a legacy system (Shalhoub, 2006). To this end, we have developed an SRM system architecture that effectively achieves collaboration (Wang *et al*., 2004). In addition, like almost every IS, the SRM system must continuously develop through a feedback process, and therefore this study suggests a framework for continuous improvement (CI) (Amit & Zott, 2001).

f) Reducing purchase cycle time

In many organisations the requisition-to-delivery time can be counted in days or sometimes weeks, making the proper procurement process simply unfeasible for anything which needs to be ordered quickly. Delays are often caused when paper-based requisitions have to be authorized manually by one or more people and where budgets and commitments have to be checked in advance of the order going out. E-procurement systems with in-built workflow streamline the process and avoid the common bottlenecks in the process. It enables a requisition to be automatically checked against pre-configured settings and electronically authorized. Not only does this speed up the entire process but also it enables a complete analysis of the purchase cycle so that procurement staff can identify common bottlenecks and whether delays are attributable to external or internal forces (Lu *et al*, 2009).

Speed is the competitive background of the present and future (Brown *et al*, 2005). According to Michael Porter, international competition is now a game of progress rather than a game of

resources. International competition is a race and imprive (Brown et al, 2005). The need to speed up operation pervades entire competition in everything they do from receiving orders to making and delivering products (Brown *et al*, 2005Firms also pressing suppliers to speed up their operations. Focusing on cycle time reduction in all operations helps cut costs and increases quality throughout the firms. By definition, the total cycle time concept embraces all aspects of the firm. The benefits derived from total cycle time reduction will increase as the firm focuses on cycle time reduction in more of its activities.

Despite these facts, most cycle time reduction concentrates on manufacturing cycle time. Through ages, time management has has played an important role in planning and controlling activities. The total cycle time (TCT) concept is based on the recognition, throughout the entire value chain, that time is an important strategic weapon. (George, 2002), has shown that firms are realigning their competition prioties from to improved customer response time by focusing on delivery speed and reliability. In the 1990s Ruch predicted that competitive priorities would shift to time from cost, productivity and quality.

g)User compliance

E-procurement ensures that everyone only buys from approved suppliers as this allows the organization to get the best value from the deals the company has struck, and allows companies to leverage far better deals with suppliers. With traditional procurement processes, paper requisitions are so time-consuming to complete and prone to delay as they pass through the approval process that many end users simply don't bother with them. They find other ways to purchase something, whether it is by placing an order directly with a supplier or by using a credit card or petty cash. This is known as 'maverick purchasing' or 'rogue spending', though to many end users who are simply trying to buy something to get a job done, it is not 'maverick' but in

the best interests of the organization. When they use the traditional system, they sometimes have to make several phone calls to different authorizer's or to the supplier to speed up the transaction (Kothari, Hu & Roehl, 2004).

This results in the following problems. Firstly, the best value is not achieved. Maverick buyers cannot command the same favourable terms as the organization and preferred suppliers are rarely used. Secondly, because the purchase is bypassing the system it cannot be anlaysed and therefore meaningful management information is hard to produce. Finally, it may cause internal friction that could be avoided (Kothari, Hu & Roehl, 2004).

h)E-procurement procedures

The E-procurement process involves several activities described below. The purchasing department in the buyer's internal marketplace defines the scope of the products to buy and invites vendors to bid or negotiate prices. The agreed upon prices (contract prices) are stored in the buyer's internal electronic catalogue/databases. The final buyer or end user can compare the various alternatives either on the e-catalogue-which is a web page with information on goods and services offered supporting online ordering and payment using the internet or on the internal databases (Kothari, Hu & Roehl, 2004).

An organizational purchasing decision would tightly follow the internal workflow management system where business and purchase rules are pre-defined. Supplier selection is extremely important in purchasing management to enhance quality, reduce delivery time, and minimize purchasing costs. The information on the internal databases or the electronic catalogues can be updated manually using software agents. These systems not only allow end-users to order products and services online without intervention by the purchasing department, but also enable

automatic fulfillment by the supplier organization and payment via electronic funds transfer or purchasing (credit) cards (Kothari, Hu & Roehl, 2004).

E-auctions which are web based markets for B2B and B2C are part of the e-procurement procedures. Suppliers offer goods to consumers on the internet with a systematic method of determining the price. The auctions may follow the English bid process (where the highest bidder prevails), the Dutch bid process (where the sellers starts with the highest prices moving downwards until a price is set) or the sealed bid process where a buyer issues request for bids in a prescribed manner similar to tendering (Lysons & Gillingham, 2003)
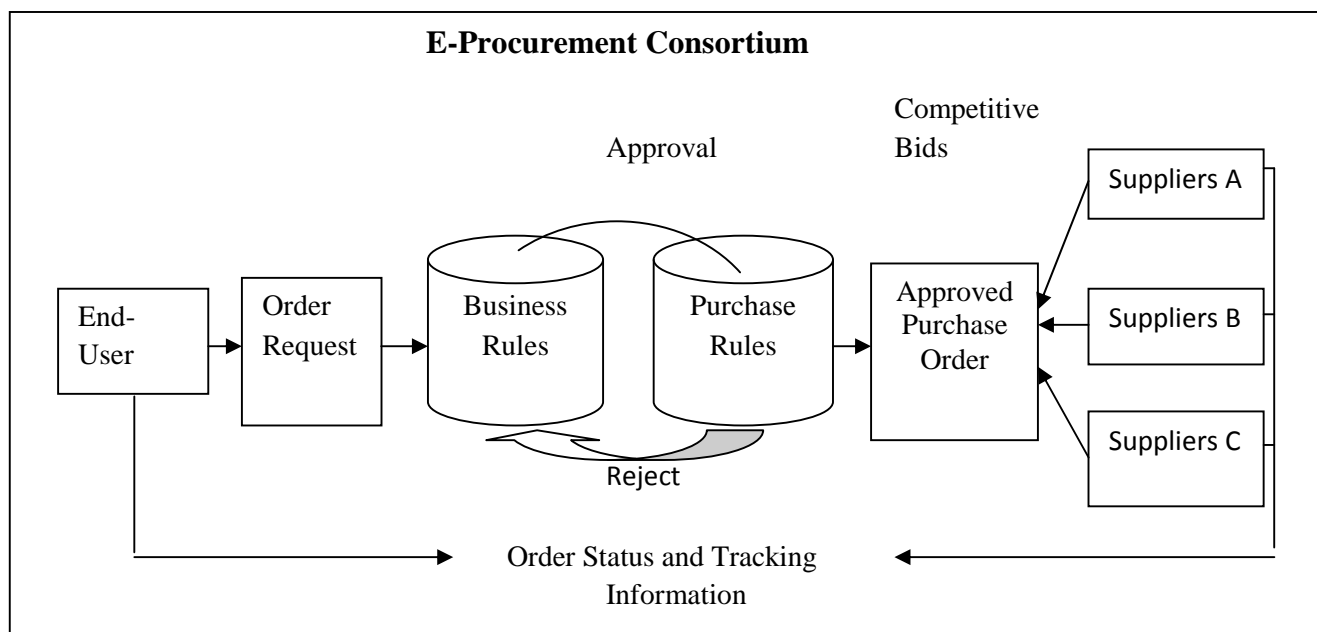
Figure 2. 1 E-Procurement Consortium

Source: (Lysons & Gillingham, 2003)

Electronic Procurement Systems

E-procurement systems, applications are designed to allow businesses use the Internet in order to acquire the necessary goods and services. In general, there are three main categories of e-procurement systems. One type focuses on improving the transactions and the decision-making

capabilities of the company. Businesses may deal with hundreds of transactions weekly, but these applications simplify the process and help foster stronger relationships between buyers and suppliers (McKechnie *et al*, 2006).

The second category of e-procurement systems involves managing assets. Systems in this category provide inventory management, maintenance scheduling, in-house product availability, as well as other similar services. These applications are useful for businesses that need t keep a close idea on the quality of their direct materials in stock. Finally, the last category includes systems designed to optimize a company's production operations. Many of these applications deal with the entire production cycle, including the procurement of materials when the inventory runs low, the management of supplier contracts, and the production scheduling.

Because of the differences between the systems, it is important for companies to choose the one that is most appropriate for their industry. Regardless of the type of e-procurement system a company chooses, the company can expect to receive similar benefits including saving money on purchases, improving the timeliness of the purchasing process, and eliminating waste. In addition to these benefits, companies can also improve the efficiency of their supply chain.

Supply chains essentially include every business, manufacturer, and distributer that supplies the goods and services necessary to create a product, so any improvement in the speed of those transactions is obviously beneficial. Additionally, using e-procurement to enhance supply chain relationships can make it easier for accounting departments to track and keep record of payments and invoices. Despite the differences in e-procurement applications, the bottom line is that a company must choose one that works for its industry and one that will help make its supply chain more efficient if the system implementation is to truly be successful.

a) Web-Based ERP (Enterprise Resource Planning)

Enterprise resource planning (ERP) system is a business management system that comprises integrated sets of comprehensive software, which can be used, when successfully implemented, to manage and integrate all the business functions within an organisation. These sets usually include a set of mature business applications and tools for financial and cost accounting, sales and distribution, materials management, human resource, production planning and computer integrated manufacturing, supply chain, and customer information (Bozarth *et al*, 2008). These packages have the ability to facilitate the flow of information between all supply chain processes (internal and external) in an organisation (Albores *et al,* 2002).

Furthermore, an ERP system can be used as a tool to help improve the performance level of a supply chain network by helping to reduce cycle times (Garcia-Dastugue & Lambert, 2003). However, it has traditionally been applied in capital-intensive industries such as manufacturing, construction, aerospace and defence. Recently, ERP systems have been expanded beyond manufacturing and introduced to the finance, health care, hotel chains, and education, insurance, retail and telecommunications sectors.

ERP is now considered to be the price of entry for running a business, and at least at present, for being connected to other enterprises in a network economy to create "business to business" electronic commerce (Bouwman *et al*, 2005). Furthermore, many multinationals restrict their business to only those companies that operate the same ERP software as the multinational firm. It is a fact that ERP is for big firms and smaller firms have to adjust their business model and approach according to the practices and software adopted by the big firms. With the opening up of the economy, small to medium sized enterprises (SMEs) have found the going very difficult. Since they do not have the robustness associated with large companies, SMEs have to tap the power of

IT and an integrated information system to stay competitive and customer oriented.

ERP is often considered the answer for their survival (Rao, 2000). Therefore, the ERP software market has become one of today's largest IT investments worldwide. A recent survey predicts that the spending on ERP will reach $66 billion in 2003 (Quach, 2005). A family of software packages used to integrate business organizations with one another is called enterprise resource planning (ERP) (Raghunathan *et al* 2008). ERP has had a positive impact on the ability of businesses to improve working capital, implement a total quality management (TQM) culture, lower inventory levels, optimize raw materials and sell and deliver products to the customers (Sganga, 2001). ERP has helped alleviate the arduous job of supporting inflexible systems that in most cases result in cost increases, data redundancy and inaccuracy, and above all, various inefficiencies (Osmonbekov *et al*, 2002). Ideally, ERP is a computer system that keeps managers informed about what is happening in real-time throughout a corporation and its global connections (Jacobs & Whybark, 2000).

In today's competitive business environment, companies strive to meet the increased competition by expanding globally and meeting customers' growing expectations. Companies aim to achieve higher profit by generating more output with lower total cost in the entire business chain. In this context, enterprise resource planning (ERP) becomes an important tool for the company to build strong capabilities, improve performance, undertake better decision making and achieve competitive advantage (Agarwal & Prasad, 2009).

b) Electronic Maintenance, Repair and Operations (MRO)

This is the same as web-based ERP except that the goods and services ordered are non-product related MRO supplies. The system generates and sends purchase orders for maintenance, repair and operating supplies to enable the smooth running of the production process (Agarwal and Prasad, 2008). When repairs are necessary to components of a production line, e-MRO orders can greatly reduce down time.

c) Electronic Sourcing

It identifies new suppliers for a specific category of purchasing requirements using internet technology. E-sourcing uses the internet for the identification of suppliers. Business organizations can shift their procurement process online in order to reach a large number of suppliers than would be possible through usual channels. The major benefit of e-sourcing is the competitive aspect by which suppliers bid for projects. Suppliers submit bids along with various details of the service they promise to provide, and purchasers can pick and choose from the offers.

d) Electronic Tendering

E- Tendering is a process of carrying out the entire cycle online including submission of price bid such that efficiency, economy, speed of the internet can be harnessed. Manual tender processes can be long and cumbersome, often taking three months or longer, which is costly for both buyer and supplier organizations.

E-tendering replace these manual paper-based tender processes with electronically facilitated processes based on best tendering practices to save time and money. Buyers are able to manage the tenders coming in, with all tenders stored in one place. Buyers can cut and paste data from

the electronic tender documents for easy comparison in a spreadsheet. Evaluation tools can provide automation of this comparison process.

Supplier's costs in responding to invitations to tender (ITT) are also reduced as the tender process cycle is significantly shortened. E-tendering offers an opportunity for automating most of the tendering processes, from help with preparing the tender specification; advertising, tender aggregation; to the evaluation and placing of the contract.

e)   Electronic Reverse Auctioning

It involves using internet technology to buy goods and services from a number of known or unknown suppliers (Swenseth *et al*, 2009). E-reverse auctions can be conducted through a number of traditional channels but many enterprises prefer using the internet as they can connect with a wider range of service providers than would be practical in the real world (Mabert *et al*, 2002). Online reverse auctions, also known as downward price auctions or reverse e-auctions, provide an arena for several suppliers to compete in real time for the buyer's product request. Appropriately named reverse auctions as the price descends during an auction as opposed to traditional, forward auctions where the price increases as more bids are entered. Traditionally, buyers submit a static three-quote closed bid (Emiliani & Stec, 2004) to select suppliers. Each supplier responds once with its best offer; however, the bid amounts are never revealed to competing suppliers (Hartley *et al*., 2006). Online reverse auctions differ in that multiple suppliers, approximately ten to 20 (Emiliani, 2000) but can be as little as three, are solicited to participate in the online reverse auction in which they can submit multiple bids while competing bid prices are public to all parties. Whereas traditional static bidding can range from weeks to several months (Emiliani, 2000), online reverse auctions typically last 30 minutes to an hour. An auction lasting only 30 minutes requires considerable preparation and coordination, however.

Market makers such as Ariba, who purchased FreeMarkets, provide this service. Other market makers include Perfect Commerce, eBreviate, eDynaQuote, and Orbis Online. Market makers assist the buyer in creating a "total cost" request for quote (RFQ) that categorizes parts into families or groupings to help facilitate the bidding process (Emiliani & Stec, 2004).

f) Challenges in adoption of e-procurement

The Public Procurement Oversight Authority (2009) enumerates the following challenges that are currently being faced in e-procurement: i) Lack of Supplier Confidence – there are security concerns such as electronic breaches, hacking and other unethical acts that are common on the internet. This has discouraged organizations from switching to e-procurement. ii) Limited e-legislation to support transactions – the government has not drafted comprehensive legislation to guide the process making it to operate in a legal vacuum. iii). Limited infrastructure and web services-internet services remain inaccessible for many Kenyan businesses due to high cost and a poor ICT infrastructure. The benefits of the fibre optic cable are yet to be felt by many organizations in Kenya. iv) Lack of resources to develop, implement and maintain – the installation and maintenance costs remain prohibitively high for most organizations hence impending e-procurement. v) Integration/Interfacing – with existing systems has proven to be a headache for most organizations due to the incompatibility that has been detected. Lysons & Gillingham (2003) identify some of the issues of e-procurement as: Resistance to change, high cost of cataloguing and coding products and loss of confidentiality which could be detrimental to the organizations interest.

g) Drivers of Electronic Procurement Adoption

E-procurement includes sourcing, negotiations with suppliers, and R&D co-ordination taking place on the internet and electronic market (Yi & Hwang, 2003). (Crook & Kumar, 2008),

defined e-procurement as the mirroring of procurement activities in the internet. Presutti (2003) defined it as all technologies which facilitate buying using the internet. (Kemler, 2001 included into e-procurement: e-sourcing, e-tendering, e-informing, e-reverse auctions, e-MRO, and web-based enterprise resource planning (ERP). E-procurement is also considered as part of supply chain management (SCM) and includes: e-procurement software, business to business (B2B) market exchanges, B2B auctions, and purchasing consortia (Davila *et al*., 2003).

Rajkumar, (2001), presented four groups of e-procurement innovations based on the major procurement processes: electronic reverse auctions, electronic catalogue management, electronic order fulfilment and electronic payment and settlement innovations. There is a variety of e-procurement classifications, but common to all is the fact that e-procurement is composed of different applications (Presutti (2003). Similarly as there is variety of applications classified as e-procurement, there are also different drivers that motivate companies to use this category of applications. (Baldrige & Burnham, 2005), analysed companies' motivation to implement internet-based tools to support procurement processes. Their case study showed that some companies targeted increasing market efficiency through reverse auctions, which provide a chance to get lower purchase prices, as well as improving supplier search and negotiation processes. Other organisations wanted to improve supply chain agility and responsibility by extending collaboration with business partners and increasing supply process effectiveness and efficiency. The third group wanted to make lean and streamlined internal procurement processes. (Baldrige & Burnham, 2005) stated that the goals of e-procurement tool implementation are linked with product categories and their characteristics.

 Research on Australian companies (Hawking *et al*., 2004) resulted in a list of the main e-procurement drivers; namely price reduction, negotiation unit cost reduction, improved visibility

of customer demand, reduced administration cost, improved market intelligence, reduced operational and inventory costs, enhanced decision making, improved contract compliance, shortened procurement cycle times, improved visibility of SC, increased accuracy of production capacity and enhanced inventory management. Drivers are linked with expectation of benefits, or problem-solving solutions that should be achieved by e-procurement systems.

While e-procurement uses ICT, the drivers of the latter are not necessarily those of the former. Even within the introduction of new technologies, the adoption of management and production technologies differs between large and small firms (Jacobs & Bendoly, 2003). in the adoption of soft process technology, the determinants also vary from technology to technology for firms of the same size class (Moozakis, 2001) linking to the observation that, in adopting ICT, the task for small firms is to understand the strategic and competitive implications (Quinn *et al*, 2006). While ICT adoption models have been proposed, such models are not necessarily transferable to e-procurement adoption. One major problem is the conflict of the networking requirement of e-procurement with the finding of a limited integration between the Internet and internal systems in SMEs (Siemsen *et al*, 2008). SMEs may embrace ICT without adopting e-procurement.

At the public level, e-procurement facilitates unlimited and non-restricted access to government information and increases market transparency and economic integration based on complementarities (Choudhury *et al*, 2008). It also increases international procurement opportunities for local businesses. Recognition of the potential benefits of e-procurement for Australian business is reflected on the establishment of web sites by federal and state governments to facilitate the adoption of e-procurement.

E-procurement has the potential to lower overhead costs associated with purchasing (Chen *et al,* 2007), and to increase a firm's bargaining power. This power can result in better purchasing

terms and conditions, better suppliers, more reliable supply of quality goods and services, better prices and, ultimately, lower all-inclusive purchasing costs. Purchasing cost savings add to profit (Srinivasan *et al,* 2002). For these type of reasons, e-procurement has been seen to have the potential to play a pivotal role in a firm's endeavors to "create a competitive cost advantage that lasts for many years" (Bingi *et al,* 1999), hence grounding sustainable competitive advantage. This is particularly important for Australia because ICT is the critical enabling technology and is a major contributor to national productivity and growth. This is a compelling motivation not only for e-procurement adoption by firms, but also for this adoption to be a matter of urgency given the belief that "early adopters will obtain maximum benefits" (Markus & Keil, 2004).

Overall, e-procurement adoption in Australia may be below expectations due to a lack of understanding of the consequences from non-adoption and link io competitive advantage, a presumption that e-procurement is mostly for large businesses, and the notion that it is too early to assess conclusively(Srinivasan *et al,* 2002). In addition, there is evidence that the adoption process is complex and onerous, and intervention may be necessary to stimulate initial adoption and subsequent implementation (Hardy, 2006). E-procurement adoption is an area of both threat and opportunity in terms of business productivity and competitiveness.

Common important drivers for e-procurement adoption are process design, international operational efficiency, and cost reduction and leadership. However, particularly conspicuous is the apparent lack of a perceived link between e-procurement adoption and competitive advantage Venkatraman, (2001). It is important to understand what may ensue from this state of affairs. Implementing a globalization strategy relies on two strategic aspects: a marketing strategy and a procurement strategy, A global marketing strategy requires the same goods and services to be made available to the global market in the same way Thurbon, (2006). A global procurement

strategy prescribes that a firm select and use the best supplier's or the better price-quality inputs independently of geographical concerns.

ICT and the adoption of e-procurement are instrumental in these areas. If a firm does not adopt a global procurement strategy and its competitors implement a global procurement strategy, in the long run they may attain a cost-quality based competitive advantage Sharma, (2005). Conversely, a firm that neglects to select and use the best suppliers of the belter price-quality inputs may not survive in the long run.

An additional implication is that competitors will be able to access the firm's traditional suppliers (as long as these are electronically available). In fact, even the linn's foreign competitors can do their purchasing Hwang, (2003).

h) Impediments to Adoption of e-procurement

Even if the benefits of adoption and the potential strategic implications of e-procurement are recognized, the list of impediments for an individual business includes items that tire major potential barriers for an effective adoption: risk, uncertainty, inefficiencies from supplier and catalogue-content readiness, cultural change, staff resistance, need for wide training with likely disruption of on-going activities Zhang, (2002).

Each one of these makes it difficult for firms to implement e-procurement strategies, to the possible extent that the implementation may be deemed too difficult. In the Australian case.cost, top management support, inadequate e-procurement solutions, business partners and lack of skilled personnel were found to be important (Hawking *et al* 2004). In the case of small businesses in Canada, security issues and the realization that 'once committed to automating business processes, nothing in those businesses will ever be (he same again' grounds the

argument that 'big businesses, universities and governments can survive e-business failures. Smaller businesses cannot afford them at air (Bayton, 2008).

It has been argued that a firm that is not an e-procurement player now, most definitely will not be a major player in the future (Kimberly & Evanisko, 2001). This can be interpreted to suggest that it may be now too late for firms to adopt e-procurement successfully. While there may be important first mover advantages for firms, there is no evidence sustaining such a prediction. E-procurement is happening and has the potential to continue the creation of real value for all firms, even the laggards.

One possible explanation for a slow adoption process is that the adoption decision is complex-while many benefits arise in the longer term, major impediments and associated potential costs may be very short term (e.g. extensive staff training). Associated benefits and costs are difficult to estimate in real terms.

