

**EFFECT OF E - PROCUREMENT ON SUPPLY CHAIN PERFORMANCE OF
COUNTY GOVERNMENTS IN KENYA: CASE STUDY OF BUSIA COUNTY
GOVERNMENT**

BY

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DECLARATION

Student's Declaration

The project is my original research and no student has submitted it to any other institution for an academic award

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Supervisor's Declaration

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ABSTRACT

Suppliers in different categories have adopted electronic procurement for enhancing their respective positions in the market by automating a wide variety of process that relates to the supply chain. Globalization and advanced technology have led to the unprecedented increase in the popularity of e-procurement. Despite this unique development, however, many businesses still manually execute a wide variety of their activities, which has led to the flouting of several essential supply chain processes. The ultimate effect of this development is the increment in losses that organizations and governments incur. The purpose of this study is to determine the consequences that county governments in Kenya face once they embrace e-procurement. This study intends to use Busia County Government as a case study. Its focus is the impact of e-material management activities on the overall achievement of the supply chains of these administrative units. For the researcher to be able to achieve his goal, he anchored this study on Electronic Market Hypothesis, Dynamic Capability Theory, Value Chain theory, Resource Based View Theory and Contingency Theory of Management. Additionally, he relied on Correlational research design to conceptualize this research. Procurement staffs of the government were the target population. The researcher collected the data from all the 56 employees. The research instrument was valid once it was exposed to experts who suggest a few amendments that were incorporated into the content. Reliability was ensured using alpha where all variables combined had a reliability coefficient of 0.971. This research determined that the advanced tendering process considerably affected the achievement of supply chain ($\beta_1=0.971$, $p = 0.000$). The findings moreover established that electronic ordering has a momentous effect on supply chain achievement of these units ($\beta_2=0.606$, $p = 0.000$). Moreover, electronic materials management plays important role in the management if county governments. The impact on the supply chain achievement proves this assertion right ($\beta_2=0.603$, $p = 0.000$). Lastly e-supplier management has a noteworthy effect on supply chain achievement ($\beta_2 = 0.546$, $p = 0.000$).The study suggests that the individuals, who are in-charge request for proposals and contract monitoring, as well as goods receipt note. Additionally, the finding recommends that they need to enhance electronic system and ensure that the system is used to process all orders. Another important suggestion is that the management applies Bar codes. Through this method, they are able to enhance receipts and issues of stocks. For much better outcome, this study has also established that these units will be highly efficient if they design and maintain working Websites and electronic communication channels, including email. The research suggests this as the best way to guarantee supplier and buyer integration.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADS	Automated Dispensing Systems
BI	Behavioral intention
CPOE	Computerized Physician Order Entry
CSM	Customer service management
DPS	Desktop purchasing systems
DW	Data warehouse
EDI	Electronic data interchange
EFT	Electronic order platform
EOQ	Economic order quantity
EP	Electronic procurement
EPC	Electronic purchasing consortia
ERP	Enterprise resource planning
GIS	Geographic information system
GPS	Global positioning system
HIS	Hospital Information Systems
ICT	Information & Communication Technology
IOS	Inter-organizational systems
IS	Information System
IT	Information Technology
KPI	Key Performance Indicator
LAN	Local Area Networks
MRO	Maintenance Repair Operations
PIS	Pharmacy Information System
PO	Purchase Order
PPOA	Public Procurement Oversight Authority
RFID	Radio Frequency Identification
RFP	Request for Proposal
RFQ	Request for Quote

SCI	Supply Chain Interchange
SCM	Supply Chain Management
SRM	Supplier Relationship Management
TCO	Total Cost of Ownership
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UDDS	Unit Dose Dispensing System
VAN	value Added Network
VMI	Vendor Managed Inventory
VR	Virtual Reality
WAN	Wide Area Network
WBDMS	Web-Based Document Management System

DEFINITION OF OPERATIONAL TERMS

E- Commerce practice: This phrase refers to the process of trading in different products over computer networks, especially the Internet. E-commerce enables organizations to execute various essential activities, such as mobile commerce, e-funds transfer, and supply chain management (SCM). Other critical ones that it supports include Internet marketing and automated data collection systems. The present advanced e-commerce system utilizes the World Wide Web. However, researchers have established that it often use other technologies, including e-mail, as well (Wagner & Sweeney, 2010).

E- Market practice: This refers to marketplaces where business-to-business and other traders and customers can efficiently operate. They are more convenient, efficient, and affordable than the traditional markets (Wagner & Sweeney, 2010).

Electronic material management: The use of technological tools, such as Bar Coding and Radio Frequency Identification (RFID), to manage goods from the point of acquisition to delivery. The managers use electronic devices to track their containers, packages, cartons or trucks that are on their way to supply various products to the customer. Through this method, the organizations or institutions record increased security, productivity, inventory control, and traceability. Eventually, according to experts, Chandler (2003), they register as significant increase in capital as well as other vital operational savings.

Electronic order processing: According to Kim (2002), this phase refers to the process of using software based on Internet technology to create and enhance purchase acquisition and put purchase orders. It also includes the process of receiving the goods and services ordered. The process of creating and approving purchasing requisition, placing purchase orders as well as receiving goods and services ordered.

Electronic Procurement practice: This practice in the supply chain takes place where the Internet and other IT systems, such as Enterprise Resource Planning, are used to facilitate the operations of business-to-government, business-to-customer, or business-to-business. In the entire e-procurement value chain, there are several independent components (Baily, 2008). The main ones are indent management, catalogue management, e-Informing, e-Tendering, e-Auctioning, vendor management, Purchase Order Integration, Order Status, contract management, e-payment, and Ship Notice, e invoicing.

Electronic supplier management: The concept of electronic supplier management ensures that supply chain systems properly work with suppliers for sourcing events. Moreover, they efficiently investigate supplier responses and make the best decisions. For the managers to achieve this goal, they use a wide variety of modules, including Electronic bidding, Reverse and forward auction. Audit trail of transactions, and Bid tabulation. Others that are common are Contract Management, supplier response scoring, sealed bidding, efficient bid document distribution, and RFI/RFP/RFQ templates. By proactively managing supplier engagements in this way, managers are able to mitigate risk and guarantee compliance (Hand field & Nichols, 1999).

Electronic Tendering practice: In this case, entire tendering process takes place online to mitigate as many risks as possible. Paper-based transactions can be easily manipulated. Additionally, if members of staff fail to take the right care, they can be stolen or misplaced. At the same time, they are incredibly slow. The online tendering process comes in to solve many of these problems (Wagner & Sweeney, 2010).

E-procurement solution: This model refers to a web-based server that ensures the procurement procedure is automated (Wagner & Sweeney, 2010). Organizations have many options and can use different solutions to execute all the procurement related tasks, including indirect purchases, auctioning, sourcing, and tendering.

Procurement process: This process comprises many activities other than the buying and selling of services. It may involve need clarification, purchase order generating, and many others (Sanda Renko, 2011). When organizations use the ideal process, they eventually acquire the goods and services that they need from credible sources suppliers at favorable rates.

Influence: According to (Porter *et al.*, (1999), it refers to the ability of a person or organization to produce the desired impact without the use of undue force or direct exercise of command.

Supply chain: Sanda Renko (2011) defines supply chain as the network of the people, organizations, and resources, activities that help to ensure that a particular product is produced and delivered to the customer at the right time and in the best way.

Supply chain management: The success of supply chain depends on the ability of the managers to supervise the use of the materials, information, and fiscal resources finances throughout the entire chain. The supply chain management refers to the activities that organization gets involved

in to coordinate and integrate the flow of products, information, and finances (Sanda Renko, 2011).

Supply chain performance: This phrase “supply chain performance” refers to the degree to which the activities involved to production and transportation of products meet end-customer requirements, such as product availability and on-time delivery (Presutti, 2003).

CHAPTER ONE

INTRODUCTION

This chapter contains background of the study, statement of the problem, and objective of the study where by general and specific objective are outline, research hypothesis, scope of the study, significance of the study and finally conceptual framework. Electronic Commerce provides on day-to-day business transactions that are carried out through electronic medium

1.1 Background of the Study

The establishment and application of procurement function in various organizations have been considered a significant aspect on determining organizational performance. Essentially, different firms across the globe are fully engaged in the procurement process for the purposes of operations in their organizations. Electronic procurement has therefore emerged as key enabler in supply chain performance. Suppliers in different categories have embraced electronic procurement in bettering their position in the market through automation of supply chain processes (Handfield, Monczka, Grunipero & Patterson, 2011). Rao, Rangunathan & Rangunathan (2007) established that companies and other entities are under pressure to embrace e-procurement and the philosophy of supply chain to improve their competitive advantage. Automation of supply chain processes has different advantages that include increasing efficiency in operations, reducing lead-time, improving product quality, and reducing administrative costs during operations. However, different firms have different supply chain management techniques.

Historically, early users of information, systems were from the finance and accounting functions that began in 1970's. Different IT systems, for example Distribution Requirement Planning (DRP), E-Sourcing, E-Catalogue, E-Tendering, E-Market sites, and Material Requirement Planning (MRP), were established to aid in procurement processes. These systems were utilized to help improve in planning, distribution and general efficient procurement processes this study will adopt different theories that include institutional theory and technology – organization-Environment theory. This study will focus on county governments that utilize Electronic Procurement in their operations (Handfield et al., 2001).

According to Croom and Brandon, (2004), Electronic Procurement entails the use of internet in communication techniques ICTs to conduct various procurement activities in organizations and business enterprises. There are different categories of Electronic Procurement that involves E-Market place; E-Catalogues, E-Reverse Auction, as well as E-Tendering. The E-Procurement solutions are integrated to safeguard procurement activities in an organization (Validya & Callender, 2004).

On the other hand, Electronic Commerce provides on day-to-day business transactions that are carried out through electronic medium. In this case, the internet is the main platform. Electronic procurement is classified into different groups that includes; E-MRO (Maintenance Repair and Operations), Electronic-Sourcing involves figuring out potential suppliers for specific purchasing needs or procurement through the internet, ERP (Enterprise Resource Planning). This software integrates different activities that are related to procurement, such as purchasing requisitions placing and receiving orders among others, via the Internet. Electronic tendering deals with request for proposals from various suppliers and giving them feedback promptly through the worldwide web. E-Information as a form of Electronic Procurement is accustomed with accumulation of necessary procurement information and sharing out to different stakeholders via online systems (Baily et al., 2008).

Furthermore, Electronic Market-sites, E-Market sites, also exists. It deals with the provision of market platforms for people involved in the procurement process in terms of suppliers meeting with consumers online. The process happens through requisitions, approvals and purchase orders done electronically for the benefit of all stakeholders, E-reverse auction is another platform that involves the internet to purchase goods and services from willing buyer willing seller but have a guarantee of returning goods that are not up to standard or expectations based on terms and conditions (Baily et al., 2008). In assessing effectiveness in performance measurement systems, Beamon argues that inclusiveness, which takes into account all appropriate aspects; universality which covered the comparison of different parameters under different conditions; and measurability that entails quantification of data are the leading features in ensuring complete performance measurements (1999). Other features include consistency that ensures all aspects are in close scope of the organization goals and objectives. In the process of undertaking a

measurement, there is need to take into account strategic goals, which helps into evaluating the position of an organization interim of resources and general costs and flexibility. In order to build up an integrated supply chain with complete efficacy, Steven explains that there is need to undertake triple-perspective approach covering strategy, tactics, and operation (1990). Under these perspectives system use, facilities, and human resource takes a single unit approach and works in a coordinated mechanism. Similarly, Stevens argues that inventory level, service level, cost level, supplier performance level, and efficiency in production level are some of the leading points of measuring performance (1990). Logistics is a vital aspect in measuring supply chain performance. Assessing the logistics and understanding the process systems performance provides a hint on the direction of performance in entirety (Lear-Olimpi, 1999). According Purchasing (2007), analysis of supplier market is also an important sub factor in successful supply chain evaluation. Outsourcing which continue to emerge a leading player in human resource acquiring and providing services and goods.

Supply chain (SC) helps in the management of the interconnected resources, processes that starts at the point of the sourcing of raw materials, and goes through to the end-user (SCC, 2010). This system helps organizations that want to compete to achieve their goals. In the present world, only businesses that pay close attention to effective supply chain management have the potential to get a competitive advantage on the marketplace (Kevin, Marcos, Marcelo & Peter, 2010). Managers presently appreciate that the extent to which they transform their supply chain into a value chain has a direct bearing on profitability. For organizations that invest nothing or little in making advanced supply chains, they lack the capacity to add value for their customers. In this regard, they have a history of underperformance (Rlaph& Thomas, 2014).

Supply chain achievement measurement is another vital concept in the procurement industry that stakeholders use to refer to the process of determining the productivity of the supply chains (iikka, 2012). SC performance has five attributes (Supply Chain Council, 2010). These elements are reliability, SC costs, SC asset management, SC responsiveness, and SC flexibility. The first attribute refers to the performance of the SC in terms of the delivery of different products and services. Businesses want to use systems that help them to supply the products to the right destination and at the correct time. Additionally, the deliveries need to be in their best condition

as well as packaging. Moreover, it should be with the proper documentation and be delivered to the exact client. SC responsiveness, on the other hand, denotes the speed at which a particular supply chain delivers products. At the same time, SC flexibility refers to the overall dexterity of the supply chain in responding to different changes in the marketplace. SC costs are defined as the amount of resources required to operate the supply chain. SC asset management is another important terms that denotes the efficiency of organizations in managing their various assets with the objective of being able to support demand satisfaction adequately. These attributes of the SC chain enjoy the support of credible scholarly research. Ilkka (2010), Ugur & Erman (2013), and others argue for the validity of the measurements based on their research findings.

Over the past years, governments have been known to centralize power. However, a growing number of countries both in the developed and lately developing world have in the last 30 years been keen on decentralizing the administrative, political and fiscal functions of the central government to sub national governments and other agencies so as to improve service delivery (Calamai, 2009). These countries include the United Kingdom, the United States, India, the former USSR, Italy, Spain and Australia. Some African countries such as Nigeria and Kenya have also entrenched devolution in their governance structures. In many cases, the quest for devolution has been driven by the need to bring government services close to the people in response to the growing pressure on reforms in the public sector and the desire for more inputs and representation in public affairs' management by citizens and equitable distribution of economic and political resources (Cheema & Rondinelli, 2007). Consequently, the global arena is full of illustrations of successful and not so successful experiments in decentralization.

It is worth observing from the above illustrations that there are various forms of decentralization. Most importantly, it should be understood that the differences among decentralization frameworks of public functions are not clear cut and as such provide breeding grounds for such issues as role conflict which slow down the devolution process (Davies, 2012). Instead, the frameworks constitute of continuum-ranging from a centralized framework to a federal system.

The county governments came up with a county integrated development plan (CIDP) given a five year term 2013-2017. It is in line with the Kenya vision 2030, which is the blueprint of fiscal and social progress of the nation as from 2008-2030. It seeks to advance the economy from its

present status to an industrialized “middle income position that provides a high quality of life to its citizens by 2030.” The plan will help the country to continue with its aggressive development agenda that the economic recovery strategy for wealth (ERS) helped to initiate. This blueprint helped Kenya to register a significant gross domestic product (GDP) of 6.1% in 2006 for the first time. This figure was up from 0.6% in 2002. It is based on three pillars.

