EFFECT OF PROCUREMENT PRACTICES ON PERFORMANCE OF SUPPLY CHAIN IN PUBLIC SECTOR: A CASE OF AGRICULTURE AND FOOD AUTHORITY IN KENYA

BY

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DECLARATION

Declaration by Candidate

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DEDICATION

I dedicate this research to my family especially my lovely wife Dr. Marion Nekesa Otwani, sons Timothy and Toby for their invaluable support

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ABSTRACT

The nature of contemporary economy has shifted the battlefield from the traditional individualized performance of companies to what has been termed as the Supply Chain Performance. Supply chain has been potentially identified as one of the key item that can significantly improve a company efficiency hence reducing the costs. The main objective of this study was to establish the effect of procurement practices on performance of supply chain in public sector guided by the following specific variables; to establish the effects of e-procurement on supply chain performance; to establish the effect of staff competency on supply chain performance; to examine the effect of green purchasing on the supply chain performance and to examine the effect of buyer-supplier relationship on supply chain performance at Agriculture and food authority (AFA). The study employed a descriptive research design. The target population for the study was 503 employees in all AFA Directorates. The study employed the use of stratified sampling to select respondents and then employed the use of simple random sampling to select the employees in the various departments. The sample size selected for the study was 151 respondents. The study used questionnaires as the instrument for data collection. Data was analyzed using descriptive statistics such as mean, percentages and standard deviation and inferential statistics such as correlation, analysis of variance and Multiple Regression Analysis (MRA). The study established that E-Procurement had a significant effect on supply chain performance ($\beta_1 = 0.264$, $p = 0.03$); Staff competency had a significant effect on supply chain performance ($\beta_2 = 0.290$, $p = 0.03$); Green purchasing had a significant effect on supply chain performance ($\beta_3 = 0.294$, $p = 0.04$); and Buyer-Supplier relationship had a significant effect on supply chain performance ($\beta_4 = 0.289$, $p = 0.03$). The study concluded that e-procurement, Staff Competence, Green Purchasing and Buyer-Supplier Relationship are critical determinants on Supply Chain Performance and therefore firms should pay attention to these procurement practices if they hope to boost the performance of their supply chains. A similar study may be carried out in Private as well as other Public institutions. The study recommends that the government should encourage public organizations to fully adopt procurement practices that add value to supply chain among them the specific variables examined under this study. Further the government should also put in resources for further research to find out other variables that positively impacts on performance of supply chain.

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LIST OF ABBREVIATIONS

AFA – Agriculture and Food Authority

MOA – Ministry of Agriculture

PPDA – Public Procurement and Disposal Act

PPDR – Public Procurement and Disposal Regulations

PPOA – Public Procurement Oversight Authority

OPERATIONAL DEFINITION OF TERMS

E-procurement It is the business-to-government purchase and sale of supplies, work, and services through the Internet as well as other information and networking systems, such as electronic data interchange, Sims (2001)

Green purchasing Procurement of products and services that have a reduced effect on human health and the environment when compared with competing products or services that serve the same purpose (Davila, A., Gupta, M., Palmer, R., 2013).

Performance Performance management can be interpreted differently through different perspectives of people. It provides important source of information on human capital and its huge contribution to the organisation (Lawler, 2003)

Procurement practices This particularly involve a bundle or a number of activities that an organization has undertaken or committed to undertake in a bid to promote effective management of organizations through supply chain, Gargan (1993),

Supply chain The concept of "supply chain" is well established in the literature and is generally referred to as the alignment of firms that bring products or services to market (Lambert, Stock and Ellram, 1998)

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

A set of activities that an organization undertakes to improve on management of supply chain are generally referred to as procurement practices. Such activities help an organization to prepare for uncertainties ahead to achieve their objectives hence playing a quite necessary role in public sector. Institutions such as Chartered Institute of Purchasing and Supply and KISM (Kenya Institute of Supplies Management) are some of the procurement bodies that have been formed courtesy of procurement growth. Organizational goals need to be merged with procurement procedures and objectives because they play a key role in organization growth. Procurement practices are vital to any organization success because supply chain in general has been widely linked to organization performance. Procurement and supplier involvement determine success of a new product implying that proper Procurement practices can have a positive outcome on the organization's overall financial performance. Importance of strategic procurement practices are well recognized by organizations because they use a sizeable percentage of their finances in procurement. For organizations to get the best value of their money, drafting of specifications and supplier evaluations need to be carefully handled by Directors and heads of procurement department.

1.1.1 Global perspective

Globally, public sector players are re-orienting their procurement models approaches and structures because they are faced with revolutionary changes within the procurement circles. Out of the cost base, procurement is required to focus on driving costs because it plays a huge role by aiding players in the public institutions to realize their goals while at the same time being able to visualize the likely uncertainties and

prepare for them in advance. In procurement system, there are two types of goals as described by Thai (2014). They are referred to as procurement goals and non-procurement goals. While non-procurement goals are mainly concerned with political, economic and social goals in a system, Procurement goals are basically concerned with protection over integrity and competition, scaling down of financial and technical risks and quality in the system. Political environment, legal framework and market structure are some of many challenges that procurers faces and such challenges makes it an ambitious task for public procurement to achieve efficiency (thai, 2014). United States federal procurement was estimated by Pegnato (2013) to be around $400 per year. Both local and state government procurement combined was put at $1.8 trillion. Regarding governments' collective purchasing, Thai and Grimm (2015) estimated it at 20% of GDP (Gross Domestic Product) for developed economies while for developing economies was put at 15% of GDP by Nicol (2016). Fradkov (2014) estimated federal procurement for Russia at 42% of the countries budget in 2014. The volume of global public sector procurement was estimated by OECD (Economic Co-operation and Development), Development Assistance Committee (DAC) (2016) at 10% of the worldwide GDP. '

According to World Bank (2005), Public Procurement is the acquisition of goods, services as well as works by a procuring entity using funds obtained from public coffers. Sustainable procurement can therefore, be defined as the application of sustainable development principles in the procurement function. Sustainable procurement is not simply about being "green". Sustainable procurement is about socially and ethically responsible purchasing, minimizing the environmental impact through the whole process of supply chain, delivering economically sound solutions as well as always ensuring good business practice (CIPS, 2014).

Sustainable procurement is a branch of the broad concept of sustainable development although its focus is far wider than just the development as it also aims at meeting the varied needs of all people in the current as well as future communities, promoting personal wellbeing, social cohesion, and inclusion, and creating equal opportunity (CIPS, 2014). Sustainability has become a global topic. In the USA for example, most critics of Wal-Mart claimed that the entry of the retailer in their urban areas would lead to increasing social costs and externalities and the negative environmental impact the big stores would have such as an increase in traffic in nearby areas. Wal-Mart was accused by trade unions of paying low wages and forcing its employees to rely on government health programs (Dixon, 2006). Today, sustainable supply chain management has enabled Wal-Mart to reduce its operating costs through waste reduction, streamlining business processes and long-term planning for its employees and the community at large to become the world's largest retailer (Walmart.com, 2012). Sustainable procurement is about considering social and environmental factors alongside financial factors in making procurement decisions. It entails foreseeing beyond the traditional economic measures and making decisions based on the whole life cost, the associated risks, measures of success as well as implications for society and the impact on the environment. Making decisions in this line demands setting procurement into the broader strategic context including value for money, performance management, corporate and community priorities (CIPS, 2014). In recent years, academics and practitioners have become increasingly interested in how organizations and their suppliers influences the environment, society in addition to the economy (Walton, Handfield, and Melnyk, 2008).

The strategic function of purchasing and supply as a lever for sustainable development is much more manifested now than it was in the days earlier.

For the purpose of this research, the definition of sustainable procurement used by the Sustainable Procurement Task Force (SPTF), a task force that was established by the UK Secretary of State for the Environment and the Chief Secretary to the Treasury was adopted. SPTF defined sustainable procurement as a process whereby organizations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organization, but also to society and the economy, whilst minimizing damage to the environment. Public procurement in Kenya has come a long way and evolved from a system with no regulations governing its operations to an orderly legally regulated procurement system. The commendable steps have been advanced since the enactment of the Public Procurement and Disposal Act of 2005, which became operational on 1st January 2007 with the gazzetement of the Public Procurement and Disposal Regulations, 2006. The Public Procurement and Disposal European Journal of Logistics, Purchasing and Supply Chain Management Vol.4, No.3, pp.1-31, June 2016 ___Published by European Centre for Research Training and Development UK (www.eajournals.org) 3 ISSN 2054-0930 (Print), ISSN 2054-0949 (Online) Act, 2005 now the Public Procurement and Asset Disposal Act, 2015 created the Public Procurement Oversight Authority (PPOA) now Public Procurement Regulatory Authority (PPRA), the Public Procurement Oversight Advisory Board (PPOAB) and the continuance of the Public Procurement Complaints, Review and Appeals Board as the Public Procurement Administrative Review Board (PPARB). The public buying in Kenya has been used as a medium to achieve various social objectives, such as, reducing unemployment, providing employment to disabled individuals, youth, and women and to marginalized areas and regions in the country, promoting gender and ethnic equality. In general, the focus has largely been on social aspects of sustainability,

other aspects need equally the same emphasis as the latter (PPOA, 2014). The idea that public institutions procure goods and services in a sustainable manner has spread rapidly since the mid-1990s, mostly through the rise of so-called green procurement or green purchasing (Van Calster 2002), which is considered part of the broader sustainable procurement notion. Sustainable procurement has been institutionalized and adopted by regional and local administrations, national governments and international organizations. Stuart Williams (2007) argued that the need to buy sustainably is due to the increasing global population and growing consumption rates per capita. Human consumption of resources significantly exceeds what the earth can provide. Essential services such as clean air and water, a stable climate and viable forests and fisheries are in long-term decline. The resources on which we rely are being depleted at accelerating rates. This means 'business as usual' no longer an option for the public sector. Public sector organizations will be instrumental in creating the transition to a more sustainable future through their role in improving local quality of life and through their leadership in tackling global social injustice and environmental degradation

Provision of effective services and eradication of poverty are two main items that public sector in Africa is struggling with. It is a sole responsibility for the public sector to tackle the poverty challenge. If well-thought mechanisms are rightly operationalized to check on how government operations are ran, any state is likely to deliver services effectively especially to the poor populations.

Public procurement in industrialized countries is said to account for 10% of their GDP while that of developing countries is approximated to be around 25%. According to Arrowsmith (2010),

Besides the political impact that procurement may pose, the comparably higher ratios on the country's GDP is a big incentive to justify formulation of an economic alliancing which numerous international trade organizations may not easily let go hence the procurement volumes in terms of market trade volume in third world states may not be significant.

1.1.2 Procurement practices

Procurement activities and practices involve a set of tasks carried out within an organization to enhance effective and proper management of the organizations' supply chain (Koh et al, (2007), Li et al, 2013). Such activities constitute a strategic and special partnership between suppliers and retailers (Otto & kotzab, 2011). A number of these concepts came into being between 2008 and 2009 to meet the requirements for speed, agility, responsiveness and flexibility (Yusuf et al, 2012, Gunasekaran et al, 2013).

A supply chain practice appears to have changed and it's a word with fewest connotations to deal with, and it continues to change overtime and the change is so dynamic. However, the dynamic aspect of procurement practice has not been captured and addressed satisfactorily (Cousins et al, 2014). Purchasing and procurement have been used concurrently, and to address the issue of dynamic procurement practice aimed at achieving best procurement management and better organizations performance, there is no differentiate between purchasing and procurement Monczka et al (2015)

Procurement is a functional group and at the same time a functional activity with numerous activities under it. The ultimate goal is to boost the organization's value. Such value adding activities include the processes of identifying and selecting the target suppliers, negotiation of contracts, purchasing, research on supply markets,

measurement and improvement of suppliers, and the development of purchasing systems. Procurement management extends its activities to include strategic sourcing which many researchers have identified to include cross-functional process which concerns and covers a wider scope which includes engineering, manufacturing activities, quality standards, design, strategy plans and accounting, (Monczka et al 2016). (Knudsen, 2017) linked procurement practices with firm performance, they examined effects of strategic supplier partnership, customer relationships and they found out that all were positively related to firm's performance. (Bowersox & Closs, 2013) concluded that for companies to be strategically effective in the contemporary highly competitive business environment, they must develop a behavioral system that incorporates both customers and suppliers. This study mainly focuses on dynamic procurement practices and their strategic supplier partnership, collaboration in Supply Chains, agile supply chains, lean supply chains, adoption of information communication Technology and continuous replenishment.