But firms need to consider the adoption decision. The essential fact is that e-trade (.and therefore e-procurement) is open. Without careful analysis, no firm can see itself as shielded from the influence of e-procurement just by choosing to ignore it. Decisions about e-procurement can be essentially strategic, prompted by a variety *of* factors (e.g. supply chain considerations, long term contracts on hand, nature of customer-supplier relationships, organizational culture and industrial relations). More needs to be known about these factors given that there is little indication of which ones are situational more or less relevant, or when they will apply. Furthermore, although there is a lack of information about e-procurement in the SME context, the suggestion in the literature is that the different context involves different benefits and barriers. Applying strategies designed for large businesses to small and medium firms may result in wastage of resources and the sought outcomes being missed. Importantly, it is apparent that the identification of the

specific impediments to e-procurement adoption in given contexts is fundamental for the development of knowledge capable to facilitate that adoption. But the full benefits from the adoption will accrue only when post-adoption implementation difficulties are overcome.
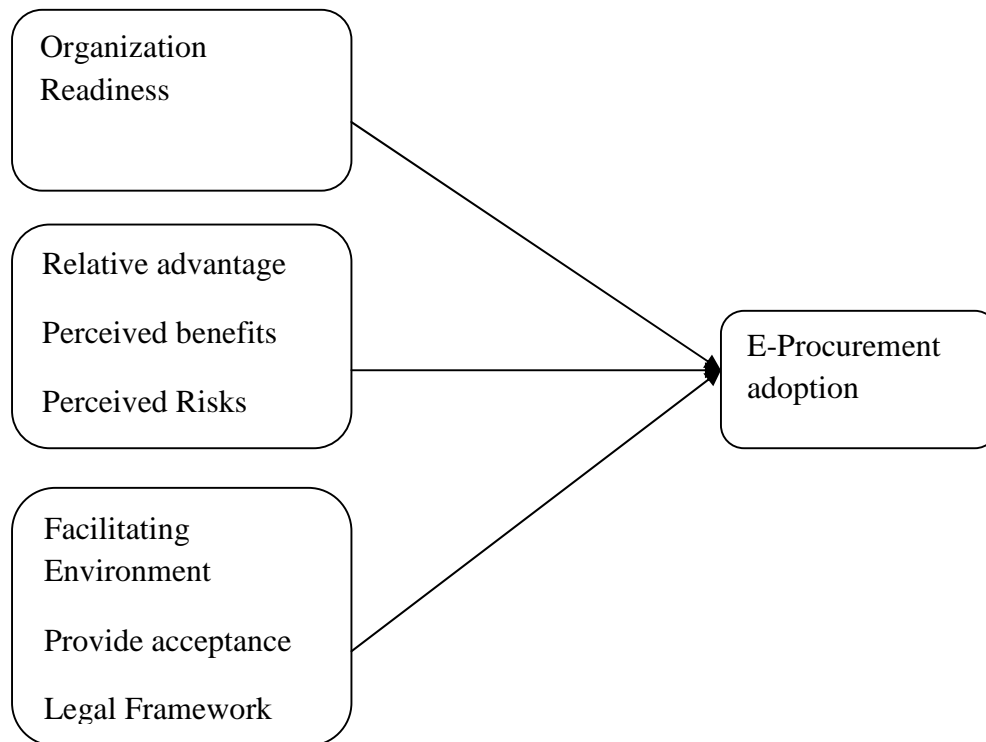
Figure 2. 2 **E-Procurement Adoption Model Framework (Bayton, 2008)**

2.2.6 Business-to-Customer Interaction

Business-to-consumer retailers include those such as amazon or barnes and noble (Gruen, *et al*, 2005) that sell retail products directly to consumers over the Internet. These retailers include start-up companies that began life as Internet companies, as well as established "bricks-and-mortar" and catalogue mail order retailers that added internet retail stores to their existing businesses. Integrative knowledge for this internet business links the retailer to its suppliers and

customers, conceptually similar to the integrative knowledge employed by Wal-Mart (Baets, 2002), in the example in our article.

Like Wal-Mart, Internet retailers may find integrative knowledge helpful to incremental learning related to core knowledge about retail sales, because integrative knowledge enables retailers to obtain feedback about customer buying patterns (Garver & Mentzer, 2009). In order to capitalize on the potential of the Internet in this manner, existing bricks-and mortar and catalogue mail order companies need to alter their integrative knowledge, via either incremental or step function learning (Garver & Mentzer, 2009). Start-up Internet retailers face at least an equally challenging task. Since the companies are starting from scratch, they require step function learning in both core knowledge and integrative knowledge (Garver & Mentzer, 2009).

When consumers purchase a product or service they follow a series of complex interaction and decision making process steps (Kwon & Zmud, 2007). Each step of the purchasing process has its own characteristics and the importance of each step depends on many factors like the type of product or service, the number of products, the product complexity, and much more (Subramaniam *et al.*, 2002).

Many purchasing models have been developed on decision steps (Olhager & Selldin, 2003). Some of these models are developed for the more traditional offline purchasing while others are specifically developed for online purchasing. Some examples of models based on more traditional offline purchasing are the models of (Olhager & Selldin, 2003). Using a traditional consumer behavior model to explain online purchasing might not be fully right since the online customer differs from the offline customer as mentioned before. The online customer for example has a larger access to information and more market knowledge compared to the offline customer. The purchasing steps therefore might also be different. This has been recognized by

(Klein & Ford, 2003) and they proposed a new ten step model specially designed to cover the E procurement purchasing steps. (Klein & Ford, 2003) found that the complexity of the behavior model is depending on the characteristics and complexity of the products. During the purchasing process of complex products, consumers are likely to repeat the steps of searching, examining, evaluating and comparing products using multiple search engine sites to evaluate and compare products until they find the required product (Klein & Ford, 2003).

This is an important finding because it indicates a need to classify the functionalities on B2C websites according to purchasing stepping a purchasing model (Klein & Ford, 2003). The benefit of model of (Klein & Ford, 2003) is that it encompasses the online purchasing behavior while retaining the different steps needed for different product purchasing. The downside of this model is that it is large and difficult to classify B2C functionalities to one specific step. There is much overlap between the different steps when dealing with B2C functionalities. A search and compare functionality for example can be used to search products, examine the products and also evaluate the products. For this reason the purchasing model preferences of this master thesis goes to another online purchasing model for the classification of onlineB2C functionalities. This purchasing model is developed by (Zhang *et al*, 2002) which is also developed to be used for online purchasing but is less extensive compared to the model of (Klein & Ford, 2003).

2.3 Conceptual Framework

According to Mathieson, (2001), a conceptual framework is a virtual or written product, one that explains, either graphically or in narrative form, the main things to be studied- the key factors, concepts, or variables and the presumed relationships among them. Conceptual framework, according to educational researcher (Stratman & Roth, 2004), are structured from a set of broad ideas and theories that help a researcher to properly identify the problem they are looking at,

frame their questions and find suitable literature. Most academic research uses a conceptual framework at the outset because it helps the researcher to clarify his research question and aim. This study will adopt a conceptual framework to describe the relationship between the various factors enhancing procurement performance in state corporations in Kenya (Locke & Latham, 2002).

Specifically, the study aimed to investigate the role of E-procurement strategy in enhancing procurement performance namely: customer service level strategy, cost reduction, inventory optimization, buyer/supplier collaboration and auditability of the procurement process (Joel *et al*, 2009). According to Shakir *et al* (2007), every part of an organization contributes to external customer satisfaction by satisfying its own internal customers. This entails that whatever the effects of E-procurement on the procurement department will inevitably affect other departments because they rely on procurement to bring in materials at the right time, price, quality and from the right source which are used to produce goods for the end customer. Recognizing the importance of the internal customer is not new and is very important if poor internal service level exists when the final service to the external customers will be diminished (Olhager & Selldin, 2003).

Further, there has been an increasing emphasis on Supply Chain Management (SCM) which is creating a greater focus on the supply management link in the supply chain. This focus will continue to grow as firms continue to adapt E-procurement strategies in order to take advantage of the internet (Presutti, 2003). Unlike the other functions such as marketing, the role of procurement has often been down played in many organizations. It is often held in low regard by its internal customers who see the function as bureaucratic, difficult to deal with, sometimes (Mathieson, 2001). Based on this review, the following hypothesis can be formulated:

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Customer Service Level strategy
• Satisfaction
• Customer Loyalty
• Information
• Exchange
• Coordination

Procurement Cost Reduction strategy
• Automation
• Integration
• Strategic Sourcing

Inventory level Optimization strategy
• Profitability
• Customer Service
• Pricing Policies

Buyer/Supplier Collaboration strategy
• Customer Expectation
• Decision Making
• Incentive

Auditability and Compliance strategy
• Specification
• Adoption
• Transparency and

Performance of state corporations
• Organizational Efficiency
• Order Fulfillment
• Quality Services

Independent variables   **Dependent variable**

Figure 2. 3 Conceptual Framework

2.3.1Customer Service Level strategy

For an organization to be truly effective, every single part of it, each department, each activity and each person and each level must work properly together, because every person and every activity affects and in turn is affected by others (Murambi, 2005). Central to this is the notion of the internal customer "every part of an organization contributes to external customer satisfaction by satisfying its own internal customers" (Heijden *et al*, 2003). From emanating perspective this internal customer notion is also well accepted (Panayiotou *et al*, 2004) has led to the concept of internal marketing (Beamon, 2008). However, the application of notion of the internal customer service level strategy to e-procurement is relatively new. The impact of e-procurement on an organization process and routines has concentrated primarily on the internal alignment characteristics of systems and practices within IT/IS strategy (Venkatraman, 2001).

As the current market place becomes more competitive, customers tend to become more and more demanding. In the event of challenges such as intensifying global competition, the continuous increase in customer expectations and customers subsequent demands as the quality of service improves (Palaniswamy & Tyler, 2000), service firms unable to effectively cater to the needs and wants focustomers risk not only losing dissatisfied customers to competitors, but also ultimate erosion of profits and consequently, failure. Indeed these challenges are forcing organizations to break free from the tradition customer satisfaction paradigm, to adopt proactive strategies which will assist them in building and sustaining a competitive edge (Hines, 2004). One strategy that has been related to success in service level is the concept and quality of management. According to (Aberdeen Group, 2001) service level quality has become a significant differentiator and the most powerful competitive weapon which many leading service organizations possess. Leading service organizations strive to maintain a superior quality service

level in an effort to gain customer loyalty (Yu *et al*, 2006). Therefore, a service organizationslong term success in a mart is essentially determined byits ability to expand and maintain a large and loyal customer base. Despite the fact that customer service level strategy and loyalty is essential for business survival (Wu *et al*, 2007), the relationship between perceived service level quality and customer loyalty remained relatively under developed (Gattiker, *et al*, 2007)

Supply chain management offers great potential for organizations to recue costs and improve customer service level strategy performance. In todays competitive market companies are pressured to achieve high customer service levels strategy with fewer resources (i.e. inventory, expedited shipment and overtime). Additionally pressures of increased product variety shorter product life cycles, and shorter desired delivery times have made it increasingly difficult to achieve high service levels with limited resources.

The customer service level strategy (percent of orders which customers receive on time) an organization provides to its customers is one of the most important factors of an organizations success. However, management is typically unclear as to the ideal customer service level strategy to strive for and the amount of inventory required in order achieving it. In practice, service level and inventory goals are often set based on experience, without using a scientific approach according to (Eisenhardt & Graebner, 2007).

2.3.2 Procurement Cost Reduction strategy
Accordingly, any good e-procurement software system today is designed to greatly reduce the time and effort required to complete purchasing transactions by eliminating traditional paper chain of requisitions, approvals, receiving and payment reconciliation. The key features of most

of these e-procurement approaches enable users to find an item in an electronic catalog, create a requisition, have the order requisition routed for approval if necessary, create and transmit the order to vendors, and (in varying degrees) help to automate the payment and invoicing process (Berger & Zeng, 2006). One of the most important and beneficial effects of an e-procurement framework is that for the first time, business information systems are well integrated that they can provide an organization with the key tool cost data that allows them to make considered decisions on purchases, discount requirements and supplier partnerships (Bensaou and Venkatraman, 2006). In many ways, it is only now that the internet and advanced software systems make it possible to capture accurate and timely information on every purchase, that companies can analyze complex buying patterns and make truly informed decisions on strategic sourcing option (Dubois & Araujo, 2007).

The value of E-procurement adoption is defined as the benefit over costs of implementing. E-procurement adoption is justified only when the perceived benefit is large enough to cover the cost. The high cost of initial investment associated with the required infrastructure and training of personnel, quantifying the return on investment often becomes a barrier to state corporations (Evenett & Hoekman, 2004).

2.3.3 Inventory Optimization strategy

In today's dynamic and competitive businessenvironment, inventory managers of manufacturing and retail organizations are increasingly under pressure to develop systems that enable them to minimize inventory costs, improve the flow of inventory in the supply chain and meet customer demand in a timely fashion. In most organizations, inventory can be as much as 50 percent of the firm's fiscal assets (Basheka, 2008). A properly managed inventory systems can considerably improve the firms performance (Mandrish & Schaffer, 2005) and productivity by reducing the

cost of activities related to intra as well as inter firm inventory management. In general inventory managers through inventory optimization strategy are able to bring about equilibrium between over stocking and under stocking and one major concern that is to produce or stock the right amount of inventory to meet demand. On the other hand, excess inventory results in increased carrying or holding costs limiting the availability of capital to the firm to invest in other business projects. On the other hand, not having enough inventories could result in shortage costs such as lost sales and even customers.

The classic inventory model is the economic order quantity (EOQ) which finds the most economic balance between inventory carrying costs and ordering / set up costs. The supply chain management approach to cost minimization of inventory implies that a business can no longer cope in the global market place by becoming an efficient entity by itself. This approach requires careful planning and coordination of all activities of the supply chain partners who are involved in the movement of materials and products from the suppliers to manufacturers to distributors (wholesaler/retailer). Managing inventory is considered to be one of the most important areas of supply chain management and inventory optimization strategy (Presutti, 2003).

Over the years, businesses have adopted new technology to integrate business activities in order to lower costs in their operations. Advances in information technology, expansion of the internet and electronic business have made it possible for suppliers and buyers to better manage their supply chain management systems by establishing electronic linkages, improve inventory management, control and optimization and monitoring the flow of goods in real time. In recent years, many firms have invested in enterprise resource planning (ERP) in order to integrate all businessactivities   into a uniform systems with a common and central database in the organization (Davenport, 2008). Recently ERP systems have become apart of the extended

enterprise and service as a platform for collaboration between business partners in the supply chain by providing decision making support to improve supply chain performance (Hong and Zhu, 2006). The use of technology in businesses today and the availability of information in corporate databases requires inventory managers to have access to an interactive decision support system that allows management to evaluate the firms alternatives with regard to supply and demand variability and find a solution that is satisfactory for the firms supply chain and its partners.

Intensifying competition and modern management philosophies drive companies to find ways to reduce working capital tied to business operations, including maintenance material inventories (Hout, 2009). Inventory management optimization differs from the management of other manufacturing related inventories for example, raw materials or work in process (WIP) inventories. The function of inventory optimization strategy derives from the need of maintaining the right order fulfillment. The maintenance material optimization problem has been extensively researched during the past decades and an abundant number of models exist in the literature (Cagliano *et al*, 2005). One of the most well known models, multi echeton technique for recoverable item controls (METRIC) was developed for multi echeton, one for one, inventory systems by (Antonette *et al*, 2002).

Retail replenishment is a high value activity and as such according to the us commercial department (Candrasekar & Shaw, 2002) 1.1 trillion us dollars in inventory support as 3.2 trillion us dollars in annual us retail sales. This inventory is spread out across the value chain, with 400 billion US dollars at retail locations. Firms are now sourcing up to 75% of the value of goods and services globally and uncertainty of demand creates longer safety lead times resulting in high inventory value (Croom, 2000)). Demand conditions are such that it is difficult to meet

supply chain expectations as either some supply chain members will be required to expedite shipments (high cost) or hold high levels of inventory (Harrington, 2001). High levels of stock adversely affect profitability (Mabert *et al*, 2001).

To coordinate demand requests, transportation and inventory management utilize the benefit of strategic supply chain tools such as information technology to lower and make ordering more efficient (Armitage & Conner, 2001). This real – time information in regard to inventory levels throughout the supply chain assists in lowering the costs of back orders, lost orders and obsolescence (Davis, 2009). However, inventories at retailers actually have not decreased   in time (Croom, 2005),) Also, (Gefen *et al*. 2003) use firm level data and conclude that inventory turnover has a downward sloping trend between 1987-2000 for Us retailers. With such a stockpile inventory, it should be expected that stock outs at the retail level should be very low, but research suggests that it is not the case.

2.3.4Buyer/ Supplier Collaboration strategy

Collaboration has been defined as "two or more chain members working together to create a competitive advantage through sharing information making joint decisions and sharing benefits which result from greater profitability of satisfying customer needs than acting alone (Hart & Saunders, 2007) buyer\supplier collaboration strategy is departure from the anchor point of discreteness that underlies business transactions to a relational exchange as the roles of supplier and buyer are no longer narrowly defined in terms of simple transfer of ownership of products (Makau & Onyango, 2010)

By focusing on relational exchange collaboration entails the activities that are undertaken faintly rather than unilaterally (Howells *et al*, 2003) suggest that the requirements for effective

collaboration are mutual objectives ,integrated policies joint decision making information sharing of benefits and losses

Buyer/supplier commitment is the belief that trading partners are willing to devote energy to sustaining the relationship whereas according to (Davenport, 2008) buyer\supplier commitment is an enduring desire to maintain a valued relationship. Through commitment partners dedicate resources to sustain and further the goals of the collaboration. (Hsu & Chiu, 2004) propose that the expectation of relationship is important for motivating collaboration in inter-organizational relationships noted that information sharing joint decision making and incentive alignment are factors that facilitate collaborative action through information exchange between the buyer and supplier.

The collaborative management of key buyer and supplier collaboration strategy is an important aspect physicaldistribution and logistics management. In deed over the last decades interest in collaborative relationships has surged. (Hjelmborg *et al*, 2000), for instance, argued that closer buyer-supplier relationships have evolved over the past two decades from transaction processes based on arm's lengthagreements to collaborative processes based on trust and information sharing and that collaborative buyer and supplier relationships play an important role in an organization's ability to respond to dynamic and unpredictable change.

2.3.5 Audits and Compliance strategy of the Procurement Process

International trade is growing rapidly for both developing and developed countries (World Bank group, 2005) and economies of countries suchas the USA and china have become increasingly intertwined (Akech, 2005). Multinational corporations must carefully consider how to manage their international affairs because many managerialprinciples are influenced by the cultural

context in which they are applied. Western management systems may not work well in Asian cultures (Wycisk *et al,* 2008) and norms of ethical business behavior vary widely across capitalist nations (Premkumar *et al*, 2004). Whistle blowing in particular may be affected by culture since perceptions of right and wrong, justice, morality and loyalty can differ across countries (Maleyeff, 2003). Similarly, the effectiveness of a code of conduct may be influenced by cross-cultural differences that shape perceptions about ethical dilemmas (Mabert, *et al*., 2003).

What may be considered legitimate in one culture may be considered corruption in another culture and this lack of common understanding makes combating national and international corruption difficult. For example what is thought of as a gift in japan could be construed as a bribe in the USA (Wu & Chen, 2005). Another example is the propensity for managers in china to divert resources in 'parallel operations' or other companies that they also have as take in (Sulek *et al*, 2006). The internal auditing professional is also affected by cultures. Internal audit appear to lack a clearlydefined role, and may have lower status, in the Asia – pacific region where the confusion culture is prominent. For example, in Singapore, internal and external auditing is used to train future managers, potentially compromising independence that objectivity (Young, 2009).

In addition, although company's useinternal audit to combat corruption by routinely conducting compliance audits and internal audit was the top ranked means of combating corruption by certified fraud examiners (association of certified fraud examiners, 2008). Managers in Japan and Latin America had greater confidence in internal audit than those in central and Eastern Europe (Young, 2009). Perhaps training and education of internal auditors in those European regions

could be improved to help them identify warnings signs of fraud, understand how to preserve electronic evidence properly within a given country's legal framework, perform surprise audits when necessary and compile a database of reported incidents.

Cartal activity is characterized by competitors who agree to fix pieces of the goods they sell, collaborate on bids to procure work, establish output restrictions or otherwise share and divide markets by allocating customers, suppliers, territories or business (OECD, 2009). Such behavior is illegal in many counties, but this has not always been the case such as in japan where cartel conduct has been positively encouraged in order to enhance the economy (Pathak *et al*, 2007).

Today, cartel conduct is regarded as corporate crime committed by individuals in order to advance the corporation and /or themselves. A cartel is an illegal commercial agreement, practice or arrangement, and by definition involves a number of players and a variety of complex factors.

E-procurement can be used to describe various forms of communication technology at different stages of the procurement (Pavlou, 2003). This may include identification, specification, search, sourcing, negotiation, order placement, receipt registration, payment and post-supply evaluation. Purchasing literature has emphasized the potential contribution of e-procurement in lowering transaction costs and prices paid for goods and services (Croom, 2000).However, many organizations report dis-appointing results from e-procurement implementation, largely as a result of non- compliance by end-users (Aberdeen Group, 2001). Arbin (2003) argues that if the potential be achieved, user adoption is crucial. This view receives support from a number of studies reporting compliance and the financial benefits of e-procurement (Pavlou, 2003).

The concept of e-procurement non-compliance builds on the broader notion of maverick buying. E-procurement system compliance can help to reduce transaction costs, by enabling a higher

level of accuracy in requisition, invoicing, and payment through electronic documentation and process automation (Xu *et al*, 2005). By comparison orders placed outside of an e-procurement system are unable to transmit errors and require additional resources during invoice and payment (Croom, 2000). Users can avoid using a system and place them orders in a variety of ways, including the use of petty, paper based orders or making direct contact with suppliers by telephone. Collections made from suppliers and the retrospectively ordered and receipted through e-procurement system also represent system non-compliance. Increased attention has been paid to how implementation of e-procurement systems can help to increase control over the procurement process with organizations (Wu *et al*, 2007). In some studies, e-procurement has been credited with increased transparency across functions, which may subsequently improve the extent to which individuals use the system and comply with contracts (Subramaniam and Shaw, 2002) suggest that the migration from traditional procurement processes to e-procurement is one of the most effective ways to improve compliance amongst users. However, other studies postulate that simply implementing e-procurement does not, itself guarantee increased compliance. Specifically, it is argued that user perceptions of e-procurement provision may influence levels system and contract compliance, and deserves further exploration (Turban et al 2006). For example (Siemsen *et al*, 2008) argue that even when use is mandated, individuals may find ways to circumvent official purchase processes if they are dissatisfied with e-procurement provisions. Contracting and procurement practices have control weaknesses, with moderate risk exposures that require management attention related to contracting and government procurement planning, monitoring mechanisms and clarity on procedural requirements and expectations (Maleyeff, 2003).

The concept of 'governance' can be used descriptively. In deed it is a term without agreed usage (McCrudden, 2004)). The term has recently evolved from the traditional public administration concept of 'governing'. It developed from the descriptive, positivist public administration, school of thought which initially intended to give new meaning to the traditional role of government by focusing on the effectiveness and efficiency of the outputs and outcomes of government actions. One way of looking at the characteristics of good 'governance' is to contract it with what can be called 'Mal governance' or 'mis governance'. Another way of approaching the concept is to understand what it means in itself. A third way is to look at the potential benefits of institutionalizing goods and sustainable governance (Locke & Latham, (2002).

2.3.6 Performance of State Corporations

For decades procurement performance has been attracting great attention from practitioners due to poor performance resulting from non-adherence to power processes and procedures. The procurement function has not been given the recognition it deserves in developing countries, in most public entities, regardless of the effort by the partners like the World Bank, the international. This could be deliberate or sheer ignorance on the value the procurement function could contribute to any organization (Zhu, 2002). While functions like Human Resource (HR) and Finance can have their performance measured, this is not the case with the procurement function. The failure to establish performance of the procurement function has led to irregular and biased decisions that have costly consequences to every entity (Subramaniam & Shaw, 2002).

(Kamanda, 2001), suggested that procurement performance starts from purchasing effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity. According to (Venkatesh *et al*, 2003) purchasing

performance is considered to be the result of two elements; purchasing effectiveness and purchasing efficiency. For an organization to change its focus and become more competitive performance is a key driver to improving quality services while its absence or use of in appropriate means can acts as a barrier to change and may lead to deterioration of the purchasing function (Ajzen, 2007).

Organizations which do not have performance means in their processes, procedures, and plans experience lower performance and higher customer dissatisfaction and employee turnover (Andersen & Christensen, 2005). Measuring the performance of the purchasing function yields benefits to organizations such as cost reduction, enhanced profitability, assumed supplies, quality improvements and competitive advantage as noted by (Basheka &Bisangabasaija, 2010).