1.2 Statement of the Problem

Procurement function is considered the most significant in organizational performance and SC performance. Procurement involves different firms or a specific firm through procurement department, purchasing various items at the right place, the appropriate time, the ideal quality and the right price for the user departments (Snider & Rendon, 2011). Electronic procurement is a major function in that enables organizations reduce their cost of operations, increase their levels of efficiency and reduce lead times at a significant proportion (Rankin, 2006). Kenya have heavily relied on manual management systems over the years. The problem with this model is that it is widely associated with major inefficiencies in the procurement function. The government presently appreciates the need to embrace the use of ICT to boost the efficiency of the procurement system. Technical institutions are leading on the way to the adoption of technology to solve many of today’s problems on the sector. By using ICT, they have been able to advance the services, lowered the operating costs, and improved the performance of SC. Some of the most essential aspects that have a profound impact on the achievement of the procurement function are online communication, computerized tendering, and online tender advertising. In essence, information technology offers highly efficient and reliable process flow. Moreover, it guarantees smoother distribution of all forms of information and task and decision decentralization. It also ensures increased transparency and control of the system (Mburu & Njeru, 2014). Since experts associate the high cost of operations in the county administrative units to manual procurement systems, the adoption of technology will likely make the management much easier. For that matter, county governments will experience a noteworthy diminution in the number of challenges related to acquiring goods or services. Moreover, the governments will save much money. The inefficiency of the procurement process creates room for immoral officials to engage in fraudulent activities, which result in the increase in economic crimes (GAIN, 2017). Parastatal operations will also improve. The manual systems have made

them incredibly inefficient and non-profitable. The cause of this in part is the lack of a reliable system to help the government take full responsibility for major procurement burdens (Bilali & Bwisa, 2015). Due to these factors, e-procurement has considerably gained popularity. However, many businesses still use manual systems to manage their operations. According to PPOA (2013), in public sector, most procurement processes were still manual. Many organizations embrace the technology as means of exchanging emails and finding information on the Internet. However, the situation will not remain the same for long given the prevalent need to integrate essential functions, for example procurement and accounting. Businesses also require reorganizing and improving transparency to be able to standardized reporting, especially in regards to public finance. The government requires all its entities to use the Integrated Financial Management Information System (IFMIS). The Commission of Revenue Authority (2013) provides that the national government disbursed 210 billion Kenya shillings to the counties in the 2013/2014 financial year. Because of this decision, the government reported a 42.7% drop in its procurement operating cost. The country saved Ksh. 629 million. According to GoK (2014), the government used KSh1.64billion in the previous year for the same. Waniani, Namusonge and Lagat (2016) also established Nzoia Sugar Company has a reliable and effective technological infrastructure. According to the study, 66.9% of the respondents reported that they consider the infrastructure adequate to support all the relevant e-procurement processes. They evaluated the worth of the hardware and software and technical expertise. Despite the positive feedback, others consider that the technological infrastructure is inefficient. The study indicates that 33.1% of them considered the system inefficient. Their main concern is the stability of the Internet and efficiency of scanners. They consider that poor network coverage as well as system failures prevent Nzoia Sugar Company from implementing its e-procurement procedures. The company, however, consider that it has acquired the right ICT infrastructure. The unsatisfied respondents disagreed on internal electronic communication. They strongly think that the company does not allow suppliers to access Enterprise Resource Planning Systems, Technological integration of the e-procurement system with other internal systems, and other similar systems. Moreover, they have issues with the security of their data. These individuals consider this element as the most important factor for their success. Since they are not sure about the safety of their data, the

respondents consider the technology inefficient. The study shows that technological infrastructure in Nzoia Sugar accounted for 11.38 percent of e-procurement implementation.

E-procurement has many associated benefits, according to many recent studies. The experts have focused on the implementation of e-procurement, the related challenges, and benefits of electronic procurement. Many of them have also related this advanced practice with other critical variables such as operational and organizational performance. The ones conducted in Kenya centered on procurement and logistics. One good example is the work of Muhia and Afande (2015) that paid close attention on the role of the implementation of the strategy on procurement performance of state corporations. The researchers used Kenya Revenue Authority as a case study. Kioko and Mwangangi (2017) also did the same. In their study, these scholars focused on the influence of electronic procurement on the performance of parastatals. On the other hand, Fozia, Namusonge and Shaelle (2016) focused on electronic supplier management practices on state corporations. Nafula and Namusonge (2017) took time to study the effect of e-procurement practices. They gave particular attention on the efficiency frontier of the county of Kakamega. Barasa, Namusonge and Okwaro (2017) conducted a closely related study. They were interested in discovering the effects of E-procurement on the organizational performance of the counties. They undertook a case study of Bungoma County. Some studies that were conducted relate e-procurement with Supply chain performance. At the time this study was conducted, no research had attempted to study such relation in the sugar industry. The choice of the objectives of this study was influenced by the unique attributes of the history of Kenya, which has been characterized with many issues pertaining to procurement, production, and distribution problems. The lack of evidence on whether past studies have focused on the influence of e-Procurement on Supply Chain, especially in county governments, makes it necessary for the execution of research on the subject. The need to fill the knowledge gap, therefore, has influenced the decision to conduct this study. The main areas that it focused on to achieve the goal are the influence of electronic tendering, electronic material management, impact of electronic order processing practice, and electronic supplier management practice. The overall intention is to evaluate these parameters and find the best ways county government in Kenya can enhance e-procurement.

1.3 Research Objectives

Generally, the review's aim was to analyze the overall impact of e-procurement practices on SCP of the county of Busia.

This study is based on explicit goals;

- i. Ascertain how e-tendering impacts SCP on the county
- ii. To determine the way in which electronic order processing impact supply chain achievement of Busia government
- iii. Determining the impact electronic material management practice on supply chain achievement of the government
- iv. Determining the influence of electronic supplier management on supply chain achievement of Busia

1.4 Research Hypotheses

The subsequent null review theories directed this analysis;

H₀₁ Electronic tendering has no major influence on supply chain achievement of Busia County Government

H₀₂ Electronic order processing has minimal impact on supply chain achievement (SCP) of Busia County Government

H₀₃ Electronic material management has no vital impact on supply chain achievement of Busia County Government.

H₀₄ Electronic supplier management has no noteworthy consequence on supply chain achievement of Busia County Government

1.5 Significance of the study

The research findings may be beneficial to experts, procurement professionals, academicians, policy makers, vendors, and investors. Experts in the region of e-procurement may use this review as a point of reference. Given that the subject of procurement has gained significant popularity among professionals and academicians, its demand is incredibly high. Many people will be able to depend on it to promote the general academic and scholarly input. Additionally, it will aid to confirm the hypothetical suppositions on the impact of e-procurement on SCM.

Policy makers will also be able to use the findings to formulate e-procurement policies. The research may aid the county governments to understand the best ways to improve their e-procurement initiatives and overcome the common challenges that they face with incredibly ease. The study may be helpful in addressing the identified issues to boost the usage of e-procurement in improving supply chain achievement among the affected population. Both national and county governments will employ the results of the review to diagnose the problems that have an impact on its financial sector and devise policies and guidelines that will support electronic procurement adoption.

Investors may also make use the findings to make important budgetary decisions pertaining to electronic procurement to minimize costs and maximize profits. Whenever they want empirical data to use for benchmarking purpose, investors will use the findings for the purpose.

Electronic procurement sites allow the right vendors to find other qualified, registered users. Buyers or sellers can initiate transactions or can be initiated completed by use of E-procurement websites. In this way, customers have the opportunity to purchase the goods or services that they want with ease, which increases their chances of qualifying for special offers or volume discounts.

1.6 Scope of the Study

The analysis was geographically restricted to Busia County Government. The study tried to ascertain the effect of electronic procurement on the Supply Chain Achievement of Busia. Specifically, the effect of electronic tendering on supply chain achievement in the county was addressed. Moreover, it established the impact of electronic order processing on supply chain achievement of the county. The effect of electronic material management practice on supply chain achievement of Busia County was also addressed. Lastly, the review established the impact of electronic supplier management on supply chain achievement of Busia. The study considered data from January 2018 to the July 2019.

1.7 Conceptual Framework

INDIPENDENT VARIABLE

DEPENDENT VARIABLE

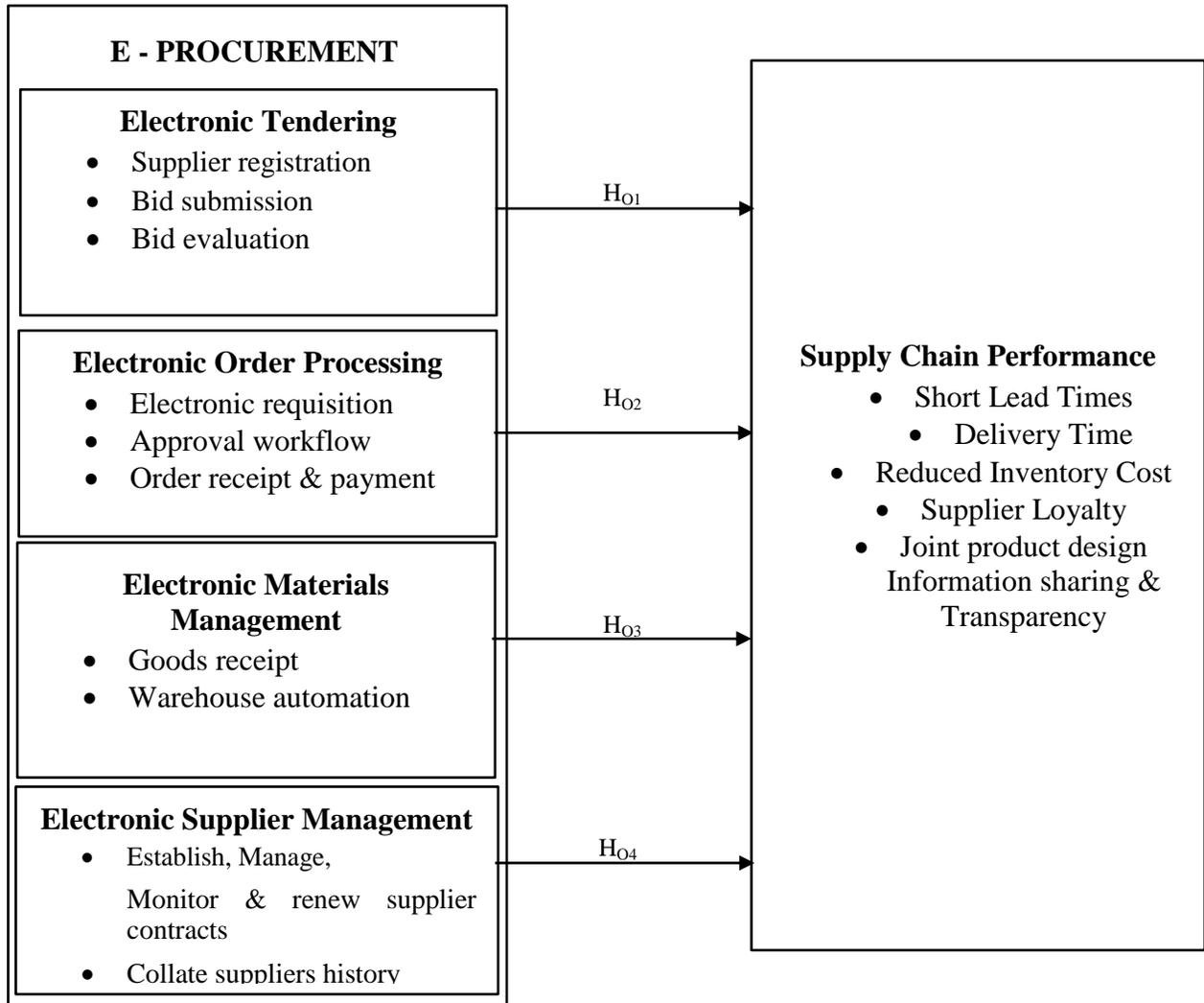


Figure 1.1: Relationship between E – Procurement and Supply Chain Achievement

The phrase, “conceptual framework” denotes a written or virtual product makes clear the elements that students or researchers should focus on at all times. It can do so in narrative or in graphical nature. The main factors are always variables, concepts, as well as the presumed

relationships among them (Mathieson, 2001). These models are structured from a wide range of hypothesis and ideas that help people to identify the problem at hand properly. Researchers are also able to frame their questions in the right way and establish the type of literature that is most suitable for the study. Academic researchers appreciate the need to use conceptual frameworks at the very onset to be able to clarify their research questions as well as aims (Stratman & Roth, 2004).

To illustrate the fundamental concepts of E-procurement and SCP, the independent variables and independent variable were identified from the literature review. The framework explains the link that exists between the different variables in the study. In this case, the study considered four independent variables, which include electronic tendering, electronic material management, electronic order processing, and electronic supplier management.

The first independent variable conceptualized for having affected the performance of supply chain was electronic tendering practice. According to Ngeno and Kinoti (2017), noted that some of these factors that significantly influence supply chain management on various sectors, including the energy sector, include electronic data interchange, supply chain integration, and e-tendering.

The second independent variable conceptualized as having significant control on the performance of supply chain was electronic order processing practice. Mutangili (2014) indicates that e ordering ensures that Network Members as well as their Suppliers to exchange the rights materials, especially EDI documents. Some of these items are POs, acknowledgements, electronic Invoices, and advanced Shipment Notices. These documents provide a centralized billing, reporting solutions, management fill rate, control price discrepancies, and the likes. Businesses can also use them to standardize their operations. All the involved parties have a chance to view the documents on the EOP website, Archive. Thus, a person or an organization is fully set to track shipments and approve invoices at a central location on the Internet.

The third independent variable conceptualized as having profound control on the efficiency of supply chain was electronic material management practice. At the same time, the outstanding challenges in terms of logistics were found to include untimely delivery of materials, poor

quality, incorrect or inadequate information regarding the arrival of materials, and missing materials. Other similar factors are unavailable or inadequate storage space and waste of labor. Supply chain managers can also rely on technology to enhance the tracking as well as the delivery of the materials. They can consider the use of GPS, JIT, EOQ to manage the E-material management process (Mueller & Mueller, 2010).

The fourth independent variable conceptualized as having power on the SCP was electronic supplier management practice. According to Wachiuri (2015), effective supply management and its methods for designing competitiveness revolve pertaining to the on-time delivery of competitive quality products.

The dependent variable in this particular study is supply chain achievement (SCP). Experts classify this element in this manner given that the success of supply relies on application of electronic procurement factors. According to (Muhia & Afande, 2015), it is an end-to-end solution that not only assimilates and streamlines a wide variety of procurement processes. According to Nyile and Shale (2016), by using electronic procurement systems, organizations also reduce ordering costs. The emergence of technology-based electronic procurement offers major solutions to e-procurement. It acts as a catalyst for major improvements (Croom, 2010; Osmonbekov *et al.*, 2012). Researchers find out that supply chain information systems has an indirect impact on the success of supply chains through systems such as ERP and SCMS (Samadi and Kassou 2016).

CHAPTER TWO

LITERATURE REVIEW

This literature review discusses the theories and empirical review of on e-procurement. Moreover, it evaluates the conceptual framework and provides research gaps, critique, and summary. This section reviews peer-reviewed journals, working papers, books, reports, and periodicals. It has aided to orient the researcher on all the relevant theoretical issues on E-procurement.

2.1 Theoretical Literature Review

According to Chau (1996), researchers have invested much of their time and resources trying to discover the link existing between the use of information technology and the overall effect on the performance a wide variety of organizations and individuals. This study briefly introduced several important SCM theories applies. Most of them are borrowed from accounting, engineering, management, economics, sociology, and other essential fields. Since this study is based on social psychology, it has used numerous options from the field as well. The most popular ones are Electronic Market Hypothesis, Dynamic Capability Theory, Value Chain theory, Contingency Theory of Management, and Resource Based View Theory.