Public Procurement. The Study Report uncovered several challenges faced by SMEs and proposed measures to address those challenges in well-structured manner. Consequently, the Public Procurement and Disposal (Preference and Reservations) Regulations, 2011 (the Preference and Reservation Scheme) were issued on 8th June, 2011 thus opening a window of opportunities for specified target groups including Small enterprises; Micro enterprises; Disadvantaged groups (Physically disabled, youth & women); Citizen contractors; Local contractors; and Citizen contractors in Joint Venture or Sub-Contracting arrangements with foreign suppliers. The Government of Kenya (2005) has advanced employment and social inclusiveness issues to be considered essential by the public entities who promote these priorities through their procurement processes. The Public Procurement and Disposal Act (Preference and

Reservations) Regulations, 2011 reserves a minimum 30% of total value of public spend for the youth, women and people with disabilities to enhance access to public tenders by youth, women and people with disabilities owned business enterprises. Lemmet (2012) researching on social impacts of SP agrees that although the social component of sustainable development has often been considered as the most neglected one, the case studies she carried out indicated that a strong commitment from public purchasers to tackle social issues exist and that employment and social inclusiveness issues are considered essential by the public entities. She further argues that some of the social impacts are directly targeted by tenders such as the participation of companies employing disabled persons.

Persistent rededication to achieving results, strong governance and sound management are the three main abilities through which an organization fulfils all of its mission and this is generally referred to as organizational performance. Examination of productivity must be broadened from the current conventional company-oriented approach to the dual company-customer perspective by the firms delivering services (Parasuraman, 2015). According to Parasuraman, (2015), leveraging synergies or reconciling conflicts between boosting service productivity and improving service quality can be helped broadened approach.

Products and services are well delivered by Organizations that have adopted best procurement practices. A broad range of potential organizational performance key indicators need to be considered when assessing and defining the performance of an organization.

Relative to the competition from multiple organizational perspectives including the overall organizational performance, return on equity, profitability, market share, productivity, and quality, this project considers organizational performance.'

1.1.3 Kenya perspective

In Kenya, the central Government has set an agenda of rationalizing procurement in public organizations and institutions since independence through various mechanisms such as involvement of the Crown agents, circulars issued by Treasury and also the 1967 Supplies manual. To replace the circulars, the government proposed and actualized the Procurement regulations in the year 2001 which were later amended slightly in the year 2002 to give room to then highlighted concerns. However, the existing gaps were not sufficiently filled by this move although there was an improvement. The Enactment of the Parliament's Act to guide the whole public process was seen as the rightful panacea to the problems at hand in the procurement of both goods and services within the public institutions. This was effected in the Month of October 2005 hence giving the way to the then Finance Minister to publish in the Government Gazette the Public Procurement and Disposal Regulations Act.

Consequently, in 2006 the Legal Notice No. 174 of 29th December, the Act became operational (RoK, 2007). However, the experience shows that the earlier identified challenges have not been wholly addressed by the Act as envisioned. Through introduction of deterrent penalties, transfer of procurement activities to other procuring bodies and debarment, procurement practices have discouraged fraudulent practices. Generally, Public Procurement Act has played a great role in management of procurement processes which has minimized instances of manipulation by players from without the concerned committees.

A new structured guideline to inform the public procurement and disposal processes is established and anchored by the constitution of Kenya, 2010 in article 227. According to RoK (2016) this article addresses the issue of Government Owned entities by ensuring that they are significantly versatile to adapt the new market opportunities hence contribute to the growth of value in the Kenyan public entities.

The public procurement system in Kenya has been undergoing reforms consistent with the global trend since the mid-1990s. Most notable reforms in this area took place within the period covering 1997-2001 and 2005. The landmark in the reforms was in 2005 when the Public Procurement and Disposal Act, 2005 (the Act) was enacted by Parliament and operationalized on 1st January, 2007. There is no doubt that the Government is the single largest buyer in any economy. Consequently, the public procurement is not only a budget implementation strategy/too; but it is also used to achieve targeted social goals. World over, many economies have and continues to design and implement strategies to create opportunities for participation of disadvantaged and marginalized groups in public procurement. In Kenya, one of the objectives of the Act is to facilitate the promotion of local industry and economic development. To this end Sec. 39 of the Act stipulated provisions for Preference and Reservations and minimal provisions were outlined under Regulation 28 of Public Procurement and Disposal Regulations, 2006 for application of the scheme. In 2009, the Ministry of Finance through Public Procurement Oversight Authority (the Authority), with the support of the African Development Bank commissioned a Study to Preferences and reservations

Odhiambo & Kamau (2013) argued that Central government purchases between 9% and 13% in Africa and the Middle East, a factor that generally shows public procurement plays an indispensably vital role in any country. It is crucial to ensure that

public procurement process is efficient, economical, and is well understood by all involved actors such as the procuring bodies plus the general suppliers and other crucial stakeholders such as academic institutions, the general public and professional associations, because it has impactful role in both economic and political sectors.

According to Mambo (2015), in Kenya, the government has recognized the adoption of ICT in service delivery to the public and citizen in general. This has gained momentum with the current government administration. Existing literature reveals that a number of organizations in Kenya have successfully adopted the use of e-procurement technology. It is of great importance to note that the ICT ministry plays a critical role in the success of the ICT implementation in the country. This is because ICT is one of the major drivers for the achievement of vision 2013 and therefore there is need to develop an ICT policy that will integrate the ICT sector to the national development. Therefore, under the government blue print for 2013-2017 notes that the ICT sector is important in the realization of the required improvement in productivity and empowerment of the citizenry. The Public Procurement and Asset Disposal Act (PPAD, 2015) indeed provides for the use of e-procurement as one of the procurement procedures through Electronic reverse auction. Electronic reverse auction is defined by PPAD (2015) as an online real-time purchasing technique utilized by the procuring entity to select the successful submission, which involves the presentation by tenderers, suppliers or contractors of successively lowered bids during a scheduled period and the automatic evaluation of bids. This is in line with the government objective of streamline public procurement activities through the use of Integrated Financial European Journal of Logistics, Purchasing and Supply Chain Management. Management Information System (IFMIS) which aims at ensuring that there is transparency and saving of tax payer's money.

PPOA Interim Report (2009) outlined plans to introduce e-procurement in all Kenya's public entities as a way of curbing corruption and reducing tendering delays. With the need to integrate key functions such as procurement and accounting and to streamline and enhance transparency in management of public funds as well as to provide a framework for standardized reporting, the government has adopted the policy requiring all government procuring entities to use the IFMIS (Mambo 2015). According to the report, the programme was set to be rolled out in 2013 after the completion of a pilot study. The system is anchored on IFMIS. The PPOA Interim Report (2009) highlighted the objectives which the Government of Kenya aims to achieve through the implementation of an e-procurement system

1.1.4 Agriculture and food authority

Established by the AFA Act of 2013, Agriculture and Food Authority (AFA) was an end result of a wide range of reforms within the Agriculture sector that began way back in the year 2003. These reforms were informed by the need to consolidate various legislative pieces touching on Agriculture.

This was viewed as the surest way to address the challenges of overlapping functions, outdated legislations and also incorporate ways of benefiting from economies of large scale.

Through the miscellaneous amendments of 2016, the authority's name was changed by deleting the word fisheries hence changing it to the current Agriculture and Food Authority. Basically, AFA is made up of eight directorates and specific Commodities Fund. These Directorates include; Horticultural crops, sugar, coffee, Pyrethrum and Other Industrial Crops, Nuts and oil Crop and Fibre and Food Crops.

AFA replaced all other institutions which had been established by the Acts affected by the repealing of section 41 which was operational prior to the enactment of the AFA & the Crops Act.

Among the key functions that the Fisheries and Food Authority is mandated to perform by the 2013 Act include the following: Administration of both the Fisheries Act and the Crops Act in reference to the provisions of the said Acts. Promotion of the best practices in terms of regulation, production, and the eventual processing and linking of end agricultural and aquatic products to the market. Also, the Authority is mandated to collect, collate data and ensure proper maintenance of agricultural and aquatic products database.

The authority is mandated to establish which areas in Agriculture and Aquaculture need research priorities and hence advise both the national and county governments on the economical agricultural levies with the main aim of enhancing effective planning, harmony and the much-needed equity in the sector.

1.2 Statement of the Problem

In the contemporary world, with the advent of global economy and human cultivation, consumers and the society have higher expectations of companies. Businesses that are in the market for pursuing commercial profits exclusively cannot stand long. Therefore, companies should pay enough attention to the social and environmental impacts of their supply chains too. Big brands are no exception. Some of the traditional business concepts can no longer be used to solve problems encountered by the companies today. Most companies are experiencing an increased variety of internal pressures caused by investors and employees and external pressures caused by legislators and customers to

improve the social and environmental activities of their supply chains (Seuring and Muller, 2008).

While the traditional economic dimension of the Triple Bottom Line (TBL) is widely used in business and measurements are well understood and developed, the new environmental and social dimensions are less prevalent and much more difficult to measure (Marc Winter, A. and Michael Knemeyer, 2013). In the modern society, a business that is exclusively driven by profit maximization motive without due consideration for its environmental impact has meager chances of prosperity in a sustainable future. Corporate leaders continue to be challenged by the issue of running competitive and profitable organizations while meeting broad social and ethical responsibilities (Morimoto et al., 2005).

This research narrows down to Kenyan manufacturing organizations in the effort to evaluate the role of sustainable procurement practices and its contribution to the performance of supply chains.

However, the contemporary methods for analyzing supply chains are not comprehensive enough, especially with the comprehension of the complex nature of supply chain and the overall organizational performance in a uniform context. Besides, researchers have not wholesomely provided answers to key and pertinent queries. For instances, answers are yet to be found on the linkages that exist between different perspectives of supply chain and the linkages that underlie dimensions of supply chain and organization performance.

Organizations' procurement practices and supply chain performance around the world have remained a major debate without any substantive conclusion coming about for years.

Technology's dynamic explosion, environmental issues, inventions, the evolving consumer demands, and the emergence of fairly new market structures has posed a mountainous challenge to a number of purchasing agents. This therefore demands a deviation from the traditional procurement practices to new procurement practices. Given that good procurement practices can lead an organization to achieve efficiency in supply chain, there is need to study aspects of procurement practices to better organizational performance.

Procurement processes have become one of the main effective way through which organizations use to increase their efficiency and professionalism because almost all organization's procurement department are on constant pressure to accomplish financial savings through a well-coordinated and efficient service delivery (Hassanzadeh and Jafarian, 2016).

Reduction of material prices and the associated costs, identifying the best sources of supply and increasing organization's productivity are the three core and strategic business of procurement practices in any organization. Procurement departments have also been obliged by current environmental pollution to further realign its functions so as to conserve the minimal resources available by adopting green purchasing idea which minimizes or completely eliminate unsafe discharges.

Numerous studies on the aspect of supply chain management have been fairly done. Kazi (2012) for example, carried out a study on factors affecting supply chain management and performance of a public health institution specifically medical supplies agency in Kenya, and he found out that effective supply chain management impact positively on operational performance and competitive priorities of the firm.

Abdi (2012) carried out a thorough study on factors affecting supply chain management in the Kenyan public corporations' procurement practices and focused much on factors affecting procurement generally in relation to risk management in State Corporation

Based on the above studies, it is crystal clear that past studies have concentrated much on factors affecting supply chain management leaving a gap on the aspect of the procurement practices. He suggested a further research on procurement practices. Therefore, this study sought to seal this gap by finding out the effect of procurement practices on performance of supply chain in Kenyan public sector.

1.3 Objectives of the Study

1.3.1 General objective

The general objective of this study is to assess the effect of procurement practices on performance of supply chain in public sector:

1.3.2 Specific objectives

i. To establish and determine the effect of e-procurement practices on performance of supply chain in Public sector at AFA
ii. To find out the effect of staff competency on performance of supply chain in Public sector at AFA
iii. To determine the effect of green purchasing on performance of supply chain in Public sector at AFA.
iv. To find out the effect of Buyer-supplier on performance of supply chain in Public sector at AFA

1.4 Research Hypotheses

H_{01}: An E-procurement practice has no significant on performance of supply chain in Public sector at AFA.

H_{02}: Staff competency has no significant effect on performance of supply chain in public sector at AFA.

H_{03}: Green purchasing has no significant effect on performance of supply chain in Public sector at AFA.

H_{04}: Buyer-supplier relationship has no significant on performance of supply chain in Public sector at AFA.

1.5 Significance of the Study

The main reason for this study is that researchers have not paid enough attention to this subject matter in Kenya particularly on the specified variables. Procurement practices have not been warmly embraced in Kenyan industries and this has made them unable to realize their set goals in terms of sales volume and the income generated by such sales. Also Kenyan industries have not realized their set customer satisfaction standards, right time shelf availability and deliveries on right time (Benson, 2011).

Most of the previously studies focused on procurement practices in relation to risk management in State Corporation leaving a gap on dynamic aspect of the procurement practices.

It is important that proper procurement policy formulations be enacted and their implementation tracked so as to facilitate the realization of the Millennium Development Goals (MDGs). The importance of this study stems from the fact that it assesses what determines supply chain performance hence providing crucial information to the different economic sectors and participants.