Although the need for performance in procurement has long been recognized, for a variety of reasons, many organizations fail to measure it adequately (Cagliano *et al*, 2003) review the history of PP in the literature through the 1980s and early 1990s and conclude that a general weakness of "traditional" measures is that they recognize and reward mainly short-term gains, rather than long-term ones. (Donovan & Williams, 2003) argued that measuring long-term impact is notoriously difficult. The literature on e-PP is divided in terms of its impact at the operational or strategic level of the organization. At the operational level, there have been several studies investigating the impact of EPTs on PPR and PP including (Majumdar and Venkataraman, 1998). It is argued that by utilizing new procurement technologies, firms can increase the efficiency of their entire procurement process and, thereby, can achieve higher firm performance (Walker *et al*, 2002). Research by (Gribbins *et al*, 2003) has also described PPR and how these positively impact PP in terms of cost, time, satisfaction, quality, stock, and value.

2.4 Empirical Review

Recent e-service for customer service level strategy research has been primarily concerned with the provisions and development of service between organizations and its external customers, Warner (2000) for example developed ten key steps in the development of an e-service strategy to help create outstanding web-based services (Yu *et al,* 2008) investigated issues or customer participation in the delivery of services, (Wu *et al*, 2007) while concerned with quality of the customer experience considered the issues for service design. (Venkatraman, 2001) investigated the value-added features e-service need to provide to gain market share and profits, (Premkumar & Ramamurthy, 2005) developed a model linking customer perceived quality with e-service to the SERQUAL dimensions. Walker *et al* (2002) investigated the reasons why consumers accept or reject technology.

Electronic customer relationship management (CRM) while recognizing the potential for data mining, improved segmentation and one-one marketing appears also to have been primarily concerned with managing the relationship and indeed the contact with customers (Saunders & Clark, 2002),). Enterprise resources planning (ERP) systems in particular have been concerned with trying to integrate and co-ordinate the various internal functional areas to break down those functional boundaries and ensure that marketing, operations and financial decisions, for example, are all made using the same data. CRM systems are also used to co-ordinate the supply chain by ensuring better sharing of information.

According to (Mabert *et al*, 2010), process automation of procurement function helps in reduction of cost to firms in various industries. Cost surveys in US have recently revealed what

was suspected for some time that by the time a requisition makes its way through a fax and internal mail paper maze of approvals to the central purchasing department, administrative costs-typically runs from $ 40-$ 150- often exceed the cost of the purchase itself.

According to (Shaw & Subramaniam, 2002), the value of E-procurement can be defined as price benefits plus transaction minus technology lock in cost. Price benefits result from saving in search, negotiation, contracting and coordination costs. With technology lock in cost in choosing and using a specific procurement system, including switching cost. Global sourcing is now an automatic expectation to respond to competition. But the choice of where to obtaingoodsand services is not a static decision. Procurement cost reduction strategy is a continual re-evaluation is a continual re-evaluation of the cost of each item bought and procured for.

The perceptions of purchasing managers relative to low cost services, contracts goods and services, effective outsourcing processes, requires good processes to evaluate the many factors related towhere to outsource, that is how to find the supplierlocations globally that align best with future plans (Hanley, 2002). Such processes will even include a screeding step with repsct to geography since factors such as infrastructure, market attractiveness and cost levels are characteristics of regions or counties rather than specific supplier's (Alaniz & Roberts, 1999). These entire screening factor on supplier's for cost reduction in delivery, transportation, order fulfillment leads procurement mangers to consider low supplier distribution and delivery.

Global studies have shown that stock-outs occurs at 8.3% of all retail sales worldwide (Global Healthcare Exchange, 2003). Research studying 71,000 customers worldwide concluded that customers lose patience with stock outs. Only 15% of the customers will delay the purchase to another time until the customers will delay the purchase to another time until the item is back in stock. On the other side, supply management (which includes supplier selection, contracting, and

quality and inventory control) is the responsibility of operations managers. Due to global supply chains, inventory interactions often involve many different firms with long production replenishment times and inventory in balances (Brousseau, 2000),). Obtaining the optimal constant price jointly with inventory policy is also important to evaluate the benefit of dynamic pricing policies.

Recent empirical research shows that information s haring in relationship increases procurement performance (Deeter-Schmelz *et al*, 2001). And that collaboration with external supply chain entities increases internal collaboration which in turn improves procurement performance (Emiliani & Stec, 2005). It is now common place for companies to dedicateengineers to key suppliers to learn about their systems, procedures, and processes ino order to improve communication, reduce errors, and enhance capabilities (Emiliani & Stec, 2005). Despite or because of these developments, here is an increasing feeling that collaborative buyer- supplier relationships can be 'too close for comfort', particularly with powerful parties (Macdonald Maleyeff, 2003). The businessenvironment has become increasingly constraining and complex. Consequently it is difficult for an organization to create internally all the knowledge required to maintain a competitive advantage.

Firms must therefore, be able to acquire and exploit knowledge residing in relationships with their business partners. The literature shows that buyer –supplier relationships are particularly conducive to transfer of knowledge that can enhance operational performance (McManus, 2002). Firms capacity to exploit and benefit from knowledge situated in buyer supplier relationship is thus a key variable in maintaining a competitive advantage. Collaborative buyer-supplier relationships have gained heightened attentions in practice and research as a critical means to manage the complexities of shortened product life cycles, increases in product variety,

customization demands and greater geographical dispersion of supply chain members (Hamner & Qazi, 2009). In deed empirical evidence provides support for the benefits of developing inter firm relationship to govern inter firm interactions such as sharing knowledge, skills, assets, and innovations as well as improvement in quality ,delivery and profit (Government of Uganda, 2006). Collaboration between firms, personal relationships lie at the core of interfirm relationships (Adams *et al,* 2002). Htus, supply chain boundary spanners, personnel who operate across and interact with channel members outside the firm (customers, suppliers and third parties) are the main conduct through which such buyer and supplier relationship thrive (Handfield, 2003),).

Choi *et al* (2001) have suggested that in post-communist state countries there is a large use of informal practices because citizens do not trust that their problems can be solved formally. This attitude is also applicable to Albania as a post-communist country which is still under political transition. Albania is one of the most corrupted countries in Europe and transparency challenges still need to be addressed. There are direct factors and peripheral elements that can enforce and promote transparency. According to (Gruen *et al*, 2005) lack of meritocracy in the public administration and strong political connections are sources of law evasion and consequently corruption. (Osmonbekov *et al*, 2002) suggests that these issues can be solved through staff rotation in the public administration. On the other hand, this practice can have negative consequences on the civil servants image and expertise.

Several research studies have focused on the external auditor's (reliance on the internal audit function (Pavlou, 2003). Typically they have looked at the external auditor's evaluation of the competence, objectively and work performance of the internal auditors and his order

subsequently decision regarding the appropriate extent of reliance. (Min & Galle, 2002), described governance as 'traditions and institutions by which authority in a country is exercised for the common good". This includes, the process by which governments are selected and replaced, the capacity of the government to formulate and implement sound policies effectively and respect of citizens for the institutions that govern economic and social interactions among them.

According to (Larsson *et al,* 2008) governance is "…the act or manner of governing, of exercising control or authority over the actions of subject a system of regulations'. (Larsson *et al*, 2008) amplified this definition by describing governance as 'working and listening to citizens in order to manage the public's resources and respond to the needs and expectationsof citizens as individuals, interest groups, and society as whole". Governance includes active cooperation and engagement in policy processes among all stakeholders including citizens. An associated term described by (McCrudden, 2004) is 'people centred governance' which is characterized as partnerships between government and society in which consultation is a key issue.

(Hung *et al*, 2006) suggests e-procurement can be condensed into the following six processes - "e-sourcing, e-tendering, e-informing, e-MRO (Maintenance, Repair and operating materials), ERP (Enterprise resource planning) and e-collaboration". The principle of electronic tendering is simply to provide a faultless system of transmitting input from the contractor's tender through to contract management removing the inefficiencies, delays and cost involved in manually processing tender information and re-transcribing for contract management activity. (Jacobs & Bendoly, 2003), suggests changes must take place if electronic solutions are to become predominant and companies are to remain competitive in the new era.

By implementing e-procurement system, several benefits could be gained. Several studies have explored the benefits of implementing e-procurement system; one of them was by (Mabert *et al*, (2003), which focused on the status of e-procurement in Small and Medium Enterprises (SMEs) in the South Coast of Massachusetts. This research showed that e- procurement was poorly understood by SMEs and they were not reaping the benefits of e-procurement.

Gefen *et al* (2003) conducted a case study that focused on analyzing the Greek government procurement processes carried out by the General Secretariat of Procurement. This study identified tangible (quantifiable) and intangible (difficult to quantify) benefits. Tangible benefits included cost of supply reduction, tender costs reduction and lead time savings. Intangible benefits included process improvement and organizational benefits. Another study was conducted by (Croom, 2004). This study exploited issues related to implementation and impact of e-procurement in nine public sectors in the United Kingdom (UK). Five impacts were identified in this study, namely: change in total cost of acquisitions, changes in organizational characteristics, changes in governance structure, management and implementation.

(Kamanda, 2001) also conducted study on the impacts of e-procurement in the procurement process on the supply chain by analyzing the project of Hong Kong Textile. They used SWOT analysis to describe impacts in each stage of procurement process. Strengths and weaknesses were used as internal performance measurement in the procurement process, for example, efficiency, and effectiveness. Opportunities and threats were identified as the electronic environments that support e-procurement. (Maleyeff, 2003) state that instead of bureaucratic, hierarchical structure, organizations should form more flexible, decentralized team and alliance based networks that allow employees to react to market shifts. This research that assumes that e-

procurement involves a network of actors that operate both inter and intra-organization processes.

Firms are making significant investments in their e-business strategies and IT; yet some managers remain unclear about how to adapt their organization to new strategies and processes. Advancements in procurement technology create the opportunities for new forms of arranging work, such as collapsing boundaries between suppliers and customers make it imperative for management to identify the key attributes and processes required for competitive advantage. (Gribbins *et al*, 2003) assert that access to memory is vital because a chain lacks many of the formal and informal mechanisms that guide decisions in established firms, such as hierarchy (formal) and strong vales, traditions and beliefs (informal).

According to the literature in the field, security (Croom, 2000) and authentication are two other major challenges present in e-procurement. The impacts of technological errors, system constraints and technological failures, which are seldom discussed or acknowledged, are also a major concern for e-procurement (Hamner & Qazi, 2009),). While tools such as e-signature, e-notice or e-bids do significantly reduce processing time – these constructs might raise security issues, cause costly errors and authenticating bidders problematic. In this sense, much of the responsibility of ethical behavior is placed on the vendors which, given their motives, may place additional pressure on procurement to validate the integrity of the process; again driving up implementation costs. The public agency is limited in its ability to insure that the internal structures of suppliers fits within the broader context of the rigorous ethical expectations of the public sector.

 (Karahanna *et al,* 1999) theory of intelligent failure attempts to provide the answer, the model has recently been adapted as describing how to "learn from failure". Though there have been

very little studies from e-Procurement perspective, some studies relating organisational learning to failures can be found in the IS literature. (Heijden, 2003) view organisational learning as a series of processes interspersed with "small" successes or failures. According to the authors, organisations will sometimes fail, giving them opportunity to learn from their failures. They further reason that the experience of failure produces learning readiness and if the cause of the failure is determined, organizational learning takes place.

According to (Barua *et al*, 2005), organizations find it difficult to learn lessons from problems and seldom question the underlying basis of their own problems. (Bozarth *et al,* 2008) further support this notion that public sector organizations often lack innovation and are resistant to change – they tend to emphasize conformity and defend status quo instead of focusing on creativity, improvement and change. This is especially evident when implementing innovative information technologies such as e-Procurement systems. As the implementation of e-Procurement initiatives in the public sector demands exchange of information within and among users (specialist-users) and suppliers (large suppliers and local/regional SMEs), the procurement organization must have capacity to exercise organizational learning and share the lessons learnt. However, despite many examples of public sector e-Procurement failures in the popular business press (Shim *et al.,* 2001), organizations do not document and share the lessons learnt pertaining to the failed e-Government implementations because organizations are interested to publicize only successes (Subramanian & Shaw, 2002) and are apparently silent on failures, making it difficult to researchers to obtain data (Sheng, 2002).

2.5 Critique of Existing Literature Relevant to the Study

Although extensive research has generally been documented, few studies have been undertaken in Kenya on the role of e-procurement strategy in enhancing procurement performance. (Makau, & Onyango, 2010) looked at the factors that have driven the adoption of e-procurement in tecommunication 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 De-Boar and Heijboer (2002). However, little attention has been given to the role of e-procurement strategy on procurement performance. In addition, the role of e-procurement attributes to such things as cost reduction, improved buyer/buyer collaboration, promotes compliance with respect to audits by all the drivers in supply chain management inspite of the disadvantages that its adoption and implementation would confer to the organizations and their supplies (Weiss & Thurbon, 2006).

E-procurement includes negotiation with suppliers, and research and development co-ordination taking place on the internet and electronic market (Yen & Ng, 2003). Research conducted on B2C E Commerce focus on factors which influence the purchasing decision of the customer in the online B2C world. Furthermore much academic research on the success and fail factors for the implementation of E Procurements as well as the benefits of E Procurement usage was found. While the importance of online B2C shopping as well as the importance of E Procurement systems is recognized by many academic researchers and practitioners, limited research interest was given to the effects both research fields have on each other on consumer attractiveness. This gap in literature is important because the rapid growth of the online

B2Cmarket and the large increase of website features offered by websites to consumers (Huang et al., 2006) could lead the E Procurement user to purchase products outside the E Procurement system. This is important because the success of E Procurement solutions depends for a large part on the (internal) users (Angeles *et al.,* 2007). This research aims at reducing this gap in literature by identifying the most promising functionalities found in the online B2C world and assesses a fit of these functionalities in a B2B E Procurement solution.

Previous research by (Morris *et al*, 2000) reveals that further organizational characteristics need to be considered studying adoption of E-Procurement at the municipal level. Apart from available resources, public managers need sufficient resources and mandate of the political leadership to successfully adopt E-Procurement. As argued by (Heijden, 2003), 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.

(Morris *et al,* 2000) shows that the empowerment of the central procurement unit is another important determinant of E-Procurement adoption. The empowered employees decide on the public supplies, services and works that the organization requires and from which supplier it is procured from. He argues that it is much easier to take an adoption decision when a strong leadership of the central procurement unit is involved. As a result, the following hypothesis is put forth.

2.6 Research gaps

Previous studies have adequately described the numerous drivers and barriers for e-procurement in general procurement but no work has been published in the Kenya with regard to the role of e-procurement strategy in enhancing procurement performance. Rankin *et al* (2006) published a study into the role of e-procurement strategy in enhancing procurement performance in Canada. This was the first piece of research to investigate the role of e-procurement in enhancing procurement.

According to Lysons & Gillingham, (2003) firms have made considerable gains as a result of having e-procurement systems installed. The use of internet and technology based systems in procurement has led to lower costs and efficiency in the process (Heijden, 2003). Some firms on the Kenyan corporate scene have adopted the use of e-procurement as a strategy in enhancing procurement performance though not to the meaningful extent (Hamner, 2009).

There were studies done on the adoption of e-procurement by the public sector in the developed world. Thus the need to validate these in the context of the developing countries and in specific the private sector as the developing countries since the implementation of e-procurement will adversely affect positively performance in terms of increasing the effective and efficiency of e-procurement in the private sector. Besides the studies were carried out rest entirely on the private sector, but the need to deploy this service to the public sector especially the state corporations which are service based institutions. Thus the study focuses on how e-procurement strategy enhances procurement performance in State Corporation in Kenya.

2.7 Summary

Though E-procurement has been touted as a revolutionary tool in supply chain management, state corporations are still slow in embracing it. This is inspite of the advantages that its adoption would confer to the organizations and its suppliers alike. Key benefits identified include: Cost savings, improved efficiency and better relations with suppliers. Many past studies examining this phenomenon have advanced several factors that constitute major hindrances to the adoption of e-procurement. These factors include: perceived complexity of e-procurement, resistance to change, culture, lack of proper regulatory mechanisms, cost and non- availability of IT infrastructure and absence of clear e-procurement adoption and implementation strategies. Among these hindrances, organizational culture has been found to be the greatest challenge to e-procurement adoption. Collaboration with suppliers can be encouraged by the introduction of e-procurement tools. These make visible the management of information needed to enable more effective collaboration. As more data becomes visible and can be shared, makes e-procurement identify for collaborative initiative and shared framework contracts.

The popularity of the internet has significantly influenced organizations' to use new inter-organizational (IOS) technologies such as e-procurement. An e-procurement system is an information technology based purchase system which is at the input end of the supply chain and the procurement processes (Presutti, 2003). It has been commonly accepted that information structures such as e-procurement systems becomes increasingly connected and embedded with other infrastructures to initiate the growth of enterprises (Venable et al, 2005). In line with this notion, the usage of information technology in e-procurement systems is considered to be as innovative strategy action (Macinnis and Jaworski, 2009). In recent years, e-procurement has been advocated as a new strategic view of supply chain management ((Morris et al 2000). The

innovation implementing e-procurement systems can create value for the enterprises through utilizing IT-enabled resources on supply chain management (Heijden, 2003).

Previous studies have focused on the implementation and adoption of e-procurement on supply chain performance (Presutti, 2003). Thus, the current study contributes to literature by proposing and empirically testing a theoretical nature that of e-procurement and also can capture basic strategies applied through technological functions. In line with this notion, the characteristics of rational exchange, information enrichment and joint strategies can be reflected in the domains of partner relationships, information sharing and procurement integration, respectively. In particular, relational exchange strategy stresses the focus of committed on-going relationship between enterprises (Wang et al, 2004). Therefore, e-procurement systems can improve the effectiveness of operation processes and the transparency of the procurement processes and procedures and could be implied that an e-procurement system enhances procurement performance and acts as a pivotal system than other e-business applications when studying procurement performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design that was used, the target population, sampling methodology data collection and data analysis method employed. The pilot study and validity and reliability of the research instruments are also discussed.

3.2 Research Design

The research design constitutes the blue print for the collection, measurement and analysis of data, (Kothari, 2005). A cross-sectional survey research design was used in this study. Cross-sectional survey is a method that involves the analysis of data collected from a population, or a representative subset, at one specific point in time Orodho (2003). The choice of this design is appropriate for this study since it utilizes a questionnaire as a tool of data collection and helps to establish the behavior of employees towards embracing e-procurement in state corporations. This is supported by (Mugenda &Mugenda, 2003) who assert that this type of design enables one to obtain information with sufficient precision so that hypothesis can be tested properly. It is also a framework that guides the collection and analysis of data. (Kothari, 2005) observes that a descriptive research design is used when data is collected to describe persons, organizational settings or phenomenon.

3.3 Population

Population refers to an entire group of persons or elements that have at least one thing in common. Population also refers to the larger group from which a sample is taken (Orodho, 2003). A population can also be defined as including all people or items with the characteristic

one wish to understand. The study population of this study comprised of the ICT and Procurement managers at all the 190 state corporations in Kenya comprising of a total of 380 respondents. Thus E-procurement strategy and its application is relevant at this level prompting the choice of the departments i.e these group of respondents is directly involved in the implementation of E-procurement policy. A list that contains the number of all managers was sourced from the human resource department of each state corporation and directorate of state corporations (G.o.K 2011) this was used as a sampling frame to identify every single element in the target population.

3.4 Sampling Frame

A sampling frame is the source material or device from which a sample is drawn. According to orodho (2003) a sampling frame is a list of all those within population who can be sampled. The sample for this study was 190 state corporations in Kenya. (Directorate of state corporations, 2013).

3.5 Sample and Sampling Techniques

A sample is a set of observations drawn from a population by a defined procedure .The sample represents a subset of manageable size. Samples are collected and statistics are calculated from the samples so that one can make inferences or extrapolations from the sample to the population.

The samples size of this study was 80 respondents. Since the population is highly heterogeneous, a cluster sampling was used to select 380 respondents from 190 state corporations. Cluster sampling is a sampling technique used when "natural" but relatively homogeneous groupings are evident in a statistical population. In this technique, the total population is divided into groups (or clusters) and a simple random sample of the groups is selected. Then the required information

is collected from a simple random sample of the elements within each selected group. This may be done for every element in these groups or a subsample of elements may be selected within each of these groups. A common motivation for cluster sampling is to reduce the total number of interviews and costs given the desired accuracy. Assuming a fixed sample size, the technique gives more accurate results when most of the variation in the population is within the groups, not between them (Orodho, 2003). A simple random sampling plan where every respondent, or object or subject has chance of representation will be used in this study.

Sample size formula

$$n \ = \ \frac{N}{1 \ + \ N(e)^2}$$

Where n=sample size

N= sample population

e=precision

Therefore the sample size will be 80

Table 3. 1 Sample Frame

Population	Target Population	Sample at 10% precision
ICT managers	190	40
Procurement	190	40
Total	380	80

3.6 Data Collection Instruments

According to (Mugenda &Mugenda, 2003) data collection is the means by which information is obtained from the selected subject of an investigation. The researcher collected both primary and secondary data during the researcher. Primary data was collected using a questionnaire covering the role of E-procurement in state corporation performance. The questionnaire contained both structured and unstructured questions. The open-ended questions were used to limit the respondents to given variables in which the researcher is interested, while unstructured questions were used in order to give the respondents room to express their views in a more pragmatic manner (Kothari, 2005). Secondary data was gathered from existing credible and recognized source. The data comprised of materials that are desirable, current, accurate, sufficient and relevant collected from library text books, internet and magazines and personnel file in the organization.

3.7 Data Collection Procedure

Data collection involved a self-administered questionnaire. The researcher dropped the questionnaires personally at the respondent's place of work. The questionnaires were then collected after a period of one month. 38 questionnaires were distributed to the ICT and Procurement managers' staff to fill in. After one month, duly filled questionnaires were collected for further processing of data at the end of the data collection period that was expected to last upto one month.

3.8 Pilot Study

According toMugenda, (2003) pilot test is necessary and the validity of a study. A pilot test was conducted using questionnaires administered to ICT managers and procurement managers. This constituted 10% of the 38 state corporations firms that were registered by directorate of state corporation the for ICT managers and for procurement (10% of 38) = 3.8 = 4 were selected using simple random sampling. In each of the ICT and the procurement managers were targeted. This constituted to respondents in each state corporation and therefore the total number of the respondents for the pilot was 4 respondents.

The pilot was undertaken to pretest data collection instrument for validity and reliability. According to (Orodho, 2003) a pilot study is necessary for testing the reliability of data collection instruments. (Cooper & Schindler, 2001) explains reliability of research as determining whether the research truly measures that which it was intended to measure or how truthful the research results are. Pilot study is thus conducted to detect weakness in design and instrumentation and to provide accurate data for selection of a sample (Young, 2009). The validity of the questionnaire was determined using construct validity method. Construct validity is the degree to which a test measures an intended hypothetical construct (Mugenda, 2003). 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 that specific item is intended to measure (Kothari, 2005).

The study used different groups of experts in the field of procurement and issued them with the questionnaires. The experts were required to assess if the questionnaires helps in establishing the role of e-procurement within state parastatals in Kenya. The coefficient of data gathered from the pilot study was computed with assistance of Statistical package of social Sciences (SPSS)

version 21. A coefficient of above 0.5 was obtained and this indicated that the data collection instruments were valid (Klein & Ford, 2003). The recommendations from the procurement experts and the pilot study respondents were used to improve on data collection instruments. Data validity played an important role towards generalization of the gathered data to reflect the true characteristics of the study problem.

The reliability of the questionnaires was determined using test-retest method. A reliable measurement is one that if repeated second time gives the same as it did the first time (Mugenda & Mugenda, 2003). Test-retest reliability is a measure of reliability obtained by administering the same test twice over a period of time to a group of individuals (Mandrish & Schaffer, 2005). The scores from Time 1 and time 2 can then be correlated in order to evaluate the test for stability over time (Mandrish & Schaffer, 2005). Test-re-test reliability is the degree to which scores are consistent over time; it indicates score variation that occurs from testing session as a result of errors of measurement (Shim *et al*, 2001). The preliminary or first draft of questionnaires was given to a panel of five experts in the field of procurement. These experts were asked to review the instrument and make recommendations for improving its validity. These recommendations were then incorporated into a second draft of the instrument which was then given to a small sample of relevant professionals. This pilot sample was asked to comment on the ease with which they understood and completed the test questions. Where relevant, these comments were incorporated into a third draft of the test instrument. This third draft was constituted to the final test instrument where the open-ended questions on the survey instrument were analyzed qualitatively; that is, they were simply reported for each of the three groups of the respondents.