2.1.1 Electronic Market Hypothesis

The efficient-market theory has been incredibly essential in the management field since the mid-1960s. However, it gained considerable popularity later on when Paul Samuelson began to circulate the work of Bachelier among economists (Fama & Eugene, 1965). He published the scholar's dissertation in 1964 as well as other empirical studies (Cootner & Paul, 1964). One year later, an exposition that was finding out the relevance of the random walk hypothesis published (Fama & Eugene, 1965). In the same year, Samuelson published a proof for a new model of the efficient-market hypothesis (Samuelson, 1965).

According to traditional economics, buyers always look for goods and services from a wide variety of suppliers. However, they have no influence on many essential market factors. Market services of supply and demand are the ultimate determinant of the design, delivery schedule, price, and quality of the products. Given that all buyers have to search all suppliers, they have no

alternative other than incur transactional and co-ordination costs. In this regard, in case these outlay are superfluous, hierarchical dexterity between different stakeholders, especially buyers and suppliers, is most favorable. In their literature, Malone *et al.* (1987) noted, “by reducing costs of coordination and transactions, IT will lead to an overall shift toward proportionately more use of e-markets – rather than hierarchies.”

Nevertheless, the researcher went on to state that inter-organizational electronic networks have the ability to enhance the coordination among different enterprises in two distinct ways (Malone *et al.*, 1987). When managers use ICT to reduce search costs, they get back electronic brokerage and market upshot. Electronic set-up ensures that all stakeholders are connected through a mutual network. They provide vital searching platforms that buyers are able to rely on to hastily, expediently and easily appraise the offerings of supplier. Additionally, they can faultlessly and proficiently finalize and transact. Nevertheless, when people use ICT to tightly couple of buyers and suppliers, a special change in relationship emerges. This modification happens due to the effect of electronic integration that takes place.

Nevertheless, in the present period, knowledge-based ICT advantages and resources get more benefits. For many years, traditional transaction economic have suggested that people need to pay attention to tangible ICT assets. However, the significance of intangible assets that reflect knowledge and expertise is gaining popularity too given the discoveries of recent studies. The suggestions of previous studies were based on the existence of dedicated ICT (Venkatraman & Zaheer, 1990; Barret & Konsynsky, 1982; Zaheer & Venkatraman, 1994). However, recent research indicates that other important factors, including the impact of data acquirement and propagation exploitation. Other experts have projected the idea of capability exploitation due to the popular need to understand the role of ICT in vertical electronic channels further (Christiaanse and Venkatraman, 1998).

This concept “Expertise exploitation” denotes the capabilities that different organizations develop with the objective of monitoring and influencing downstream channel of the behavior of members by using knowledge resources in exchange dealings. This same concept is also characterized by learning effects that relate with data exploitation as an asset by fully utilizing important data that is gathered by distribution members. Studies have shown that organizations develop expertise development through electronic techniques and eventually develop the right

hierarchical relationships with their partners. Their review showed that enterprises that employed capability exploitation through electronic techniques produce hierarchical links with their associates. Those corporates that ignore this principle have no ability to achieve this level of success. However, they are also able to gain greater strategic benefits when developing yield management through exploiting ICT generated information (Sigala *et al.*, 2001). The firms are also able to create better e-marketing tactics (Sigala, 2001) and achieve materialize ICT benefits (Sigala, 2002).

Electronic Market Hypothesis (EMH) is founded on transactions costs analysis, which firms that want the most efficient ways to predict the behavior of their staff use. EMH predicts that by bringing down coordination cost, information technology will change the direction of the firm to market-based form of economic activity from hierarchical (Malone, Yates and Benjamin, 1987). EMH predicts IT transformation will occur in different stages from hierarchies to biased-electronic market. It also ranges from partial markets to impartial one. This process of change has being ongoing for several years and continues to date. Presently, Granados *at el* (2006) provides that firms are shifting from brick to mortar markets. Internet based procurement are untied arrangements that permits agencies to transact in virtual environment without utilizing a specific dedicated systems. Credible reports show that the value of products that had been sold on the B2B electronic marketplaces and reached \$2.7 trillion by 2004 (Gartner Group, 2006). This figure represents 27% of this local market. Moreover, it stands for at least 3% of the global sales transactions. The same study shows that the growth was planned to take place in the global market worth over \$953 billion, which was growing at a rate close to \$7.29 trillion by 2004.

A major driving force behind the appearance of e-procurement is the advancement of technology for electronic data transfer. Electronic Data Interchange (EDI) is the method that is most preferred the world over. This technology is connected with purchasing and distribution functions. Moore (1998), it works when organizations utilize the most appropriate software that support designing activities as well as control the processes of production. Electronic Data Interchange is important given that it allows documents to be transferred from one computer to another in the agreed method among traders. Study shows that it ensures the automation of the entire supply chain, which includes factors such as the harmonization of the demand, supply, and

fabrication, and increases the operational boundaries of Intranets (McIntosh et al., 2001). For that matter, they become Extranets.

From the theoretical framework, Electronic tendering practice is explained by the popular Electronic Market hypothesis. Malone et al. (1987) uses the traditional economics to explain the mechanisms that ensure the coordination the flow of different products among buyers, suppliers, markets, and hierarchies. Additionally, the scholar provides that inter-organizational electronic networks can guarantee the effective coordination among firms in two contrasting methods. When supply chain managers use electronic networks to bring down search costs, ICT get an e-brokerage as well as market effect. When buyers and sellers are connected through a shared network and provide the essential tools, the customers get opportunity electronic networks help buyers to quickly and swiftly assess the offerings of several suppliers.

This hypothesis that is being used in this study is relevant in that when companies adopt E-procurement, coordination costs reduce as all the information is easily and freely shared between the buyers and sellers. A company is able to access more markets in the e-markets, use e-auction, e-commerce and all this will lead to less transaction costs and reduced lead time and no stock outs.

2.1.2 Dynamic Capability Theory

The aspect of dynamic capability was first coined by David Teece, Gary Pisano and Amy Shuen (Chien & Tsai, 2012). The theory describes a business aptitude to organize its assets in an effort to improve performance deliberately. According to Chien and Tsai (2012), dynamic capability is the aptitude of firms and other institutions to adjust their resource base purposefully. An organization should be able to respond satisfactorily and appropriately to a wide variety of external factors. This requires the adoption of different strategies that will harness multiple capabilities of the organization and put them into use. This will give the company the ability to integrate, develop, and leverage on the environmental competitive advantage. Indeed, the current business world is very dynamic. Changes ranging from organizational structures, culture, marketing and customer's tastes and preferences are taking a different path. For that matter, firms should have the capability to act in response to these changes in the most effective manner. The dynamic capability theory asserts that only those organizations able to achieve this will actually be able to break even in this competitive world (Chien & Tsai, 2012).

The market environment is presently more dynamic and tumultuous than it was a decade ago. For that matter, businesses that want to remain competitive for a long period have to adopt new supply chain strategies. Since SCM is presently shifting to agile capability of competitive bases from the inefficient traditional options, it is the best option that they should go for and achieve the objectives (Yusuf *et al.*, 2004).

Dexterity is a factor that organizations cannot ignore given that it is a business-wide aptitude that holds organizational composition, logistics processes, data structures, and mindsets (Christopher, 2000). Scholars argue that the objective of the agility of supply chains is to ensure firms have the capability to respond speedily to immediate adjustments in either demand or supply. Moreover, it helps to ensure that organizations develop the capacity to handle external disruptions effortlessly (Lee, 2004). Other scholars have also identified other aspects of agile supply chain. According to Christopher (2000), these elements include sensitivity, virtuosity; network based, and process integration. The latter refers to the act of mutual operational among all stakeholders and shared information, and cooperative product expansion.

Organizations need responsive supply chain because it is highly market susceptible. When they use it, their firms have the capacity to evaluate and react to the demands of the market appropriately. For the supply chain to make the most impact, the members need to show the willingness to create an appropriate environment in which information flow freely in all directions. Christopher (2000) expounds on this concept by stating that firms need to reduce lead time to be able to leverage supplier relations and eventually create agile supply chains. Through the leverage of respective competencies of network partners, they are able to realize greater receptiveness to the various market needs. According to Krajewski *et al.* (2009), efficient supply chains have the aptitude of make to stock, low inventory investment, and low capacity cushion. They also have the qualities to make to short lead-time, timely delivery, and emphasis low process. On the other hand, responsive supply chain assemble to order with lots of significance assigned to product variety operational strategy, just as needed inventory, high capacity cushion, and shorten lead time. Additionally, it also puts emphasis on fast delivery time, flexibility, and customization. The company can only be able to aid the external suppliers boost quality, delivery time and service performance by developing strategies to share the right pieces of information

and collaborate with others. For organizations to achieve this goal, they have to find ways to get real time market feedback. In this way, they are able to plan using the actual customer requirements, which are more accurate than past sales or shipments.

Organizations are also leveraging on information technology to capture data on demand through efficient software, such as Efficient Customer Response (ECR). They can do this from the point –of –sale or the point of use. Thus, firms use the applications to increase the responsiveness in process industries. ECR is easy to use due to the features that enable it to integrate and rationalize a wide variety of factors, such as product assortment, new product development, and promotion (Harrison & Van Hoek, 2008). Rao (2002) asserts that firms that successfully provide windows into operations and integrate supply chain by implementing e-business to streamline business processes. Porter (2008) also provides that firms can adopt the use of information technology to change their respective business environments in at least three ways. One of these methods is appropriately adjusting the structure of the industry. They can also achieve their corporate goals by changing the rules of competition. Finally, organizations are able to use technology to creating new and better strategies to grant businesses enhanced methods of gaining competitive advantage in the market.

IT has the potential to help organizations to share information to and from between upstream and downstream partners. Through this means, a firm is able to create a virtual supply chain. This model is based on information rather than inventory. Due to its unique features, organizations that rely on the virtual supply chains to form process alignment. They achieve this goal through a kind of collaboration that is linked as EDI and other technological devices that enable remote communication. For companies that are fully market driven, they can leverage on agility. They invest in product research and advanced technology to develop a unique ability to respond swiftly to fluctuations in the demand for products and sourcing problems.

This theory is related to e-order processing to cope and change with dynamic markets to be able to provide goods and services to sugar processing to use in their production process in highly dynamic and competitive environment. Changes in marketing strategy, organizational structure as well as tastes and preferences among customers is prevalent and as to such sugar firms should

be able to process customers' orders quickly. Evidently, e-procurement integrates the in-house and external procurement components to address dynamics in the way organizations achieve operational excellence by reducing cost and saving on time used to procure goods (Mwenga, 2016). Additionally, e-procurement is IT based, and will almost always be up to date with the latest trends in the market.

From the theoretical framework, the Dynamic Capability Theory explains Electronic order processing practice. Krajewskiet al (2009) indicates that efficient supply chains have the aptitude of make to stock, low inventory investment, and low capacity cushion. They also have the qualities to make to short lead-time, timely delivery, and emphasis low process. On the other hand, responsive supply chain assemble to order with lots of significance assigned to product variety operational strategy, just as needed inventory, high capacity cushion, and shorten lead time. Additionally, it also puts emphasis on fast delivery time, flexibility, and customization. The company can only be able to aid the external suppliers boost quality, delivery time and service performance by developing strategies to share the needed information and collaborate with other supply chain members. The increased competences helps to ensure firms are able to get real time market feedback, as they plan using the actual customer requirements rather past sales or shipments.

2.1.3 Value Chain theory

Value chain is a core theory in the business world that Michael Porter successfully coined in 1985 (Christopher, 1992). The purpose of the hypothesis is to help people to have a better understanding of how to develop a competitive advantage and create shareholder value as well. The theorist provides that firms can achieve this if they are able to separate their respective business systems into value chain, which refers to the series of value-generating activities. Porter introduced the generic value chain model in his 1985 book, *Competitive Advantage*. The literature reveals that it is made up of a sequence of activities that are common to a wide range of companies (Christopher, 1992).

A firm is able to use value chain to get a clear understanding of the behavior of costs and the potential cost of differentiation. This change happens due to the ability of this model to

disaggregate organizations into purpose fully pertinent activities. According to Porter, firms require to perform a set of activities to design, produce, and market. Moreover, the activities should deliver and support the development of the products. The value chain considers activities that cover inbound logistics, marketing and sales, technology development, operations, outbound logistics, firm infrastructure, and human resource management as primary segments. The expert formulates the general strategies of cost leadership and differentiation, as he considers that they are the effective for helping firms to have competitive advantage (Porter, 1985). The cross-value chain strategies have proved beyond doubt that organizations that want to have a significant edge over their business rivals have to manage the value chain as a whole. Porter's value chain offers the best foundations on which firms need to develop their supply chain, which is a concept that consultant Keith Oliver invented in 1982. While companies need to have an internal focus on Porter's value chain, they can only do best when use different ways to manage the supply chain. The latter is effective at extending the scope of organizations towards intra-company material and information flows. The focus is often on the flow of raw materials from the source to the end consumer. The main idea that organizations should be able to appreciate is that supply chain is a network of organizations and individuals that are happen through upstream and downstream linkages in a wide range of processes and activities that ensure quality products get into the hands of the consumer (Christopher, 1992). Given that technology is essential for ensuring the success in every value creating activity, organizations require using the most recent solutions. A few in the technological world has the potential to impact competitive advantage. This assertion is particularly valid the variations incrementally change the activities or cause (Simichi-Levi, 2000).

In the present globalized world that is characterized with not only extended lead times but also greater risk, the firms that succeed in the integration ensure they find the best supporting ICT systems. They take advantage of the growth of the internet and other similar technologies. These resources enable these organizations to experience the benefits of real-time information sharing. They have many options. For example, the firms can use inter-connected ERP systems, electronic portals, web-based EDI, and online order processing systems. An organization can use these technologies to build closer links with their customers and audience, suppliers, and third-party vendors. While these resources can support any business, firms require considering the

impact of the culture of their rival's and potential information technology deficiencies. Other essential factors that can limit the success of a firm are the lack of process alignment and a wide range of other organizational legacies (Akkermans *et al.*, 1999). In this regard, despite that new technology offers much promise, organizations need to take much care. Researchers are yet to find solid examples of how it is transforming supply chain systems. Some firms that are making use of efficient production, total quality management, and reengineering strategies are high likely to experience a significant reduction in the cost of their operations. However, most of them stand a high chance to record increased flexibility and quality of service (Simichi-Levi, 2000). Organizations are able to use technology to be able to achieve a competitive advantage. In the end, managers now appreciate that they can realize further improvements through supply chain management efficiencies (Poirier, 1999). Kumar and Dissel (1996) conducted a study to assess the contribution of IT in supply chain management initiatives. After evaluating the effect of frameworks pertaining to the formation of various cooperative alliances, the experts resolved that firm's environmental forces influence organizations to get involved in the alliances. They want to support their supply chain by sharing and transmitting information beyond the boundaries of their companies. The IT systems that are efficient for expanding the availability and sharing of information are known as inter-organizational information systems (IOIS). For managers who are looking for ways to reduce the uncertainty of their supply chains, they can use the IOIS-created virtual vertical integration (Kumar, 1996). Experts refer to this nature of electronic cooperation as information partnership (Lee, 1992). They use various degrees to represent the time value as well as volume of information that are transmitted between their different trading partners. For instance, as Lee (1992) says, network participants have the right to get the full disclosure of the IOIS at the uppermost level of an information partnership.