1.5.1 AFA management

It will help AFA management to analyze and identify significance of adopting and promoting use of procurement best practices while discarding practices that inhibit adoption of the practice which aims at contributing to the optimal performance.

1.5.2 Government / Policy makers

This study will be of importance to both the government and the policy-making institutions and agencies since it serves to provide an insightful guideline to policy makers on SCM practices within the regulatory bodies and the likely challenges in the implementation of SCM practices.

The procurement managers, heads and organization heads will be in a position to benefit from the knowledge generated hence have a better and vivid understanding of the positive effects of implementing the best procurement practices. Properly aligned unit and staff will be highly motivated. Adherence to the legislation and properly formulated procurement policy enhances performance of the unit while ensuring service delivery is not disrupted. Use of appropriate technology like e-procurement will not only increase productivity but also minimize time wasting (lead times) and reduce human conduct and corruption.

1.5.3 Researchers and academicians

The study also provided an informative academic dissection of the procurement which must be avoided. The future generation of scholars and the general public also benefits greatly from this study. The academic family fraternity derives invaluable benefits from the analyses and the results of this study. For instance, it will be a perfect point of reference for empirical data on SCM practices. It will also help in identifying areas which require to be studied further.

1.6 Scope of the Study

The study assessed procurement practices as a determinant of supply chain performance at Agriculture and Food Authority (AFA). The target populations were 503 employees drawn from AFA who were directly involved in procurement processes and decision making and the sample size of the study was 151. The study was conducted in the months of August and September, 2019.

1.7 Limitations of the Study

The researcher met a number of challenges while conducting the study. Such challenges included some respondents unwilling to participate and also securing appointments with the respondents. To counter these problems, the researcher applied ethical considerations identified in this study to convince respondents to participate and give the appropriate information. The study majorly questionnaires for the primary data collected using and thus it is limited to the responses received. The researcher's assumption was that the feedback supplied was credible as there was no way of finding out how much thought the respondent had put in while filling the questionnaire.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter covers reviews of both the empirical and theoretical factors that have an effect on the performance of supply chain and how such factors relate or link to the research questions. Besides, the literature review highlights and indicates what has been previously covered by other researchers and experts including their methodological approaches and the gaps identified. This is then followed by the inclusion of the study's conceptual framework which shows how both dependent and independent variables interact. Then summative remarks on the literature review follows.

2.2 Theoretical Framework

Supply chain performance draws upon numerous theories, enhanced from the Supply Chain Management. The relevant theoretical approaches identifying and explaining these variables are explored to indicate the already existing studies and their conclusions thereof. Some of these theories include; theory of Constraints, Channel Coordination theory, Resource Based theory, and Institutional theory.

2.2.1 Channel coordination theory

This theory was first modeled, analyzed and postulated by Anantasubramania Kumar (Kumar, 2008). It cites flaws in the decentralized decision making as regards supply chain. According to the theory, decentralized decision making leads dilemma scenario which yields a suboptimal performance. Channel Coordination or supply chain coordination as sometimes referred, seeks to enhance the performance of the supply chain links by creating synergy between the plans and objectives of the respective individual enterprises (Altintas, 2008). The main focus is on inventory management

also ordering decisions in a web of interconnected company setting. According to the theory, Channel Coordination model may take into the account the Multi-echelon inventory theory, information asymmetry, multiple decision making points of view, and also the recent manufacturing paradigms like the mass customization, outsourcing, delayed differentiation and the short product life-cycles (Tirole, 2008).

Some of the practical applications of this theoretical approach include the Collaborative Planning, Forecasting and Replenishment (CPFR), Vendor Managed Inventory (VMI) Quick Response (QR) (Scheller-Wolf, 2007). This theory of channel coordination focuses on achieving the optimal performance by creating arrangements that bring into single perspective the diverse objectives by different partners. These are referred to as coordination mechanisms or schemes that are responsible for the flow of information, materials, and services and also the financial assets along the supply chains (Li, 2007).

In order to optimize the behavior of production, appropriate methods must be employed. Also, the information visibility and transparency among the partners will enhance the realization of real-time enterprises. Optimizing production along the chain also requires different partners to work in unison towards the common objectives of the specific supply chain (Cachon, 2011).

There are two methods to effectively study coordination along the supply chain. The first methods the existence of a central decision maker who has the complete information to solve the problems at hand (Erhun, 2008). The result of this method is the first-best amicable solution which offers bound on the achievable whole system performance objectives.

The second method takes into account the decentralized problem and develops a contract protocol that has the ability to approach or achieve the performance of the first-

best (Egri, 2008). A contract is considered to coordinate the channel if the partners' optimal local decisions have resulted in optimum system-wide performance (Sethi, 2008). Channel distribution can be achieved in numerous simple model. Nonetheless, it is relatively difficult or impossible in real scenarios or in the normal course of business practice. Therefore, the overriding aim is to achieve mutual benefit in comparison with the uncoordinated channel situation. This theory instigates the fourth hypothesis of the study buyer-supply relationship.

2.2.2 Resource based theory

Resource Based Theory seeks to identify and analyze strategic advantages that may accrue to a given organization hence sharpening its competitive advantage. These advantages may be human, organizational or financial. Whichever form they take, competitive advantages are considered in terms of their value, uniqueness and rarity. According to the Resource Based Theory, efficient planning and the best procurement practices should be the determinants of competitive advantage in an organization. Peteraf and Barney (2003), posits two major assumptions that are central to the analysis of competitive advantage within the Resource Based Theory. First, firms in a given industry may be diversely resourced and secondly, the resource difference may continue for a long duration of time. A resource is able to confer competitive advantage when it is inimitable. Therefore, if all the firms in an industry have similar resources none of them would enjoy competitive advantage over the other Cool et al (2002). Efficient use of resources enables procurement departments to reap more with less.

Actually, resources can enable a firm to boost its efficiency thus cutting on unnecessary costs. Procurement practices like sourcing should be unique and hard to copy across firms. Resource based theory also takes into account the operational and organizational processes in a given organization. Organizations that are in a position to purchase

internationally enables them to function well business-wise. Organizations with uncommon practices are at a better position to ward off competition hence achieve higher profit margins. For instance, firms that have installed ERP systems are relatively competitive owing to the fact that such systems are expensive to install. Effective collaboration with suppliers is also o prominent importance. It contributes to improved sourcing performance by incorporating value addition for end users as communicated by the suppliers and also the constant involvement of the suppliers in product tailoring. Positive sourcing has an effect on procurement as it yields better performance. This is made possible by the fact that the net is cast wide in a bid to achieve the best possible deal. Thus, as products move along the maturity curve and value shifts, innovation follows by default.

2.2.3 Institutional theory

This is considered as the classic way of dissecting into the critical components of public procurement (Obada, 2010). Scott (2012), stipulates that institutions have three pillars which can be classified as normative, cultural cognitive and regulatory. The regulatory pillar stresses on the application of rules, existing laws and sanctions as the best mechanisms of enforcement while expedience should be the basis for compliance. Scott (2012) continues to argue that key components of any institutions includes both cultural-cognitive and regulative elements which in conjunction with the resources and associated activities can give a meaning to life.

The normative pillar is emphatic on how norms (how things ought to be done) and values which point to the desirables or the preferred while social obligation is considered as the primary basis for compliance. The cultural-cognitive, therefore, arguably rests on a platform of shared common belief systems and understanding. In the Kenyan case, for instance, public procurement processes are assumed to follow the

PPDA Act of 2015. This act provides a framework for regulations and guidelines which are regularly issued by the mandated body (Public Procurement and Oversight Authority). This body ensures that all public entities and providers have complied with the said guidelines and regulations. The public Procurement regulations of 2013 can be viewed as conforming to the 3 pillars of institutions as laid down by Scott 2012. Accordingly, social influence, organizational incentives, and the organization's culture are the identifiable antecedents for complying with the set procurements rules and laws. Therefore, this theory links to the second research hypothesis: Enforcement has minimal impact on the performance of supply chain functions and processes.

2.3 Empirical Framework

2.3.1 E-procurement and supply chain performance

Companies are in constant search of ways to improve their efficiencies along the supply channels through exacerbated integration the application of the appropriate technology. These two factors are considered as integral enablers for procurement processes because of their ability to aid the sharing of useful information and the perceived shortening of information processing time (Mouritsen, et al 2011). According to Wilson and Vlosky (2008), ICT impact is demonstrable through the relationship changes, inter-organizational changes and also performance changes. The existence of innumerable factors through which the role of ICT within an organization may be assessed and also the wide range of dimensions on which procurement processes can be understood implies that the earlier research findings have been limited to the study of only a handful of dimensions and relationship variables. When it comes to the controlling and coordination of among the companies along the supply chain channel, assessment of the impact of ICT on the controlled integration is of indispensable importance (Mouritsen, et al 2011).

In procurement the use of ICT aids in the proper coordination of business processes within an organization and also between the buyers the suppliers. A perfect example is the electronic purchase order system in which web-based catalogues and online links with the suppliers can be used to exchange crucial information on the fulfilment activities (Johnson & Leenders, 2012). Managers are also by default magnetically attracted to the benefits associated with improved productivity, relatively faster response times and a perceived low-risk environment when it comes to implementation (Flynn, 2012). Innovative technologies in the supply chain information systems have the revolutionary potential of facilitating the coordination of transport firms which can effectively give the much-needed room for virtually integrating the whole procurement system. Managers have come to the realization of the fact that Information Communication Technology greatly enhances procurement-related decisions by among other things providing real-time pieces of information and creating a collaborative environment among the trading partners (Power & Simon, 2012). According to (Williams 2013), technology comes with the tools that can effectively enable an organization to operate consistently and procure materials and services which have the best real money value. Also, using a unison web-based sourcing tools businesses can streamline support for complex negotiations. ICT is also impressively effective in enhancing the sharing of information among organizations in the supply chain systems.

It can therefore be rightfully used to eliminate cases of bloated paper works as regards inventory levels which result from the cumulative effect undesirable information flow up via a SC. According to Daugherty, Myers and Autry (2009), integrated information systems are a critical component of numerous Automatic Replenishment Programs (ARP). Innovative initiatives like the Vendor Managed Inventory (VMI), Collaborative Planning Forecasting & Replenishment (CPFR) are anchored on the high level of

automated in flow of both goods, physical materials and the associated information among companies hence improving efficiency across the whole system.

ICT significantly reduces the amount of time spent during processing and also improves the general procurement performance. ICT through process integration enhances procurement performance through the following ways. It creates new and innovative methods for storing, processing, distributing and exchanging key pieces of information between suppliers and clients within the procurement system and its constituent parts. Simatupang & Sridharan (2013), emphasizes that information can be likened to the glue that holds the entire organization together and thus can be effectively used to integrate both procurement processes and activities. Information relating to demand, forecasting and replenishment is a valuable component of integrated planning and control. Whereas internal control lays emphasis on cross-functional processes, external integration focuses on the relationship patterns between customers and suppliers. Such relationships have varying intensity levels which range from the low-end open market negotiations, coordination and cooperation to high level collaboration engagements. Collaboration in procurement processes is a weighty issue that require high levels of mutual trust, commitments and critical information sharing. It demands connecting the performance systems with the decision making outcomes, sharing of information and aligning of incentives in the SC.

Enterprise resource Planning (ERP) systems are critical elements that are supportive of initiatives geared towards internal information sharing (Sirian & Stump, 2012). Inter-organizational Information Systems (IOIS), are important insofar as external information sharing is concerned. Seamless and automatic information systems shared by inter-connected firms can be a valuable asset in terms of information sharing between customers and suppliers. ICT can also be credited for improving

communication patterns, high demand for coordinated joint activities and newer organization structures due to the ability for storage, transmission and processing of information pieces which helps in speeding up activities among organizations. Normally, organizations are characterized by huge amounts of procurement data but rarely do they transform such raw data into valuable market knowledge. Such organizations are in constant drive to find trends, connections and patterns in the available data in order to put into the practice the tested competitive procurement performance.

According to Thomas and Rainer (2013), ICT has been a supporter for procurement processes for a long time. When ERP systems were implemented in 2008, they made it possible to for firms to connect with suppliers through EDI and the eventual automation of delivery links and channels. This is enhanced by the connection the user materials management system to the supplier systems. ICT helps in the decentralization of an organization's operational procurement processes while centralizing the strategic ones hence boost transparency. Before the installation of e-procurement systems, strategic procurement processes were always dealt with routine tasks that included the individualized transactions. Many times, strategic aspects of procurement processes were neglected hence limiting the buyers' influence on the choice of both the suppliers and goods purchased.

Internet-based technologies have been credited for facilitating efficient and relatively faster operational procurement processes thus aiding managers to direct more efforts on strategic tasks.