3.6.1 Reliability

The study conducted factor analysis to select a subset of variables from a larger set based on the original variables with the highest correlations with, the principal component factors. Reliability analysis was conducted using Cronbach's alpha to determine whether the data gathered on each variable had a significant relationship with the role of e-procurement.

Reliability is the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable (Orodho, 2003).

(Cooper & Schindler, 2001) identify three types of reliability referred to in quantitative research, which relates to; the degree to which a measurement, given repeatedly, remains the same as the stability of a measurement over time; and the similarity of measurements within a given time period. (Mugenda, 2003) adheres to the notions that consistency with which questionnaire items are answered or individuals scores remain relatively the same can be determined through the test-retest method at two different times. This attribute of the instrument is actually referred to as stability. If we are dealing with a stable measure, then the results should be similar. A high degree of stability indicates high degree of reliability, which means the results are repeatable.

(Klein & Ford, 2003) detects a problem with the test-retest method which can make the instrument, to a certain degree, unreliable. She explains that test-retest method may sensitize the respondent to the subject matter, and hence influence the response given. Similarly, (Cooper & Schindler, 2001) note that when respondents answer a set of test items, the scores obtained represent only a limited sample of behaviour. As a result, the scores may change due to some

characteristic of the respondent, which may lead to errors of measurement. These kinds of errors reduced the accuracy and consistency of the instrument and the test scores. Hence, it is the researchers' responsibility to assure high consistency and accuracy of the tests and scores (Kothari, 2005). To measure the reliability of the gathered data, Cronbach's alpha was applied. Cronbach's alpha is a coefficient of internal consistency. Suppose that we assume a sum of K components (K-items or test lets) $X=Y_1+Y_2+\ldots\ldots Y_k$. Cronbach's

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K}\sigma_{Y_i}^2}{\sigma_X^2}\right)$$ ....Equation 1

where σ_X^2 the variance of the observed total test scores, and $\sigma_{Y_i}^2$ the variance of component i for the current sample of persons.

If the items are scored 0 and 1, a shortcut formula is

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K}P_iQ_i}{\sigma_X^2}\right)$$ Equation2

where P_i is the proportion scoring 1 on item i, and $Q_i = 1 - P_i$. This is the same as KR-20.

Alternatively, Cronbach's α can be defined as

$$\alpha = \frac{K\bar{c}}{(\bar{v} + (K-1)\bar{c})}$$ ....Equation 3

Where K is as above, $\bar{v}$ the average variance of each component (item), and $\bar{c}$ the average of all covariances between the components across the current sample of persons (that is, without including the variances of each component).

A commonly acceptable rule of thumb for describing internal consistency using Cronbach's   is as follows.

Table 3. 2 Internal consistency- Cronbach's alpha

Cronbach's alpha	Internal consistency
0.9	Excellent(high stakes testing)
0.7 <0.9	Good (low stake testing)
0.6 <0.7	Acceptable
0.5 <0.6	Poor
< 0.5	Unacceptable

However, greater number of items in the test can artificially inflate the value of alpha and a sample with a narrow range can deflate it, so this rule of thumb should be used with caution.

3.7 Data Analysis and Presentation

This study is expected to produce both quantitative and qualitative data to explain the role of e-procurement strategy exhaustively. Once the questionnaires were received they were coded and edited for completeness and consistency. Quantitative data was analyzed by employing descriptive statistics and inferential analysis using statistical package for social science (SPSS). This technique gives simple summaries about the sample data and present quantitative descriptions in a manageable form, (Orodho, 2003). Together with simple graphics analysis, descriptive statistics form the basis of virtually every quantitative analysis to data, (Kothari, 2005). Correlation analysis to establish the relationship between the independent and dependent variables was employed. The purpose of doing correlation was to allow the study to make a

prediction on how a variable deviates from the normal. The positive (H_1) hypothesis testing was done at 5% level of significance and SPSS was used for this purpose. The data was then presented using frequency distribution tables, bar charts and pie charts for easier understanding.

3.7.1 Multiple Regression Analysis Model

Procurement performance in the state corporations was regressed against five variables of the role of e-procurement performance namely customer service level strategy, cost reduction, inventory optimization strategy, Buyer / supplier collaboration strategy and auditability of the procurement process. The equation will be expressed as follows:

$$Y = a + B1x1 + B2x2 + B3x3 + B4x4 + B5x5 + \acute{E}$$

Ys = procurement performance

a = Constant (Co-efficient of intercept)

X1 = Customer service level strategy and;

X2 =Cost Reduction;

X= Inventory optimization strategy

X4= Buyer-supplier collaboration strategy

X5=Auditability and compliance strategy

.= Error Term

B1 ……………….B5= Regression co-efficient of five variables.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The study sought to investigate the role of e-procurement strategy on performance of state corporations in Kenya. Specifically the study looked at customer service level strategy, procurement cost reduction strategy, inventory optimization strategy, buyer/supplier collaboration strategy and auditability/compliance strategy. This chapter presents the empirical findings and results of the application of the variables using cross-sectional survey. Data was analyzed, results interpreted on the basis of the overall objectives of the study.

4.2. Response Rate

Orodho,(2003) defines response rate as the extent to which the final data sets includes all sample members and is calculated as the number of respondents with whom interviews are completed and devided by the total number of respondents in the entire sample including non-repondents. The data was collected from the state corporations in Kenya which are registered under the inspectorate of state corporations. The sample of the study consisted of 38 respondents. The response rate for this study was 84.21%.

4.3 Results of pilot Study

A pilot study was undertaken to pretest data collection instrument for validity and reliability. According (Orodho, 2003), a pilot study is necessary for testing the reliability of data collection instruments. (Cooper & Schindler, 2001) explains reliability of research as determining whether the research truly measures that which it was intended to measure or how truthful the research results are. Pilot study is thus conducted to detect weakness in design and instrumentation and to

provide accurate data for selection of a sample (Young, 2009). The validity of the questionnaires was determined using construct validity method. Construct validity is the degree to which test measurers an intended hypothetical construct (Mugenda, 2003). 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 that specific item is intended to measure (Mugenda, 2003). The study dealt with different groups of experts in the field of electronic procurement and supply chain ethics and issues them with the questionnaires. The experts were required to assess if the questionnaires helps in determining the factors influencing implementation of supply chain management ethics within the public sector organizations in Kenya. The coefficient of the data gathered from the pilot study was computed with assistance of Statistical Package for Social Sciences (SPSS) version 21. A coefficient of above 0.5 was obtained and this indicated that the data collection instruments were valid (Kothari, 2005). The recommendations from the supply chain management enterprise (SCME) experts and the pilot study respondents were used to improve on data collection instruments. Data validity played an important role towards generalization of the gathered data to reflect the true characteristics of the study problem.

The reliability of the questionnaires was determined using test retest method. A reliable measurement is one that if repeated a second time gives the same results as it did the first time (Mugenda & Mugenda, 2003). Test-retest reliability is a measure of reliability obtained by administering the same test twice over a period of time to a group of individuals (Klein & Ford, 2003). The scores from time 1 and time 2 can then be correlated in order to evaluate the test for stability over time (Klein & Ford, 2003). Test-retest reliability is the degree to which scores are consistent over time; it indicates score variation that occurs from testing session to testing

session as a result of errors of measurement (Kothari, 2005). The preliminary or first draft of questionnaires was given to a panel of five experts in the field of supply chain management.

These experts were asked to review the instrument and to make recommendations for improving its validity. These recommendations were then being incorporated into a second draft of the instrument which was then given to a small sample of relevant professions. This pilot sample was asked to comment on the ease with which they understood and completed tests items. Where relevant, these comments were incorporated into a third draft of the test instrument. This third draft was then constitute the final test instrument where the open-ended questions on the survey instrument were analyzed qualitatively; that is, they were simply reported for each of the three groups of the respondents. An internal consistency technique using Cronbach's alpha was then applied to measure the reliability of all the questionnaires issued to different group of pilot respondents. According to (Kothari, 2005) Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability. An alpha coefficient higher than 0.75 indicates that the gathered data has a relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population (Mandrish and Schaffer, 2005). Data reliability played an important role towards generalization of the gathered data to reflect the true characteristics of the study problem (Klein & Ford, 2003).

The researcher also did a pilot on the corporation's sampled year of establishment and category they belonged and found out the following.

Table 4. 1 Reliability Analysis

Reliability Statistics	No. of Items	Cronbach's Alpha value
Customer service level strategy	**6**	0.76
Procurement cost reduction strategy	**6**	0.79
Inventory optimization strategy	**6**	0.83
Buyer-supplier relationships	**6**	0.75
Auditability and compliance strategy	**6**	0.77

4. 3.1 Corporations Year of Establishment

For each corporation sampled the year of establishment was also sought. A range of years were given which were categorized to come up with various range for easy presentation. A simple majority (26.3%) of the respondents gave their corporation established over 50 years ago 25.7% indicated between 31 to 40 years, 24% 21 to 30 years and another 24% gave less than 20 years.While some corporations were relatively old on average, majority (26.3%) of the corporations have existed for over 50 years and were formed around the time when Kenya attained independence.

This was important since 50 years is a reasonably long duration which can allow the corporation to build adequate memory and knowledge database and therefore offer a good profile for study. The size of the corporations' workforce also ranged from 70 to 6,000 employees. This is a workforce size that can provide a rich, adequate and diverse pool of knowledge among the employees which is the critical construct focused in this study.

4.3.2 Category of state corporations

Respondents were asked to indicate the categories in which their corporations belonged. A simple majority (23%) of the corporations belong to the service category, 18% training and research, 17% commercial/manufacturing, 16% tertiary education and training, 15% regulatory, 8% financial and 3% public universities as presented in table 4.2. This was a very good distribution based on the various categories used to classify the state corporations. This is because the study sourced data from across all the available categories of the corporations making it a more representative sample that eased the generality of the research findings.

Table 4. 2 Category of State Corporations

Categories	Percent
Service	23
Training and Research	18
Commercial/manufacturing	17
Tertiary education and training	16
Regulatory	15
Financial	8
Public universities	3
Total	**100**

4.4 Respondents Background Information

4.4. 1 Gender Distribution

The gender of the respondent was sought. A simple majority of 68% of the respondents were male while the rest 32% were female as shown in table 4.3. This is a good distribution which depicts a fair balance of gender. Since majority of the responses for this study relies on the perceptual measures of the respondents, this gender distribution is expected to accommodate the opinions and views from both sides of the gender divide. Nevertheless the balance in gender in

public service may also be an evidence of successful efforts of various gender mainstreaming campaigns.

Table 4. 3 Distribution of Respondents by Gender

Gender	Percentage (%)
Male	68
Female	32
Total	**100**

4.4.2 Job Titles of Respondents

Although the unit of observation for this study was the procurement managers and the ICT managers as already indicated in the methodology. An overwhelming (92%) of the respondents were senior procurement management designate with a paltry (4%) indicating ICT managers designate respectively as shown in the table 4.4. This was a very important profile distribution for this study since the respondents were the right people with adequate information relevant to this study hence best placed.

Table 4.4 Job Titles of Respondents

Designation	Percentage (%)
Chief supply chain	55
Senior supply chain managers	35
ICT manager	4
Deputy ICT manager	6
Total	**100**

4.4.3 Working Experience of Respondents

The question sought to investigate the number of years each respondent have worked with the corporation. Majority (48%) of the respondents have a working experience between 2 to 10 years, 32% have 11 to 20 years, 16% have over 20 years and a few (4%) have less than 2 years experience as shown in table 4.5. This means that the respondents have adequate working experience with the corporations and therefore posses the necessary knowledge and information which was considered useful for this study.

Table 4.5 Working Experience of Respondents

Experience in years	Percentage
Less than 2 years	4%
2 to 10 years	48%
11 to 20 years	32%
Over 20 years	16%
Total	**100%**

4.4.4 Level of education of Respondents

Respondents level of education was sought and majority (76%) of the respondents indicated that they have at least a degree level of education while sizeable (34%) posses a higher degree at postgraduate level (table 4.6). This is highly expected since the respondents are at a senior management level where the skills, knowledge and competencies are supposed to be high. Nevertheless, the well educated respondents mean that they were well informed and furnished this study with better information which added value.

4. 6 Level of Education of Respondents

Education Level	Percentage
Bachelor's Degree	76%
Post graduate	24%
Total	**100%**

4.5 Requisite Analysis

4.5.1 Reliability and Factor Analysis

The study conducted factor analysis to select a subset of variables from a larger set, based on the original variables with the highest correlations with the principal component factors. Factor analysis is the name given to a group of statistical techniques that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions (factors). The approach involves condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information (Baets, 2002). In more technical terms factor analysis addresses the problem of analyzing the structure of the interrelationships (correlations) among a large number of variables (e.g test scores, test items, questionnaire responses) by defining a set of common underlying dimensions, known as factors.

Factor analysis is an interdependence technique in which all variables are simultaneously considered, each related to all others. Reliability is the extent to which results are consistent over time and an accurate presentation of the total population under study is referred to as reliability and if the results of a study can be produced under a similar methodology, then the research instrument is considered to be reliably (Orodho, 2003).

(Cooper & Schindler, 2001) identify three types of reliability referred to in quantitative research, which relates to: the degree to which a measurement, given repeatedly, remains the same the stability of a measurement over time; and the similarity of measurements within a given time period. (Mugenda, 2003) adheres to the notions that consistency with which questionnaire items are answered or individual's scores remain relatively the same can be determined through the test-retest method at two different times. This attribute of the instrument is actually referred to as stability. If we are dealing with a stable measure, then the results should be similar. A high degree of stability indicates a high degree of reliability, which means the results are repeatable. (Orodho, 2003) detects a problem with the test-retest method which can make the instrument, to a certain degree, unreliable. (Orodho, 2003) explains that test-retest method may sensitize the respondent to the subject matter, and hence influence the responses given. Similarly, (Bayton, 2008) note that when a respondent answer a set of test items, the score obtained represents only a limited sample of behavior. As a result, the scores may change due to some characteristic of the respondent, which may lead to errors of measurement. These kinds of errors reduced the accuracy and consistency of the instrument and the test scores. Hence, it is the researchers' responsibility to assure high consistency and accuracy of the tests and scores (Gebauer & Seveg, 2001). To measure the reliability of the gathered data, Cronbach's alpha was applied.

4.5.1.1 Factor Loading For Construct Customer Service Level strategy

The table 4.7 shows Cronbach's alpha values of all items before and after extraction of item with a factor loadings value of less than 0.4. Factor analysis helped to select a subset of variables from a larger set, based on which original variables had the highest correlations with the principal component factors. Table 4.7 indicates that the Cronbach's alpha value of all customer service level strategy items remained as 0.777 since all the item had a factor loading value of more than

0.4 and there were no item which were removed. According to (Mabert *et al*, 2003), factor loading values that are greater than 0.4 should be accepted and values below 0.4 should lead to collection of more data or help the researcher to determine the values to include. Values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great, and values above 0.9 are superb. (Mabert *et al*, 2003), recommends 0.4 as minimum acceptable values. Since the entire item had a factor loading of above 0.40, all the Customer service quality items were retained by the study and used for subsequent data analysis. Since the factor loading values obtained were between 0.528 and 0.752, factor analysis was appropriate for the data and there were no items that were discarded. Table 4.7 shows that after retaining all the item, further reliability analysis gave similar Cronbach's alpha value of 0.777 and this demonstrated that the obtained data on the entire Customer service quality item was reliable since the obtained Cronbach's alpha value of 0.777was above 0.60. This concurred with (Orodho, 2003) that an alpha coefficient higher than 0.60 indicates that the gathered data had relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population on determinants of procurement performance in state corporations. The study, therefore, considered all the five item notably Customer service quality, Variability in demand, Customer service management, Forecast accuracy and Customer loyalty in buying goods, services and works to be reliable in determining the role of e-procurement strategy in procurement performance in state corporations in Kenya. .

Table 4. 7 Factors Loading for the Construct Customer Service level strategy

before	Items	Factor loadings	after
.777	Customer service quality	.752	.777
	Variability in demand	.727	
	Customer service management	.692	
	Forecast accuracy	.683	
	Customer loyalty in buying goods, services and works	.606	

4.5.1.2 Factors Loading For the Construct Procurement Cost Reduction strategy

Table 4.8 shows the Cronbach's alpha values of Procurement Cost Reduction strategy and factor loading of the 5 procurement cost reduction strategy items. The higher the absolute value of the loading, the more the factor contributes to the variable. Table 4.8 illustrates that the Cronbach's alpha value of procurement cost reduction strategy before and after removal of item with a factor loading value of less than 0.4. Table 4.8 shows that the Cronbach's alpha value changed from 0.621 to 0.632 after the removal of item with factor loadings of less than 0.40. These item included E-government with factor loadings of 0.362 and Electronic data interchange with factor loadings of 0.158. According to Kaiser (1974), factor loading values that are greater than 0.4 should be accepted and values below 0.4 should be rejected. . (Mabert *et al*, 2003), recommend 0.4 as minimum acceptable values. The study, therefore, considered the five items namely; E-government, Electronic data interchange, Transaction costs, Good governance and Internet control application on procurement performance in state corporations in Kenya. The new

Cronbach's alpha value of 0.632 demonstrated that the obtained data on all the e-government indicators were reliable and this satisfied (Orodho, 2003) that an alpha coefficient higher than 0.60 indicates that the gathered data on procurement cost reduction strategy had relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population to determine role of e-procurement strategy in procurement performance in state corporations in Kenya.

Table 4. 8 Factors Loading for the Construct procurement cost reduction strategy

before	Items	Items	Factor loadings
.621		E-government	.632
		Electronic data interchange	.724
		Transaction costs	.483
		Good governance	.446
		Internet control application	.362

4.5.1.3 Factors Loading for the Construct inventory optimization strategy

On inventory optimization strategy factors, the reliability and factor analysis results were as presented in table 4.9. This shows Cronbach's alpha values before and after removal of item with a factor loading value of less than 0.4. It shows that the Cronbach's alpha value changed from 0.625 to 0.804 after the removal of item with factor loadings of less than 0.40. These item included; Inventory control, Optimization technique, Demand forecasting, Sequential optimization and Stochastic processes. This concurred with (Mabert *et al*, 2003), factor loading values that are greater than 0.4. Should be accepted and values below 0.4 should be rejected. The new Cronbach's alpha value of, 0.804 demonstrated that the obtained data on all the inventory optimization strategy item were reliable and this satisfied (Orodho, 2003) that an alpha

coefficient higher than 0.60 indicates that the gathered data had relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population on how inventory optimization strategy determines role of e-procurement strategy on procurement performance in state corporations in Kenya.

Table 4. 9 Factors Loading for the Construct Inventory Optimization strategy

before	Items	Factor loadings
.625	Inventory control	.838
	Optimization technique	.742
	Demand forecasting	.689
	Sequential optimization	.639
	Stochastic processes	.628

4.5.1.4 Factors Loading for the Construct Buyer-supplier collaboration strategy

On buyer-supplier collaboration strategy, the reliability and factor Analysis results were as presented in table 4.10.These presents buyer-supplier collaboration strategy Cronbach's alpha values before and after removal of item with a factor loading value of less than 0.4. It shows that the Cronbach's alpha value changed from 0.722 to 0.751 after the removal of item with factor loadings of less than 0.40. All functions on buyer-supplier collaboration strategy were accepted. This was in agreement with (Mabert *et al*, 2003), that factor loading values that are greater than 0.4 should be accepted and values below 0.4 should be rejected. The new Cronbach's alpha value of 0.751 indicated that, they obtained data on all the buyer-supplier collaboration strategy items were reliable and this satisfied (Orodho, 2003) that an alpha coefficient higher than 0.60 indicates that the gathered data had relatively high -internal consistency and could be generalized to reflect opinions of all respondents in the target population on how buyer-supplier collaboration strategy determines procurement performance in state corporations in Kenya.

Table 4. 10 Factors Loading for the Construct buyer-supplier collaboration strategy.

before	Items	Factor loadings
.722	Information sharing	.710
	organizational development	.640
	Supplier relationship competencies	.615
	Inter organizational systems	.682
	channel relationships	.602

4.5.1.5 Factors Loading for the Construct Audits and compliance strategy

On audits and compliance strategy the reliability and factor Analysis Results are presented in table 4.11. Audits and compliance strategy factors Cronbach's alpha values before and after removal of item with a factor loading value of less than 0.4 are presented. The analysis results indicate that the Cronbach's alpha value changed from 0.574 to 0.631 after the removal of item with factor loadings of less than 0.40. All items were accepted, in line with (Mabert *et al*, 2003), who argues that factor loading values that are greater than 0.4 should be accepted and values below 0.4 should be rejected. The new Cronbach's alpha value of 0.631 indicated that the obtained data on all the audits and compliance strategy items were reliable and this satisfied (Orodho, 2003) that an alpha coefficient higher than 0.60 indicates that the gathered data had relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population on how audits and compliance strategy factors determines procurement performance in state in corporations in Kenya.

Table 4. 11Factors Loading for the Construct Audits and compliance strategy

before	Items	Factor loadings
.674	Internal audits	-776
	Anti corruption agencies	.678
	Governance	.656
	Accountability	.680
	Regulations	.617

4.5.1.6 Factors Loading for the Construct Procurement Performance

On procurement performance practices, the reliability and factor analysis results are presented in table 4.12. it shows that procurement performance practices, Cronbach's alpha values before and after removal of item with a factor loading of less than 0.4. the Cronbach's alpha value was 0.645 in tandem with (Mabert *et al,* 2003) that factor loading values that are greater than 0.4 should be accepted and values below 0.4 should be rejected. Since the entire item had a factor loading of 0.40 and above, the entire procurement performance items were retained by the study and used for subsequent data analysis. The new Cronbach's alpha value was thus 0.638 and this indicated that the obtained data on all procurement performance items was reliable and this satisfied (Orodho, 2003) that an alpha co-efficient of higher than 0.60 indicates that the gathered data had relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population on how respondents rated procurement performance practices in state corporations in Kenya

Table 4. 12 Factors Loading for the Construct Procurement Performance

before	Items	Factor Loading
.645	Procurement risk management	.782
	Procurement quality and measurement	.706
	Procurement planning	.642
	Procurement strategies	.509
	Procurement Integrity and transparency	.494
	Procurement benchmarks	.674

4.5.3 Multicolinearity

According to Sekaran (2003) a correlation of + 1 implies a perfect positive linear relationship between variables. As presented in table 4.13, all the independent variables had a strong positive correlation with role of e-procurement strategy in procurement performance in state corporations in Kenya, which are the dependent variable (p-value <0.01). Table 4.13 demonstrates that customer service level strategy was found to have a statistically significant strong positive correlation with procurement performance (r=0.423, p=value =0.000). Procurement cost reduction strategy had strongest positive correlation with procurement performance (r=0.843).

This correlation was found to be statistically significant at 92% significant level (p-value=0.0000). Inventory level optimization had a negative correlation with procurement performance (r=-219). The relationship was found to be statistically significant at -21.9% significant level (p-value=0.0000). Buyer and supplier collaboration strategy had a negative correlation with procurement performance (r=-0.68). Auditability and compliance strategy had a positive correlation with procurement performance (r=2.70).

The correlation analysis results implies that customer service level strategy, procurement cost reduction strategy and auditability and compliance strategy had the greatest influence with the roles of procurement strategy in procurement performance in state corporations in Kenya.