From the theoretical framework, the Value Chain Theory explains electronic material management practice. The value chain of Porter pays attention to the company-internal focus. On the other hand, the supply chain increases the scope towards intra-company material and information flows. Firms that implement Porter's value chain are able to design important set of activities to produce and market, deliver and support their quality products. The theorist distinguishes between the core activities that cover inbound logistics, operations, outbound logistics, marketing, and sales, and other factors. Porter (1985) provides the best general

strategies for the value chain of cost leadership as well as differentiation, which they need to be highly competitive.

For this study, the Value chain theory implies that those firms that adopt E-procurement are able to gain from the growth of advanced technology. All the technologies that allow real-time information sharing, including the internet, inter-connected ERP systems, and web-based EDI ensure that different firms are able to build effective and closer links with their various business partners.

2.1.4 Resource Based View Theory

The Resource Based View (RBV) theory was developed by Barney and Wernerfelt in 1930s in their analysis of heterogeneous firms that introduced that the concept of resource position barriers is almost always analogous to entry barriers (Lynch *et al.*, 2000). It asserts that the resources of an organization are essential for ensuring that it performs well. According to the RBV theory, firms need to classify resources into organizational capital resources, human capital resources, and physical capital resources(Lynch *et al.*, 2000).Organizations can use the theory of RBV as the core foundation for building supply chain strategy taxonomy (McKoneSweet& Lee, 2009). However, for them to succeed, the firms should also appreciate that manufacturers, their suppliers, and their customers collaborate for the best result (Flynn *et al.*, 2010). If they are completely vertically integrated, their internal units will be able to supply most of their core materials supplies without problems. However, companies will need to receive some resources from external parties. For that matter, organizations should still have a close relation with suppliers and customers. Scholars have stated supply chain partners often supply many valuable resources(Dyer and Singh, 1998).They hold that structuring the inter-organizational resources is highly essential for the ability of firms to realize their outstanding performance despite that their own constrained resource base also play an important role in some way. In particular, suppliers help organizations to implement its supply chain strategies, as they ensure the resources are availed at the right time. The effective of external resources is essential for ensuring proper integration with internal resources (Hitt, 2011). In this regard, the heterogeneous partner-specific resources are required to ensure an improved potential for a competitive advantage. Additionally, firms are able to achieve the sustainability of the competitive advantage when they

have resources that are immobile and are almost impossible to imitate (Morris *et al.*, 2005). Accord to the RBV theory, firms need to hold valuable, inimitable, rare, non-substitutable resources to be able to achieve their corporate goals with ease. However, the most successful ones leverage and bundle their internal and external resources as well. Through these strategies, they are able to create a considerable competitive advantage.

The ways company handle the process of integration determines their ability to achieve their objectives with ease. Through this model, Pagell (2004) says they are able to enhance interaction and collaboration with other entities within the chain and eventually achieve a mutually acceptable outcome. According to Kim and Narasimhan (2002), supply chain integration is the only tool that an organization can rely on to links itself with its consumers, dealers and other conduit associates. Lambert (2004) asserts that cross-functional integration is key for successful supply chain management. If organizations integrate their operations and activities with some of their most strategic trading partners, they are able to sustain a competitive advantage for the whole supply chain after a short while (Lambert & Cooper, 2000).

Power (2005) wants firms to operate with an understanding that the most efficient integration models involve honest cooperation, collaboration, and information sharing. Other elements that make the right integration are trust, shared technology, and partnerships. Kwon and Suh(2004) views this concept as the right strategy to reduce operation costs, which eventually helps to increase customer and shareholder value. Narasimhan, Jayaram, and Carter (2001) consider supply chain integration as a proper way to improve business performance especially in highly competitive markets. Frohlich and Westbrook (2001) view the highest levels of integration as the solution to organizational performance issues.

The greatest challenge that organizations face as it regards the integration of supply chain is finding a way to coordinate activities across the system until the enterprise is able to reduce costs, increase service levels, and reduce the bullwhip effect (Simchi-Levi *et al.*, 2009). The appropriate integration should also enable firms to use their resources better and swiftly respond to changes in the market. Other scholars argue that when all the different stages of supply chain

are focused on helping the firm to maximize profitability, supply chain coordination occurs(Chopra and Meindl, 2015).

From the theoretical framework, electronic supplier management practice is explained by the Resource Based View Theory. Kim and Narasimhan (2002) assert that proper supply chain integration correctly link firms with their respective customers, suppliers and other channel members. They are great tools for integrating their relationships, locations, activities, functions, as well as processes. Successful firms integrate their operations with their trading partners to have a reliable competitive advantage.

2.1.5 Contingency Theory of Management

The Austrian psychologist Fred Edward Fiedler proposed the contingency theory of leadership. In his landmark 1964 article titled, "A Contingency Model of Leadership Effectiveness," he explained the need for managers to put emphasis on the significance the personality of the leaders as well as the environment where he or she operates (Northouse, 2007). According to this theory, the Least Preferred Co-Worker Scale (LPC scale), is the most reliable way to measure the efficiency of a leader. For individuals to score high on this gauge, they must be relationship inspired. Frontrunners or managers who obtain low are task-driven. The concept of 'situation' is the most central element in this hypothesis. Leader-member relations characterize it, which refers to the general conditions that characterize the place of operation. When evaluating this factor, one has to consider feelings such as the trust, loyalty, and confidence that the team has in the leader. Another important element is the task structure. In this case, the theory suggests that people should consider the clarity of the task when determining the ability of a leader. Additionally, they should have in mind the position power, which denotes the amount of reward-punishment authority of the leader (Northouse, 2007). Once an organization adequately evaluates these factors, they are able to establish the extent to which various situations in environment are favorable for business.

Northouse (2007) as a supporter of this theory has also provided the most vital benefits of the Contingency theory. The author says that this model has survived over the years due to the fact empirical research supports it. Other than Fiedler, many researchers have validated this theory

with their own research. Most of them consider the Contingency theory to have much 'predictive powers.' They hold that different organizations can use it to determine the type of leadership that particular contexts require. Contingency theory makes it necessary for firms to consider leaders optimal situations that best suits with their unique leadership styles. Moreover, since the theory provides adequate data on different leadership styles, organizations that want to develop profiles for human resource planning can resort to it.

Despite that contingency theory have many benefits; firms should take care to ensure they reap the most from it. It does not offer any guidance on the reasons various leaders with particular leadership styles are more effective in certain situations than others do. At the same time, the validity of the LPC scale is being questioned. Some critics are concerned that it does not properly correlate with the majority of standard leadership measures. Moreover, Northouse (2007), Indicates that the theory also offers no useful information on how employers should do about a leader/situation mismatch.

If the organization does not adopt its operations to situations or trade setting contingencies, it will not be adequately built-in for processes in a specific business atmosphere leading to failures (Donaldson, 2001). The research ruminates adoption of e-procurement and contribution of e-procurement to procurement performance. This theory informs this research in terms of evaluating the adoption processes and how that aligns e-procurement practices towards stimulating procurement performance potential in a firm. The extent to which e-procurement practices are adapted to the unique procurement circumstances is the extent to which its efficiencies are likely to be realized by the organization. Some of the contingencies to consider are technology available, the capacity of suppliers or distributors and their interests, the capacity of consumers and their interests, government regulations and policy, and available capital for investment. Managers operating that embrace the contingency theory will do well if they are prepared to identify as many influences on an issue as possible. For example, the manager may discover that not only non-application of electronic order processing and electronic material management contribute to the problem when using long lead time. However, the company's revised payment program, poor procurement team coordination, a loss of supplier recognition and outdated application of outdated e-procurement policy all play an essential role to the

problem. Thus, the managers to be able to make the best decisions, they should integrate all the threads that intertwine.

From the theoretical framework, supply chain performance is linked to the contingency theory of leadership. The purpose of supply chain management is to link all the elements of the manufacturing as well as the supply processes throughout the entire process. The theory pays great attention on the way in which organizations use the processes of their suppliers, technology and capability to achieve their goals. Skjøtt-Larsen *et al.* (2007) note that the main aims of the supply chain are to offer service to their clients, ensure reduction in the operating cost, and decrease the assets needed to guarantee the success of the chain. Many firms now focus on finding ways to secure cost, quality, technology, and others to be able to be competitive in the global marketplace. Manufacturers understand that their supply chain management practices will determine their level of success, and many of them are focusing on this important factor. However, for them to succeed, these parties need to emphasis on the complete and long-time value of all of these associates (Yu *et al.*, 2001).

2.1.6 Electronic Tendering Concept

The pressure on procurement departments to maximize profits means they have to work hard to reduce costs without failing to maintain timeliness as well as quality. Inconsistent procurement policies often cause many problems. The departments are looking into these provisions with the aim of reducing the cancellation of projects and cost overruns and delays. Through this method, the firms are also able to limit staff dissatisfaction and litigation. Due to the apparent needs for improvement, procurement departments are focusing on developing policies that reflect the needs of their respective firms. Moreover, they are working with other stakeholders to ensure they choose the right electronic tendering tools and techniques.

Electronic tendering is another essential process that managers use to control the tendering cycle online an online. This medium helps to manage the operations from the advertisement stage through to the point where tender is awarded. Other than other features, this online process gives organizations a centralized platform where they monitor the tendering activities. For that matter,

it guarantees efficiency and accountability and reduces traditional tendering costs, which eventually results in increment in the presentation and value of the supply chain (Chen, 2004).

Frankwick (2004) argues that since the e-Tender marketplace is accessible remotely, organizations hardly miss a business opportunities. They are able to receive email or SMS alerts whenever a new tender of published and at any other strategic moments. Suppliers also benefit a lot from the electronic system. They work with well-informed customers who know exactly what they want and directly come to them. In this way, they waste no time trying to track down potential customers. In turn, they serve many customers without spending too much effort or money.

Customers can also save a lot of time given that they are better placed to ask the supplier to the research for them. Suppliers will always provide lots of useful information about different matters, such as their products and services and costs. Most of them provide a link to their sites and relevant customer testimonials. According to Palmer (2003), instead of being forced to browse the internet to find this type of content, the customer only need to complete a single, simple web-form and let the supplier to handle the rest.

Smith (2000) asserts that E-tendering refers to the system that sends Request for Invoices (RFIs) as well as Request For Purchases (RFPs) to suppliers and brings back the needed feedback in real-time. The Internet technology is used to do all this work to enhance the tendering process. However, firms do not use E-tendering as means to close the deal with the supplier. The purpose of this process is to make a significant part of the tactical purchasing process easy.

Other authors consider e-tendering an electronic-based process that enables the entire tendering process to be online. This new model gives organizations the chance to be highly efficient in their supply chains. It reduces the use of hard-papers and guarantees a speedy exchange of information (Swan, 2000).

For many years, government agencies and the public sector have been the ones that heavily rely on e-tendering. However, as the number of individuals who visit the Internet to gather varied

pieces of information increase, organizations have found it to be a successful and viable sales channel (Dexter, 2001).

The high demand for enhanced security is also influencing the tendering decision of many organizations. Firms that consider remote transactions the safest alternative are turning to it in large numbers. The remotely controlled businesses are the most affected. They find e-tendering the most efficient and convenient approach. Other than the seller and buyer, this process is appealing to them because it involves a mediator-web-based computer system. The success of the tendering system is accredited to the high integrity of data and confidentiality. The implementation of Public Key Infrastructure helps to enhance the security of the system and guarantee its long-term reliability. The fact that the infrastructure utilizes asymmetric encryption/decryption technique is another added advantage. It offers a high shielded environment, which is vital for the safety of the data (Malik, 2013).

Companies that issue digital certificates empower companies to benefit from e-Tendering. In this process, the buyer and bidder are the most essential partners. For any of them to access the web portal, both of them have to be registered on the platform. If a buyer fails to do this, he or she cannot publish the tender. A bidder also who ignores this step cannot bid. According to Malik (2013), E-Tendering to be effected, Registration process, Submission process, and Bid evaluation process are necessary.

The buyer is in charge of the entire bid evaluation process. In most cases, they create a committee to handle the process. After opening the bid, the committee evaluates it and generates a comparative report. They then share it and award the appropriate supplier the contract.

2.1.7 Electronic Order Processing Concept

E-ordering refers to the act of creating and approving purchasing requisition (Kim, 2002). It also involves the process of placing purchase orders and receiving the products that have been ordered. For a firm to use it, they have to use software that is based on Internet technology. The items that they order are indirect goods and services. All the employees of an organization use an ordering catalogue to support the software system.

When firms use Enterprise Resources Planning (ERP), services and goods that they order must be related to products. For people who order direct items, they must appreciate that they are plan based (Bello, 2002). Organizations that intend to develop an automated purchasing system use EDI electronic ordering. Once organizations eradicate the repetitive manual processes, they are able to reduce costs, boost productivity, and enhance customer service.

Petersen (2005) provides that this advanced ordering system enables firms to order as many products as they want through a website. Since millions of people are online, companies that have adopted an online ordering system experience increased sales. The technology allows people to transact at any time. Customers are able to place orders from any wherever provided they have access to computer/laptop with a stable Internet connection.

For a firm to be able to succeed, it needs to understand the best Sales and Purchase ordering system. Most people consider that it is a straightforward process. However, many buyers and suppliers find it to be extra challenging. When organizations rely on paper, email, phone, and fax- based ordering, they depend on manual intervention. The problem with such a system is that it is incredibly slow. However, the entire process could increase the supply chain performance (Foster, 2002).

Order processing is another major aspect of the order fulfillment cycle. Order processing that involves the use of clear procedures is a core factor in logistics operations. It begins with the receipt of purchase requisition. A firm can receive orders in multiple ways. However, the ideal means is file transfer, which is best used at the agreed daily slot times. For example, the procurement department can receive data once in the morning or afternoon. Since the files always come in a pre-agreed format, the staff can upload them into the system without the risk of manipulation. In this way, the process eradicates or limits human error and streamlines the order cycle, which is essential for ensuring that the system is most effective (Mutangili, 2014).

Firms are able to enhance their internal control over expenses, suppliers, and payables. They can achieve this goal by deploying an Electronic Purchase Order Requisition system. Thus, organizations that go electronic are able to get a much more efficient payable process. The fact that the advanced technological system eliminates many manual tasks ensures that the purchase

order requisition process is more reliable than before. For firms that use PO Requisition technology, they are able to generate POs and then channel them for approval using Smart Routing technology. Once the company electronically approves the order, they invoice the suppliers. The subsequent occurrence is the automated matching between the PO and the invoice. The staff then tracks the matched invoices against the PO until the system closes them for blanket POs. When the firms decide, they can match the rules to ensure the invoiced are properly matched to POs. Additionally, they are able to apply tolerances for the entire PO or the products. Firms can also use matching rules to promote further control, which is the best way to ensure that invoices and POs are properly matched. Another benefit of E-ordering is that it make it easy for Network Members as well as their Suppliers to exchange their EDI documents (Mutangili, 2014).

E-ordering and web-based ERP refers to the process of creating, approving purchasing requisitions, placing purchase orders, and receiving goods and services that have been ordered online. For people who use-ordering, they apply for indirect goods and services ordered (i.e., non-product related goods and services). The employees use the supporting software system, which is often the ordering catalog system. However, web-based ERP items are product-related. Due to their unique attribute, they are known as direct goods and services. In most cases, only the employees of the purchasing department are the ones that make use of the supporting software system. The organizations that order for indirect goods and services do so an ad hoc basis. On the other hand, the direct products, the process is plan-based.