Christopher (2013) contends that certain dimensions of information can practically enable the matching of supply and demand across markets. However, such matching

should be on specific tailored products within shorter time frameworks. This will resultantly enable suppliers to act speedily in response to any market changes. ICT is also christened as the important link among the various stages of the system hence creating the allowance for coordinating and maximizing the total supply profits. It is an invaluable part of the daily operations in each stage of the procurement process. According to Kim & Rodgers (2013), business-to-business transactions have been examined through studies on diverse operational performance dimensions like the cycle time, inventory cost and the flexibility of the manufacturer. The rapid growth and the impactful role of ICT in its application is an evidence of improved performance of procurement functions.

This has been made possible through extranet, internet, and intranet. Nonetheless, organizations should remain alive to the crucial delicate balancing between responsiveness and efficiency. Bowersox, Cooper & Closs (2007) opined that ICT creates the best platform for the collection of data on demand patterns, and the development a uniform database, hence providing a medium for the transmission of useful order information. ICT gives organizations a room to change their methods of sourcing their supplies hence further smoothening their operations.

Auto makers and companies such as Ford Motor Company, General Motors and DaimlerChrysler have employed internet in their transactions since 2008 and the results have been overwhelmingly positive.

ICT through the use of ICT design tools has created a platform where both customers and suppliers can join hands and work together on the product design Chopra, Meindl and Dhamram (2007). Integrating for the purposes of value chain addition can be made possible if distinct and separate activities are knitted together through faster and reliable

flows of information. Through the integrated systems, customers can change their ordered specifications and also delivery schedules. This changes are made on their interface and seamlessly reconfigured back to the procurement system. ICT gives room to managers and other important stakeholders to bypass traditional man-made hindrances which have been in existence courtesy of their control to free flow of information. By using in-house websites, ICT has also enabled efficient vertical and horizontal communication within an organization. This to a greater extent enables an organization to cut down on both production and transaction costs hence achieving operational efficiency.

According to Keith and Vahid (2008), ICT is the cog that drives e-markets which resultantly yield increased availability of information about specific suppliers for each product. It also elicits increased interest for markets across parties and reduces procurement costs while enhancing the less tedious paperless transactions. ICT gives us a chance to access worldwide market hence buy at the lowest prices offered. Besides, offers as advertised in company websites give customers a chance of a variety of products from diverse retailers. Likewise, due to product customization before shopping costs related to warehousing can be eliminated due to the direct delivery arrangements. In fact, Dell and Amazon have embraced such end point delivery arrangements for their customers. The inherent reality is that nature offers a global setting that is culturally distance apart, geographical uniqueness and complexity, low levels of behavior transparency, and social challenges in knitting together procurement and channel partners. Thus, ICT has been highly effective in enhancing procurement performance coordination and a control system that that has successfully eliminated the face-to-face interactions in globalized exchange relationships.

2.3.2 Staff Competency and supply chain performance

Aligning your staff properly can critically impact the performance of the organization because a highly skilled and motivated workers are more likely to discharge their duties optimally. According to Saunders (2007), the quality and the ability of the employees determines whether the organizational structures are successfully functional and also whether the planning control systems are effective.

In case of an organization strategic plan, it should capture the information on how the human resource assets will be acquired, developed, used and rewarded for their contributions. The plan should also capture the up to date development of the procurement functions and the projected strategic direction in case the current state changes. Equipping employees with multiple skills is of great importance as it enables them to generate more than the equivalent value during the payback time. Employees should be broadly and continuously educated and trained in a bid to further the goals and objectives of value-based management. Such education and training should however be oriented on the organizational skills requirement to avoid redundant workforce.

According to Leenders & Fearon (2008), highlighted five reason for establishing a sound and a professionally run procurement system. The reasons cited include the high number of component items, the huge monetary volumes, the transparent audit trail requirements, the damning and severe results in case of poor performance and the potential contribution towards efficient organizational operation. They continue to argue that for a value-based management system, qualifications are critical as employees are continually required to assess and improve the underlying processes while contributing towards the desired team performance. Additionally, qualifications can enhance the staffs' ability to perform which consequently enables them to make

relatively better decisions, promote team work spirit, and quickly adapt to the rapidly changing environments. This will yield an overall increase in efficiency, productivity and the eventual job satisfaction among workers.

The difference between training and education is that the former seeks to improve the immediate or current work while the latter develops the human resource for long term prospects. For constituent value creation in an organization and so far in the procurement processes both are highly needed.

Cousins (2011) opines that the continually increase in the purchasing partnership philosophy requires any serious organizational to closely look into the educational and training levels of its procurement staff. Over the years, procurement has shifted from the majorly clerical works and service to a core and strategic business function. As such, the level of education, training and skills should commensurate with the strategic importance of the procurement. All employees as a matter of fact should therefore be engaged in rigorous trainings and education so as to learn new skills and improve their performance.

The contemporary cut-throat competition has compelled organizations to be innovative and embrace agile approaches. Besides, organizations are forced to deliver super quality products within relatively shorter cycles while at the same time being able to cut on the associated costs.

The organization's inherent ability to monitor and manage its supply chain processes has been lauded as one of the strongest tools that enhance competitive advantage while improving the overall performance by the organization since it is one of the drivers of productivity (Li, S., Ragu-Nathan, B., Ragu-Nathan, T., & Subba Rao, S. 2006). The prominence of supply chain management is directly reflected in the expenditures where

a majority of organizations averagely spend about 70% of their revenues on closely related activities. Due to such prominence as evidenced by the huge revenue consumptions, the interest of academicians has been aroused especially with the potential effect of ICT systems on the supply chain management performance (Luftman, J.,Brier, T. 1999). The universal adoption of procurement activities and practices across the globe has attracted immense attention over the past decade. Quite a sizeable number of studies have pointed to the potential benefits that can accrue to an organization such as the reduction in procurement costs, relatively higher quality of the goods purchased and better supplier relationships to mention just a few (Palmer, R., Gupta, M, Davila, 2003). As a result, there has been an increase in research activities focusing on the adoption of enablers and the factors that may inhibit Information Technology that is applicable to the supply chain management. To this end the driving force of this paper is the desire to establish if procurement practices can determine the supply chain performance, and if so, how can they be best measured.

This is an automatic call for highly trained professional skills which translates into enhanced performance. An organization whose staff have effective knowledge of the mission, and a top-down objective structure matched with related performance measures require good qualifications (Baily, et al. 2013).

They continue to propound that because process guidelines connect an individual or team work performance to the organizations objectives and expectations of the top management, rightful and merit-based qualifications are important ingredients. The use of team work approach, cross-functional managers, broader processes and linkage-oriented job-specifications together with proper information systems will enable an individual to create the balance between conflicting goals and improved processes. Based on such considerations, professional skills and qualifications are deemed to be

the fulcrum around which the organizational performance turns. In the absence of well-trained, well-motivated and abled staff even the best and the brilliantly proposed strategies and plans will always fail. A team that is highly motivated can floor a team that is less motivated even if the latter are more talented. In order to significantly improve the procurement performances, it is imperative to the roles that a team or an individual need to play. The knowledge on the standards that ought to be achieved and the key performance indicators is also of great importance.

According to Goetsch & Davis (2013), a clear understanding of one's roles in an organization is what makes the specific employee or worker to ignite his innovative skills, become an initiative taker, and an all-round problem solver. They continue to list the benefits of training that include enhanced team work, improved quality, safety and quality and collaborative communication among workers.

Education is borderless and thus can motivate procurement team performance. However, possessing knowledge without its rightful application is of no importance.

Attention of the trainers and trainees should shift towards imparting skills that improve job execution and demonstrate key competencies. Noble (2011) postulates that all chartered institutions and bodies like the Chartered Institute of Purchasing and Supplies (CIPS) are established to majorly benefit the public. This is what constitutes the major tenet of any profession. It is the prior recognition and the general expectation that specific profession through the expertise and commitment will confer the greater advantage and benefits to the entire society and the corporate life. As such, it can be interpreted as the promotion of the best in-class procurement processes within an organization while stamping out corrupt practices. Regrettably, Maude (2011), notes

that a huge chunk of procurement professionals across government departments lack capability, the requisite market knowledge and therefore not process-driven.

2.3.3 Green Purchasing and supply chain performance

Lemmet (2012) study revealed a diversity of environmental impacts at various stages of a products' life cycle. The purchase of remanufactured ink cartridges by the French Ministry of Education has led to a decrease of waste generated at the manufacturing stage. The construction (Yorkshire and Humber Region, UK, and Oregon, USA) demonstrate significant impacts related to the reduction of CO2 emissions of waste production and of water consumption. The Ferrara study (Italy) and the recycled paper case (São Paulo, Brazil) show positive environmental impacts distributed throughout the life cycle. Vincent and Abbie (2011) proposed that sustainable procurement practices necessitate the appropriate order in pursuit of procurement activities to match with policies and best practices as to first conform with and surpass all relevant legislation and regulatory requirements including environmental, social, health and safety policies. Secondly, it's to cut on environmental impact while maximizing economic and social advantage through entrenching appropriate sustainability standards within the procurement practice. Thirdly, come up with sustainable procurement awareness and skills amongst all stakeholders and further, build a stronger base on policy and strategy understanding while stimulating sustainability in the market place, involving current and upcoming suppliers on best practice in sustainability along the supply chain.

That is ensuring sustainability is the criteria in all phases of procurement through the integration of environmental, social and economic aspects in procuring supplies and services. In addition, assess the growth of sustainable procurement with a view to positive progress and work together with other organizations and to research best

practice. Consumer knowledge on environmental hazards like global warming influences their considerations on environmental effects of their consumption. Kotler (2004) mentioned that traditional companies were judged by their clients according to quality of their products, European Journal of Logistics, Purchasing and Supply Chain Management Vol.4, No.3, pp.1-31, June 2016 ___Published by European Centre for Research Training and Development UK (www.eajournals.org) 9 ISSN 2054-0930 (Print), ISSN 2054-0949 (Online) responsiveness in offering customer solutions and the degree of fairness. Nevertheless, today companies are measured and judged according to environmental ethics.

2.3.4 Buyer-supplier relationship and supply chain performance

Supply base management is of prominent importance within an organization. It helps in attaining the global supply link liquidity while maintaining records. It gives room for identifying new suppliers, evaluating the already existing suppliers' improvement of the supplier performance indicators and the portfolio of suppliers.

Through collaborating and mixing of tools, it is practically possible to assess and develop a given supplier performance. This will result in reduced risk and also ensure suppliers are challenged to act the best they can. A lean supply base is of great importance as it among other things enables an organization to thoroughly audit its suppliers and keenly review them before committing to binding partnerships. This creates a high level of mutual understanding and trust between the parties.

Among the benefits of a lean supply base is that it can lead to improved products and reduction of both costs and inventories. This is because normally a lean supply base yields improved business processes through partnerships. The universally best practices as far as supply base management is concerned equips an organization with tools and

methods that transforms procurement into a competitive advantage as regards the entire supply chain services in the organization. An organization that is able to forge close relationships with its suppliers' benefits from relatively lower costs and inventories. Such an organization stands a chance of also benefiting from improved working capital and comparably better products. Narrow supplier bases also come with benefits as the remaining vendors or suppliers are likely to increase their business volumes as a tradeoff for lower unit prices.

2.3.5 Procurement practices and organizational performance

According to Turner 2011, organizations need to navigate beyond their internal institutional analysis as regards procurement processes and systems. As such, they should embrace benchmarking in their bid to adopt and operationalize the best practices. A number of areas within these organizations have been identified as needing considerable improvements. They include, factoring in procurement department inputs during cross business, budgeting and cross functional planning.

Also, efforts should be made towards supplier consolidation, controlling of indirect income-consuming categories, high use of spending/reporting analysis tools, efforts towards environmental considerations while at the same time considering the amount of time, quality standards as well as ethical practices in purchasing and technology, (Narasimhan and Das,2001).

Pivotal to the Kenya's economy are manufacturing companies. They are a source of employment many Kenyans hence they must be supported in order to guarantee growth and continuity. Nonetheless, a number of companies and reports have headlined media outlets and various business platforms due to market challenges that have yielded low returns hence forcing some of them to close down. According to Ingari et al, 2012,

researchers prompted by such happenings have made huge contributions towards shedding of light on the challenges that may be due to the lack of the best procurement practice

2.4 Critiques of the Study

(Knudsen, 2017) linked procurement practices with firm performance, they examined effects of strategic supplier partnership, customer relationships and they found out that all were positively related to firm's performance. (Bowersox & Closs, 2013) concluded that for companies to be strategically effective in the contemporary highly competitive business environment, they must develop a behavioral system that incorporates both customers and suppliers. This study mainly focuses on dynamic procurement practices and their strategic supplier partnership, collaboration in Supply Chains, agile supply chains, lean supply chains, adoption of information communication Technology and continuous replenishment.