Independent variables such as inventory level optimization and buyer and supplier collaboration strategy did not directly influence on the role of e-procurement strategy in procurement performance in state corporations in Kenya and therefore customer service level strategy, procurement cost reduction strategy and auditability and compliance strategy were being complied and accepted as contributing positively to procurement performance in state corporations.

The highest correlation value of (r=2.70) of auditability and compliance strategy was as a result of a higher variance inflation factor of 200.762 and higher beta co-efficient of .364. This implied that auditability and compliance strategy negatively affected the correlations of other independent variables leading to a case of multicolinearity which is a problem in multiple regressions that develops when one or more of the independent variables are highly correlated with one or more of the other independent variables. If one independent variables in a perfect linear combination of the other independent variables, that is, if it is regressed on the other independent variables and the resulting $R2=1.0$, then the matrix of inter-correlations among the independent variable is singular and there exists no unique solutions for the regression coefficient (Kothari, 2005).

Multicollinearity increases the standard errors of the coefficients. Increased standard errors in turn means that coefficients for some independent variables may be found not to be significantly different from O, whereas without Multicolinearity and with low standard errors, these same coefficients might have been found to be significant and the researcher may not have come to null findings (Kothari, 2005).

Mathematically, a set of variables is perfectly multi-collinear if there are one or more exact linear relationships among some of the variables. Multicolinearity test therefore helps to reduce the variables that measure the same things and also checks model redundancy (Lai and Li, 2005),). The higher correlation value implied that audit ability and compliance strategy affected procurement performance at 92.45% significant level. This was found to have a negative influence on correlation values of other independent variables since other variables also affected procurement performance. According to (Kothari, 2005) if there are two variables or more variables that will have a VIF around or greater than 5, one of these variables must be removed from the regression model.

Table 4. 13 Correlations

		PP$_1$	PP$_2$	PP$_3$	PP$_4$	PP$_5$	PP$_6$
PP$_1$	Pearson Correlation	1	.361**	.475**	.185**	.236**	.411**
	Sig.(2-tailed)	x	.000	.000	.19	.001	.000
	N	66	66	66	66	66	66
PP$_2$	Pearson Correlation	.361**	1	.879**	-.311**	.169*	.377**
	Sig.(2-tailed)	.000	x	.000	.000	.041	.000
	N	66	66	66	66	66	66
PP$_3$	Pearson Correlation	.475**	.928	1	-.225**	.236**	.467**
	Sig.(2-tailed)	.000	.000	x	.005	.002	.000
	N	66	66	66	66	66	66
PP$_4$	Pearson Correlation	.185**	-.311**	-.225**	1	-.085	-.065**
	Sig.(2-tailed)	.19	.000	.0005	x	.366	. .421
	N	66	66	66	66	66	66
PP$_5$	Pearson Correlation	.236**	.169*	.236**	-.085	1	.348**
	Sig.(2-tailed)	.001	.041	.002	.366	x	.000
	N	66	66	66	66	66	66
PP$_6$	Pearson Correlation	.411**	.377**	.467**	-.065**	.348**	1
	Sig.(2-tailed)	.000	.000	.000	.421	.000	X
	N	66	66	66	66	66	66

**Correlation is Significant at 0.01 level(2-tailed)

*Correlation is Significant at 0.05 level(2-tailed)

4.6 Descriptive Analysis

The purpose of descriptive statistics is to enable the researcher, to meaningfully describe a distribution of scores or measurements using indices or statistics. The type of statistics or indices used depends on the types of variables in the study and the scale of measurements. Measures of central tendency are used to determine the typical or expected score or measure from a staple of measurements or a group of scores in a study. Measures of central tendency are used to give expected summary statistics of variables being studied. The commonly used measures of central

tendency are mode, mean and median. The researcher in this study used mean average and percentages of present the study findings of the role of e-procurement strategy in procurement performance in state corporations in Kenya.

4.6.1Construct Customer Service Level strategy

Supply chain management efforts great potential for organizations to reduce costs and improve customer service performance. In today's competitive market, companies are pressured to achieve high customer service levels strategy with fewer resources i.e. inventory, expedited shipments and overtime.

Additional pressures of increased product variety, shorter product life cycles and shorter desired delivery times have made it increasingly difficult to achieve high service levels with limited resources. The customer service level strategy (percentage of orders which customers receive on time) an organization provides to its customers in one of the most important factors of an organizational success. However, management is typically unclear as to the ideal customer service level strategy to strive for and the amount of inventory required in order achieving it. Therefore it is important for organization to understand the impact of these factors in order to react to changes effectively as well as to understand where to focus efforts. On the extent to which customer service level strategy influenced the determinants of procurement performance in state corporations in Kenya, the study asked the respondents to indicate the extent to which customer service level strategy issues were handled within state corporations. A- Likert Scale of 1 to 5) (1 =not at all, 2= small extent, 3=moderate extent, 4=large extent, 5= very large extent) was used. The key issues dealt with included; order lead time, variability in demand, forecast accuracy, customer loyalty, customer service quality, customer service management.

The findings were presented in table 4.14 on the extent to which customer service quality influenced customer service level strategy to affect procurement performance in state corporations in Kenya, 0.5 percent of the respondents indicated that customer service quality did not affect procurement performance, 1.7 percent of the respondents indicated that customer service quality affected procurement performance, 42.6 percent of the respondents indicated that customer service level strategy affected procurement performance to a moderate extent, 52.4 percent of the respondents indicated that customer service quality affected procurement performance to a large extent and 5.0 percent of the respondents indicated that customer service level strategy affected procurement performance to a very large extent. This indicated that customer service quality was not undertaken in many state corporations and this hindered procurement performance being achieved. This findings echoed findings by (Larsson et al, 2008) that low level of customer service quality in state corporations creates unsupportive environment for the achievement of high procurement performance among state corporations in Kenya.

On customer service management by state corporation, 2.6 percent of the respondents indicated that there was no customer service management which could lead to more coordinated and integrated design and control of the supply chain in order to provide goods and services levels. 6.2 percent of the respondents indicated that there was customer service management with customers at a small extent, 68.7 percent of the respondents indicated that there was customer service management with customers at a moderate extent, 21.3 percent of the respondents indicated that there was real time customer service management with customers to a large extent, 3.6 percent of the respondents indicated that there was better customer service management with customers at a very a large extent which influenced better procurement performances in state corporations in Kenya. There was an agreement with (Lysons & Gillingham, 2003).) that better

customer service management process is the key point of contact for administering product and service agreement developed by customer teams as part of customer relationship management process and the goal is to provide a single source of customer information such as product availability, shipping dates and order status towards supporting a coordinated procurement performance among state corporations in Kenya.

On order lead time, 2.4 percent of the respondents indicated that order lead time did not influence procurement performance in state corporation in Kenya, 9.6 percent of the respondents, indicated that order lead time influenced procurement performance in state corporations in Kenya to a small extent, 52.6 percent of the respondents indicated that order lead time influenced procurement performance in state corporations in Kenya to a moderate extent, 42.5 percent of the respondents indicated that order lead time influenced procurement performance in state corporations to a large extent while 1.26 percent of the respondent indicated that order lead time influenced procurement performance in state corporations to a very large extent.

This concurred with (Maleyeff, 2003), that order lead time is the time that elapses between the customers placing an order and receiving the goods which increases customer satisfaction and minimizes custody monitoring order fulfillment and this facilitates procurement performance in state corporations in Kenya. On forecast accuracy, 2.6 percent of the respondents indicated that clear forecast accuracy leads to information sharing between customer and suppliers in the supply chains especially point of sale (POS) and forecast data and this did not influence procurement performance of state corporations in Kenya, 6.2 percent of the respondents indicated that forecast accuracy between customers and suppliers influenced procurement performance in state corporations in Kenya to a moderate extent, 63.7 percent of the respondents indicated that clear forecast accuracy, between customers and suppliers influenced procurement

performance in state corporations to a large extent in state corporations in Kenya, while 7.6 percent of the respondents indicated that clear forecast accuracy between customers and suppliers influenced procurement performance to a very large extent in state corporations in Kenya. This was in agreement with (Morris *et al*, 2000) that the proper application of accurate forecasts between customers and suppliers leads to collaboration, access and sharing of information between different parties and players in the supply chain arena and this therefore supports procurement performance in state corporations in Kenya.

On variability in demand, 0.96 percent of the respondents indicated that variability in demand did not influence procurement performance in state corporations in Kenya, 8.62 percent of the respondents indicated that variability in demand influenced procurement performance to a small extent in state corporations in Kenya, 53.6 percent of the respondents indicated that variability in demand influenced procurement performance to a moderate extent instate corporations in Kenya, 42.8 percent of the respondents indicated that variability in demand influenced procurement performance to a large extent in state corporations in Kenya, while 2.4 percent of the respondents indicated that variability in demand influenced to a very large extent in state corporations in Kenya. This echoed (Pavlou, 2003), that increased level of demand variability results in improving demand estimation that allows for setting safety stocks more accurately and in addition as a strategic approach for decreasing safety stocks without sacrificing the customer service levels strategy which leads to procurement performance in state corporations in Kenya.

The study further found that, 0 percent of the respondents indicated that customer loyalty increased revenues by raising purchase/usage levels and therefore increasing the range of product bought from the sup pliers did not influence procurement performance in state corporations in Kenya, 4.6 percent of the respondents indicated that customer loyalty in buying goods works and

services from suppliers influenced procurements performance to a small extent in state corporations in Kenya, 43.7 percent of the respondents indicated that customer loyalty to buying goods, services and works from suppliers influenced procurement performance to a moderate extent in state corporations in Kenya, 47.6 percent of the respondents indicated that customers loyalty to buying goods, service and works from suppliers influenced procurement performance to a large extent in state corporations in Kenya, while 4.1 percent of the respondents indicated that customers loyalty in buying goods, services and works from suppliers influenced procurement performance to a very large extent in state corporations in Kenya. These findings supported findings by (Brown *et al*, 2005) that customer loyalty in buying goods, services and works from suppliers are designed to strengthen commitment and create velvet handcuffs to bond the customer with the supplier in the market and therefore promotes customer and supplier relationships and hence enhancing procurement performance in State Corporation in Kenya.

Table 4.14, therefore, indicates that majority of the respondents with an average percentage of 48.98, 45.67, 42.56 and 2.64 rated all customer service level strategy management factors as influencing procurement performance to a moderate extent, a large extent, and a very large extent respectively. Further, majority (92.45%) of the respondents indicated that the major factors influencing customer service level strategy affect procurement performance in state corporations in Kenya to a large extent. Customer service quality, customer service management, variability in demand, forecast accuracy and customer loyalty, as factors affecting customer service level strategy in buying goods, services and works from the suppliers. These findings concurred with (Brown *et al,* 2005) that lack of buyer and supplier commitment, longer lead times, lack of effective quality management, lack of reliability and empathy affects procurement performance in state corporations in Kenya. The study therefore, concluded that factors such as

customer service management, customer service quality, variability in demand, forecast accuracy and customer loyalty in buying of goods, services and works influenced how customer service level strategy affected procurement performance in state corporations in Kenya.

Table 4. 14 Customer service level strategy

Customer service level strategy	not at all	small extent	moderate extent	large extent	very large	Total
Customer service quality	1.9	2.5	46.6	45.8	3.2	100
Variability in demand	1.7	4.6	56.8	34.9	2.0	100
Customer service management	4.6	7.2	46.6	32.4	9.2	100
Forecast accuracy	2.8	9.8	53.5	29.5	4.4	100
Customer loyalty in buying goods, services and works	0.8	9.6	52.5	32.5	4.6	100
Average	2.36	6.74	51.2	35.88	4.68	100

4.6.2 Construct Procurement Cost Reduction strategy

Procurement cost reduction strategy, entails companies expanding forward to respond to opportunities for new markets, expanded backward towards international suppliers for lower costs and or higher technology. The increasing global interdependencies and the accelerating pace of change demanded more flexible and adoptive organizations. Any good procurement policies and in addition to automation is designed to greatly reduce time and efforts required to completing purchasing transactions by eliminating traditional paper chain of requisition, approvals, receiving and payments reconciliation (Subramani, 2004).

Research studies have pointed out the cost of materials in a typical organization setting or construction project can take up around 65 percent of the total construction costs (Puschmann & Alt, 2005). In order to minimize cost of procurement of goods, services and works in state corporations, procurement managers and planners should not only strive to reduce the wastage and reworks but they shall also cut down on the costs pertinent to the logistics of materials especially those which are of bulky nature (Parasuraman, 2000) which in this case improves procurement performance of state corporations in Kenya. The study asked the respondents to indicate the extent to which procurement cost reduction strategy factors affected procurement performance in state corporations in Kenya. The procurement cost reduction strategy factors that were dealt with included; E-procurement, electronic data interchange (EDI), transaction costs, good governance and control application.

The analyzed results are presented in table 4.15 , 1.4 percent of the respondents indicated that e-government had no influence on procurement performance in state corporations, 1.5 percent of the respondents indicated that at a small extent, e-government had influence on procurement performance in procurement cost reduction strategy in state corporations in Kenya, 3.6 percent of the respondents indicated at a moderate extent, e-government had influence on procurement performance in state corporations in Kenya while 0.6 percent of the respondents indicated that at a very large extent, e-government had influence on procurement cost reduction strategy in state corporations in Kenya. Similarly 46.8 percent of the respondents at a very large extent, e-government influenced procurement performance in State Corporation in Kenya.

On electronic data inter change which is a drive towards a highly execution of electronic data inter change (EDI) in the logistics field and supply chain management warrants closer scrutiny of the common expectation that a more advanced EDI implementation leads to significantly higher

benefits for all participation firms in the network. 2.5 percent of the respondents stated that electronic data interchange (EDI) did not influence procurement performance at a large extent in state corporations in Kenya, 3.6 percent of the respondents stated that electronic data interchange (EDI) influenced procurement performance a small extent in state corporations in Kenya, 5.8 percent of the respondents stated that electronic data interchange (EDI) influenced procurement performance to a moderate extent in state corporations in Kenya. 76.53 percent of the respondents stated that electronic data interchange (EDI) influence procurement performance to a large extent in state corporations in Kenya.

On transaction cost theory perspective 1.4 percent of the respondents stated that transaction cost could serve as a good starting point for analysis of State Corporation's procurement performance at a very large extent. 2.6 percent of the respondents stated the use of information technology has facilitated the reduction of coordination cost to which in addition facilitated information sharing and lower transaction cost hence procurement performance in state corporations in Kenya while 84.3 percent of the respondents stated that making transaction cost the basic unit of analysis, expressly identified alternative market and internal mode of contracting hence with respect tothe critical dimensions with respect to which transactions differed (Wendin, 2001).

According to World Bank the term 'good governance is broadly defined as a manner in which power is exercised in the management and utilization of a country's economic and social resources for national development. Good governance encompasses political legitimacy, accountability, transparency, openness and the rule of law. Governance is the process, the function and power of government. It is the exercise of the executive, legislative and judicial power for the public and state leadership by the political elective and administrative – statutory organs/ bodies and therefore depended on a set of norms and values based on democracy"

(Lysons & Gillingham, 2003). Application of good governance enhances ethical behavior, meeting public expectations regarding the mission and the function of organizations, complying with the constitution and the law, foster efficiency and effectiveness and preventing failures and disasters (Williams & Hardy, 2006).

On governance processes, 0.7 percent of the respondents indicated that good governance processes did not influence good procurement performance in state corporations in Kenya, while 4.0 percent of the respondents indicated at a small extent, that a good governance processes influenced procurement performance in state corporations in Kenya, 38.9 percent and 32.74 percent of the respondents indicated to a large extent and moderate extent respectively that proper good governance processes influenced procurement performance in state corporations in Kenya and 22.3 percent of the respondents indicated to a very large extent, that good governance policies influenced procurement performance of state corporations in Kenya.

On internet control application of the internet to traditional business and administrative activities has introduced considerable digitization and process automation (Tatsis et al, 2006). One key area of development from are search perspective is the use of and application of electronic(s) surveys, based on internet technology. The application of e-surveys can bring many benefits including extremely low marginal cost, automation of processes, and the ability to collect and manage very large samples, 2.2 percent of the respondents indicated that internet control application did not influence procurement performance practices in state corporations in Kenya, 23.7 percent of the respondents indicated that internet control application affected digitization and automation of process systems to a small extent and influenced procurement performance in state corporations in Kenya, 53.68 percent of the respondents indicated that at a moderate extent digitization and automation application of process systems influenced procurement performance

in state corporations in Kenya, 18.3 percent of the respondents indicated that to a large extent internet control application services influenced procurement performance in state corporations in Kenya to a very large extent.

Table 4. 15 Procurement cost reduction strategy

Procurement cost reduction strategy	not at all	small extent	moderate extent	large extent	very large	Total
E-government	2.5	4.6	0.8	48.7	43.4	100
Electronic data interchange	2.7	4.3	6.2	65.7	21.1	100
Transaction costs	3.8	5.6	4.5	65.9	20.2	100
Good governance	4.7	5.9	7.0	44.6	37.8	100
Internet control application	4.2	3.7	16.3	51.7	24.1	100
Average	**3.58**	**4.82**	**6.96**	**55.32**	**29.32**	**100**

4.6.3 Construct Inventory Optimization strategy

This Inventory optimization strategy offers efficiency in coordinating demand, requests, transformation and inventory management utilization of optimum level and benefits supply chain in keeping inventory toner and ordering more efficient, real time information in regards to inventory levels through the supply chain in assisting to lowering the cost of back orders, lost orders and obsolescence (Zhang *et al*, 2002).

Inventory optimization strategy assist in coping with the increasing uncertainty both on demand and supply sides, it becomes crucial requirement to making demand and supply by decisions through the cooperation of marketing and operation managers. Traditionally, demand management is the responsibility of marketing managers into estimate demand determinants such as pricing, promotion, and advertising. To anticipate pricing, demand forecasts have become sophisticated, though still flawed due to sheer number of products in a retailer's store.

To examine the influence of inventory optimization strategy on procurement performance in state corporations the study rated key inventory optimization strategy factors in supply chain management. These included inventory control, stochastic processes; optimization techniques demand forecasting and service level sensitivity on procurement performance.

Analysis results are presented in table 4.16 on inventory control on inventory optimization strategy functions. 3.7 percent of the respondents indicated that inventory control practices on procurement performance did not influence the role of e-procurement strategy enhancement on procurement performance in state corporations in Kenya. 45.7 percent of the respondents indicated that inventory control procurement performance practices influenced the role of e-procurement strategy and its enhancement in procurement performance in state corporations in Kenya to a small extent whereas 36.5 percent of a moderate extent while 12.3 percent of the respondents indicated that inventory control on e-procurement strategy influenced procurement performance practices in state corporations to a large extent while 1.8 percent to a very large extent. It was identified that 0.9 percent of the respondents indicated that stochastic processes policy had influence on procurement performance in state corporations in Kenya to a large extent while 4.3 percent of the respondents indicated that, inventory costs had no influence on procurement performance in state corporations in Kenya to a very large extent.

On optimization technique function 0.7 percent of the respondents indicated that optimization technique does not have an influence on procurement performance in state corporations in Kenya, 3.6 percent of the respondents indicated that optimization technique function influences procurement performance in state corporation in Kenya to a small extent, 13.7 percent of the respondents indicated that optimization technique functions influences procurement function in

state corporations to a moderate extent, 76.2 percent of the respondents indicated that optimization technique function influences procurement performance in state corporations to a large extent, and 5.8 percent of the respondents indicated that inventory optimization strategy function influences procurement performance in state corporations in Kenya to a very large extent.

On the rate of demand for casting, 0.9 percent of the respondents indicated that the level of demand forecasting did not influence procurement performance in state corporations, 6.4 percent of the respondent indicated that the level of demand forecasting influenced procurement performance to a small extent in state corporations in Kenya, 72.6 percent of the respondents indicated that the level of demand, forecasting influenced procurement performance to a moderate extent in state corporations in Kenya, 8.2 percent of the respondents indicated that, the level of demand forecasting influenced procurement performance to a large extent in state corporations in Kenya while 11.9 percent of the respondent indicated that the level of demand forecasting influenced procurement performance to a very large extent in state corporations in Kenya.

Further on sequential optimization on inventory optimization strategy practices, 1.4 percent of the respondents indicated that sequential optimization on inventory optimization strategy practices did not influence procurement performance in state corporations, 56.8 percent of the respondents indicated that sequential optimization on inventory optimization strategy, influenced procurement performance practices to a small extent in state corporations in Kenya, 36.8 percent of the respondent indicated that sequential optimization on inventory optimization strategy, influenced procurement performance practices to moderate extent in state corporations in Kenya,

4.8 percent of the respondents indicated that sequential optimization on inventory optimization strategy, influenced procurement performance practices to a large extent in state corporations, while 2.4 percent of the respondents indicated that sequential optimization on inventory optimization strategy, influenced procurement performance practices to a large extent in state corporations in Kenya, while 0.2 percent of the respondents indicated that sequential optimization on inventory optimization strategy, influenced procurement performance practices to a very large extent in state corporations in Kenya.

Analysis results are presented in table 4.16 on stochastic process on inventory optimization strategy functions. 2.5 percent of the respondents indicated that stochastic process practices on inventory optimization strategy did not influence procurement performance in state corporations in Kenya. 5.3 percent of the respondents indicated that inventory control procurement performance practices influenced the role of e-procurement strategy and its enhancement in procurement performance in state corporations in Kenya to a small extent whereas 6.7 percent of a moderate extent while 48.7 percent of the respondents indicated that stochastic process on inventory optimization strategy on e-procurement strategy influenced procurement performance practices in state corporations to a large extent while 36.8 percent to a very large extent.

These findings concurred with (Brousseau, 2000) who indicated that the complexity and uncertainty exists in supply chain and thus makes the concepts of accurate and effective forecasting an elusive target. On the other hand (Cagliano et al., 2003) to have a visible decision making system is becoming a crucial issues for organizations ina constantly fluctuating environment where the economic uncertainty needs mathematical models, forecasting the expected demand for a certain period of time with one or more product is one of the most

relevant targets with an enterprise despite the need for accurate forecasting to enhance competitive advantage through proper inventory optimization strategy approach (Evenett and Hoekman (2004). The study deduced that the major factors affecting procurement performance in many state corporations include lack of training on information technology skills, corruption, lack of transparency, nepotism and in efficient procurement procedures and by not following public procurement act and the regulations envisaged by procurement policies and guidelines and hence poor procurement performance practices.

Table 4. 16 Inventory optimization strategy

Inventory optimization strategy	not at all	small extent	moderate extent	large extent	very large	Total
Inventory control	3.7	45.7	36.5	12.3	1.8	100
Optimization technique	0.7	3.6	13.7	76.2	5.8	100
Demand forecasting	0.9	6.4	8.2	72.6	11.9	100
Sequential optimization	1.4	56.8	36.8	4.8	0.2	100
Stochastic processes	2.5	5.3	6.7	48.7	36.8	100
Average	**1.84**	**23.56**	**20.38**	**42.92**	**11.3**	**100**

4.6.4 Construct Buyer-Supplier Collaboration strategy

This Buyer and supplier collaboration strategy entails the collaborative management of key supplier and buyer relationship and is an important of physical distribution and logistics management activities. Indeed, over the last decades, interest in collaborative relationship has surged. (Hart,. and Saunders, 2007), for instance, argue that closer buyer-supplier relationships have evolved over the past two decades from transaction processes based on arms length agreements to collaborative processes based trust and information sharing and that collaborative

buyer – supplier relationship plays an important role in an organization's ability to respond to dynamic and unpredictable change.

Recent imperial research shows that information sharing in relationships increases financial performance (Heijden, 2003),) and that collaboration with external supply chain entities increases internal collaboration which in turn improves service performance (Johnston,2005).