Presutti (2003) holds that the most common e-procurement solutions help companies to establish the right ordering routines and reduce transaction costs. Firms use E-business in procurement to place product order in online catalogues. They can also use them on desktop purchasing systems when the process is electronically managed. Once the information that passes through the relevant authorization is cleared, the firm can choose to aggregate it with others and then issue them to the supplier. Through this type of system, operational costs reduce (Huber & Wagner, 2007). Moreover, the efficiency of the entire system improves. Additionally, organization may find increased negotiating power with suppliers due to the features of order consolidation.

Alcatel is popular known as the first firm to use inclusive electronic orders processing for all its direct goods. This company implemented the system in April 2005 in collaboration with the supplier Swisscom. Following the success of this initial attempt, it has influenced others to continue to place orders, receive delivery confirmations and invoices utterly paperless. The electronic invoice processing has been successful because of several reasons. However, the fact that it meets the specifications of the VAT authorities is part of the benefits. The functions that Alcatel supplies are specified in a comprehensive contractual agreement, which creates the needed framework for the specifications as well as the orders. The XML standard that Rosetta Net offers is essential for the same. Once Alcatel accepts the order, the system automatically delivers a confirmation message. Eventually, the path submits an invoice to Swisscom Fixnet. The SAP MM-Module automatically reconciles the latter and eventually approves it for payment. (Christian Tanner, Ralf Wölfle, Michael Quade, 2006)

2.1.8 Electronic Material Management Concept

Lean supply chain management refers to a robust production management structure with origin from Toyota Japan. Many scholars and organization continue to perfect its use in eliminating wastages and decreasing mistakes in inventories thereby increasing proficiency and value in the production process. Ideas such as Vendor Managed Inventory (VMI) as well as Just in Time (JIT) help organizations introducing lean supply management practices that help in identifying and maintaining strong and collaborative suppliers. Effective service delivery is the product of diverse supplier base with robust mentoring strategies between buyers and suppliers. Assessments emphasize planning, supply assurance, customer focus, and change control product quality in conducting manual and electronic supplier appraisal (KMPG, 2012).

In a typical platform, supply chain structure of any product or service entails distribution, manufacturing, and supply. At the supply stage, focus target on how raw materials reach manufacturing. It also focuses on local of source and timeline within which the raw materials reaches the manufacturing plants. The process of manufacturing changes the raw material to an end product which gets its way to the distribution channel which ensure the product reached the final users through a series of suppliers, wholesalers and vendors. Proficient management of these channels at all stages through initiatives that cover data accuracy, improvement of product

quality, decreasing lead times, and reducing costs of complex production structures can help organizations create an impact on the entire e-material supply chain. Some other advantages of embracing e-material supply chain include fast and efficient customer care, rising fulfilment and customer satisfaction, lower cost of production, rapid growth in IT, decrease in inventory costs, improved accurate forecasting for forward planning, and increased inter-operation communication, and collaboration.

The goals of supply chain management planning tool is the incorporation of resource planning for increasing efficiency in the production process of a company or organization. Examples of these tools include Material Requirement Planning (MRP) that enable firms and entities to plan production processes within specific timelines based on available bills of materials, inventory business, and entire master production plans of an organization. This tool continues to undergo improvement and has a MRP II that conjoins the capabilities of the manufacturer and the benefits of Manufacturing Resource Planning (MRP). The third tool is the Enterprise Resource Planning (ERP) that enables organizations and companies to adjoin all processing and production tasks within the value chain. In most cases, ERP represent a solitary structure with order management, inventory satisfaction, and preparation for production, fiscal forecasting and customer care activities in the organization. Many organizations use this tool (Bowersox et al., 2019). There are other IT tools that are applicable in resource planning such as customer service management, distribution requirement planning, vendor managed inventory, and data warehouse. E-procurement back up JIT and helps most managers in charge of purchasing in making sound decisions on EOQ and making adjustments such as reorder points and stock levels where applicable.

In order to improve production level reducing material wastage and loses is vital in an organization. This implies that an organization's profit levels has a direct link with the ability of managers to use materials prudently. Early and time delivery of materials from supply agents help reduce delays which can increase lead times. In matters of supply and purchasing, some of the leading deterrent for effective management of materials include not matching materials with order purchases, omission in orders, under-orders, over-orders, early delivery, late delivery, inadequate JIT strategy, inadequate training, lack of adequate management, and

miscommunication among partners in the channel of supply. Some of these problems are common while others are not. For example omission on order defers the production process, delivery at the wrong time interferes with production plans, while excess orders demands re-work of production processes thus distorting the schedule. Loss of materials through theft or negligence and double entry of materials due to inadequate skills and knowledge create problems in inventory that can cost an organization. In the logistical aspects some of the leading problems include arrival of materials are the wrong, missing materials, unavailable storage space, waste of labor for material search, general housekeeping troubles and and in some cases delivery of poor quality materials. Technology plays vital roles in aiding organizations improve and enhance tracing and conveyance of materials. According to Mueller and Mueller (2010), top management of organization can consider the use of GPS, JIT, EOQ to manage the process of e-material delivery and supervision.

EDI technology represents an electronic platform for exchange of data and vital information between computers in two or more establishments. Some of the transactions that EDI technology helps in improving includes order entries, order validation, order adjustments, raising invoices, and pre shipment notices. The technology gained entry into corporate world through business entities like Wal-Mart, Kmart, and Target since they made it mandatory for processing for consumers in the online base. In order to deliver effective and timely results, EDI facilitates the real time exchange of information between two entities involved in the transaction. This helped reduce the time taken to process orders, invoice, and other transactional information which previously took hours in few seconds. In some cases however, point of sale transaction takes few hours in case of many weeks. EDI helps in adjustment of orders such as postponement of delivery, VMI, and supplier integration. EDI improvement VMI and helps organizations and companies in continual improvement programs that aid in getting in touch with customers in new territories and integrating collaborating efforts with new suppliers and customers beyond their boundaries. In some sophisticated companies, EDI enables companies and organizations to surrender the management of the inventory to their own robust and effective suppliers. This level of integration and collaboration with suppliers supersede normal partnership since suppliers success becomes attached to the effectiveness with which they manage the clients supply chain (Muller & Muller, 2010).

With advancement in technology gadgets like mobile phones, laptops, and ipads, and other portable devices helps in improving access to various tools of supply chain management. With adequate internet connectivity, radio frequency identification, GIS, and GPS, tracking technology continues to undergo revolution. Use of IT continues to inspire cultural structure changes in the tracking sector with focus on decreasing obstructions between different functionalities. Other than tracking and trailing, IT also offers ample opportunity for movement of information between different parties and activities. EDI and EFT represent some of the IT solutions that allow retailers in an organization to enjoy different functionalities such as purchasing order, raising and settling invoices, and process credit checks. Real time positioning and tracking systems helps organizations in planning for arrival of materials at the correct time and in the precise quality. In the process, it helps the receiving party in planning for offloading and preparing accordingly to reduce delays. This help in reducing lead times and thereby increasing efficiency. Radio frequency base information and other communication systems such as GPS, RFID, and Bluetooth systems continue to gain ground in the commercial communication systems(Muller and Muller, 2010). They have a potential of successfully supporting resource and materials location and tracking through automated data collation in the entire channel of delivery. GPS on the other hand helps in tracking, supervising, managing, and controlling moving and mining operations in open areas.

2.1.9 Electronic Supplier Management Concept

Electronic supplier management refers to the concept that used ICT to arrive at key and strategic decisions on sourcing the correct and efficient suppliers through modules on self-service supplier portals, which provides specific standard qualifications, customized application forms, centralized visibility, and key performance indicators complete with trackers. It also promotes supplier diversity within a centralized system and offers the service seekers a platform for engaging only qualified and certified suppliers. E-Supplier management system helps in understanding the suppliers from the source point to the delivery stage through the process cycle. It provides a platform to analyze supplier responses that helps in making decisions become giving out tender awards. The process of performance evaluation of the suppliers ensign modules such as electronic bidding, bid tabulation, assessment of rubrics for supplier responses, efficient

bid documentation, RFI/RFP/RFQ templates, seal bids, as well as reverse and forward action. In some instances, it entails audit trails for all transactions against any tender.

In order to ensure successful contract management, e-supplier management entails proactive managing supplier engagement methods that seek to avert all risks and ensure compliance to the centralized contract data and other contractual obligations. These may include compliance to custom contract fields, contract document management, sub contract visibility, expiry date notifications, invoice and payment tracking, and all reporting obligations. With advancement in technology, communication and computer services providers can permit all the performers in the contract to converse amongst themselves. This allows efficient and timely flow of information between suppliers, manufacturers, distributors, retailers, and consumers thereby reducing timelines associated with paper work and other physical activities. Top management of organizations that embrace use of this type of communication procedure enjoy considerable benefits since there is streamlined communication amongst all interested parties, increase in timely and convenient delivery of information and improvement in relationship among the various stakeholders (Handfield & Nichols, 1999). Other multiplier benefits of this coordinated type of communication include ease of distribution of supply contracts, distribution of strategies via the internet, and outsourcing and procurement (Simch-Levi et al., 2003). It vital to note that any organization seek to cut costs and reduce lead times should purpose in improving and streamlining their lead channels of communication with all their actor through execution of an e-supplier management system (Humphreys et al., 2001).

Kepher, Shalle & Oduma (2015) undertook a research on evaluating the function of supplier administration on procurement performance in manufacturing companies. The case study focuses on the supplier partnership, supplier teaching, contractor quality management, dealer integration at East African Breweries Limited. The outcomes of the research point out that 81% of the change in procurement performance in EABL resulted from buyer supplier integration, supplier quality management, supplier collaboration, and supplier training. Performance management among suppliers is crucial to procurement performance since most organizations integrate suppliers into their activities. EABL engages in a strong collaborative and cordial relationship with its suppliers hence offers a series of training, which helped, improved performance by

94.6% approval from the respondents. It is important to note that technology integration is still low in EABL. It is recommended that EABL should increase focus on technological integration to help improve supplier collaboration and training currently in place.

According to Tim (2007), the use of communication platforms such as websites helped organization to develop and build robust supply chain relationships. On the same note, firms need to embrace high-end technologies in order to effectively manage costs, offer high quality goods and services and maintain competitive edge in the market (Turner, 1993). Li in his assessment of importance of e-data in improvement supply chain performance identified fourteen information technology tools (2001). He further grouped the items into 3 distinct clusters in terms of their basic functions that included supply chain management programs, resource planning elements, and communication elements (Li, 2002). Based on these grouping, communication tools offered data transfer and engagement between parties that included examples such as Electronic Fund Transfer, EDI, and Internet, extranet, and intranet.

EDI helps in procurement documentation such as order status, acquisition orders, and other supplements. It also helps in developing electronic catalogs where consumers who seek data and information on all dimensions of procurement process in an organization. EFT on the other hand helps different interested parties as a vital platform for funds transfer between different accounts over a value added network (VAN) or through the internet. Intranets are local area networks or wide area networks within specific organizations, which helps to pass data among employees through firewall secured networks. In most cases LAN and WAN work well in corporate organizations with office in different locations. Extranet helps in business partners in different sectors communicate and share information in different set ups within a definite level of security and privacy. Internet is a simple unvarying line of communication that permits movement of information across browsers (Bowersox et al., 2007).

Ability of suppliers to avail the right products, in the precise quality and magnitude at the right time informs the ability of manufacturers to produce quality products. In the contemporary expectations, suppliers need to act fast on orders from customers even though most of the time suppliers delay in delivery. Laxity among suppliers in delivering goods and services on slows

down production process by increasing lead and cycle times. These leads to some buyers making unnecessary orders for large stock in order to create a buffer should future order delay. If suppliers and manufacturing firms can create a paramount and long lasting collaboration, the symbiotic relationship can bolster partnership that can reduce lead and cycle times thereby increasing efficiency in production. Efficient supply management can help create competitiveness that revolve around time provision of all orders to suppliers for action and effective delivery at reasonable costs (Wachiuru, 2015). Information flow and sharing among different partners in the supplier chain plays a vital role in ensuring seamless product and money movement among the initial dealers and clients in the external supply chain structure. In the internal system, it helps in ensuring cordial and robust communication among partner thereby fostering a long lasting positive relationship. Any form of inefficacy at any level of the supply chain communication flows leads to multipliers negative impacts on the entire chain. This in turn reduces the ability of all the partners to perform to their maximum level of potential. In other words, the entire chain of supply is only as robust as its weakest point. In most cases, problems arise in the information flow when a point of concern is distorted among the partners before action is taken to positively evaluate its importance in the entire system. Such distortions of information create negative impulses that may lead to false forecasts and ineffective resource allocation, which can result in longer lead times and higher costs of production.

On the flipside, fast and accurate information flow across all partners in a supply chain system helps in correct and accurate forecasting which help in adequate and timely resource allocation. It is important to note that speed with which information sharing takes place in systems informs the level within which it can undergo distortion both at the internal and external levels (Nurmilaasko, 2008). There are two types of integration according to Trent and Manczka (1998). One entails the forward coordination of product movement from supplier to the end customers while the other describes the backward information movement from product users to the product producers/suppliers. According to Nurmilaasko (2008), there are three levels of SCI which include manual human-to-human information sharing such as telephone, fax, and emails; semi-automatic SCI which represent human to system information movement such web portals'; and the third SCI represents the full automatic structures such as middleware. In order to keep up with the emerging market trends, it is vital to note that companies are slowly increasing their

desires to usurp control of their suppliers while seeking to get the most recent information on product and services available in the market. They do this in order to keep up with the merging market trends and maintain competitive edge and agility in their forte.

Increase in internet connectivity continues to revolutionize the process of e-sourcing. E-sourcing denotes the process of identifying and convincing fresh suppliers via ICT platforms at reduced costs. This process helps in increasing competition during bidding process. In some cases, e-sourcing platforms enable organizations to enjoy the benefits of using virtual electronic purchasing consortia (EPC) to identify and finish activities that help control demands aggregations between more than one party. EPC exploits the probable of economies of scale and not invoking diseconomies of rising volumes of transactions and associated communication costs (Corsten and Zagler, 1999). This results into average decrease in purchasing costs of over 5% and a return of investment of over 70% as Huber et al. (2004) note.

2.1.10 Supply Chain performance Concept

In the wake of capitalism and increase innovation in the business world, it is the prayer of every CEO to competitive edge in the market and out maneuver his or her competitors. These desires coupled with the shift from individual company brilliance to supply chain performance make CEO's weary of competition. Getting an all-round team of departments to keep company afloat in the market is becoming a leading challenge in the corporate management. Supply Chain performance represents extended supply chain activities in meeting customers' tastes and preferences at the tail end of service or good provision. This concept takes into account the product availability, on-time delivery, and all relevant portfolios of customer satisfaction. Supply Chain Performance is a transcending concept that cuts across several boundaries including primary materials, basic components, subassemblies, and products. It also takes into account the various distribution channels until the product reaches the consumer. The concept of supply chain performance goes beyond the contemporary management functions and covers line. In order to ensure successful business development and strategic market penetration, there is need for companies and organizations to embrace continual improvement within the supply chain performance. To achieve this, there is need for implementation of performance measures that support core goals of chain performance improvement. This will ensure the company move

beyond the company-specific metrics that compromises chain-wide strategic development (Hausman, 2017).

According to Presutti (2003), supply chain performance represents the assessment of supply chain management that entails tangible and intangible factors of production. E-procurement is an important aspect of supply chain performance. According to Weingarten et al., e-procurement system is more essential in understanding supply chain performance than other e-business applications since it offers a value creation perspective in the processes of executing supply chain performance.