According to Goetsch & Davis (2013), a clear understanding of one's roles in an organization is what makes the specific employee or worker to ignite his innovative skills, become an initiative taker, and an all-round problem solver. They continue to list the benefits of training that include enhanced team work, improved quality, safety and quality and collaborative communication among workers. Education is borderless and thus can motivate procurement team performance. However, possessing knowledge without its rightful application is of no importance.

According to Saunders (2007), the quality and the ability of the employees determines whether the organizational structures are successfully functional and also whether the planning control systems are effective. In case of an organization strategic plan, it should capture the information on how the human resource assets will be acquired,

developed, used and rewarded for their contributions. The plan should also capture the up to date development of the procurement functions and the projected strategic direction in case the current state changes. Equipping employees with multiple skills is of great importance as it enables them to generate more than the equivalent value during the payback time.

Employees should be broadly and continuously educated and trained in a bid to further the goals and objectives of value-based management. Such education and training should however be oriented on the organizational skills requirement to avoid redundant workforce.

According to Leenders & Fearon (2008), highlighted five reason for establishing a sound and a professionally run procurement system. The reasons cited include the high number of component items, the huge monetary volumes, the transparent audit trail requirements, the damning and severe results in case of poor performance and the potential contribution towards efficient organizational operation. They continue to argue that for a value-based management system, qualifications are critical as employees are continually required to assess and improve the underlying processes while contributing towards the desired team performance. Additionally, qualifications can enhance the staffs' ability to perform which consequently enables them to make relatively better decisions, promote team work spirit, and quickly adapt to the rapidly changing environments. This will yield an overall increase in efficiency, productivity and the eventual job satisfaction among workers. The difference between training and education is that the former seeks to improve the immediate or current work while the latter develops the human resource for long term prospects.

(Flynn, 2012). Innovative technologies in the supply chain information systems have the revolutionary potential of facilitating the coordination of transport firms which can effectively give the much-needed room for virtually integrating the whole procurement system. Managers have come to the realization of the fact that Information Communication Technology greatly enhances procurement-related decisions by among other things providing real-time pieces of information and creating a collaborative environment among the trading partners (Power & Simon, 2012). According to (Williams 2013), technology comes with the tools that can effectively enable an organization to operate consistently and procure materials and services which have the best real money value. Also, using a unison web-based sourcing tools businesses can streamline support for complex negotiations.

Abdi (2012) conducted a research on Kenyan public corporations' procurement practices. He directed his efforts towards addressing procurement practices in relation tom risk management within such state corporations. Nonetheless, he left a wide gap on the dynamic aspect of the procurement practices as integral determinants of supply chain performance. He suggested further research on procurement practices. It is from this suggestion that this study seeks to focus on the dynamic aspect of the procurement in the supply chain for better performance.

Novack & Simco, (2011) postulates that the complexity of procurement processes stems from the fact that such processes require the completion of a series activities such as qualifying new suppliers' procurement of diverse inputs, monitoring the performance of a supplier. Such activities normally transcend both functional and organizational boundaries.

The evolving technological explosion, inventions, the constant shifts in consumer demand and the relatively new structures of market have posed a huge challenge to the majority of firms. Today's purchasing agent is an all-round specialist with a touch for technology besides being a skillful and highly competent manager.

According to Deal, & Kennedy (2008), he must be capable of comprehending the complex nature and the changes that may affect his tasks.

2.5 Research Gaps

The available evidence has continued to indicate that organizations rarely enjoy competitive advantage that may be conferred by the supply chain performance techniques. This may be partly due to the limitation of the existing methods for dissecting supply chains. Such methodologies are not comprehensive enough especially in explaining the complex nature of SCM and the key organizational performance indicators within a unified context. Additionally, research experts have continually failed to establish concrete linkages between the diverse dimensions of SCM and also the linkages that connect the underlying SCM dimensions and the SCM performance.

There is also a huge gap when it comes to the conceptualization of relationship patterns that exist between SCM performance indicators and the overall organizational performance indicators. This is further compounded by the fact that, in Kenya there is no single study that has been comprehensively done to establish the determinants of supply chain performance.

According to Benson (2011), In Kenya, industries have not effectively embraced the best procurement practices. This has resultantly made them fail to achieve key performance goals as regards the sales revenue realization, right delivery times, shelf availability and customer satisfaction.

This therefore requires migration from the traditional procurement processes and practices to the newer schools of thoughts. Leading companies have always taken advantage of such dynamics to establish comparably superior procurement processes hence improving their performance. Good procurement practices are an essential element if an organization is to achieve efficiency in supply chain (Kevin, 2002). This therefore justifies the need for studying aspects of procurement practices with a view to achieving better organizational performance.

2.6 Chapter Summary

The contemporary cut-throat competition has compelled organizations to be innovative and embrace agile approaches. Besides, organizations are forced to deliver super quality products within relatively shorter cycles while at the same time being able to cut on the associated costs. The organization's inherent ability to monitor and manage its supply chain processes has been lauded as one of the strongest tools that enhance competitive advantage while improving the overall performance by the organization since it is one of the drivers of productivity (Li, S., Ragu-Nathan, B., Ragu-Nathan, T., & Subba Rao, S. 2006). The prominence of supply chain management is directly reflected in the expenditures where a majority of organizations averagely spend about 70% of their revenues on closely related activities.

Due to such prominence as evidenced by the huge revenue consumptions, the interest of academicians has been aroused especially with the potential effect of ICT systems on the supply chain management performance (Luftman, J.,Brier, T. 1999). The universal adoption of procurement activities and practices across the globe has attracted immense attention over the past decade. Quite a sizeable number of studies have pointed to the potential benefits that can accrue to an organization such as the reduction in procurement costs, relatively higher quality of the goods purchased and better

supplier relationships to mention just a few (Palmer, R., Gupta, M, Davila, 2003). As a result, there has been an increase in research activities focusing on the adoption of enablers and the factors that may inhibit Information Technology that is applicable to the supply chain management. To this end the driving force of this paper is the desire to establish if procurement practices can determine the supply chain performance, and if so, how can they be best measured.

2.7 Conceptual Framework

The study presented its ideas and principles in a diagrammatic framework to indicate the dependent variable and independent variables of the study. The independent variable was procurement practices and the dependent variable was supply chain performance at AFA. The study independent variable consisted of its indicators which includes; e-procurement, staff competency, green purchasing and buyer-supplier relationship.

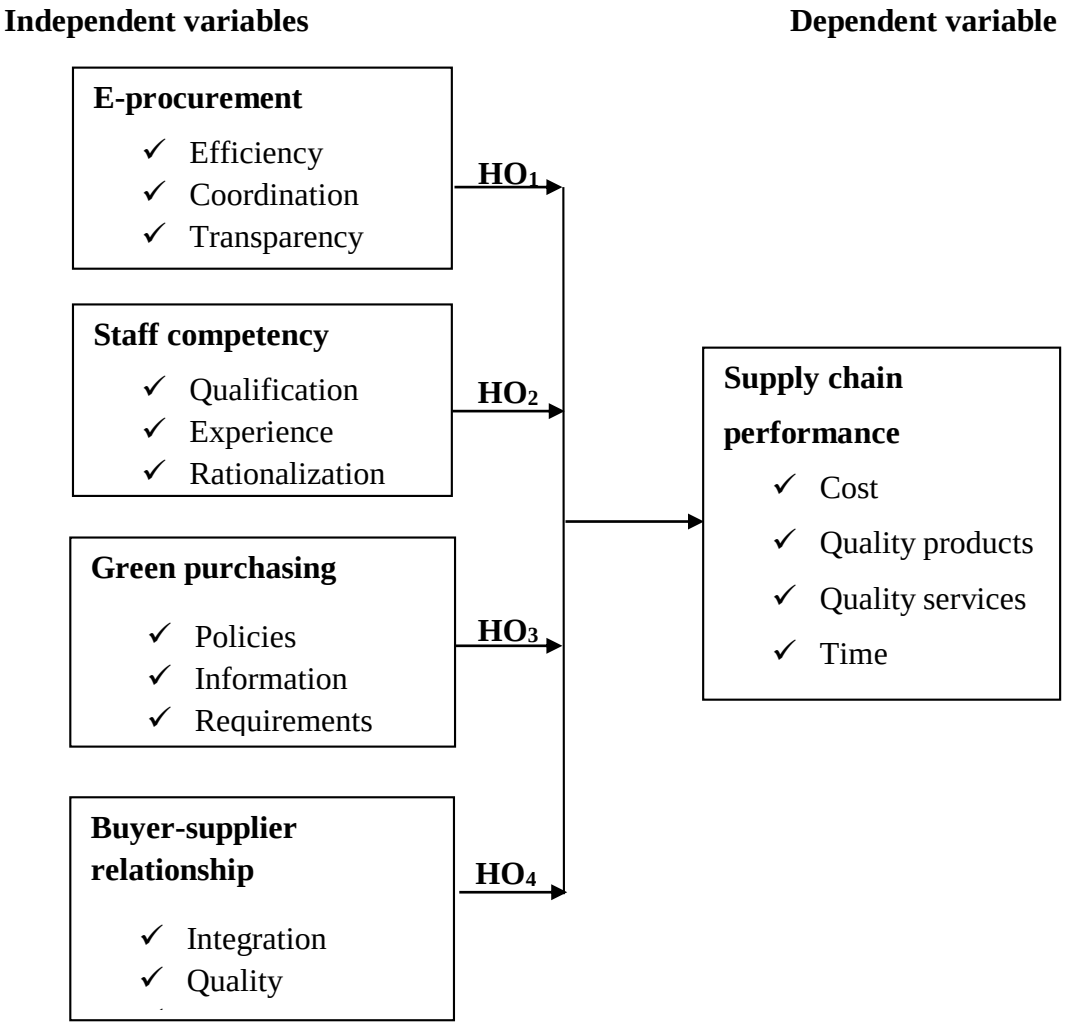

Figure 2.1: Conceptual Framework

***Source*: Researcher 2019**

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

All processes and methods that the researcher followed in the conduct of the study are presented in this chapter. The research design, study site and target population, variable measurements and definition, empirical model, reliability and validity testing, procedure of data collection, instrumentation of the data collected, data analysis methods, results presentation and the underlying ethical considerations are all outlined in this chapter.

3.2 Research Design

According to Kothari (2004) research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose. Cooper and Schindler (2008), defines research design as the plan and structure of investigation so as to answer the research question. This study adopted explanatory research design. An explanatory research design focuses on cause effect relationships and the concern being how one variable affects or is responsible for changes in another variable. Explanatory research designs go beyond description and attempts to explain the reasons for the phenomenon.

3.3 Sampling Frame

This refers to the list of items from which the sample is extracted and therefore it is an entire and the actual list of population members. It therefore forms population list from which the researcher is able to make selection. Employees who were directly involved in procurement at AFA thus formed this study's the sampling frame.

3.4 Target Population

Population are all elements, things or individual cases that suits specifications of the researcher (Nachmias and Nachmias, 2008). Castillo, (2009) states that population is a huge collection of objects or individuals to who's the study benefit goes and therefore it is the center of any scientific study. Target Population can as well be defined as the objects or individual collection with common binding traits/characteristics which are considered for data collection in a study. The study majorly focused on public procuring entities which fits the definition of the PPDA 2013 (RoK, 2013) and Agriculture and Food Authority was the main unit of analysis. The populations of interest were employees drawn from AFA who were directly involved in procurement processes and decision making.

Table 3.1: Target Population

Departments	Target population
Procurement	100
Finance	100
ICT	100
HR and Admin	25
Market Research	25
Technical and Advisory	22
Regulation and Compliance	50
Audit Services	30
Legal services	51
Total	**503**

Source: **HR Records, 2019**

3.5 Sample Size and Sampling Technique

Orodho (2009) stipulated that sampling basically is the process of selecting units like people or organizations from the targeted and accessible population so that one can be

able to fairly generalize the results or the outcome of the population's study. According to (Coopers and Schindler, 2008), sampling technic is a process of selecting units of the entire population that represent the population.

The study employed stratified random sampling. The study employed Nassiuma (2000) formula which is used for the calculation of sample size n from a population N as shown below

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

where

n is sample size

N is study population

C is coefficient of variation and

e is error margin

By taking N as 503, C as 0.32, e as 0.022 and substituting such values in the equation the estimated sample size (n) will be

$$n = \frac{503\ x\ 0.32^2}{\{0.32^2 + (503-1)0.0022^2\}}$$

n=151 our sample size will comprise 151 respondents

Table 3.2: Sample size

Departments	Sample size
Procurement	25
Finance	25
ICT	25
HR and Admin	10
Market Research	10
Technical and Advisory	10
Regulation and Compliance	17
Audit Services	10
Legal services	17
Total	**151**

***(Source;* Researcher 2019**)

3.6 Data Collection Instrument

Data sources for the study was primary data only. According to Collis and Hussey, (2003) primary data (raw or original data) is the new set of data obtained from respondents. Questionnaires formed the research instruments for this study. Questionnaire refers to a list of questions about a particular research topic of interest arranged in some order so as to elicit responses from a respondent. According to Orodho (2009) a questionnaire is an appropriate tool for collecting data. It collects huge information in less time and respondents' privacy makes them give honest answers. Moreover, since questions are standardized all respondents gets the same questions. The questionnaires contained different questions that aimed at answering the research questions. Primary data was collected through questionnaires.