Buyer-supplier collaboration strategy is an interface of joint action between the buyer and supplier in the market place and focus on collaborative product and process development. While suppliers of commodity materials may sometimes negatively influence performance, for example, if they fail to deliver on time, the performance effects of key suppliers i.e. suppliers who supply strategic products which are high in value, scarce or contribute considerably to a buyers performance both to the advantage or disadvantage of a buyer. To establish the influence of buyer supplier collaboration strategy on procurement performance in state corporations in Kenya. The study asked the respondents to indicate the extent to which buyer supplier factors affected procurement performance in state corporations in Kenya. The buyer supplier factors were dealt with and included; information sharing, organizational development, inter-organizational development, inter-organizational systems, channel relationships and supplier relationship competencies.

The analyzed results are presented in table 4.17 and was identified that 0.9 percent of the respondents indicated that, information sharing between buyer and suppliers had no influence on procurement performance in state corporations in Kenya, 36.7% of the respondents indicated that, buyer supplier collaboration strategy had no influence on procurement performance in state corporations in Kenya to a small extent and 45.6percent of the respondents to a moderate extent,

3.8 percent of the respondents indicated that, buyer supplier collaboration strategy had influence on procurement performance in state corporation in Kenya to a very large extent on organizational development, 0.6 percent of the respondents indicated that organizational development does not have an influence on procurement performance in state corporations in Kenya, 4.2 percent of the respondents indicated that organizational development on buyer-supplier collaboration strategy influences procurement performance in state corporations in Kenya to a small extent, 13.4 percent of the respondents indicated that organizational development influences procurement performance to a moderate extent, 77.8 percent of the respondents indicated that organizational performance influence procurement performance in state corporations in Kenya and 4.6 percent of the respondents indicated that organizational performance influence procurement performance in state corporations to a very large extent.

On inter-organizational systems, 0.5 percent of the respondents indicated that inter organizational systems did not influence procurement performance in state corporations in Kenya, 6.8 percent of the respondents indicated that inter organizational systems influenced procurement performance in state corporations to a small extent, 76.5 percent of the respondents indicated that inter organizational systems influenced procurement performance in state corporations to a moderate extent, 6.7 percent of the respondents indicated that inter-organizational systems influenced procurement performance in state corporations to a large extent while 9.5 percent of the respondents indicated that inter organizational performance influenced procurement performance in state corporations to a very large extent.

Further, on channel relationship practices, 4.3 percent of the respondents indicated that channel relationships practices did not have an influence on procurement performance in state corporations in Kenya, 65.8 percent of the respondents indicated that channel relationship

practices, influenced procurement performance in state corporations in Kenya to a small extent, 26.4 percent of the respondents indicated that channel relationships on procurement performance in state corporations to moderate extent while 3.5 percent of the respondents indicated that channel relationship practices on procurement performance in state corporations in Kenya influence to a very large extent.

On supplier competencies, 2.7 percent of the respondents indicated that buyer supplier competencies on procurement performance in state corporations in Kenya, 2.3 percent of the respondents indicated that buyer supplier competencies influences procurement performance in state corporations in Kenya to a small extent, 14.8 percent of the respondents indicated that buyer-supplier competencies on procurement performance in state corporations in Kenya, to a small extent, 65.7 percent of the respondents indicated that the rate of buyer-supplier competencies on procurement performance influenced to a moderate extent in Kenya state corporations, 7.2 percent of the respondents indicated that the rate of buyer-supplier competencies influenced procurement performance to a very large extent in state corporations.

These findings concurred with Dyer et al, (2001) who indicates that a buyer supplier in a specific form of relational exchange which implies creating value together as the process of requiring a high level of purposeful co-operation and has been conceptualized as the creation of joint processes through substantial investments into co-specialized assets or simply joint action. In this study, we largely follow (Klein, 2007) and define collaboration as joint action in buyer- supplier relationships and focus on collaborative product and process development, lack of buyer supplier commitment, competencies and proper organizational systems and development affect strong and long lasting collaboration between buyer and supplier relationship and hence affecting procurement performance in state corporations in Kenya.

The study deduced that the major factors affecting procurement performance in state corporations in Kenya include; lack of collaborative buyer-supplier commitment, poor organizational development structures, inefficient organizational systems and policies, lack of information sharing and lack of integrative channel relationships.

Table 4. 17 Buyer- Supplier relationship

Buyer-Supplier relationships	not at all	small extent	moderate extent	large extent	very large	Total
Information sharing	0.9	36.7	45.6	3.8	13	100
organizational development	3.5	12.4	76.8	2.6	4.7	100
Inter organizational systems	0.5	6.8	76.5	6.7	9.5	100
channel relationships	2.3	65.8	22.4	2.6	6.9	100
Supplier relationship competencies	2.7	14.8	65.7	7.2	9.6	100
Average	**1.98**	**27.3**	**57.4**	**4.58**	**8.74**	**100**

4.6.5 Construct Auditability and Compliance strategy

The As a result of changes in organizational needs, technology and complexity of organization activities and systems, the nature of the services sought from the audits and compliance strategy has been transforming over the years from an emphasis of traditional compliance audit where index dependence has been the core paradigm to a value adding role where partnering with management is accorded greater significance. (Klein, 2007) argue that internal audit literature also focusing on this evolving role which is considered paramount importance's achievements of organizational goals.

Despite indicating that value adding internal audit departments needs to possess, varying attributes based onthe situational context. On the extent to which audits and compliance strategy

influenced the determinants of procurement performance in state corporations in Kenya, the study asked the respondents to indicate the extent to which audits and compliance strategy issues were handled within the state corporations in Kenya.

A Likert scale of 1 to 5 (1 =not at all, 2= small extent, 3=moderate extent, 4=large extent, 5= very large extent) was used. The key issues dealt with included; accountability, internal audits, anti-corruption agencies, regulation and governance.

The findings were presented in table 4.18 on the extent to which accountability influenced audits and compliance strategy to affect procurement performance in state corporations, 2.7 percent of the respondents indicated that accountability did not affect procurement performance, 3.2 percent of the respondents indicated that accountability affected procurement performance to a small extent, 5.2 percent of the respondents indicated that accountability was not undertaken in many state corporations and this had affected and revamped procurement systems and hence performance 54.6 percent of the respondents indicated that accountability affected procurement performance to a large extent and 34.3 percent of the respondents indicated that accountability was not undertaken in many state corporations and this had affected and revamped procurement systems and hence performance.

These findings echoed, findings by (Hout, 2009), that accountability is moving away from confrontational, detection- focused services to a prevention focused services through a partnering approach with a focus on consulting services in state corporations creates supportive environment for procurement performance

On internal audit with auditors, 5.9 percent of the respondents indicated their disagreement to the questionnaires provided on the overall audit services rendered to the state corporations, 4.9 percent of the respondents indicated that there was internal audit conducted on systems, policies and suppliers at a small extent, 5.9 percent of the respondents indicated their disagreement to the questionnaires provided on the overall audit services rendered to the state corporations 9.6 percent of the respondents indicated that there was internal audit conducted on suppliers systems and policies of the organization at a moderate extent, 13.4 percent of the respondents indicated that there was internal audit services with suppliers, systems and policies at a very large extent which influenced audits and compliance strategy of procurement performance in state corporations in Kenya.

These was in agreement with (Hout, 2009), that the 'overall, internal audit function of the state corporations provides value adding audit services and hence improved procurement performance and thus internal audit is undergoing a paradigm shift from traditional compliance audit to value added internal audit (Jacobs & Bendoly, 2003) which helps in bringing about a robust procurement performance in state corporations in Kenya.

On anti-corruption agencies and the existence of measures prohibiting state corporations corruption is by no means a recent phenomenon in Kenya, 2.4 percent of the respondents indicated that corruption is highly entrenched in state corporations in Kenya and do influence procurement performance among state corporations to a small extent, 47.2 percent of the respondents indicated that anti corruption agency fight against corruption influenced procurement performances in state corporation to a moderate extent, 12.1 percent of the respondents indicated that anti corruption agency fight against corruption influenced

procurement performances in state corporation to a small extent 36.8 percent of the respondents, indicated that anti-corruption agency over sighting and fight on corruption influenced procurement performance in state corporations to a large extent, while 2.6 percent of the respondents indicated anti corruption agency on audits and compliance strategy affect procurement performance in state corporations to a very large extent. This is echoed (Karahanna *et al*, 2008) that in addition to the common perception that law enforcement agencies are a type of organizations relatively prone to corruption and that law enforcement authorities are among the most corrupt government agencies (Locke *et al,* 2002), the reason for selecting these agencies stems from their particular responsibilities in enforcing anti corruption policies.

On Regulation and the existence of measures prohibiting state corporations corruption is by no means a recent phenomenon in Kenya, 5.6 percent of the respondents indicated that Regulation is highly affected state corporations in Kenya and do influence procurement performance among state corporations to a small extent, 7.8 percent of the respondents indicated that Regulation influenced procurement performances in state corporation to a moderate extent, 23.9 percent of the respondents indicated that Regulation influenced procurement performances in state corporation to a small extent 36.7 percent of the respondents, indicated that Regulation influenced procurement performance in state corporations to a large extent, while 26.0 percent of the respondents indicated Regulation on audits and compliance strategy affect procurement performance in state corporations to a very large extent.

On governance and the existence of measures prohibiting state corporations corruption is by no means a recent phenomenon in Kenya, 4.8 percent of the respondents indicated that governance affected state corporations in Kenya and do influence procurement performance among state

corporations to a small extent, 6.4 percent of the respondents indicated that governance influenced procurement performances in state corporation to a moderate extent, 32.5 percent of the respondents indicated that governance influenced procurement performances in state corporation to a small extent 29.3 percent of the respondents, indicated that governance influenced procurement performance in state corporations to a large extent, while 27.0 percent of the respondents indicated governance on audits and compliance strategy affect procurement performance in state corporations to a very large extent.

Law enforcement agencies are among the most important anti-corruption agents in society. As suggested by (Davis, 2009) one of the key means of successfully combating transnational crime, corruption and terrorism is building integrity in the judicial system, as well as ensuring fair prosecution and investigation procedures. It is thus, after all, only reasonable to expect ethical and law abiding behavior from those whose duty it is to deter others from breaking the law. Of those who responded, 41.45%, 24.54% and 1.78% indicated that audits and compliance strategy factors influence procurement performance to a moderate extent, to a large extent and to a very large extent respectively. These audit and compliance strategy factors influence over sighting of anti corruption agency affect procurement performance in state corporations to a large extent and included; accountability, internal audits, anti-corruption agencies, regulations and governance. These findings concurred with Ploskonka (Puschmann & Alt, 2005) who indicates that corruption should be dealt with an all round approach involving all efforts to deter it owing to the fact that it is a multi dimensional phenomenon. There is a need for a total war against corruption in which active participation of government, parliament, oversight agencies, international organizations, civil society, media and citizens is required so as to stave off existence of corruption in every segments of social and political system. By the same token, it would be naïve

to try to combat corruption by pursuing policies just to carry the day. The study deduced that major factors affecting procurement performance include; accountability, regulations, proper internal audits, contributory role of anti corruption agencies and bad governance practices in state corporations.

Table 4. 18: Audits and Compliance strategy

Audits and compliance strategy	not at all	small extent	moderate extent	large extent	very large	Total
Accountability	5.2	2.7	3.2	54.6	34.3	100
Internal audits	5.9	66.2	13.4	2.4	12.1	100
Anti corruption agencies	47.2	36.8	2.6	13.2	0.2	100
Regulations	5.6	7.8	23.9	36.7	26	100
Governance	4.8	6.4	32.5	29.3	27	100
Average	**13.74**	**23.98**	**15.12**	**27.24**	**19.92**	**100**

4.6.2 Content analysis

4.6.2.1 Customer Service Level strategy

Long-term customer-dominated relationships (Siemsen *et al*, 2008) tend to exist in a special set of circumstances. The history of these relationships often extends back in time over decades, such as the now discontinued relationship between Baird Clothing, a UK textile supplier, and its major customer Marks and Spencer, where their involvement lasted for over sixty years. A customer-dominated relationship often develops its own cultural norms and behaviors revolving around the organizational culture and expectations of the customer. In such circumstances the relationship has often developed under conditions where the supplier has been involved in adaptations to its products, processes and technology (Nagle *et al*, 2006).

This represents considerable investment in the relationship by the supplier, often to the extent that operations are geared solely towards the needs of one major customer, in a similar fashion to the relationships of automotive suppliers and large car manufacturers (e.g. LePine, 2005). A culture of customer control and supplier dependence may have developed over time, with cascading pressures on the supplier to cut costs and reduce lead times as the customer's markets become increasingly internationally competitive. Thus customer-dominated relationships may become a burden to small and medium-sized suppliers (Macinnis & Jaworski, 2009). Faced with such a situation, customer-dominated suppliers may be described as having operated under the conditions of an imposed strategy (Malone *et al*, 2007),), where the organizational choice and strategic direction of the firm is controlled by forces or individuals from outside the boundaries of the organization. Therefore, the knowledge, experience and capabilities of such suppliers are very limited with regard to the development of certain levels of relationships and strategy.

4.6.2.2 Procurement Cost Reduction strategy

Supplier involvement in cost reduction efforts has been concentrated mainly in the product development phase of the life cycle of the product. Often this concentration on the early phases of the product life cycle is defended with referral to the 80/20 rule or the so called "Blanchard statistic" that says that 80% of the manufacturing costs are determined during product design and development. This paper finds that empirical evidence in the literature for this 80/20 rule is only anecdotal. Therefore it is even more surprising that we find in our extensive survey of the literature that, compared to the literature on cost reduction in design phases, the literature on cost reduction efforts in later stages of the product life cycle is rather limited. On top of that, this literature often takes a perspective internally to the firm and ignores possibilities for

supplier/buyer collaboration in these cost reduction exercises beyond product development, which leads to numerous potential value sources remaining untapped.

Given the amount of money involved, the general applicability of the cost reduction techniques to various industries and relationships with suppliers, the opportunities for huge savings and the fact that most firms usually have many products and/or technologies at maturity stage, our research makes an important contribution by identifying both a lack of evidence in the literature on the idea that 80% of the costs are committed in the design and development phase and the limited attention given in the literature to supplier/buyer cost reduction programs in further stages of the product life cycle.

It is unclear, however, on which evidence the figure for the percentage of procurement cost commitment is based. Horngren et al. (2000), for example, mention the case of the mining industry as an exception where most costs are incurred at the same time as the commitment occurs. To our knowledge, the first reference to a particular percentage of cost commitment is in Blanchard 1978. In his book "Design and Manage to Life Cycle Cost" he mentions a percentage of 95% (p. 15), although he did not introduce the term "cost commitment" and no evidence is given for this estimate. (Paulrajet *et al*, 2006) present figures ranging from 40 to 70% commitment at the end of the conceptual phase and 85 to 90 % commitment at the end of the development phase. They also report (p. 21) on the view held by the department of defence that for high technology projects 95 % is a more realistic (or pessimistic) number. (Young, 2009),) cites General Motors executives saying that 70% of the cost of their truck transmissions is determined at the design stage. (Cooper & Schindler, 2001) state a figure of between 70 and 80%. (Brun *et al*, 2004) claim more than 90% of a product's cost is determined in pre-production

phases, referring to Blanchard only as a reference. None of these papers or books, however, presents any empirical evidence on which these claims could be based.

4.6.2.3 Inventory optimization strategy

To investigate the differences between the ways in which inventory optimization strategy is described in the literature and actual inventory optimization strategy implementations, five case studies have been conducted. The goal of these case studies was to investigate whether statements about inventory optimization strategy outcomes, enablers for success, and the design of inventory optimization strategy itself as found in the literature, also held in practice. The case studies focused on issues like control, information, the buyer-supplier relationship, IT systems, and results. The five cases were selected to cover smaller and larger organisations in a variety of industries. Our key informants were purchasing managers at buying companies and supply chain specialists at supplier companies, and all interviews were complemented with document analysis. The data were analyzed using cross-case synthesis, a method that compares the case study findings in a conceptually clustered matrix to identify differences (Crenshaw & Robison, 2006),).

The case studies showed that inventory optimization strategy can be implemented for a diverse range of products and demand patterns. Different situations lead to different inventory optimization strategy designs. On the other hand, in those cases where inventory optimization was implemented for commodity products, buyer involvement was lower and the supplier was expected to take full control of the entire chain.

In all cases suppliers mentioned that inventory optimization strategy helped to secure their sales. However, to realize improvements in capacity planning, it appeared that it is important that

inventory optimization strategy is implemented with a large number of customers. Not all suppliers had accomplished this yet. All buyers were enthusiastic about the improved service levels. There were less emergency orders and a reduction in incorrect orders. Both buyers and suppliers mentioned the advantage of the increased supply chain control. In three out of five cases an increase in the sales margin for the supplier could be noticed. With respect to costs, many differences appeared; some had the advantage of reduced transportation costs while others benefited more from reduced inventory costs. Only one buyer mentioned a reduction in administration costs. These five case studies are limited in number, and they do not represent more than a qualitative exploration, yet, the findings provided further support for the importance of the enablers as they were identified from literature, and they presented additional insights into the expected benefits of inventory optimization strategy.

4.6.2.4 Buyer Supplier Collaboration strategy

The development of customer-supplier collaboration strategy and interaction between parties in collaboration has been conceptualized by researchers working on interaction, relationships and networks in the field of industrial marketing and purchasing (Davenport, 2008). This body of research has focused on the nature of collaboration between firms and the behaviour of firms in industrial networks. To most firms in dyadic collaborations there will be conflicting pressures in creating a balance in their relationships between self-serving motives and the advantages of close interaction and collaboration. To achieve the benefits of a long-term inter-dependent relationship certain sacrifices may have to be made at different times for the relationship to grow and continue. These adaptations' mean that a particular supplier or customer is handled in unique ways to achieve cost advantages or to gain access to a firm's unique competencies or resources (Emiliani, 2000). Adaptations are likely to be viewed as necessary investments for the sake of

the relationship with the other party. They may take the form of tailoring resources to the requirements of a certain customer or supplier through durable transaction specific investments (Freeman, 2006).

In long-term relationships continuity of the relationship relies on the perception of each party that the relationship itself constitutes an investment. Adaptations may generally be considered to have a positive impact on the long-term well-being of the relationship. The preparedness of a supplier to take part in various types of adaptations, whether they be technical, knowledge based, economic or legal (Emiliani, 2000) means that he considers it beneficial for the relationship and is committed to its future (George, 2002),). However, when adaptations are continually placed upon one party by the other, and decisions about their appropriateness and necessity are unilaterally rather than bilaterally decided, the adapting firm may lose the capability to make its own decisions about the future of the relationship. In so doing it may lose its commitment towards the other firm. Thus investment through adaptations may be felt to be for the benefit of the other firm rather than the relationship itself, and goodwill towards that firm may be lost. When the ability of the firm to contribute to decisions about the relationship, internal firm processes and innovation are sidelined over a prolonged period of time, the knowledge of how to innovate, plan for the future and contribute to the development of relationships may be lost. Thus small suppliers that often face imposed adaptations by customers may be increasingly locked (Hines, 2004), to current relationships.

4.6.4.5 Audits and compliance strategy
In order to practically enforce the law, it is essential for some boundary to exist between behaviour labeled as ''deviant'' and that which is not (Maleyeff, 2003), and it is here that the presence of clearly articulated and enforceable regulations can be of use. Regulation plays a

significant role in our daily life as they facilitate, license, authorise or promote certain activities whilst simultaneously constraining, prohibiting or restricting other activities (McCloskey, 2006),). Business regulation is usually directed at organisations rather than individuals (Hines, 2004), and enables clarity to be gained regarding desired actions which will prevent harm, whilst also providing a measure through which adherence to rules and standards can be gauged (Osmonbekov *et al*, 2002). It has previously been suggested that the ''law'' lacks regulatory techniques that are able to adequately control organisations (Pavlou, 2003), and it is here that the role of regulatory agencies comes to the fore as their presence can assist in securing compliance by enforcing relevant laws, rules and standards. (Sheng, 2002), define regulatory agencies as being those that have ''significant responsibilities for regulating activities of commercial corporations which might run counter to what parliament determines to be broader community interests, and the capacity to initiate prosecutions''.

According to (Trent, 2007) the likelihood of achieving compliance can be further increased when there is interdependency between compliance personnel and line managers. Beyond this interdependency, it is necessary to have clear standards, the monitoring and assessment of compliance with those standards, the communication of disappointment and use of firm reprimands should non-compliance occur, and the communication of positive feedback when compliance does occur. In short, it is essential for a culture of compliance to be advocated and actively demonstrated within a workplace.

Indeed, (Wendin, 2001) believes that a culture of compliance is not an ''optional extra'' but indeed an ''essential element'' of doing business. Despite this belief, it is a reality that in some corporations, the basis for a compliant culture has been laid yet illegal behaviour still occurs. Indeed, some individuals are well aware of the consequences of being non-compliant, yet

continue to knowingly defy policies and rules. One example of such conscious non-compliance is cartel conduct. By definition, a cartel is ''an anticompetitive agreement, anticompetitive concerted practice, or anticompetitive arrangement by competitors to fix prices, make rigged bids (collusive tenders), establish output restrictions or quotas, or share or divide markets by allocating customers, suppliers, territories, or lines of commerce'' (OECD, 2004).

There is consensus amongst law enforcement agencies that due to the enormous harm done to consumers and businesses throughout the world, that cartels should be stopped and dealt with to the full extent of the law (Wood, 2000). Inherent to this position is the reality that some people do in fact profit from this type of illegal behaviour, even though there are no legitimate social or economic benefits stemming from cartels to justify the damage they do, nor are there any cultural, linguistic or other justifiable reasons why cartel participants contravene competition laws other than for their own gain (Zhu, 2002). Admittedly, some companies experiencing financial difficulties or economic hardship may choose to either establish or join a cartel in order to overcome their problems, but most cartel participants possess a full understanding of the illegal nature of their activity and continue to do so because the potential gain is so large (Ajzen, (2007).

4.7 Inferential Analysis

4.7.1 Correlation Analysis

Correlation is a term that refers to the strength of a relationship between two variables. A strong or high correlation means that two or more variables have a strong relationship with each other while a weak or low, correlation means that the variables are hardly related. Correlation coefficient can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while a value of +1.00 represents a perfect positive correlation. A value of 0.00

means that there is no relationship between variables being tested (Orodho, 2003). The most widely used types of correlation coefficient is the Pearson R which is also referred to as linear or product-moment correlation. This analysis assumes that the two variables being analyzed are measured on at least interval scales. The coefficient is calculated by taking the covariance of the two variables and dividing it by the product of their standard deviations. A value of +1.00 implies that the relationship between two variables X and Y is perfectly linear, with all data points lying on a line for which Y increases and X increases. Conversely a negative value implies that all data points lie on a line for which Y decreases as X increases (Orodho, 2003). In this study pearson correlation is carried out to determine how the research variables related to each other. Pearson's correlation reflects the degree of linear relationships between two variables. It ranges from+1 to -1. A correlation of +1 means there is a perfect positive linear relationship between variables (Young, 2009)

4.7.1.1 Correlation analysis for customer service level strategy

A correlation analysis for the construct customer service level strategy was conducted to find out how customer service correlated with procurement performance. Table 4.19 shows that the Pearson correlation coefficient was 6.7699. (Baily, 2008) indicates that customer service level strategy has a positive correlation with e-procurement performance (p-values >0.05). The significance of customer service level strategy verses e-procurement strategy enhancement and performance as indicated in the table below. These findings indicate that there is a positive linear relationship between customer service level strategy and e-procurement performance. Central to this is the notion of the internal customer "every part of an organization contributes to external customer satisfaction by satisfying its own internal customers" (Baily, 2008). From emanating perspective this internal customer notion is also well accepted (Bayton, 2008)

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Table 4. 19 Correlation analysis for construct customer service level strategy

		procurement performance	customer service level strategy
procurement performance	Pearson Correlation	1	6.76
	Sig. (2-tailed)	0.000	
	N	63	63
customer service level strategy	Pearson Correlation	6.76	1
	Sig. (2-tailed)	0.000	
	N	63	63
Correlation is significant at the 0.01 level (2-tailed)			

4.7.1.2 Correlation analysis for procurement cost reduction strategy

A correlation analysis for the construct procurement cost reduction strategy was conducted to find out how procurement cost reduction strategy correlated with procurement performance. Table 4.20 shows that the Pearson correlation coefficient was 3.822904 a clear indication that procurement cost reduction strategy has a positive correlation with e-procurement performance (p-values >0.05). (Roth 1999). The significance of procurement cost reduction strategy verses e-procurement performance enhancement as indicated in the figure, all the plots are on the first quantrate in the line of best fit. These findings indicate that there is a strong linear relationship between procurement cost reduction strategy and procurement performance. According to Bielefied, 2006), process automation of procurement function helps in reduction of cost to firms in various industries.