Procurement system is a key aspect in an organizations supply chain system. In a traditional set up, procurement entails strategic and operational process in which activities and priorities are uneven (Turban et al., 2000). E-procurement on the other hand helps organizations to devolve operational procurement processes while maintaining the centralized aspect of strategic procurement processes without hindering or compromising the quality of the entire process. This process helps in increasing transparency in the procurement process. In strategic business development, e-procurement helps in consolidating purchasing practices that lead to large volume discounts and improved services from suppliers. In the process, the organization experiences acceleration in the flow of vital data and information between the buyers and the sellers that reduces administrative hours of work around procurement. In the end, such extra hours goes to other job description hence increasing productivity. Availability of extra working hours enable organizations to adjust to changing and highly dynamic market behaviors thus maintaining a competitive edge (Egbu, 2004).

Organization performance depends on the performance of the procurement department since it helps in improving reasonable buying and attainment of quality products. This in turn puts the quality of the organization's product in the market. According to Juma, poor procurement performances play a role in decreasing profit levels or organizations (2010). Prolonged poor procurement performance act as a major deterrent to the growth of private sector organizations since it leads to late delivery, high rates of defective deliveries, low quality goods and services, and in some cases non-deliveries (Migai, 2010). In the private sector, incompetent staff,

contemporary and long procurement procedures, inadequate quality assurance policies, lack or proper coordination within the procurement team, and in-ability to embrace strategic changes in business development act as the lead drivers of poor procurement performance (Juma, 2010).

In assessment level of performance, measure in place must strive to ascertain the difference between the actual performance and the target performance levels while taking into account all positive actions from improving efficiency and effectiveness in production. Ultimate performance measures necessitate the achievement of double benefits and enhancement in the supply chain management. In assessing the performance measures, one of the key aspect on the action is the focus on measures that ensure profitability. This aims as increasing the rate of return. Another aspect of action on performance measures targets effectiveness in production. It vital to note that there are measures that focus on the less tangible and non-tangible financial measures. Even though financial measurement performance that target profitability in an organization remain the key interest of shareholders, it is vital to note that it offers very limited information regarding long-term effective actions of an organization towards satisfying customers. This is the reason why most organizations use product quality and customer service deliveries as key components of service measurement values (Wisner et al., 2010).

This study used product quality and customer satisfaction as the key aspects on non-financials measuring metrics for performance evaluation in steel manufacturing firms. The research signals that non-financial processes have positive influence on the performance of organization (Banker, Potter, & Srinivan, 2000). These non –financial measures also act process measures that over leads and directions in assessing financial positions of organizations.

Most operational and tactical advantages that procurement subdivisions generate arise from using web-based e-procurement schemes that support majority of emerging procurement platforms, for instance e-catalogs, e-RFX, as well as e-auctions. This is from the IS point of view (Rai, Brown, & Tang, 2009). Percy, Guinipero and Wilson (2007) provides a comprehensive assertion that e-auctions within sourcing processes helped in 30% reduction in the price of cable TV equipment, 20% reduction in the prices of power equipment and 39% reduction in the price of medical

supplies in the US. Similarly, it led to 37% reduction in the price of public utilities, and 53% reduction in the purchases in the US armed forces.

Application of an automated e-replenishment system that replaced the manual based system lead to buyer side operational costs reductions of 19.6% in traditional decentralized, 29.5% in decentralized with information sharing, and 12.5% coordinated supply chain structures as Robinson, Sahin and Gao denote (2005). According to Massuer (2011), in order to disburden the procurement department of organizations, organizations need to introduce supplier provided standard e-catalogs along with online self-service procurement services. In summary the e-procurement are product-linked, process-associated, and inventory associated efficacy improvements. Several researches are available on the aspects of e-procurement. Some of these characteristics include procurement performance effect (Teo & Lai 2009), matters of attainment (Puschmann & Alt, 2005), and issues of change adoption in different locations and industries (Talluri, Narasimhan, & Viswanathan, 2011). Other researches on the same aspect but in relation to single e-procurement module covered areas such as e-auctions, e-negotiations, and reputational mechanisms.

In assessing effectiveness in performance measurement systems, Beamon argues that inclusiveness which takes into account all appropriate aspects; universality which covered the comparison of different parameters under different conditions; and measurability which entails quantification of data are the leading features in ensuring complete performance measurements (1999). Other features include consistency that ensures all aspects are in close scope of the organization goals and objectives. In the process of undertaking a measurement, there is need to take into account strategic goals which helps into evaluating the position of an organization interim of resources and general costs and flexibility. In order to build up an integrated supply chain with complete efficacy, Steven explains that there is need to undertake triple-perspective approach covering strategy, tactics, and operation (1990). Under these perspectives system use, facilities, and human resource takes a single unit approach and works in a coordinated mechanism. Similarly, Stevens argues that inventory level, service level, cost level, supplier performance level, and efficiency in production level are some of the leading points of measuring performance (1990). Logistics is a vital aspect in measuring supply chain performance.

Assessing the logistics and understanding the process systems performance provides a hint on the direction of performance in entirety (Lear-Olimpi, 1999). According Purchasing (2007), analysis of supplier market is also an important sub factor in successful supply chain evaluation. Outsourcing which continue to emerge a leading player in human resource acquiring and giving products services and goods.in addition, the process comes with associated risks and benefits in line with Canbolat, Gupta, Matera, and Chelst (2008). It composition entails trader markets and presentation, sourcing of products, and logistics.

2.4 Empirical Literature Review

According to Barngetuny and Kimutait (2005), e-procurement, also referred to as electronic procurement or supplier exchange, is the process of using internet-based system to undertake single or all phases of procurement, namely post-purchase review, receipt , ordering, negotiation, sourcing, and search. E-procurement is either enterprise-to-government, enterprise-to-consumer, or enterprise-to-enterprise sale or purchase of supplies, services and work via the Internet including other information and networking systems, for example electronic data planning and interchange (Muhia & Afande, 2015). E-procurement, according to Brandon-Jones and Croom (2004), is the process of using internet-based incorporated information and communication technologies (ICTs) to undertake single or all phases of finding and allocation procedure comprising of post-purchase review, receipt, ordering, negotiation, sourcing, and search. Whereas there exists different categories or types of e-procurement concentrating on one or various phases of the process, namely e-sourcing, e-ordering, e-information sharing, and e-contracting, Muhia and Afande (2015) opine that e-procurement is regarded widely as an end-to-end resolution that incorporates and restructures varied procurement procedures all over an institution.

The e-procurement concept is not only a simple vanilla arrangement used to make online transactions, but also an inclusive system, relying on the Internet to eases, quickens services, making the process cost effective for industries to source their necessities on time, and in procedures that align themselves with organizational objectives and goals. Currently, lesser time to market and rising international competition coupled with increasing focus on key strategic ideas compels e-Procurement aids organization to streamline their purchasing process with the

goal of pinpoint focus on core business activities. This helps in increasing profit margins. With increasing internet connectivity across the globe, customers continue to buy goods from known and unknown online platforms. These platforms perform e-informing whose main activity is gathering and distributing purchasing data from third parties. This helps in expanding e-marketing sites on web-based Enterprise Resources Planning. The results in such initiative are opening up of value chains.

In the online purchasing platforms, customers can access the type of goods and services they need, bundle them in virtual shopping carts and seek purchasing approvals from online team. Once approved, the customers get their orders processed in close coordination with the suppliers' teams and their own financial services providers and systems (Jessop, 2006).

Under e-procurement platforms, websites permit competent and listed users to search for customers and undertake transactions. Based on the websites' terms and conditions, customers may negotiate costs through bids or in some instances take up declared prices. The buyers and the sellers then initiate and complete the transaction. In some cases on specific days, ongoing transactions may trigger discounts or special offers. Some e-procurement software has the capacity to automate orders and purchases. In this type of virtual transactions, it is the wish of participating companies to control part inventories with efficacy in order to reduce human resource overhead and their associated costs. The result of such a strategy is improvement of manufacturing cycles hence increase in profitability. With increasing internet connectivity and ease of payment for goods and services, Martin denotes that companies will integrate e-procurement into their purchase to pay (P2P) value chain (2006).

Rising improvement in technology continues to popularize e-procurement. In the United States of America, companies began using e-procurement platforms around 2000. This preceded the recession. As at December 2000, Reddick alludes that all government tasks maintained a web presence in at least one stage of the procurement process with others engaging in online bidding (2004). Malaysian government ordered all suppliers to use e-procurement platforms around this period (Yossuf et al., 2011). According to Kaliannan et al., this directive from the government introduced rapid changes in the procurement processes as technology continued to improve in

the country (2009). Commonwealth of Australia reviews designates that administrations of New South Wales, Scotland, Western Australia and New Zealand began using e-procurement processes in 2005.

In Kenya, data available indicate that e-procurement is sluggishly taking shape in most establishments in the private and the public sector. According to Barasa and Namusonge (2017), the County Government of Kakamega lacked adequate online presence. This in turn made the ability to facilitate e-procurement processes difficult and slow. Similarly, lack of adequate online presence reduced the number of online supply orders. With limited orders coming in through the online platform, county records indicate low uptake of online orders that in turn translate to limited efficiency in the procurement process. It is however vital to note that establishing the impacts of online platforms on the efficiency of Kakamega County Government using the regression analysis indicate a close correlation between two parameters.

According to the Waniani, Namusonge and Lagat, a review of technological infrastructure available at Nzoia Sugar Company indicated adequacy in online capacity (2016). 66.9% of respondents in the review accepted that company has adequate technological infrastructure such as hardware, technical capacity, adequate internet and software to enable it undertake e-procurement. 33.1% of the respondents held a contrary opinion. They opined that the company lack technological platform adequacy. They claimed lack of adequate and stable internet in poor quality scanners provided evidence for the technological inadequacy. These findings conform to Lysons and Gillingham proclamation that several companies are making considerable strides towards installation of electronic integration system (2003). The respondents at Nzoia Sugar Company agreed that internet connectivity, inadequate network coverage, and occasional system failures represented the leading challenges for the company. There was a disagreement on internal electronic communication on matters regarding e-procurement processes using platforms different from e-mail such as instant messaging and video-conferencing. Key disagreement was in the ability of the company to permit external suppliers to access the company's internal e-procurement systems such as Enterprise Planning Systems. Another key area of contention was the integration of the e-procurement system with the internal system. Most respondents felt this was a recipe for manipulation given that security of data and information, which form core

element of e-procurement, remained largely susceptible to manipulation from third parties. Technological infrastructure accounted for the 11.38% of e-procurement execution in Nzoia Sugar Company. Carelessness among dealers in delivering goods and services on slows down production process by increasing lead and cycle times. These leads to some buyers making unnecessary orders for large stock in order to create a buffer should future order delay. If suppliers and manufacturing firms can create a paramount and long lasting collaboration, the symbiotic relationship can bolster partnership that can reduce lead and cycle times thereby increasing efficiency in production. Efficient supply management can help create competitiveness that revolves around time provision of all orders to suppliers for action and effective delivery at reasonable costs.

As Mambo (2015) denotes, Kenya government continues to recognize the adoption and implementation of ICT in service delivery. Available literature indicate that a number of organizations in Kenya continue to adopt and implement e-procurement technology. It is vital to note that the ministry of ICT plays a vital role as a key government department in charge of implementing ICT programs in the country. Since Kenya's Vision 2030 is one of the leading development blueprints anchored in technological advancement, there is an urgent need to develop a comprehensive ICT policy to help streamline ICT sector in the national development platforms. Under the government blue print of 2013-2017, ICT sector remains one of the leading players in ensuring complete implementation and realization of goals.

Some large firms and companies in Nairobi continue to implement and execute e-procurement procedures as Ratanya (2013) reveals. For example, large-scale manufacturing firms continue to develop concrete information systems that allow their department to share information. Ability of inter department information sharing form the preliminary foundations which helps in building robust e-procurement platforms. Data available also indicate that most large manufacturing firms have a centralized procurement system with internal online procurement structures.

E-procurement system offers a great platform that encompasses making strategic decisions that help in moving companies and organizations in the correct direction towards purchasing process

(Quinnox, 2012). A company that organizes a robust e-procurement process have the capacity to connect their businesses processes with the suppliers in a central system thereby managing all interactions for efficiency. According to Khanapuri et al., technology, organization objectives, information, company data, human resource, and staff skills are some of the leading requirements for adoption of a robust e-procurement platform (2011).

SC and information are crucial aspects in e-procurement and play a vital role in helping e-procurement facilitate information flows and coordination of actions in the purchasing chains (Hsin Chang et al., 2013). According to Toktas-Palut et al., the most vital benefit of the e-procurement is shared information among firms or companies (2014). They further explain this in the interactive structural modeling (ISM) approach through elucidating that a well-integrated information sharing system boosts other benefits of e-procurement thereby improving efficiency by reducing costs. According to this model implementation of e-procurement and execution of shared information, systems ensure additional benefits to the company (Toktas-Palut et al., 2014). E-procurement process allows companies to restructure and automate processes and transactions thereby increasing benefits such as higher speed in sourcing processes and efficient purchasing process. This in turn helps in increasing activity volumes at reduced costs leading to increase in profit margins (Davila, Gupta & Palmer, 2003; Hashim et al., 2013; Toktas-Palut et al., 2014).

According to Nafula and Namusonge (2017), impacts of implementation of e-procurement on the efficiency Kakamega County Government service delivery include availability of website to facilitate e-procurement processes. Inadequacy in this online presence affected efficiency in procurement. Conversely, placing orders for supplies within the online platform remained low. Low uptake of online procurement processes had an ultimate negative effect on the performance on the department of procurement. The study recommends to the Kakamega County Government the need to adopt user-friendly information system that all suppliers can use in the sourcing and purchasing activities. This will help in reducing bias against old suppliers with little technical ideas.

Ngeno and Kinoti in their assessment of the effect of e-procurement processes on supply chain management processes in the energy sector in Kenya applied the research design using both qualitative and quantitative techniques to underscore the value of e-procurement (2017). This study collected and collated data from specific respondents in the energy sector. The study used stratified random sampling technique in coming up with 152 respondents from the total of 246 target population in the energy sector. The study took into consideration all variables such as electronic data interchange, e-tendering, and supply chain integration. All the variables indicated an influence on the effective management of supply change chain in the energy sector.

In the study, Chegugeu and Yusuf discovered that a large percentage (58% {186/321}) of the respondents strongly agreed that the tendering processes in hospitals remained one of the most competitive bidding processes (2017). Conversely, 6% (19/321) agreed to the statement, while 8% (26/321) responded their indecision to the statement. In addition, 18% (58/321) of the respondents indicated disagreement while the remaining 10% (32/321) indicated strong disagreement to the statement. In the same breadth of the study, 52% (167/321) indicated that there is an improvement in the level of access to medicine and services in the hospital. Other responses to this question indicated that 8% (26/321) of the sampled respondents agreed, 16% (51/321) of the participants indicated their indecision, 20% (64/321) disagreed with the proclamation while the remaining 4% (13/321) of the respondents strongly disagreed with the statement. According to the report 50% (161/321) of the respondents alluded that the system has experienced decrease in the workload and timeline in selection of the correct and efficient suppliers thereby reducing the cost of tendering process. On the statement, 16% (51/321) of the participants agreed while 6% (19/321) of the contributors indicated their indecision. Markedly, 14% (45/321) of the contributors registered their disagreement to the statement while another 14% (45/321) strongly disagreed with the declaration.