Rossman and Marshall (2006), posits that questionnaires seeks to collect from the informant information or pieces of information that are not directly observable as they

inquire more about individual experiences, accomplishments, attitudes, motivations as well as feelings hence considered the most appropriate for studies. Furthermore, questionnaires are considered to be useful in obtaining objective data, also use less time as data collection instruments and are less costly. In addition,

Questionnaires have come with standardized answers hence simplifying the process of data compilation. Relative to telephone or verbal surveys, questionnaires also do not need much effort to get responses.

This study employed the use of both closed-ended and open-ended questions were used to collect quantitative data. Respondents are encouraged by open-ended questions to give more information in an unconstrained way. On the other hand, closed-ended questions are simply answered by ticking the most appropriate response as provided by the researcher.

3.7 Data Collection Methods

Collection of data is a highly crucial and delicate process as it directly affects validity of ultimate findings. Going by the arguments of Burns and Grove (2003), data collection is a systematic and precise gathering of information that is relevant to the study problem through case histories, participant observations, focused group discussions, narratives, and interviews. The pick and drop method as well as mail survey methods were used to administer questionnaires owing to the tight schedule of some respondents. To uphold ethical research standards, respondents were briefed on the importance of the study and that confidentiality and anonymity of their identities and submissions would be guaranteed.

Questionnaires were administered individually to the respondents. Due to nonresponse biasness, the mail survey has been criticized severally. According to Overton &

Armstrong (2010), Results of a study do not give a room to directly say how the entire sample would have responded if the number of persons who respond differ substantially from those who do not.

Extrapolation, subjective estimates plus a number of comparisons with known values for the actual population are the main three methods for estimating nonresponse. Extrapolation method was adopted in this study. This method assumed that respondents requiring more prodding to answer or the ones who answer later are more like non-respondents. A successive wave of questionnaires is the commonest type of extrapolation carried over. Responses generated by a stimulus is the wave.

3.8 Pilot Study Test

In this study, the pilot study of the sample's 15% was done. Reliability analysis was done to all questionnaires to ascertain the internal consistency of the test. Cronbach alpha was used as a coefficient of internal consistency. Simply, internal consistency measures the association in various items on a common test. The study pilot study was conducted at Coffee Board of Kenya. The following rules of thumb were raised by Castillio (2009) >0.9 – Excellent, >0.8 – Good, >0.7 – Acceptable, >0.6 – Questionable, >0.5 – Poor and <0.5 – Unacceptable. 0.7 the acceptable value formed the base of reliability for this study.

Content validity and construct validity was used in this study. In construct validity, there were several sectional divisions in the questionnaire which were consistent to the conceptual framework and each section evaluated information for a certain objective. For content validity, the questionnaires were scrutinized by five randomly picked staffs from the department of interest (procurement department). They were requested to examine the questions and statements contained in the questionnaire and find out

whether they are clear, consistence, relevant, inoffensive and meaningful. Depending on evaluation provisions, the data collection tools were adjusted accordingly before they get released for data collection.

3.8.1 Reliability of the research instrument

The extent to which similar results are repeatedly produced by a specific measuring process is the instrument's reliability (Eriksson and Kovalainen (2008). Reliability of this study was measured by use of internal consistency method and split-halves method. In split-half method, Spearman - Brown correlation coefficient is used to produce the correlation existing between the two halves.

The level of reliability depends on the level of similarities between the two halves. The greater the level of similarity the greater the reliability. In studies where researchers have a considerable huge amount of raw data split-halves method is ideal and most suitable for measuring reliability (Zikmund, 2003).

To test internal consistency, Cronbach's Alpha was used because it effectively measures how closely related a set of items in a group are. According to Warmbrod, (2012), the items' measure of an underlying (or latent) construct is evidenced by a high value of alpha. Thus, a predetermined least value ((threshold) of 0.7 is needed to ensure reliability (Festinger, DeMatteo and Marczyk 2004). Values below 0.7 signifies lack of reliability while values above 0.7 indicates presence of reliability. If the Cronbach statistics for the main variable and also for the four specific variables show a Cronbach statistic of 0.7 and above, then the reliability of the study will be consistent. Cronbach Alpha tests were conducted in this study.

3.8.2 Validity of the research instrument

An instrument is considered valid if it satisfactorily measures what it is meant to measure. Internal and external validity are two main forms of validity. The causal relationship between the dependent and independent variables is what is referred to as internal validity.

This means that some changes in the regressed are well explained by the regressor. The content employed in the research instrument is validated by non-statistical face and content validity (Orodho, 2012).

Finding out whether the instrument's content is measuring what it is supposed to measure is established through content validity measure. All the four research hypothesis were incorporated in the research instrument for this study. In order to ensure that the respondents fully understand the content, simple language was used in the research instrument. The researcher conducted a pilot study in few AFA departments to test the original questionnaire relevance and content validity. This enabled questionnaire to measure what it intended to measure in relation to the research question by enhancing both its face and content validity. Before such instruments are used in the actual collection of data in the field, necessary corrections and adjustments were made.

3.9 Data Collection Analysis

The study employed inferential and descriptive statistics to analyze data. The quantitative data was keyed into the SPSS (statistical package for social sciences), To verify whether the captured data correlates with the data-captured into SPSS the dataset was subjected to a verification process. SPSS version 20 was used to run the descriptive statistics. After analysis, both descriptive and inferential statistics were generated.

Central tendencies and dispersion were used to measure mean and standard deviations respectively. Regression analysis was used to determine relationship between dependent and independent variables. Correlation and regression analysis composed the inferential statistics. Correlation analysis is normally used to determine the association between the variables.

Multiple linear regression model tested the influence of each independent variable on the dependent variable. The ability of multiple linear regression model to measure or test the variables correlation effect justifies its use.

The main variable was linked to specific variables by the regression model shown below:

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X4 \epsilon$$

Where,

Y– Supply Chain Performance

$\beta 0$ – Constant

X_1- E-procurement

X_2- Staff competency

X_3- green purchasing

X_4- Buyer-supplier relationship

$\beta_{1\text{-}4}$ Regression coefficients or Change induced in Y' (Dependent Variable) by each X (Independent variables)

ϵ= Error term

3.10 Measurement of Variable

Both dependent and independent variables are based on multiple-item constructs, and was measured through Likert- type scales

Table 3.4: Measurement of Variables

Variables Name	Related Measurement
Supply Chain Performance	Right quality, Right price, Right quantity, Right place and Right source
E-procurement	effectiveness, efficiency, Coordination
Staff competency	Qualification, experience, rationalization
Green purchasing	Policies, Information, Requirement
Buyer Supplier relationship	Integration, Quality, Mutual planning

***Source*: Researcher 2019**

3.11 Ethical Considerations

Throughout the research the principle of informed consent and voluntary to participate was highly esteemed and upheld. For purposes of the respondent's rights protection voluntary participation was applied (Borgatti, 2005). The researcher explained and made it clear that all the pieces of information voluntarily given was treated with utmost confidentiality and that the purpose of the study was solely and purely academic. By doing this, all respondents were assured of their confidentiality. In addition, no identification details were used by any respondent when filling the questionnaires so as to maintain the spirit of anonymity. The researcher had all the requisite permission for conducting the research from NACOSTI (National Commission for Science, Technology and Innovation) and a clearance letter issued from ethical review board of Moi University.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSION OF THE FINDINGS

4.0 Introduction

This chapter shows response rate, the results of data reliability, and descriptive statistics of the study variables, regression analysis and an interpretation of the study findings.

4.1 Response Rate

The researcher administered a total of 151 questionnaires and 146 were completed and returned. This represents a response rate of 96% as shown in Table 4.1. This response rate was adequate to allow the researcher to continue with the analysis. The questionnaires were composed of questions that addressed the objectives of the study. The response rate was 96% of the total distributed questionnaires which was adequate to satisfy this study.

Table 4.1: Response rate

Return rate	Frequency	Percentage
Returned	146	96%
Not Returned	5	4%
Total	**151**	**100**

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4.2 Reliability of Data Collection Instruments

Finding out internal consistency for collected data reliability test was used. The preferred technique of measuring reliability was the internal consistency method because of its ability to measure the degree which the research yields consistency for the data collected after a series of repeated trials.

A Cronbach Alpha threshold of 0.7 was surpassed as shown by the table 4.2 below. An Alpha value of 0.736 was found on supply chain performance, 0.745 on e-procurement, 0.731 on staff competency, 0.823 on Green purchasing and 0.738 on Buyer-supplier relationship. Kline (2000) states a scale of $0.7 \leq \alpha < 0.9$ is acceptable.

Table 4.2: Reliability results

	Cronbach's Alpha	**No of Items**
Supply chain performance	.736	5
E-procurement	.745	5
Staff competency	.731	5
Green purchasing	.823	5
Buyer-supplier relationship	.738	5

Table 4.2 shows that all the study variables yielded Cronbach alpha coefficient of more than 0.7 which is recommended value. This means the instrument was reliable.

4.3 Demographic Findings

The demographic variables under the study were age bracket, gender, education level, job designation and the duration the respondent has been an employee of AFA.

4.3.1 Gender of the respondents

Among the respondents, Gender respondents were particularly crucial in this study as it helps us understand how job distribution is balanced between the genders.

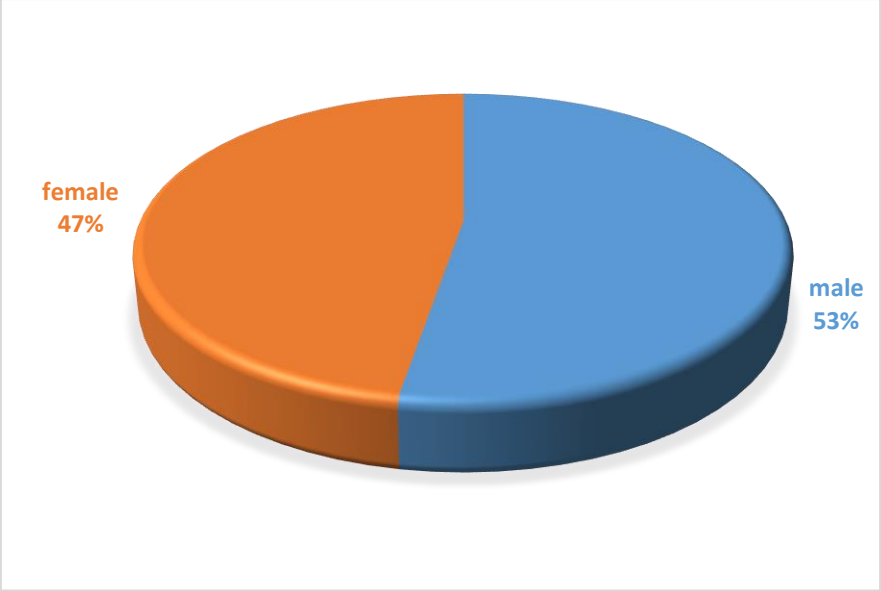

Figure 4.1: Gender distribution

Source: **Researcher 2019**

The findings show that a slight majority of respondents were male comprising 53% and the female respondents comprising 47%. This dispersion is not wide hence the government and the general public should maintain the same spirit to ensure that job opportunities and also education is for all gender. However, the female gender should also build their literacy and competency level through pursuing higher education to increase their competitiveness to reach the fifty, fifty division of available job opportunities.