Table 4. 20 correlation analysis for Construct procurement cost reduction strategy

		e-procurement performance	Procurement cost reduction strategy
e-procurement performance	Pearson Correlation	1	3.82
	Sig. (2-tailed)	0.0001	
	N	63	63
Procurement cost reduction strategy	Pearson Correlation	3.82	
	Sig. (2-tailed)	0.0001	
	N	63	63
Correlation is significant at the 0.01 level (2-tailed)			

4.7.1.3 Correlation analysis for Inventory optimization strategy

A correlation analysis for the construct inventory optimization strategy was conducted to find out how inventory optimization strategy correlated with procurement performance. Table 4.21 shows that the Pearson correlation coefficient was 3.199374. This is a clear indication that inventory optimization strategy has a positive correlation with e-procurement performance (p-values >0.05). The significance of inventory optimization strategy verses e-procurement enhancement and performance as indicated in the figure, all the plots are on the first quantrate in the line of best fit. These findings indicate that there is a strong linear relationship between inventory optimization strategy and e-procurement strategy. Demand conditions are such that it is difficult to meet supply chain expectations as either some supply chain members will be required to expedite shipments (high cost) or hold high levels of inventory (Carabello, 2007). High levels of stock adversely affect profitability (Croom, 2000).

Table 4. 21 correlation analysis for construct inventory optimization strategy

		procurement performance	Inventory optimization strategy
e-procurement performance	Pearson Correlation	1	3.199
	Sig. (2-tailed)	0.0002	
	N	63	63
Inventory optimization strategy	Pearson Correlation	3.199	
	Sig. (2-tailed)	0.0002	
	N	63	63
Correlation is significant at the 0.01 level (2-tailed)			

4.7.1.4 Correlation analysis for Buyer/Supplier Collaboration strategy

A correlation analysis for the construct buyer-supplier collaboration strategy was conducted to find out how buyer-supplier collaboration strategy correlated with procurement performance. Table 4.22 shows that the Pearson correlation coefficient was 2.899480. This is a clear in indication that buyer/supplier has a positive correlation with e-procurement performance (p-values >0.05). The significance of buyer/supplier verses e-procurement performance as indicated in the table below. These findings indicate that there is a strong linear relationship between buyer/supplier collaboration strategy and e-procurement strategy as shown in table 2.22. By focusing on relational exchange collaboration entails the activities that are undertaken faintly rather than unilaterally (Davenport, 2008) suggested that the requirements for effective collaboration are mutual objectives, integrated policies, joint decision making, information sharing of benefits and losses.

Table 4. 22 correlation analysis for construct Buyer-supplier relationship

		procurement performance	Buyer supplier collaboration strategy
procurement performance	Pearson Correlation	1	2.899
	Sig. (2-tailed)	0.0002	
	N	63	63
Buyer supplier collaboration strategy	Pearson Correlation	2.899	
	Sig. (2-tailed)	0.0002	
	N	63	63
Correlation is significant at the 0.01 level (2-tailed)			

4.7.1.5 Correlation analysis for Auditability and compliance strategy

A correlation analysis for the construct auditability and compliance strategy was conducted to find out how audits and compliance strategy correlated with procurement performance. Table 4.23 shows that the Pearson correlation coefficient was 4.518513. This is a clear indication that Auditability and compliance strategy has a positive correlation with e-procurement performance (p-values >0.05). The significance of Auditability and compliance strategy verses e-procurement performance as indicated in the table. These findings indicate that there is a strong linear relationship between Auditability and compliance strategy level and e-procurement strategy as shown in table 4.23. However, many organizations report dis-appointing results from e-procurement implementation, largely as a result of non- compliance by end-users (Aberdeen Group, 2001). (Davis, 2009), argues that if the potential be achieved, user adoption is crucial. This view receives support from a number of studies reporting compliance and the financial benefits of e-procurement (Croom, 2000).

Table 4. 23 correlation analysis for construct auditability and compliance strategy

		procurement performance	Auditability and compliance strategy
Auditability and compliance	Pearson Correlation	1	4.5185
	Sig. (2-tailed)	0.0000	
	N	63	
Auditability and compliance strategy	Pearson Correlation	4.5185	
	Sig. (2-tailed)	0.0000	
	N	63	63
Correlation is significant at the 0.01 level (2-tailed)			

4.7.2 Regression analysis

Regression analysis is a statistical tool for the investigation of relationship between variables. Usually, the investigator seeks to mantain the casual effect of on variable upon another. Regression analysis allows you to model, examine and explore spatial relationship, and can help explain the factors behind observed spartial patterns. Regression analysis is also used for prediction

4.7.2.1 Regression analysis for construct Customer service Level strategy

The overall model for the construct customer service was tested. The findings as indiacated in the table 4.24 shows the coeffient of determination R Square= 0.839 and R=.916 at 0.05 at significance level. The coefficient of determination indicated that 19.5% of the variation on e-procurement performance is explained by customer service level strategy. This shows that there existed a strong positive corelation coefficient between customer service level strategy and e-procurement performance. The tests of Beta coefficient shows that the significant relationship between customer service level strategy and e-procurement performance is positive. The

significance coefficient of customer service level strategy 0.0000 is significantly greater than zero since the t-statistics 6.774 is greater than 0.05 this demonstrates that customer service level strategy management has a positive effect on e-procurement performance. These findings concurred with (Carabello,2007) that effective customer service level strategy function greatly support effective e-procurement performance in organizations. These findings also corroborates observations by (Dooley, 2007) that customer service level strategy management practices such as customer collaboration, effective buyer supplier communication, application of effective supplier performance systems and the use of effective quality management systems promotes e-procurement performance in organizations.

Table 4. 24 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.916	.839	.826	.999

Predictors: (constant) customer service level strategy

4.7.2.2 Regression analysis for construct procurement cost reduction strategy

Table 4.25 presents the regression model the regression model of procurement cost reduction strategy with a coefficient of determination of R^2 = 0.272 and R= 0.522 at 0.05 significance level. The coefficient of determination indicates that 52.2 % of the variation on e-procurement performance is influenced by procurement cost reduction strategy. This shows that there exists a positive relationship between procurement cost reduction strategy on e-procurement performance. The test of beta coefficient shows that there is a significant relationship between

procurement cost reduction strategy and e-procurement performance as positive. The coefficient significance of procurement cost reduction strategy effect as .191 and is significantly greater than zero since the significance of t-statistics 0.00 is less than 0.05. this demonstrates that the high level of procurement cost reduction strategy as having a positive effect on e-procurement performance. These findings are in line with (Frohlich, 2002) that procurement cost reduction strategy issues such as requisitions, approvals, receiving and payment reconciliation affect e-procurement performance.

Table 4. 25 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.442	.195	.190	0.9362
Predictors: (constant) procurement cost reduction strategy				

4.7.2.3 Regression Analysis For Construct Inventory Optimization strategy

Table 4.26 presents the regression model the regression model of inventory optimization strategy with a coefficient od determination of R^2 = 0.272 and R= 0.522 at 0.05 significance level. The coefficient of determination indicates that 52.2 % of the variation on e-procurement performance is influenced by inventory optimization strategy. This shows that there exists a positive relationship between inventory optimization strategy on e-procurement performance. The test of beta coefficient (appendi iv) shows that there is a significant relationship between inventory optimization strategy and e-procurement performance as positive. The coefficient significance of inventory optimization strategy effect as .191 and is significantly greater than zero since the significance of t-statistics 0.00 is less than 0.05. this demonstrates that the high

level of inventory optimization strategy as having a positive effect on e-procurement performance.

These corroborated findings by(George, 2002) that inventory optimization strategy factor such as high levels of stock adversely affect profitability, coordination of demand requests, transportation and inventory management utilize the benefit of strategic supply chain tools such as information technology in lowering and ordering more efficient and effective stock utilization and hence e-procurement performance.

Table 4. 26 Model Summary

		Model Summary		
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.442	.195	.190	0.8244

Predictors: (constant) inventory optimization strategy

4.7.2.4 Regression analysis for construct Buyer supplier collaboration strategy

Table 4.27 presents the regression model the regression model of Buyer supplier collaboration strategy with a coefficient od determination of R^2 = 0.272 and R= 0.522 at 0.05 significance level. The coefficient of determination indicates that 52.2 % of the variation on e-procurement performance is influenced by Buyer supplier collaboration strategy. This shows that there exists a positive relationship between Buyer supplier collaboration strategy on e-procurement performance. The test of beta coefficient (appendi iv) shows that there is a significant relationship between Buyer supplier collaboration strategy and e-procurement performance as positive. The coefficient significance of Buyer supplier collaboration strategy effect as .191 and

is significantly greater than zero since the significance of t-statistics 0.00 is less than 0.05. this demonstrates that the high level of Buyer supplier collaboration strategy as having a positive effect on e-procurement performance.

This echoed the findings by (Handfield, 2003) that effective buyer-supplier relationships promotes information sharing, joint decision making and incentive alignment are factors that facilitate collaborative action through information exchange between the buyer and supplier hence enhancing procurement performance.

Table 4. 27 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.442	.195	.190	0.7648

Predictors: (constant) Buyer-Supplier collaboration strategy

4.7.2.5 Regression analysis for construct Audits and compliance strategy

Table 4.28 presents the regression model the regression model of audits and compliance strategy with a coefficient od determination of $R^2 = 0.272$ and R= 0.522 at 0.05 significance level. The coefficient of determination indicates that 52.2 % of the variation on e-procurement performance is influenced by audits and compliance strategy. This shows that there exists a positive relationship between audits and compliance strategy on e-procurement performance. The test of beta coefficient (appendi iv) shows that there is a significant relationship between audits and compliance strategy and e-procurement performance as positive. The coefficient significance of audits and compliance strategy effect as .191 and is significantly greater than zero since the

significance of t-statistics 0.00 is less than 0.05. this demonstrates that the high level of audits and compliance strategy as having a positive effect on e-procurement performance.

These concured with the findings by (Croom, 2000) that many organizations report disappointing results from e-procurement implementation, largely as a result of non- compliance by end-users and hence e-procurement failure.

Table 4. 28 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.442	.195	.190	0.9278
Predictors: (constant) customer service level strategy				

4.7.3 ANOVA Test

4.7.3.1 ANOVA for construct customer service level strategy

The results of Analysis of variance (ANOVA) for regression coefficients are shown in Table 4.29. The analysis results revealed that the significance of F statistics is 0.00 which is less than 0.05. This implies that there is a significant relationship between customer service level strategy and e-procurement performance. Electronic customer relationship management (CRM) while recognizing the potential for data mining, improved segmentation and one-one marketing appears also to have been primarily concerned with managing the relationship and indeed the contact with customers (Harrington, 2001). Central to this is the notion of the internal customer "every part of an organization contributes to external customer satisfaction by satisfying its own internal customers" (Heijden, 2003). From emanating perspective this internal customer notion is

also well accepted (Hines, 2004) has led to the concept of internal marketing (Johnston, 2005). However, the application of notion of the internal customer service level strategy to e-procurement is relatively new.

Table 4. 29 ANOVA for construct customer service level strategy

Model	Sum of Squares	Df	Mean of Square	F	Sig
Regression	138.400	1	138.400	9.5	.000
Residual	325.445	135	2.410		
Total	463.845	136			
Predictors: (Constant) Customer service level strategy					
Dependent Variable: E-Procurement Performance					

4.7.3.2 ANOVA for construct Procurement cost reduction strategy

The results of Analysis of variance (ANOVA) for regression coefficients are shown in Table 4.30. the analysis results revealed that the significance of F statistics is 0.00 which is less than 0.05. This implies that there is a significant relationship between procurement cost reduction strategy and e-procurement performance. E-procurement adoption is justified only when the perceived benefit is large enough to cover the cost. The high cost of initial investment associated with the required infrastructure and training of personnel, quantifying the return on investment often becomes a barrier to state corporations (Locke and Latham, 2002).

Table 4. 30 ANOVA for construct procurement cost reduction strategy

Model	Sum of Squares	Df	Mean of Square	F	Sig
Regression	18.605	1	18.605	8.5	.0001
Residual	465.814	135	3.450		
Total	484.419	136			
Predictors: (Constant) Procurement cost reduction strategy					
Dependent Variable: E-Procurement Performance					

4.7.3.3ANOVA for construct Inventory optimization strategy

As can be observed in table 4.31 of the Analysis of variance (ANOVA) for regression coefficients, the results demonstrate that the significance of F statistics is 0.00 which is less than 0.05. Therefore it implies that there is a significant relationship between inventory optimization strategy and e-procurement performance. Demand conditions are such that it is difficult to meet supply chain expectations as either some supply chain members will be required to expedite shipments (high cost) or hold high levels of inventory (Maleyeff, 2003). High levels of stock adversely affect profitability (McCrudden, 2004).

To coordinate demand requests, transportation and inventory management utilize the benefit of strategic supply chain tools such as information technology to lower and make ordering more efficient (Andersen & Christensen, 2005).

Table 4. 31 ANOVA for construct inventory optimization strategy

Model	Sum of Squares	Df	Mean of Square	F	Sig
Regression	32.614	1	32.614	9.61	.0002
Residual	465.213	135	3.446		
Total	497.827	136			
Predictors: (Constant) inventory optimization strategy					

Dependent Variable: E-Procurement Performance

4.7.3.4 ANOVA for construct Buyer -Supplier collaboration strategy

The results of Analysis of variance (ANOVA) for regression coefficients are shown in table 4.32. the analysis results revealed that the significance of F statistics is 0.00 which is less than 0.05. This implies that there is a significant relationship between Buyer-supplier relationships and e-procurement performance. Buyer\supplier commitment is an enduring desire to maintain a valued relationship . Through commitment partners dedicate resources to sustain and further the goals of the collaboration. (Taylor & Todd, 2005) and (Shalhoub, 2006) propose that the expectation   of relationship is important for motivating collaboration in inter-organizational relationships (Quach, 2005) noted that information sharing joint decision making and incentive alignment are factors that facilitate collaborative action through information exchange between the buyer and supplier.

Table 4. 32 ANOVA for construct buyer- supplier collaboration strategy

Model	Sum of Squares	Df	Mean of Square	F	Sig
Regression	73.86	1	73.860	25.314	.0002
Residual	436.814	135	3.235		
Total	510.674	136			

Predictors: (Constant) Buyer-Supplier relationship

Dependent Variable: E-Procurement Performance

4.7.3.5 ANOVA for construct Audits and Compliance strategy

As can be observed in table 4.33 of the Analysis of variance (ANOVA) for regression coefficients, the results demonstrate that the significance of F statistics is 0.00 which is less than 0.05. Therefore it implies that there is a significant relationship between Audits and compliance strategy and e-procurement performance. Purchasing literature has emphasized the potential contribution of e-procurement in lowering transaction costs and prices paid for goods and services (Croom, 2000).However, many organizations report dis-appointing results from e-procurement implementation, largely as a result of non- compliance by end-users (Aberdeen Group, 2001). (Moozakis, 2001), argues that if the potential be achieved, user adoption is crucial. This view receives support from a number of studies reporting compliance and the financial benefits of e-procurement (Pressutti, 2003).

Table 4. 33 ANOVA for construct Audits and Compliance strategy

Model	Sum of Squares	Df	Mean of Square	F	Sig
Regression	87.641	1	87.641	12.6	.0000
Residual	446.824	135	3.307		
Total	534.465	136			
Predictors: (Constant) Audits and compliance strategy					
Dependent Variable: E-Procurement Performance					

4.8 Overall Model

Multiple regression analysis was used to determine whether independent variables; customer service level strategy (X1), procurement cost reduction strategy (X2), inventory optimization strategy (X3), buyer-supplier collaboration strategy (X4) and audits and compliance strategy (X5) simultaneously affect the dependent variable Y which is the role of E-procurement performance. The sub-section examines whether the multiple regression equation can be used to

explain the hypothesis of the role of e-procurement strategy in enhancing procurement performance in state corporations in Kenya. The model used for regression analysis was expressed in the general form as given below

$$Y = a + B1x1 + B2x2 + B3x3 + B4x4 + B5x5 + e$$

Where;

Y = procurement performance (Dependent variable)

a = Constant (Co-efficient of intercept)

X1 = Customer service level strategy (independent variable)

X2 =Cost Reduction (independent variable)

X= Inventory optimization strategy (independent variable)

X4= Buyer-supplier collaboration strategy (independent variable)

X5=Auditability and compliance strategy (independent variable)

e =Error term

B1 ……………….B5= Regression co-efficient of five variables.

For this model, procurement performance was used as the dependent variable (Y) and independent variables included X1-X5. The relationships between dependent and independent variables and the results of testing significance of the model were also respectively interpreted. in interpreting the results of Multiple regression analysis, the three major elements considered were: the coefficient of multiple determinations, the standard error of estimate and the regression

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coefficients. R^2 was used to check how well the model fitted the data. $R^{2.}$ Is the proportion variation in the dependent variable explained by the regression model.

Table 4.34 reports the model of procurement performance with the coefficient of determination $R^2 = .978$ and R =0.989 at 0.05 significant level. The coefficient of determination indicates that 97.8% of the variation on e-procurement strategy in the performance of state corporations in Kenya can be explained by customer service level strategy (X1), procurement cost reduction strategy (X2), inventory optimization strategy (X3), buyer-supplier collaboration strategy (X4) and auditability and compliance strategy (X5). The remaining 2.1% of the variation e-procurement strategy in the performance of state corporations in Kenya is affected by other variable not included in the model. This shows that the model has a good fit since the value is above 75%. The results of the summary analysis of variance (ANOVA) are represented in table 4.34

Table 4. 34 Regression Model Summary

	Model Summary			
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.916	.839	.826	5.73

Table 4.35, shows the regression and residual (Error) Sum of squares. The variance of the residuals (or errors) is the value of the mean square which is 803.196. As can be observed in table 4.38, the predictors X1-X5 represent the independent variables, which are the factors enhancing procurement performance. Table 4.34 also provides the data to compute $R^{2.}$ this is

sum of squares-regression divided by sum of squares total R squared. SS-regression/SS-total 4015.980/5=803.196. Table 4.35 reports that the summary of ANOVA and F-statistic which reveals the value of F (1.204) is significant at 0.05 confidence level. The value of F is large enough to conclude that the set independent variables X1-X5 are the factors enhancing procurement performance in state corporations in Kenya.

Table 4. 35 ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4015.980	5	803.196	1.204	0.05
Residual	314.535	135	2.329		
Total	**4330.515**	**140**			

Table 4.36, evaluates and interprets the standardized coefficients of correlation (Beta). In estimating the contribution of each independent variable of the study, it was established that all independent variables significantly contributed to variance of e-procurement strategy at significant level of 6.05. However, the relative importance of each independent variable(s) is different. Also, since the significant values are less than 0.01, the coefficients were significant and the regression equation was:

$$Y = 46.79671 + 6.769933 X1 + 3.822904 X2 + 3.199374 X3 + 2.899480 X4 + 4.518513 X5$$

Table 4.36, shows variance inflation factors (VIF) which measure how much the variance of the estimated coefficients are increased over the case of number of correlations among the X variables. In this case customer service level strategy had the highest VIF of 6.769933 and highest beta coefficient of .999.

Table 4. 36 Coefficients

	Coefficients						
Model	Unstandardized coefficients		Standardized coefficients	t	Sig	Collinearity Statistics	
	B	Std error	Beta			Tolerance	VIF
Customer service level strategy	.006	.999	6.769933	6.774	.0000	0.007	8.675
Procurement cost reduction strategy	.152	.936	3.822904	4.0830	.0001	0.006	7.428
Inventory optimization strategy	.184	.08244	3.199374	3.880	.0002	0.002	6.834
Buyer-supplier collaboration strategy	.042	.7648	2.899480	3.790	.0002	0.004	5.984
Auditability and compliance strategy	.136	.9278	4.518513	4.869	.0000	0.023	4.725
Dependent variable: procurement performance							

Linear regression through the origin

4.9 Optimal Model

After the removal of Multicolinearity, the new regression analysis results were as follows;

Multicolinearity misleadingly inflates the standard errors. Thus it makes some variables

statistically insignificant while they should be otherwise significant (Young, 2009). In this case

customer service level strategy had the highest VIF of 6.769933and highest beta coefficient of

.999 thus made other variables to appear insignificant and hence it was removed from further

regression analysis. Table 4.37 reports the model of procurement performance with the coefficient of determination $R^{2} = $ .978 and R =0.989 at 0.05 significant level. The coefficient of determination indicates that 97.8% of the variation on e-procurement strategy in enhancing procurement performance in state corporations in Kenya can be explained by customer service level strategy (X1), procurement cost reduction strategy (X2), inventory optimization strategy (X3), buyer-supplier collaboration strategy (X4) and auditability and compliance strategy (X5). The remaining 2.1% of the variation in e-procurement strategy in enhancing procurement performance in state corporations in Kenya is affected by other variable not included in the model. This shows that the model has a good fit since the value is above 75%. The results of the summary analysis of variance (ANOVA) are represented in table 4.37

Table 4. 37 Regression Model Summary

		Model Summary		
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.916	.839	.827	5.73

Table 4.38 also provides the data to compute $R^{2.}$ which is sum of squares-regression divided by sum of squares total R squared. SS-regression/SS-total 4015.980/5=803. Table 4.38 reports that the summary of ANOVA and F-statistic which reveals the value of F (1.204) is significant at 0.05 confidence level. The value of F is large enough to conclude that the set independent variables X1-X5 are the factors enhancing procurement performance in state corporations in Kenya.

Table 4. 38 ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4015.980	5	803.196	1.204	0.05
Residual	325.326	135	2.4098		
Total	**4341.306**	**140**			

Table 4.39, evaluates and interprets the standardized coefficients of correlation (Beta). In estimating the contribution of each independent variable of the study, it was established that all independent variables significantly contributed to variance of e-procurement strategy at significant level of 6.05. However, the relative importance of each independent variable(s) is different. Also, since the significant values are less than 0.01, the coefficients were significant and the regression equation was:

$$Y = 46.79671 + 6.769933 X1 + 3.822904 X2 + 3.199374 X3 + 2.899480 X4 + 4.518513 X5$$

The levels of determination of the variables on procurement performance are; .245,.220,.0.58 and 93 respectively with the levels of significance being .00,.00,.08, .00, this shows a unit increase in customer service level strategy resulted in an increase in procurement performance in state corporations by .223 an increase in procurement cost reduction strategy would result in an increase in procurement performance in state corporations by .196 and increase in auditability and compliance strategy would result in an increase in procurement performance in state corporations by 71.139

Table 4. 39 Coefficients

Model	Un-standardized coefficients		Standardized coefficients	t	Sig	Collinearity Statistics	
	B	Std error	Beta			Tolerance	VIF
Customer service level strategy	.235	.035	.304	4.762	.000	.035	12.276
Procurement cost reduction strategy	.223	.024	.322	5.67	.000	.046	14.236
Inventory optimization strategy	.048	.036	.107	1.86	.080	.047	16.284
Buyer-supplier collaboration strategy	.194	.059	.236	2.652	.006	.024	18.154
Auditability and compliance strategy	.196	.074	.235	2.764	.006	.016	25.159
Dependent variable: procurement performance							
Linear regression through the origin							

The heading row "Coefficients" spans the full width of the table above the Model row.