According to the Shale and Nyile in their study of “The role of sustainable practices on supply chain performance of manufacturing sector in Kenya: A case study of East African Portland Cement Company,” implementation and execution of e-procurement systems continues to enable quick and timely payment of suppliers (2016). Most of the contributors, 34.7%, agreed with the statement to a large extent while 26.5% of the respondents alluded that the process has improved

payment systems to a very large extent. This implies the EAPCC has a good relationship and close information flow between its systems and that of its suppliers. Using e-procurement system also helped in reducing ordering costs. 20.4% of the respondent agreed to this statement in a very large extent. 32.7% of the respondents agreed with the statement to a large extent while the 34.7% of the respondents moderately agreed with the statement. According the respondents, e-procurement processes reduced the cost of using materials such as paper and post services and services such as phone calls and supplier visits. These in turn ensured time saving and reduction of cost in making and processing of orders and purchases thereby increasing profitability.

With an objective of assessing the level to which e-procurement helped improve value of goods and services in public hospitals, Matunga, Nyanamba and Okibo undertook a study (2013). Other objective of the study was to determine the level or degree at which e-procurement has helped reduce the prices of products in public hospital as well as identify how e-procurement helped in getting the value for money in the procurement process. This study found out that the greatest challenge in using e-procurement in the hospital was inadequate funding, lack of capacity to execute change management, and inadequate technical skills and expertise. The study concluded that most public hospitals continue to embrace e-procurement processes regardless of the difficulties that come with adopting the e-procurement platforms.

Fozia, Namusonge and Shaelle found out that employees search for new product and services electronically and in the online platforms (2016). In the process of searching for new product and services on online platforms, the study found out that most state corporations undertake supplier prequalification and confirmation on new suppliers' preferences in online platforms. The study also indicate that appraisals on marginalized groups take place on electronic platforms though the same study registered doubts on whether the search for new suppliers take place electronically. The study however, failed to establish a direct electronic interaction between employees and suppliers or if employees could categorize new customers on the electronic platforms. The study also failed to fully establish if employees undertake e-auctions or carry out location search for new customers and suppliers.

In their study on changes caused by e-procurement in the success of parastatals, Kioko and Mwangangi (2017), analyzed the impacts of e-sourcing, e-informing, e-payments, and e-tendering had striking influence on the success of government parastatals. Outcome from the study indicate that the 3% of the participants proved that e-procurement greatly controlled the success of the state parastatals. Additionally, 12% of the participants indicated moderate extent of influence while 37% indicated little extent of influence. In addition, 27% of the respondents in the study indicate little extent of influence. The remaining 21% of the respondents indicated the e-procurement has no impact on the success of the parastatals. Results from the literature indicated that 100% agreed on the declaration that e-bidding had great influence on the market share while 69% of the respondents agreed that e-evaluation had huge influence on the market share. In the study, 47% of the participants agreed acknowledged that the provision on tender documents on an online platform had a great influence on the market share. Another 100% record indicated agreement that e-bidding provided a huge influence on the revenue limits of the parastatals.

In line with the research findings, a majority of the participants 96% indicated that there is a direction correlation between e-evaluation and the profit margins. E-evaluation has a direct and huge control on the extent of profitability. On the same note, the study indicated that a large percentage of the respondents agree that the provision of tender documents on an online platform presented a positive influence on the profit levels. 90 percent of the participant's concurred that e-bidding had great influence on the delivery time. Similarly, 88% of the respondents agreed that e-evaluation of tender documents and purchasing documents provided a positive influence on the delivery time. Results from the study signified that a majority of participants (87%) concurred that provision of tender credentials in an online application had huge influence on the delivery time. The average mean of the findings and responses indicated that 2.5 majority agreement on sourcing influence on performance of the state parastatals. From the study report, in order to improve performance of the parastatals there is need to improve e-procurement aspects such as e-sourcing, e-informing, e-payment, and e-tendering. Findings of the report suggested introduction and embracing of e-procurement in the state parastatals in order to improve their performance. The study further recommended future and more research on the e-procurement topic to ascertain and validate its findings.

2.5 Evaluation of the Current Research

Croom (2010) and Osmonbekov et al. (2012) strongly claim that the discovery of the web-based electronic procurement has been hailed as the best advent in the revolution of purchasing processes. Electronic procurement has played a chief role in the economies of transactions and has enhanced a shift in the duties and impact of the purchasing activities in many corporations. However, it has been observed that minimal information is available on the duties of e-procurement approach in promoting procurement achievement in Kenya. A research by Njuguna, (2011) focused on the determinants that influenced the realization of e-procurement in telecommunication industries. The findings of the research on Safaricom Kenya concurred with several literature that some companies had adopted the system and has aided in achieving company's goal. Nevertheless, it was observed that both the espousal and execution process started at a snail pace.

De-Boar (2012) claims that the ability of e-procurement to boost strategic sourcing and significantly minimizing procurement costs has caused a lot of excitement particularly to organizations. Weele (2012) supports De-Boar arguing that e-procurement not merely boosts collaboration of buyer but as well as promotes compliance reduction. As Yen and Ng (2013) notes

E-procurement aids a business to negotiate with a supplier on the electronic market through the internet. Another review on B2C E-Commerce concentrated on ways in which the purchasing decision of users' changes affects B2C online market. Other literatures talked on the factors that contributed to the success or failure for the execution of the system. The review also found researches on the importance of using e-procurement. It is unfortunate that minimal research was done on how e-procurement impact consumer attractiveness despite talking on the importance of e-procurement and online shopping. Moreover, that minimal focus has been given to how the approach affects procurement achievement.

2.6 Research gaps

Ngeno and Kinoti (2017) did a review on ways in which e-procurement influenced the efficiency of supply chain administration in Kenya's energy sector. From the findings, it was realized that the energy sector's supply chain management activities were remarkably influenced positively by factors such as e-tendering and interchange of data.

The review also observed that planning of corporate resources has huge impact on efficiency the supply chain activities of Kenya's energy sector. In the reviewed literature, electronic data interchange, supply chain incorporation, and e-tendering were addressed. However, chief E-procurement characteristics such as electronic material administration and electronic order processing were disregarded.

The impact of E-Procurement on achievement of communal organizations in the county of Bungoma was researched by Barasa, Namusonge and Okwaro (2017). They looked at how E-tendering related to the achievement of the organizations in the county. In addition, they addressed the impact of E-Auction on the achievement of Bungoma County corporate. They also established ways in which E-Purchasing and E-Invoicing affected the companies' achievement in the county. From the review, they found out that e-invoicing, e-auctioning, e-tendering, and e-purchasing markedly impacted the achievement of organizations. Their review did not deal with changes caused by supply chain actions on the achievement of corporate.

In another analysis on the influences of electronic trader activities on execution of predilection rules on the state parastatals, it was noted that most workers look for new products online (Fozia, Namusonge & Shaelle, 2016). The review emphasized that many companies do electronic confirmation of supplier prerequisites and their confirmation.

In addition, they discovered that corporate do online appraisal of marginalized groups. Conversely, the reviewers had some concerns on the online searching for new suppliers. The reviewers concentrated more on verifying if electronic supplier administration activities were employed. In our study, we will focus on determining if electronic supplier activities have any impact on supply chain accomplishment.

Several literature reviewed put more emphasizes on how E-Procurement related with some variables such as corporate achievement, compliance policy manuals, and overall activities. Most analysis done in the other parts of the country addressed logistics and procurement. For instance, Muhia and Afande (2015) did an analysis on the employment of e-procurement tactics on procurement achievement on Kenya Revenue Authority. Another study was on the function of e-procurement on achievement of agencies in Kenya (Mwangangi, 2017).

As seen earlier, Fozia, Namusonge and Shaelle (2016) reviewed the role that electronic supplier activities plays on execution of predilection convention on Kenya's state agencies while Nafula and Namusonge (2017) did an analysis on the function of e-procurement activities on value concerning Kakamega County Government frontier. We also reviewed Barasa, Namusonge and Okwaro (2017) paper on how E-procurement related to the achievement of the organizations in Kenya's County Government. From all the analysis, we realized that a few scholars touched on how e-procurement linked with supply chain achievement while no literature was found that was concerned with sugar manufacturing sector. We therefore, aim at reducing the gap existing in the concerned sectors.

2.7 Summary

It is no doubt that achievement of procurement is the heart of all corporations' success. Procurement achievement not only aid in the purchasing of valuable goods and services but also leads to competitive acquiring of the same. Consequently, the corporate gains a competitive in the current market. This insinuates that pathetic activities in procurement leads to vast losses experienced in both public and private entities. The losses are attributed to working materials of poor quality and exaggerated prices. On realization that procurement activities significantly affect the profits of a company, several companies are pressurizing their procurement department to try to cut the cost, at the same time maintain quality of materials, and meet timelines. It has been observed that unreliable procurement rules leads to delays in procurement or even cancellation of some orders and projects. It can also cause litigation and employee dissatisfaction. Therefore, companies are advised to put in procurement policies that meet the organizations needs. Apart from the policies, companies need to obtain quality electronic tendering equipments by thoroughly examining if they are suitable for the company.

Currently, both private and public agencies are demanded to ensure quality and best practices in their procurement activities. Organizations are under pressure from community and shareholders to improve their procurement department and be responsible for their actions.

The government of Kenya employed ICT services in its course to deliver quality procurement services to its population. The current government has supported the course and increased ICT use in procurement department. Most of the corporations in the Kenya republic has adopted e-procurement evidenced by several reviews on the same. From the literatures, it can be concluded that effective procurement in Kenya is highly linked to the effectiveness of the ICT ministry. An effective ICT policy should be put in place since ICT is the core component in the attainment of Kenya's vision 2030. The policies will aid in incorporating ICT sector to the national growth. It will also aid in the attainment of the needed development in empowerment and efficiency of the general public.

The reviews on how e-procurement achievement connects to procurement activities of various counties in Kenya showed that e-procurement significantly impacted supply chain achievement of Kenya's County Governments. It then suggested that strategies should be put in place that will enable successful implementation of e-procurement activities and offer vital assets and direction in executing the technique. Disbursements, management of internal over expenditure, payables, and suppliers can be promoted with the acquisition and successful implementation of electronic purchase order requisition system. Manual activities that are done during requisition of the order will be reduced when processes are electronically carried out attracting an efficient payable approach. Pos can be produced with the help of PO Requisition technology, which are then routed online to be endorsed via Smart Routing technology.

A company is in a position to get the latest information on a product or services, changes in pricing, and data on delivery when they incorporate supplier online selling. Additionally, corporate may enhance communication among buyers and sellers when they integrate Web and Internet-based EDI-applications in their operations.

Some other tools such as requests for quote (RFQ), desktop purchasing systems (DPS) for automating buying processes, RFP that promotes acquiring processes and online auctions that approximates selling prices of goods enhances the operation of any company.

Considering that most people can access the internet, it is now possible to have online markets that allow multiple people to interact and do business. Some of the applications that enhance online transactions are auction engines, application integration, compensation, and fulfillment, and catalog building. One can get moderations in the prices and specific requirements of products and services from suppliers using e-procurement system. Furthermore, one can place his/her order by filling an online form.

A firm that installs a high quality e-procurement system and is utilized efficiently enhances its performance. First, the system allows the company to communicate professionally with the supplies, which ensures maximum supplier performance. Additionally, the system aids in managing costs through a built in monitoring tool. Lastly, managers are able to calculate prizes of products and moderate previous contracts.

CHAPTER THREE

RESEARCH METHODOLOGY

This part of the study contains techniques applied to measure ways in which E-procurement activities influenced supply chain achievement of County Government of Busia in an objective manner. The section showed the research design, data gathering collection procedures and the system through which data was to be examined.

3.1 Research Design

The review utilized correlational design technique. This technique allows the reviewer to examine the extent to which the variables in the research connect (Orodho, 2003). This technique is relevant to this review because it will enable the researcher to establish the relationship between achievement appraisal criteria, feedback, and reward with employees' productivity through the multiple regression equation.

3.2 Area of Research

The area of review was Busia County Government

3.3 Target Population

Population as characterized by Kothari (2004) is an explicit group of individuals, amenities, fundamentals, and events, or things examined. Target demography refers to the explicit population from which data is gathered. The review will target 56 county senior staffs, four from each department across the 14 supply chain departments of county government of Busia.

Mugenda and Mugenda (2003) unequivocally point out that the research demography ought to contain discernable some a population needs to have some observable characteristics related to the reviewers objectives. In their definition, it is assumed that the demography under review is not standardized. This is true since different counties under study have adopted different E-procurement practices.

3.4 Sample and Sampling Process

This review assumed census survey thus including all the targeted 56 respondents in the final analysis.

3.5 Data Gathering Schemes

3.5.1 Data Types and Source

This review used primary data collected from employees of Busia County government working in the Supply Chain Department.

3.5.2 Data Collection Instrument

Questionnaires will be majorly employed in the gathering of primary data. Questionnaires have proved to be suitable for various analyses since one can gather impalpable information. Mallenbergh (2008) is of the idea that questionnaires enable reviewers to know participants attitudes, feelings, accomplishments, motivations, and experiences. The questionnaire was categorized into different parts. The first part focused on electronic tendering, second part with electronic order processing, third part with Electronic Materials Management, and fourth part with Electronic supplier correlation administration and last section with Supply Chain Performance. See appendix I.

3.5.3 Validity Test

Mugenda and Mugenda (2003) strictly confirm that validity can be exemplified as the exactness, the accuracy, and significance of conclusions derived from review findings. Soundness indicates the extent to which a particular tool examines the findings under study resulting in accuracy and meaningfulness of inferences. It is the level of confidence to which variants in examining tool results mirrors the exact differences in the tested components. It also refers to the data that is not only reliable, but also true and accurate. The instruments will be subjected to appraisal and amendment by use of simple language, peers review, and experts (supervisors) whose recommendations were taken to improve the face and content validity.

3.5.4 Reliability Test

The aforementioned instruments were employed determine the questionnaire's consistency of the pilot population. For this review, a Cronbach alpha (construct composite reliability co-efficient) of 0.7 or more will be regarded as efficient for all the set ups (Nunnally, 1978). The Alpha examines all the internal measures internal uniformity through determining if specific tool by establishing if certain item calculates the same constructs. Cronbach's Alpha, for all the

objectives in the review will be calculated to determine if all the goals will give the same findings should the research be carried out some other day. The collected information, therefore, was exposed to cronbach's alpha coefficient of reliability since its estimate of data generalizability is unbiased. For Ritter (2010), 0.7 is a frequently acknowledged rule of thumb for characterizing internal reliability. The findings were correlated from the assessed information to establish their consistence coefficients and a dependability coefficient of 0.971 was determined for all the variables. An alpha coefficient of 0.7 was achieved in all variables and therefore this was indicative that the research tool was sufficiently reliable to carry out the study without further analysis.

3.6 Data Analysis

The collected data will undergo analysis by use of qualitative and quantitative techniques using excel and SPSS software version 21. Data sorting will be done through editing, coding, and classification. The quantitative data will be subjected to measurement of frequencies, regression. Graphs, charts, and tables will be used to represent the findings for easier interpretation and inference. The association among variables at a confidence level of 5% will be determined using regression assessment. The proposed regression model equation will be as stated below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + E,$$

Y represents the value of dependent variable, which is supply chain achievement

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ are regression coefficients to be expected

X_1 E-Tendering exercise

X_2 E- Order processing practice

X_3 E- Material management practice

X_4 E- Supplier management practice

E error phrase

3.7 Ethical Deliberation

The review works on assumptions that the public procurement and disposal principles will not change in their entire period of study. In addition, the researcher acts on the supposition that the participants are cognizance with inventory control systems. Furthermore, it is believed that the data collected will aid the reviewer to successfully carry out the research and the variables will remain constant all the time. Moreover, it will be deduced that the participants will give correct and useful response. In that regard, the researcher will not coerce the participants into giving responses to the questionnaire. In addition, responses were kept confidential and were used specifically for the review.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

The section presents an assessment of the collected information and a deliberation of the review results. An outlines of the findings based on the review objectives is given. SPSS statistical software facilitated the assessment of data on E-procurement practices and their effect on the supply chain achievement of Busia County. SPSS aided to get the mean and regression analysis of the results.