4.3.2 Age bracket

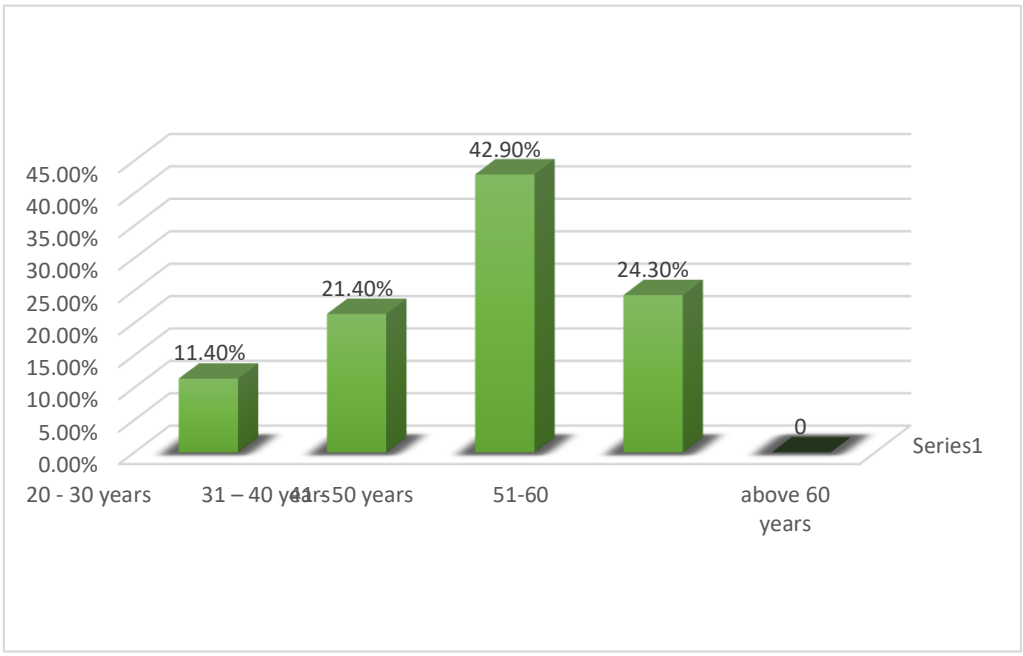

Figure 4.2: Age bracket

***Source;* Researcher 2019**

The study sought to capture the respondents' age and were therefore requested to indicate their age brackets. As indicated in the figure above, a higher percentage of respondents, 42.9% were within the 41-50 years' age bracket, 24.3% of the respondents were within 51-60 years' bracket, 21.4% were aged between 31-40 years, 11.4% were aged between 20-30 years but there was no any respondent aged above 60 years. This shows that AFA (public sector) has complied with the civil servants age limits.

4.3.3 Level of education

The respondents were asked to indicate the highest level of education they had attained.

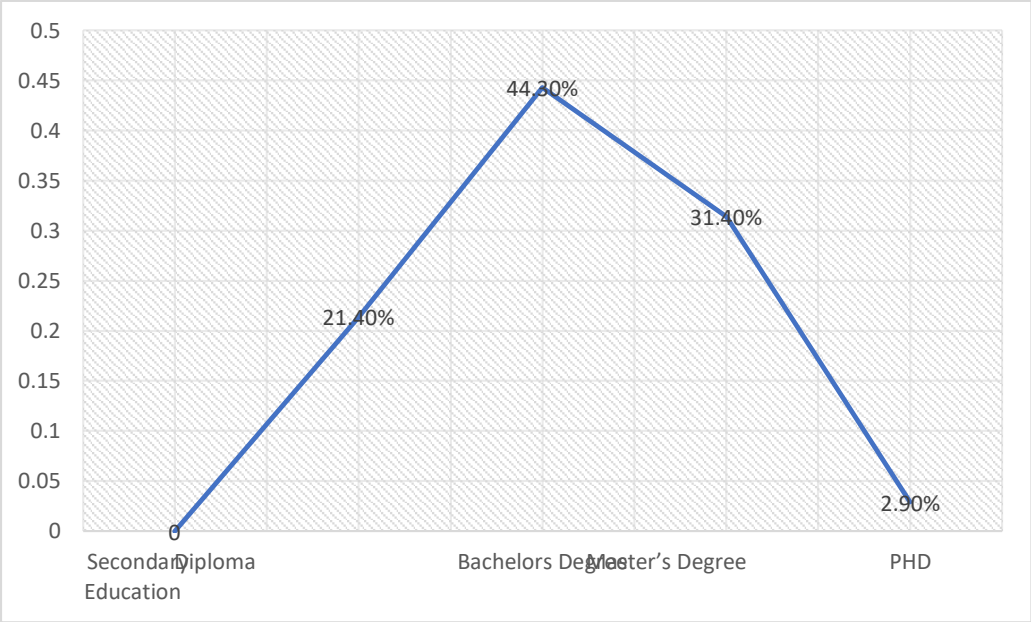

Figure 4.3: Education level

Source: **Researcher 2019**

The results showed that the majority of the respondents, 44.3% had attained education up to bachelor degree level, 31.4% had master's level, 21.4% had diploma qualification levels while only 2.9% had attained education up to PHD level and no respondent had secondary education as the upper most attained education level.

4.3.4 Employment duration

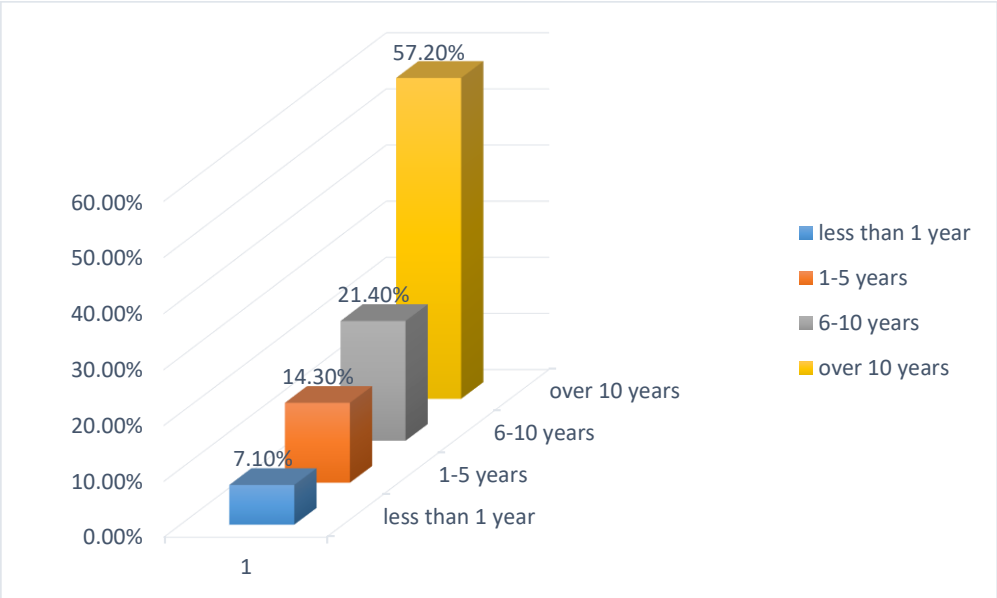

Figure 4.4: Employment duration

Source: **Researcher 2019**

The respondents were further asked to write down the number of years they had been employed at Agriculture and Food Authority. The results showed that most of the respondents, 57.2% had been employed at AFA for over 10 years, 21.4% between 6-10 years, 14.3% between 1-5 years and 7.1% had less than a year at AFA.

4.4 Test of Assumptions of the Study Variables

Test of multicollinearity, independence, normality and sampling adequacy are the tests on statistical assumptions that were performed in this study

4.4.1 Multicollinearity test

Multicollenearity is a situation through which the independent variables become so correlated to themselves in a multiple regression analysis such that it becomes difficult to tell the effect that each independent variable poses to the dependent variable. It was through computation of VIF (Variance Inflation Factor) that Multicollinearity was tested in this study.

The extent to which stability and variance of the regression estimates is affected by independent variables correlation is what is measured by collinearity diagnostic. According to Gujarat & Porter, (2009), there is a serious problem in application of multiple time series regression model if there is existence of Multicollinearity.

As shown in the table below, Variance Inflation Factor (VIF) was used to detect for multicollinearity. A VIF greater than 10 shows existence of multicollinearity (O'Brien, 2007). The higher the VIF's value the more severe the problem of multicollinearity. However, all the variables in this study had a VIF of less than 10 as shown in the table below

Table 4.3: Collinearity Statistics

Variables	**Tolerance**	**VIF**
E-procurement	.255	3.765
Staff competency	.634	1.976
Green purchasing	.201	6.345
Buyer-supplier relationship	.135	7.654

Source: **Research data (2019)**

The above table show there was no correlation hence all variables were maintained in the study.

4.4.2 Normality test

As a result of either skewness or kurtosis or both, Shapiro-Wilk test has powers to detect departure from normality and therefore, it was used to test normality in this study. Shapiro-Wilk test determines whether data is normally distributed against hypothesis. That is if Sample follows a Normal distribution or Sample does not follow a Normal distribution.

According to Razali & Wah, (2011), Shapiro-Wilk test encompasses statistic ranging from 0-1 and figures higher than 0.05 indicate the data is normal. This tests reject the hypothesis of normality when the p-value is greater than or equal to 0.05. The table below show the normality test:

Table 4.4: Shapiro-Wilko

	Statistic	**Df**	**p-value**
E-procurement	.794	32	.023
Staff competency	.899	32	.034
Green purchasing	.846	32	.026
Buyer-supplier relationship	.735	32	.041

Source: **Research data (2019)**

Since the p-values were greater than the significance level (0.05) (not significant of p<.05), this implies that the variables were normally distributed.

4.4.3 Data sampling adequacy

To establish the data's sampling adequacy Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin Measure (KMO) tests were conducted. KMO measure varies between 0 and 1, and values closer to 1 are better with a threshold of 0.5 hence KMO of 0.50 is acceptable degree for sampling adequacy. The null hypothesis that the correlation matrix is an identity matrix is tested through Bartlett's Test of Sphericity which analyzes if the samples are from populations with equal variances. There is an acceptable degree of sampling adequacy in Bartlett's test significance of 0.05 or less. The table below show that Bartlett's test of sphericity had a consistent significance of $p < .001$ while KMO measures of sampling adequacy produced values between 0.542 and 0.742. This therefore, confirms sampling adequacy.

Table 4.5: KMO and Bartlett's Test

	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity Approx. Chi-Square	df	Sig.
E-procurement	.742	875.543	78	.000
Staff competency	.624	694.345	33	.000
Green purchasing	.578	532.765	32	.000
Buyer-supplier relationship	.542	456.346	24	.000

Source: **Research data (2019)**

4.4.4 Tests of independence

Durbin-Watson test was used to assess independence of error terms. It implies that observations are independent. Since independence of the residuals is one of the basic hypotheses of logit regression analysis, Durbin Watson (DW) test checks that the residuals of the models were not autocorrelated. According to Garson, (2012), independence statistic ranges from 0-4 and scores ranging between 1.5 to 2.5 shows independent observations. The table below show that Durbin-Watson statistics were close to the prescribed value of 2.0.

Table 4.6: Durbin Watson Test

Variables	Durbin Watson
E-procurement	2.248
Staff competency	1.978
Green purchasing	2.146
Buyer-supplier relationship	1.989

Source: **Research data (2019)**

This implies that there was no autocorrelation and the residuals were independent hence the study Variables were independent.

4.5 Descriptive Statistics

This part of the study presents the descriptive results on effect of e-procurement, staff competency, green purchasing and buyer-supplier relationship on supply chain performance at Agriculture and Food Authority.

4.5.1 Supply chain performance

On statements regarding supply chain performance, the respondents were requested to indicate the degree to which they concurred (agreed) or disagreed with the statements. The responses were spread on a five likert scale with a range of 1 (strongly disagree) to 5 (strongly agree). To arrive at the dispersion from the mean, standard deviation method was used. According to this concept, a high standard deviation implies that the data is spread out over a large range of values while low standard deviation means that the data spread is very close to the mean.

Table 4.7: supply chain performance

	Mean	**Std. Deviation**
Procurement practices have led to reduction of cost associated with supply chain	4.3756	.25473
Procurement practices have led to Quality product development in AFA	3.9354	.37562
Procurement practices have enabled AFA to provide quality services to the general public	3.7524	.46589
Procurement practices at AFA have contributed to good environmental conservation and management practices	4.2635	.24657

Source: **Research data (2019)**

The study findings indicated that the respondents strongly agreed that procurement practices have led to reduction of cost associated with supply chain (Mean=4.3756),

respondents agreed that procurement practices have led to Quality product development in AFA (Mean=3.9354), respondents also agreed that procurement practices have enabled AFA to provide quality services to the general public (Mean=3.7524), respondents further agreed that procurement practices at AFA have contributed to good environmental conservation and management practices (Mean=4.2635). The study findings are supported by a number of studies which includes (Mouritsen, et al 2011).

4.5.2 E-procurement

On statements touching on e-procurement, the respondents were asked to write down the degree the extent to which they agreed or disagreed with the statements. The responses were placed on a five likert scale with a range of 1 (strongly disagree) to 5 (strongly agree). To indicate the dispersion from the mean standard deviation was used. High standard deviation simply implies that the data is spread out over a large range of values while on the opposite, a low standard deviation imply that the data points are very close to the mean.