The output table 4.43 below is for Y versus X1, X2, X3, X4, and X5.

Table 4. 40 Regression output

Dependent Variable: Y

Sample: 38

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Sig.
E-procurement performance	46.79671	5.196101	9.006121	0.0000
Customer service level strategy	6.769933	0.999345	6.774372	0.0000
Procurement cost reduction strategy	3.822904	0.936286	4.083050	0.0001
Inventory optimization strategy	3.199374	0.824425	3.880734	0.0002
Buyer/Supplier relationship	2.899480	0.764836	3.790983	0.0002
Auditability and compliance strategy	4.518513	0.927896	4.869633	0.0000

R-squared	0.839845 Mean dependent variable	73.86466
Adjusted R-squared	0.826717 S.D. dependent variable	13.78283
S.E. of regression	5.737409 Sum squared residue	4015.980
	F-statistic	63.97615
Durbin-Watson stat	1.870660 Prob(F-statistic)	0.000000

The equation derived from regression output is as follows:

$$Y = 46.79671 + 6.769933\ X1 + 3.822904\ X2 + 3.199374\ X3 + 2.899480\ X4 + 4.518513\ X5$$

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter summarizes and sought to investigate the role of e-procurement strategy on performance of state corporations in Kenya and the data collected and the statistical analysis discussions done with reference to the objectives and research questions of the study. Data was interpreted and the results of the findings were correlated with both empirical and theoretical literature available. The conclusion relates directly to the specific objective/research questions. The recommendations were deduced from conclusion and discussion.

5.2 Summary of Key Findings

The study sought to explore the role of e-procurement strategy performance in state corporations in Kenya. Especially the study looked at customer service level strategy, procurement cost reduction strategy, inventory optimization strategy, buyer/supplier collaboration strategy and relationship, auditability and compliance strategy of the procurement process.

5.2.1 Effect of Customer Service Level strategy on Procurement Performance

The study sought to find out the extent to which customer service level strategy affected procurement performance in state corporations in Kenya. From the findings customer service quality influenced customer service level strategy hence affected procurement performance in state corporations in Kenya. On overall, majority of the respondents with an average percentage rated all customer service level strategy management factors as influencing procurement performance to a moderate extent, a large extent, and a very large extent respectively. Customer service quality, customer service management, variability in demand, forecast accuracy and

customer loyalty, as factors affecting customer service level strategy in buying goods, services and works from the suppliers. The study therefore, concluded that factors such as customer service management, customer service quality, variability in demand, forecast accuracy and customer loyalty in buying of goods, services and works influenced how customer service level strategy affected procurement performance in state corporations in Kenya.

5.2.2 How does procurement cost reduction strategy affect procurement performance in State Corporation?

The study sought to find out the extent to which procurement cost reduction strategy affected procurement performance in state corporations in Kenya. From the findings the respondents indicated that procurement cost reduction strategy had greater influence on procurement performance in state corporations in Kenya.

5.2.3 To what extent does inventory optimization strategy affect procurement performance in State Corporation in Kenya

The study sought to find out the extent to which inventory optimization strategy affected procurement performance in state corporations in Kenya. From the findings, respondents indicated that inventory optimization strategy on e-procurement strategy influenced procurement performance in state corporations to a very large extent.

5.2.4 How does Buyer/supplier collaboration strategy influence procurement performance of state corporations in Kenya?

The study sought to find out the extent to which Buyer/supplier collaboration strategy affected procurement performance in state corporations in Kenya. From the findings, respondents

indicated that, Buyer/supplier collaboration strategy had influence on procurement performance in state corporations in Kenya to a very large extent.

5.2.5 To what extent does audits and compliance strategy influence the procurement process in State Corporation in Kenya?

The study sought to find out the extent to which audits and compliance strategy affected procurement performance in state corporations in Kenya. From the findings, the respondents indicated that audits and compliance strategy was not undertaken in many state corporations.

5.3 The overall effect of the variables

The study findings showed a great influence of all the five variables to the performance of state corporations. Test of overall significance of all the five variables jointly, customer service level strategy, procurement cost reduction strategy, inventory level optimization, buyer-supplier collaboration strategy and auditability and compliance strategy of the procurement process ANOVA, at 0.05 level of significance found the model to be significant.

5.4 Conclusions

The crux of this study was to explore the role of e-procurement strategy in the performance of state corporations in Kenya. Based on previous studies the components of e-procurement were expected to have positive relation with procurement performance in state corporations in Kenya. The output given from the findings indicate that there is a significant positive relationship between the components of e-procurement strategy namely customer service level strategy, procurement cost reduction strategy, inventory level optimization, buyer supplier collaboration strategy and auditability and compliance strategy of the procurement process with the procurement performance.

The findings also indicated that customer service level strategy contributes towards procurement performance in state corporations in Kenya. The result also revealed that procurement cost reduction strategy has a direct relationship with e-procurement strategy and finally improving the procurement performance of state corporations in Kenya. Supplier management, pooling of purchase requisitions and procurement-oriented product development are tasks that are typically assigned to strategic procurement. Prior to e-procurement, strategic procurement often had to deal with administrative routine work as well, such as individual transactions, converting purchase requests into purchase orders or ensuring the correct allocation of invoices received and therefore, the use of e-procurement technologies in procurement is aimed at realizing faster and more efficient operational procurement processes hence reducing procurement costs and thereby enhancing procurement performance.

The findings in addition revealed that inventory level optimization. Buyer/supplier collaboration strategy and auditability and compliance strategy of the procurement process have positive relationship with procurement performance in State Corporation. The findings emphasize that continuous inventory replenishment policy takes a regular order. The time of a replenishment decision is called an order point and the arrival of an order is regeneration point. The objective of any firm is to maximize the long-run average profit with decision variables. However, the inventory optimization level strategy is always non-negative when unmet demands are lost.

The finding also emphasized that the advent of electronic procurement have been viewed as a key stone of supply chain collaboration. Moreover, it has been repeatedly reported that electronic procurement is an important enabler for information sharing, however, its impact on complex collaborative practices including joint decision making and incentive alignment has not been established yet.

5.6 Recommendations

1.   Recent e-service research has been primarily concerned with the provision and development of service between an organisation and its external customers. While concerned with the quality of the customer's experience considered the issues for service design. The value-added features e-services need to provide to gain market share and profits. Electronic customer relationship management (CRM) recognises the potential for data mining, improved segmentation and one-to-one marketing appears also to have been primarily concerned with managing the relationship and indeed the contact with customers. It is interesting to note that the manufacturing-based e-commerce literature has been much more internally focused concerned with, in particular, the implications for process design. It is recommended that Enterprise resources planning (ERP) systems in particular should be concerned with trying to integrate and co-ordinate the various internal functional areas to break down those functional boundaries and ensure that marketing, operations and financial decisions, for example, are all made using the same data. Customer Relationship Management systems can also be used to co-ordinate the supply chain by ensuring better sharing of information. The study is a justification of the fact that e-procurement system is information, technology based purchase system which is at the input end of the supply chain. It has been commonly accepted that information infrastructures such as e-procurement system becomes increasingly connected and embedded with other infrastructures to initiate the growth of enterprises. In line with this notion, the usage of information technology in e-procurement system is considered to be an innovation strategy action.

2.   On procurement cost reduction strategy methods, the research recommends holding the key success for delivering cost effective services hence procurement performance. Strong concerns have thus been raised within the state corporations for adopting alternative integrated

procurement cost reduction strategies to supersede the traditional cost approach with the concomitant problems of fragmented working relationship between parties in the supply chain. It is recommended that target cost contracting (TCC), to be accompanied by a gain-share/pain-share arrangement serving as a cost incentive mechanism in state corporations in Kenya. In line with this state corporation must view the embracement of e-procurement as a tool that will support procurement cost and processes as it generally contributes partner relationships, information sharing, and supply chain integrations as e-procurement contributes to supply chain performance.

3.   On audits and compliance strategy as part of the recommendations, the researcher would like the government to introduce legislation to guide procurement over the internet. Currently there are no clear cut legislation to guide buying and selling using the internet based systems which has discouraged state corporation to automate system in line with the implementation business activities through digital technologies over the internet. The introduction of the fibre optic cable in the country is projected to boost internet connectivity country wide hence ensure that the nation is served by high capacity broad band networks that can facilitate e-procurement. The government should strive to ensure that the costs of connecting to the internet through the fibre optic are brought down to minimize the costs of running such systems. The government should also come up with a policy of training manpower that can run such systems. This can be done by setting up dedicated technology based organizations and institutions in that case and exempting taxation from such institutions to bring onboard knowledge based technology.

4.   The researcher recommends that using technology through e-procurement and procurement systems processes can be improved effectively and transparency of the supply chain can be enhanced. Therefore, e-procurement system is more pivotal than other e-business

applications, the current economic environment, a value creation perspective is important for improving supply chain performance. It can be expected that the functional characteristic of e-procurement systems can enable companies to improve the efficiency of value creation processes in the supply chain. Investing and facilitating a digital economy is by empowering youth to develop software that are market ready and which the government and county government will be primary consumers.

5.   The Researcher recommends that adversarial procurement approaches preclude the development of collaborative relationships. However, there emerged a general consensus that a more relational procurement process has a positive influence on the relationship established: this reinforces the assertion by Rogers that better business alliances are created through developing the supplier-relationship procurement model. The perceived benefits of relational approaches should include clarity of service requirements, value delivery, and cultural alignment: These supports the view presented by Lehtonen that mutual involvement in relationship development and planning is needed to convert ideas into practical operations, and to enable both parties to develop the relationship to their mutual benefit. It was also apparent that some organisations should be more evolved than others in terms of clearly defining the level of collaboration and associated business benefits they are seeking to achieve. It is recommended that Suppliers to be so open and consider radically differing service solutions as being central to their competitive advantage and see their ability to partner and establish a relationship with the client setting them apart from their competitors.

6.   The researcher recommends that intensifying competition and modern management philosophies drive companies to find ways to reduce working capital tied to business operations, including maintenance material inventories. The study recommends that the function of

inventory optimization strategy should be derived from the need of maintaining the right order fulfillment. Demand conditions are such that it is difficult to meet supply chain expectations as either some supply chain members will be required to expedite shipments (high cost) or hold high levels of inventory. High levels of stock adversely affect profitability and as such stocks should be replenished continuously from upstream. To coordinate demand requests inventory management should utilize the benefit of strategic supply chain tools such as information technology to lower and make ordering more efficient and effective. This real – time information in regard to inventory levels throughout the supply chain assists in lowering the costs of back orders, lost orders and obsolescence.

5.7 Areas for further research

This study is a milestone for future research in this area, particularly in Kenya. The findings emphasized the importance of the component of e-procurement strategy in the performance of state corporations in Kenya, which is customer service level strategy, procurement cost reduction strategy, inventory level optimization strategy, buyer-supplier collaboration strategy and auditability/compliance strategy of the procurement systems and processes in state corporations in Kenya. Future research will need to be carried in other industries and countries in order to show if the link between e-procurement strategy and procurement performance can be generalized.

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APPENDICES 1: RESPONDENT CONSENT

DEAR RESPONDENT,

REF: CONSENT FOR PROVISION OF ACADEMIC DATA

I am a student at the Jomo Kenyatta University Agriculture and technology pursuing degree of doctor of philosophy in business administration (procurement and supply chain management option). I am currently conducting a research study on the role of e-procurement strategy in enhancing procurement performance in state corporations in Kenya to fulfill the requirements of doctor of philosophy in business administration (procurement and supply chain management option)

I would highly appreciate if you assist me by responding to all questions as listed below. Your response will be treated with utmost confidentiality and purely for academic purposes.

Your assistance is highly appreciated.

Yours Faithfully,

NOOR ISMAIL SHALLE

APPENDICES

1: QUESTIONNAIRE

INSTRUCTION: *Please answer all the questions honestly and exhaustively by putting a tick ( ) or numbers in the appropriate box that closely matches your view or alternatively writing in the spaces provided where necessary.*

NB: This information will be used strictly for academic purposes only and will be treated with utmost confidence.

PART A: Background Information

Department……………………………………………………………………

Jog Designation………………………………………………………………

Gender   [   ] male ....

....[   ] Female

Age........................... [   ] 18 – 30   [   ] 31 – 40   [   ] 41 – 50   [   ] 50 and above

Level of education   [   ] O/A level   [   ] Certificate/Diploma [   ] Bachelors   [   ] post graduate   [   ] other specifications

Years of experience in e-procurement as a requisitioner [   ] less than one year [   ] 1 -10   [   ] 10 – 20   [   ] 20 and above

Total Population of employees in your corporation……………………………

PART B: Customer Service Level strategy

1. Please indicate the extent to which the following Customer Service Level strategy factors affect the procurement performance in state corporations in Kenya. Use a scale of 1-5, where (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent)

Customer service level strategy	1	2	3	4	5
Customer service quality					
Variability in demand					
Customer service management					
Forecast accuracy					
Customer loyalty in buying goods, services and works					

2.Could you suggest how state corporations in kenya should employ effective customer service level strategy for long term organizational success and the ability to expand and maintain a large and   loyal   customer   base.

…………………………………………………………………………………………………

……………………………………………………………………………………

PART C: Procurement Cost Production

Please indicate the extent to which the following Procurement Cost Production factors affect the procurement performance in state corporations in Kenya. Use a scale of 1-5, where (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent)

Procurement Cost Production	1	2	3	4	5
E-government					
Electronic data interchange					
Transaction costs					
Good governance					
Internet control application					

In your own opinion do you think Procurement Cost reduction strategy on e-procurement strategy affect procurement performance in state corporations in Kenya …………………………………………………………………………………………… ………………………………………………………………………………

PART D: Inventory Optimization strategy

1. Please indicate the extent to which the following Inventory optimization strategy factors affect the procurement performance in state corporations in Kenya. Use a scale of 1-5, where (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent)

Inventory optimization strategy	1	2	3	4	5
Inventory control					
Optimization technique					
Demand forecasting					
Sequential optimization					
Stochastic processes					

Suggest how inventory optimization strategy assists in coping with the increasing un-certainty both on demand and supply sides and becomes a crucial requirements to making demand and supply

decisions.…………………………………………………………………………………

…………………………………………………………………………………………

PART E: Buyer/Supplier Collaboration strategy

1.Please indicate the extent to which the following Buyer-supplier relationships factors affect the procurement performance in state corporations in Kenya. Use a scale of 1-5, where (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent)

Buyer-supplier relationships	1	2	3	4	5
Information sharing					
Organizational development					
Inter organizational systems					
Channel relationships					
Supplier relationship competencies					

2.Outline on the importance of buyer-supplier relationship collaboration as a key factor based on arms-length agreement to collaborative processes based on trust and information sharing among organizations in the supply chain.…………………………………………………………………………………

……………………………………………………………………………………

PART F: Auditability and compliance strategy

1.Please indicate the extent to which the following Auditability and compliance strategy factors affect the procurement performance in state corporations in Kenya. Use a scale of 1-5, where (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent)

Audits and compliance strategy	1	2	3	4	5
Accountability					
Internal audits					
Anti corruption agencies					
Regulations					
Governance					

Highlight on the reasons for conducting internal audits in supplier systems and policies in in state corporations in Kenya and how does that lead to effective procurement performance in organizations.…………………………………………………………………………………

……………………………………………………………………………………

PART F: Procurement Performance

1.Please indicate the extent to which you agree with the following statements relating to procurement performance in state corporations in Kenya. Use a scale of 1-5, where (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent)

Procurement Performance	1	2	3	4	5
Poor performance results from non-adherence to power processes and procedures					
Procurement quality and measurement					
Procurement planning					
Procurement strategies					
Procurement Integrity and transparency					
Procurement benchmarks					
Procurement quality and measurement					

Discuss on how procurement performance can be a achieved through benchmarking in state corporations in kenya and how does it bring about efficiency and effectiveness in the procurement   system?

…………………………………………………………………………………………………

………………………………………………………………………………

Thank You

APPENDIX 11: COEFFICIENT TABLE

Dependent Variable: Y

Sample: 1 310

Included observations: 310

Variable	Coefficient	Std. Error	t-Statistic	Sig.
E-procurement performance	46.79671	5.196101	9.006121	0.0000
Customer service level strategy	6.769933	0.999345	6.774372	0.0000
Procurement cost reduction strategy	3.822904	0.936286	4.083050	0.0001
Inventory optimization strategy	3.199374	0.824425	3.880734	0.0002
Buyer/Supplier relationship	2.899480	0.764836	3.790983	0.0002
Auditability and compliance strategy	4.518513	0.927896	4.869633	0.0000

R-squared	0.839845	Mean dependent variable	73.86466
Adjusted R-squared	0.826717	S.D. dependent variable	13.78283
S.E. of regression	5.737409	Sum squared residue	4015.980
		F-statistic	63.97615
Durbin-Watson stat	1.870660	Prob(F-statistic)	0.000000

APPENDIX IV: List of state corporations

1. Agricultural Development Corporation
2. Agricultural Finance Corporation
3. Agro-Chemical & Food Company Limited
4. Anti-Counterfeit Agency
5. Athi Water Services Board
6. Bomas of Kenya
7. Bondo University College
8. Brand Kenya Board
9. Bukura Agricultural College
10. Catering and Tourism Development Levy Trustee
11. Chekoilel University
12. Chemelil Sugar Company
13. Chuka University College
14. Coast Development Authority
15. Coast Water Services
16.   Coffee Board of Kenya
17. Coffee Development Fund
18. Coffee Research Foundation
19. Commission for University Education
20. Communication Commission of Kenya
21. Competition Authority
22. Constituency Development
23. Fund
24. Cooperative College of Kenya
25. Cotton Development Authority
26. Council of Legal Education
27. East African Portland Cement
28. Egerton University
29. Energy Regulatory Commission
30. Ewaso Ngiro North Development Authority
31. Ewaso Ngiro South Development Authority
32. Export Processing Zones Authority
33. Export Promotion Council

34. Geothermal Development Company
35. Higher Education Loans Board
36. Horticultural Crops Development Authority
37. Hotels & Restaurant Authority
38. IDB (Capital) Ltd
39. Industrial &Commercial Development Corporation
40. Jomo Kenyatta Foundation
41. Jomo Kenyatta University of Agriculture and Technology
42. Kabianga University College
43. Karatina University
44. KENGEN
45. Kenya Copyright Board

46. Kenya Electricity Transmission Company
47. Kenya Water Institute
48. Kenya Wine Agencies Limited

49. Kenya Agricultural Research Institute

50. Kenya Airports Authority
51. Kenya Broadcasting Corporation
52. Kenya Bureau of Standards
53. Kenya Civil Aviation Authority
54. Kenya Coconut Development Authority
55. Kenya Dairy Board
56. Kenya Education Staff Institute
57. Kenya Ferry Services Ltd.
58. Kenya Film Commission

59. Kenya Forest Research Institute
60. Kenya Forest Service
61. Kenya Industrial Estates
62. Kenya Industrial Property Institute
63. Kenya Industrial Research and Development Institute
64. Kenya Information Communication Technology Board
65. Kenya Institute for Public
66. Policy Research Analysis
67. Kenya Institute of Education
68. Kenya Institute of Special Education
69. Kenya Law Reform Commission
70. Kenya Literature Bureau

71. Kenya Marine & Fisheries Research Institute
72. Kenya Maritime Authority
73. Kenya Meat Commission
74. Kenya Medical Research Institute
75. Kenya Medical Supplies Agency
76. Kenya Medical Training College
77. Kenya National Trading Corporation.
78. Kenya National Accreditation Services

79. Kenya National Bureau of
80. Statistics
81. Kenya National Examination Council
82. Kenya National Highways   Authority

83. Kenya National Shipping Line
84. Kenya Pipeline Company Ltd.
85. Kenya Plant Health Inspectorate Services
86. Kenya Polytechnic University College
87. Kenya Ports Authority
88. Kenya Power & Lighting Company
89. Kenya Railways Corporation
90. Kenya Roads Board

91. Kenya Rural Roads Authority
92. Kenya Safari Lodges & Hotels

93. Kenya Seed Company
94. Kenya Sisal Board
95. Kenya Sugar Board
96. Kenya Sugar Research Foundation
97. Kenya Tourist Board

98. Kenya Tourist Development Corporation
99. Kenya Trade Network Agency

100.   Kenya Urban Roads Authority
101.   Kenya Utalii College
102.   Kenya Wildlife Service
103.   Kenya Year Book Editorial Board

104.   Kenyatta International Conference Centre
105.   Kenyatta National Hospital
106.   Kenyatta University
107.   Kerio Valley Development Authority

108. Kimathi University College
109. Kisii University College
110. Laikipia University College
111. Lake Basin Development Authority
112. Lake Victoria North Water Services
113. Lake Victoria South Water Services Board
114. Local Authorities Provident
115. Fund
116. Maseno University
117. Masinde Muliro University
118. Meru University College of Science and Technology
119. Moi Teaching & Referral Hospital
120. Moi University
121. Mombasa Polytechnic University College
122. Muhoroni Sugar Company Ltd (under receivership)
123. Multimedia University College of Kenya (Kenya College of Communications
   Technology)
124. Narok University College
125. National Campaign Against Drug Abuse Authority

126. National Crime Research Centre

127. National Housing Corporation

128. National Bio Safety Authority
129. National Cereals and Produce Board
130. National Commission on Gender & Development
131. National Coordinating Agency
132. for Population and
133. Development (NCAPD)
134. National Council for Law
135. Reporting
136. National Council for Persons with Disabilities
137. National Environment Management Authority
138. National Hospital Insurance Fund
139. National Industrial Training Authority
140. National Irrigation Board
141. National Oil Corporation of Kenya
142. National Social Security Fund

143. National Water Conservation & Pipeline Corporation
144. New Kenya Co-op. Creameries

145.   Northern Water Services Board
146.   Numerical Machining Complex
147.   Nyayo Tea Zones Development Corporation
148.   Nzoia Sugar Company
149.   Pest Control Produce Board
150.   Postal Corporation of Kenya
151.   Pwani University College
152.   Pyrethrum Board of Kenya
153.   Rift Valley Water Services Board
154.   Rural Electrification Authority
155.   SACCO Society Regulatory Authority

156.   School Equipment Production Unit
157.   South East University College
158.   South Nyanza Sugar Company
159.   Sport Stadia Management Board
160.   Tana & Athi Rivers Development Authority

161.   Tana Water Services Board
162.   Tanathi Water Services Board
163.   Tea Board of Kenya
164.   Tea Research Foundation of
165.   Kenya
166.   University of Nairobi
167.   Water Resources Management Authority
168.   Water Services Regulatory Board
169.   Water Services Trust Fund

170.   Witness Protection Agency
171.   Women Enterprise Fund
172.   Youth Enterprise Development Fund

APPENDIX 111: MEASUREMENT OF VARIABLES

Variable name	indicator	Measure	Scale	Instrument
Customer Service Level strategy	• Customer service quality • Variability in demand • Customer service management • Forecast accuracy • Customer loyalty in buying goods, services and works	Likert/ Ordinal	5 point Likert Scale	**Questionnaires**
Cost Reduction	• E-government • Electronic data interchange • Transaction costs • Good governance • Internet control application	Likert/ Ordinal	5 point Likert Scale	**Questionnaires**
Inventory Optimization strategy	• Inventory control • Optimization technique • Demand forecasting • Sequential optimization • Stochastic processes	Likert/ Ordinal	5 point Likert Scale	**Questionnaires**
Buyer-Supplier Collaboration strategy	• Information sharing • organizational development • Supplier relationship competencies • Inter organizational systems • channel relationships	Likert/ Ordinal	5 point Likert Scale	**Questionnaires**
Auditability and Compliance strategy	• Internal audits • Anti corruption agencies • Governance • Accountability • Regulations	Likert/ Ordinal	5 point Likert Scale	**Questionnaires**