4.1 Rate of Participant's Response

A sum of 56 structured questionnaires was given to the participants working supply chain department. Only 55 participants filled and handed back the questionnaires successfully, which constituted a response rate of 98.2%.

4.2 Regression Analysis

The reviewer performed a regression analysis to evaluate ways in which independent variables impact dependent variables.

Table 4. 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.892(a)	0.795	0.784	0.05

a. Predictors: (Constant), E-tendering, e-order processing, e-materials administration and e-supplier management reward

b. Dependent: Supply Chain Achievements

Source:Survey Data (2019)

We performed the coefficient of determination to evaluate the efficiency of the statistical data model in envisaging the future outcomes. The coefficient of determination, R^2 can be characterized as the percentage of the discrepancy in the dependent variable that can be forecasted from the independent variable. The coefficient of determination allowed the researcher to expound of the involvement of the three independent variables that were studied (e-tendering, e-ordering, e-materials administration and e-supplier management). From the adjusted

R² it is clear that the independent variables under review described only 79.5% of the supply chain achievement. Consequently, it can be deduced that 20.5 of the determinants that influence the achievement of supply chain were not analysed.

4.3 Coefficients

Table 4. 2: Coefficient of determination table

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
	(Constant)	1.521	0.251		6.057	0.000
1	E-Tendering	0.971	0.041	0.828	23.49	0.000
	E-Ordering	0.676	0.04	0.654	16.84	0.000
	E-Materials Execution	0.603	0.067	0.494	9.059	0.000
	E- Supplier Execution	0.546	0.133	0.249	4.096	0.000

a. Dependent Variable: Supply Chain Achievement

Source: Survey Data (2019)

The established regression equation from the model was established as

$$Y = 1.521 + 0.971X_1 + 0.676X_2 + 0.603X_3 + 0.546X_4 \dots \dots \dots 4.1$$

Where; X₁ E - Tendering
 X₂ E - Ordering
 X₃ E – Materials Execution
 X₄- E - Supplier Management

Considering all the factors, the regression equation has determined that (E – Tendering, E – Ordering, E - Materials Management and E - Supplier Management) constant at zero, supply chain achievement will be positively influenced as evidenced by a coefficient of (β₀= 1.521) this being significant at (p=0.000).

From the results we deduced that the e-tendering has a considerable impact on supply chain achievement (β₁=0.971, p = 0.000). This statistically indicates that a change of one standard deviation in e-tendering results in a (0.971) standard deviations decrease in supply chain

performance of Busia County Government. Ideally, if the County was to practices more e-tendering then their supply chain achievement would be enhanced positively. A p value of 0.000 is a suffice evidence to conclude that e-tendering has a momentous impact on achievement and therefore the null hypothesis that e-tendering has insignificant effect on supply chain achievement of Busia County Government is therefore rejected.

The findings moreover established that e-ordering has a major impact on supply chain accomplishment ($\beta_2=0.606$, $p = 0.000$).This statistically indicates that a change of one standard deviation in e-ordering results in a (0.606) standard deviations decrease in supply chain performance of Busia County Government. Ideally, if the County was to practices more e-ordering then their supply chain achievement would be enhanced positively. A p value of 0.000 is a sufficient evidence to conclude that e-ordering tendering has a considerable effect on the achievement and therefore the null hypothesis that e-tendering has no noteworthy effect on supply chain achievement of County Government of Busia is therefore rejected.

The results presented signifies that e-materials management has a portentous effect on supply chain achievement ($\beta_2=0.603$, $p = 0.000$).This statistically indicates that a change of one standard deviation in e-materials management results in a (0.603) standard deviations decrease in supply chain achievement of Busia County Government. Ideally, if the County was to practices more e-materials execution, then their supply chain achievement would be enhanced positively. A p value of 0.000 is a suffice evidence to conclude that e-materials execution has a noteworthy effect on achievement and therefore the null hypothesis that e-materials execution has no

considerable effect on supply chain achievement of Busia County Government is therefore rejected.

Lastly e-supplier management has a critical effect on supply chain achievement ($\beta_2 = 0.546$, $p = 0.000$). This statistically indicates that a change of one standard deviation in e-materials management results in a (0.546) standard deviations decrease in supply chain accomplishment of Busia County Government. Preferably, if the County was to practice more e-supplier execution then their supply chain achievement would be enhanced positively. A p value of 0.000 is a suffice evidence to conclude that e-supplier execution has a striking effect on achievement and therefore the null hypothesis that e-supplier execution has no remarkable effect on supply chain achievement of Busia County Government is therefore rejected.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMENDATIONS

The sector highlights a summary of the results from the review, conclusions deduced, recommendations made by the reviewer concerning the findings and suggestions on areas the reviewer felt may require further investigation through research activity.

5.1 Summary of Findings

From the review, it was deduced that E-tendering had a conspicuous influence on supply chain achievement of County Government of Busia.

E-tendering activities drastically reduce time needed in tendering process, postal procedures are eliminated, and no printing and storage charges. Moreover, it has the convenience of accessing request, tenders, and quotations at any time and at any place. Data security is almost guaranteed since minimal chances of altering information exist. In addition, e-tendering assures authentication and non-repudiation of sent information. Moreover, it overcomes the challenges of poor infrastructure and enhances audit trails to a large extent.

We also construed that promoted authentication hence unauthorized individual could hardly access the document. With such capabilities, non-compliant bids drastically reduced ultimately minimizing corruption. It was also noticed that malfunctioning of the internet or computers has a significantly minimal impact on the submission of the bid.

From the review, we interpreted that Electronic Order Processing has crucial effect on supply chain achievement of Busia County Government. E- Order procedural activities lessens time for processing orders and paperwork. Likewise, the degree of human errors is reduced and does not delay on dispatching orders. In addition, supplier relationship is boosted when electronic invoicing is used.

The review also determined that E-materials administration has a sizeable effect on supply chain achievement of Busia County government. Largely, E-material management practice affects supply chain achievement. For instance, real-time stock levels enable inventory manager to quickly see which products have reached re-order level, Inventory levels in each warehouse is accessible to management, enables count of inventory throughout the supply chain, minimizes

inventory carrying costs as electronic information enables better decisions on reorder quantities and visibility of product availability is critical to efficient operations. Some respondents indicated that by use of Bar codes store's catalogue can be automatically attuned to account for products exiting the store affects procurement achievement to a judicious extent.

The review showed that E- Supplier execution has a substantial effect on supply chain achievement of Busia County Government. To a large extent buyers and suppliers institute a sole shared anticipation of demand and an arrangement of supply, buyers issue order of materials from the suppliers is streamlined, quick information sharing with suppliers, predictability of flow of goods, electronic payment to suppliers improve delivery and improved relations with channel partners.

5.2 Conclusions

The review strongly concluded that a striking impact on E-tendering on supply chain achievement was witnessed resulting in the dismissal of the null proposition. The results decision is a prove that E-tendering procedural activities boots supply chain accomplishments. This is because E-tendering activities do away with postal processes but also significantly reduces time for tender processing. Likewise, it cuts cost on printing and storage and one can conveniently get requests, tenders, or quotations any time and at any place. It was also noted that integrity, authentication, and non-repudiation was achieved through electronic tendering. Moreover, it overcame the challenges of poor infrastructure in some areas and boosted inventory trails to a larger extent.

The review also observed that e-ordering extensively influenced supply chain achievement ensuing to the dismissal of the null supposition. This shows that E-ordering processing activities boosts supply chain achievement since it minimizes human errors, less paperwork cuts on cost, and reduces time for processing orders. Moreover, it ensures that orders are delivered on time.

The research findings showed that E-material execution activities had a striking effect on supply chain achievement resulting in the rejection of the null hypothesis. This insinuated that E-material execution activities augments achievement of supply chain. For example, real-time stock

degrees allows inventory managers to quickly see which products have reached re-order level, inventory manager knows how much inventory is in each warehouse, enables count of inventory throughout the supply chain, minimizes inventory carrying costs as electronic information enables better decisions on reorder quantities and visibility of product availability is critical to efficient operations.

It was concluded that E-supplier administration activities had major influences on attainment or accomplishment of supply chain consequentially resulting in rejection of the null hypothesis. Therefore, E-supplier management actions boost supply chain accomplishment as buyers and suppliers form a sole shared forecast of demand and a plan of supply, buyers issue order of materials from the suppliers is streamlined, quick information sharing with suppliers, predictability of flow of goods, electronic payment to suppliers improve delivery and improved relations with channel partners.

5.3 Recommendations

On realization that E-tendering processing activities boosts supply chain achievement in a positive way, the review recommends that organizations that all modules like goods receipt note, approvals of orders purchased, monitoring of contracts, and tender requests should be done electronically. The processes do away with postal procedures, reduces time for tender processing it cuts cost on printing and storage and one can conveniently get requests, tenders, or quotations any time and at any place. It was also noted that integrity, authentication, and non-repudiation was achieved through electronic tendering.

The review also acknowledged that E-order processing activities boost the achievement of supply chain. Therefore, the review proposes the incorporation of electronic system to achieve minimal human errors, less paperwork hence cutting on cost, and reduced time for processing orders. Moreover, it ensures that orders are delivered on time.

From the review, it was found that E-material management activities enhanced supply chain achievement by Stocks being managed by application of MRP, EOQ, stock aging, stock location, receiving, issuing stocks and stock reports electronically. It is recommended that application of Bar codes should be improved to improve receipts and issues of stocks.

The findings were that E-supplier management practice enhanced supply chain activities. The research proposed that organizations should ensure working Websites, working internal and External mail to improve supplier and buyers integration. To improve buyer/supplier relationship in time electronic payment to suppliers is necessary.

5.4 Suggestions for further Studies

Documentation on further findings related to accomplishments of electronic tendering systems, electronic execution of materials, electronic supplier management, and electronic order systems to companies was recommended. The recommendation was specifically on determinants such as corruption, quality of time, and cost. Analysts were advised to to different measuring methods to effusively appreciate how benefits. Scholars to use varied methods of measurements to fully follow and comprehend the ways and modalities of sharing the achievements.

The review also recommended that more study should be carried out the barrier causing some companies not to implement electronic system. It emphasized on the use of a comparative study for the researchers to determine the similarities and differences resulting in the success of electronic system employed in various industries such as public and private corporations and between manufacturing industry and another industry. Further research is recommended to look into effect of outsourcing purchasing functions.

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APPENDICES

Appendix I: Introduction Letter

**C/O MANAGEMENT SCIENCE DEPARTMENT
SCHOOL OF BUSINESS ADMINISTRATION
MASENO UNIVERSITY
P.O. BOX 333, MASENO
DATE _____**

TO WHOM IT MAY CONCERN

Dear Sir/Madam

RE: GATHERING OF INFORMATION

As a Maseno University student majoring in Master of Science Degree in Supply Chain Management, I am demanded by the university to carry out a research as a pre requisite to successful completion of the course. To abide by the requirements, I am conducting this study entitled, “Effect of E – Procurement Practice on Supply Chain Performance of County Government in Kenya.”

I am kindly requesting that you spare a few minutes and assist me in answering the questions provided in the attached questionnaire you will be provided with. You will not need to identify yourselves and any piece of data you will provide will be private and stringently used for educational purpose. Attached herewith is an introduction letter from Maseno University.

Any questions or concerns arising from the survey should be relayed to me via my mobile number, which is 0721271576 or my supervisor, Dr. Albert Tambo through Maseno University.

Yours Sincerely

Mr. Sylvester Obunde
MSC/BE/00031/2017
MASENO UNIVERSITY

Appendix II: Questionnaire

Please tick as appropriate ()

SECTION A: ELECTRONIC TENDERING

Kindly show the degree to which the given declaration on Electronic Tendering on supply chain achievement are factual. Apply the 1-5 scale, where 1 represent No Extent, 2 – Small Extent, 3 – Moderate Extent, 4 – Large Extent and 5 Very Large Extent

E-Tender Processing	1	2	3	4	5
Tender handling time is reduced					
Postal, printing and storage costs reduced					
Convenience of getting requests, tenders, and quotations anyway and at any time in the world					
Electronic documents cannot be accessed by unauthorized person					
Integrity is achieved since the tender cannot be modified					
Authentication is attained since all the parties cannot deny sending or receiving documents					
It eliminates non-compliant bids automatically					
No bias exist in spite of geographic setting of a trader					
Promotes inventory trails					
Reduction in corruption					
Computer/network break down has no significance on submission of a bid					

SECTION B: ELECTRONIC ORDER PROCESSING

Kindly show the magnitude to which you concur with the below statements how electronic order practices impacts supply chain achievement. Scale of 1-5 is used, where 1 represent No Extent, 2 – Small Extent, 3 –Moderate Extent, 4 – Large Extent and 5 Very Large Extent

E - Order Processing	1	2	3	4	5
Order processing time is minimized					
Paperwork is reduced hence less cost					
Human errors is minimised					
Checks order due dates frequently					
supplier relationship is boosted when electronic invoice payment is used					

SECTION C: ELECTRONIC MATERIAL MANAGEMENT

Kindly show the magnitude to which you concur with the below statements on the degree to which electronic material management affects supply chain achievement. Apply the 1-5 scale, where 1 represent No Extent, 2 – Small Extent, 3 –Moderate Extent, 4 – Large Extent and 5 Very Large Extent

E- Material Management	1	2	3	4	5
Real-time stock magnitudes enable inventory manager to see quickly which products have reached this re- order level.					
Inventory in each warehouse is accessible to management					
Enables count of inventory during supply chain period					
By use of Bar codes store's					

Inventory can be automatically accustomed to take care of items exiting the store.					
Minimizes inventory carrying costs as electronic information enables better decisions on reorder quantities					
Visibility of product availability is critical to efficient operations.					

SECTION D: ELECTRONIC SUPPLIER MANAGEMENT

Please show the magnitude of your concurrence with these sentences on how Supplier Management impacts supply chain achievement. Apply the 1-5 scale, where 1 represent No Extent, 2 – Small Extent, 3 –Moderate Extent, 4 – Large Extent and 5 Very Large Extent

E-supplier management practice	1	2	3	4	5
Buyers and suppliers form an exclusive collective estimate of demand and a plan of supply					
Buyers issue order of materials from the suppliers is streamlined.					
Quick information sharing with suppliers					
Predictability of flow of goods					
Electronic payment to suppliers improve delivery					
Improved relations with channel partners					

SECTION E: SUPPLY CHAIN PERFORMANCE

Supply Chain Achievement	1	2	3	4	5
Reduces purchasing cost					
Improves on time management and boosts effectiveness in procurement process					
Standardizes purchasing process across the organization					
Reduces administrative cost with better effectiveness					
Improves effectiveness of supply chain processes(standard process)					
Reduces discretion & increases transparency					
Improves supply chain managers decision making					
Minimizes order transmission errors					
Reduces procurement corruption					
Inventory minimization					
Stronger buyer-vendor relationship					

Thank you