Table 4.8: E-procurement

	Mean	Std. Deviation
ICT adoption has greatly improved efficiency of our procurement processes and has therefore enhance performance of AFA	4.36455	.27645
AFA has skilled employees that are able to use ICT Systems in all procurement processes	3.8452	.36563
ICT adoption has greatly helped AFA procurement particularly through coordination of its departmental processes	3.3745	.27505
Through the use of ICT AFA has realized greater cost/expenditure transparency	3.45735	.25789
ICT adoption in AFA has enabled provision of real-time information for quick decision making and enabling collaboration between trading partners.	4.19466	.27545

Source: **Research data (2019)**

According to the results in table above, the respondents agreed that ICT adoption has greatly improved efficiency of our procurement processes and has therefore enhance performance of AFA (Mean=4.36455), respondents agreed that AFA has skilled employees that are able to use ICT Systems in all procurement processes (Mean=3.8452), respondents agreed that ICT adoption has greatly helped AFA procurement particularly through coordination of its departmental processes (Mean=3.3745), respondents agreed that Through the use of ICT AFA has realized greater cost/expenditure transparency (Mean=3.45735), respondents also agreed that ICT adoption in AFA has enabled provision of real-time information for quick decision making and enabling collaboration between trading partners (Mean=4.19466). The study findings are supported by a number of studies which includes (Mouritsen, et al 2011).

4.5.3 Staff competency

On statements regarding staff competency, the respondents were requested to indicate the extent to which they agreed or disagreed with the statements. The responses were equally placed on a five likert scale with a range of 1 (strongly disagree) to 5 (strongly agree).

To indicate the dispersion from the mean standard deviation was used. High standard deviation simply implies that the data is spread out over a large range of values while on the opposite, a low standard deviation imply that the data points are very close to the mean.

Table 4.9: Staff competency

	Mean	Std. Deviation
AFA has qualified employees in the supply chain department	4.1634	.23645
AFA supply chain department employees have high Level of experience and knowledge of procurement laws and regulations and this enhances efficiency	3.2476	.37456
There is employee rationalization in the supply chain performance	3.1383	.26242
Recruitment of all staff in AFA is purely based on competency	3.1167	.29416

Source: **Research data (2019)**

According to the findings in the table above, the respondents agreed that AFA has qualified employees in the supply chain department (Mean=4.1634), the respondents agreed that AFA supply chain department employees have high Level of expertise and knowledge of procurement laws and regulations and this enhances efficiency (mean=3.2476), the respondents also agreed that there is employee rationalization in the supply chain performance (mean=3.1383), furthermore, respondents agreed that recruitment of all staff in AFA is purely based on competency (mean=3.1167). The study findings are supported by a number of studies which includes Leenders & Fearon (2008),

4.5.4 Green purchasing

On statements regarding Green purchasing, the respondents were likely asked to write down or indicate their extent of agreements or disagreements with the statements. The responses were placed on a five likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To indicate the dispersion from the mean standard deviation was used. High standard deviation simply implies that the data is spread out over a large range of

values while on the opposite, a low standard deviation imply that the data points are very close to the mean.

Table 4.10: Green purchasing

	Mean	Std. Deviation
AFA has adopted green procurement policies in all its procurement areas	2.9354	.37656
AFA favours products which provide information about their effect on the environment	3.1246	.34635
AFA provides design specification to suppliers that include environmental requirements for purchased items	2.8988	.38564
AFA partners with suppliers who are compliant with environmentally related legislation	2.9675	.32947
AFA has environmental management systems in place	2.3645	.34636

Source: **Research data (2019)**

From the findings of the table above, the respondents relatively disagreed that AFA has adopted green procurement policies in all its procurement areas (mean=2.9354), respondents relatively agreed that AFA favours products which provide information about their effect on the environment (mean=3.1246), respondents disagreed that AFA provides design specification to suppliers that include environmental requirements for purchased items (mean=2.8988), respondents relatively disagreed that AFA partners with suppliers who are compliant with environmentally related legislation (mean=2.9675) respondents disagreed that AFA has environmental management systems in place (mean=2.3645). The study findings are supported by a number of studies which includes (Narasimhan and Das,2001).

4.5.5 Buyer-supplier relationship

On statements regarding buyer-supplier relationship, the respondents were asked to indicate the extent to which they agreed or disagreed with the statements. The responses were spread on a five likert scale with a range of 1 (strongly disagree) to 5 (strongly agree).

To indicate the dispersion from the mean standard deviation was used. High standard deviation simply implies that the data is spread out over a large range of values while on the opposite, a low standard deviation imply that the data points are very close to the mean.

Table 4.11: Buyer-supplier relationship

	Mean	**Std. Deviation**
Buyer-supplier relationship promotes rapid integration in the organization	3.7354	.36452
Buyer-supplier relationship improves product quality	3.1763	.29576
Buyer-supplier relationship aid organization adoption of cost-effective design choices	3.2634	.31873
Buyer-supplier partnership promote mutual planning and problem-solving efforts	3.6836	.47357
Buyer-supplier partnership promote effective information sharing	3.1784	.48364

Source: **Research data (2019)**

According to the findings in table above, the respondents agreed that buyer-supplier relationship is crucial in promoting rapid integration in the organization (mean=3.7354), respondents agreed that Buyer-supplier relationship improves product quality (mean=3.1763), respondents agreed that Buyer-supplier relationship aid organization adoption of cost-effective design choices (mean=3.2634), respondents

agreed that Buyer-supplier partnership promote mutual planning and problem-solving efforts (mean=3.6836), respondents agreed that Buyer-supplier partnership promote effective information sharing (mean=3.1784). The study findings are supported by a number of studies which includes Ingari et al, 2012

4.6 Factor Analysis

Factor analysis was used to assess construct validity in this research. Construct validity measures the extent to which a scale measures what it intends to measure. 19 items were examined to assess the construct validity. According to Field (2005), a KMO threshold of 0.5 is considered in a research. The research KMO measure was 0.622, which confirms the appropriateness of the factor analysis for the data set. Factor loading for all measuring item are also shown in the table below and all measuring item must have a factor loading value of greater than 0.5. There are 20 measuring items clustered under the five variables in our study.

The results also show that each factor can explain more variance than a single variable because the Eigen value for each factor is greater than 1.0. 60% and above of the common variance shared by 20 measuring can be explained because the cumulative percentage of variance explained by five factors is 63.1%.

Table 4.11: Factor analysis

Variable	Scale items	Factor loading	Eigen values	Percentage of variance
E-procurement	ICT adoption has greatly improved efficiency of our procurement processes and has therefore enhance performance of AFA	0.637	2.655	15.574
	AFA has skilled employees that are able to use ICT Systems in all procurement processes	0.743		
	ICT adoption has greatly helped AFA procurement particularly through coordination of its departmental processes	0.583		
	Through the use of ICT AFA has realized greater cost/expenditure transparency	0.725		
Staff competency	AFA has qualified employees in the supply chain department	0.812	3.436	17.584
	AFA supply chain department employees have high Level of experience and knowledge of procurement laws and regulations and this enhances efficiency	0.736		
	There is employee rationalization in the supply chain performance	0.573		
	Recruitment of all staff in AFA is purely based on competency	0.863		
Green purchasing	AFA favours products which provide information about their effect on the environment	0.579	2.749	15.479
	AFA provides design specification to suppliers that include environmental requirements for purchased items	0.736		
	AFA partners with suppliers who are compliant with environmentally related legislation	0.794		
	AFA has environmental management systems in place	0.649		
Buyer-supplier relationship	Buyer-supplier relationship promotes rapid integration in the organization	0.854	3.383	14.476
	Buyer-supplier relationship improves product quality	0.805		
	Buyer-supplier relationship aid organization adoption of cost-effective design choices	0.549		
	Buyer-supplier partnership promote mutual planning and problem-solving efforts	0.532		
	Buyer-supplier partnership promote effective information sharing	0.746		
supply chain performance	Procurement practices have led to reduction of cost associated with supply chain	0.826	2.853	68.575
	Procurement practices have led to Quality product development in AFA	0.765		
	Procurement practices have enabled AFA to provide quality services to the general public	0.705		
	Procurement practices at AFA have contributed to good environmental conservation and management practices	0.819		

Source: **Research data (2019)**

4.7 Inferential Statistics

On this part, the study employed the use of general linear model in the determination of the independent variables' predictive power on business establishment. This was made possible through regression analysis, the Model and coefficient of determination. The researcher applied SPSS V 22.0_ (the statistical package for social sciences) for coding, entering and computation of the study's measurements of the multiple regressions. The coefficient of determination (R^2) simply explains the degree or the extent to which a change or changes in the dependent variable(s) can be explained by the change or changes in the independent variables. Similarly, it denotes a percentage variation in the dependent variable that is caused by all the study's 4 independent variables.

4.7.1 Correlations analysis

This study endeavored to finding out the relationship existing between variables defining the independent variables and the dependent variable. In order to make a valid recommendation and conclusion about the variables the researcher run correlation analysis to assist in finding out the nature of the relationship. Correlation coefficient can be either positive or negative. A positive correlation between variables means that if one variable increases also the other variable increases while a negative correlation between variables means that if one variable increases the other variable decreases. Furthermore, correlation coefficient ranging from 0.10 to 0.29 is considered weak, correlation coefficient ranging from 0.30 to 0.49 is considered medium while correlation coefficient ranging from 0.50 to 1.0 is considered strong. However, to avoid multicollinearity correlation coefficient shouldn't exceed 0.8. There is no multicollinearity problem in this research because the highest correlation coefficient is 0.745 which is less than 0.8. The table below shows variable correlation analysis

Table 4.12: Correlation analysis

		Y	X_1	X_2	X_3	X_4
Y	Pearson Correlation	1				
	Sig. (2-tailed)					
X_1	Pearson Correlation	0.625**	1			
	Sig. (2-tailed)	0.04				
X_2	Pearson Correlation	0.768**	0.723**	1		
	Sig. (2-tailed)	0.03	.02			
X_3	Pearson Correlation	0.745**	0.423**	0.513**	1	
	Sig. (2-tailed)	0.03	.012	.019		
X_4	Pearson Correlation	0.618**	0.512**	0.406	0.614**	1
	Sig. (2-tailed)	0.04	.02	.018	.021	

***. Correlation is significant at the 0.05 level (2-tailed).**
Y supply chain performance, X_1 e-procurement X_2 staff competency, X_3 green purchasing, X_4 buyer-supplier relationship.
Source: **Research data (2019)**

The above table show a positive relationship of 0.625 between e-procurement and supply chain performance. This implies that development and full embracement of e-procurement will develop supply chain performance. The study also indicated a strong positive correlation of 0.768 between staff competency and supply chain performance. The relationship between green purchasing and supply chain performance was at 0.745 indicating a relatively strong positive correlation. Buyer-supplier relationship was also positive at 0.618. All the above correlations were significant at 5% level ($p<0.05$)

Table 4.13: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.843[a]	.711	.462	.094622

a. Predictors: (Constant), e-procurement, staff competency, green purchasing and buyer-supplier relationship.
Source: **Research data (2019)**

The table above indicates the existence of a good linear association or relationship between the study's dependent and independent variables. This is clearly shown by the correlation (R Square) coefficient of 0.711. As such the 4 independent variables in the study influenced a performance of 71.1% by the supply chain as represented by the R^2. It therefore follows that other factors which are not studied in this research influence 28.9% of supply chain in Agriculture and Food Authority.

Nevertheless, further research and studies should be done to find out or investigate other factors that influence 27.2% in supply chain.

Table 4.14: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.108	4	.527	1.836	.000[b]
	Residual	38.765	135	.287		
	Total	40.873	139			

a. Predictors (Constant), e-procurement, staff competency, green purchasing and buyer-supplier relationship.
b. Dependent Variable: supply chain performance.

Source: **Research data (2019)**

The significance value is 0.000 which is less than 0.05 hence the model is statistically significant in predicting how e-procurement, staff competency, green purchasing and buyer-supplier relationship influenced supply chain performance at Agriculture and Food Authority. The F critical at 5% level of significance was 1.836.

4.7.2 Multiple regression analysis

The study sought to establish the role of procurement practices on supply chain performance in public sector a case study of Agriculture and Food Authority. The factors investigated were: e-procurement, staff competency, green purchasing and buyer-supplier relationship.

The regression model was:

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

With Y representing the supply chain performance, X_1 e-procurement, X_2 staff competency, X_3 green purchasing and X_4 buyer-supplier relationship. B_0 is the constant of the model, and $\beta_1 – \beta_4$ are the regression coefficients while ε represents the error term.

Table 4.15: Coefficient of determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.476	.311		7.961	.04
	E-procurement	.714	.256	.264	2.789	.03
	Staff competency	.633	.254	.290	2.492	.03
	Green purchasing	.731	.285	.294	2.565	.04
	Buyer-supplier relationship	.672	.275	.289	2.444	.03

a. Dependent Variable: Supply chain performance
Source: **Research Data (2019)**

Multiple regression analysis was run to find out the extent to which each independent variable influences the supply chain performance. Going by the SPSS generated table above, the regression equation is:

($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$) becomes:

$Y= 2.476+ 0.714X_1 + 0.633X_2 + 0.731X_3 + 0.672X_4 + \varepsilon$

From the model, when other factors (e-procurement, staff competency, green purchasing and buyer-supplier relationship) are at zero, supply chain performance will be 2.476. Holding other factors constant, a unit increase in e-procurement would lead to 0.714 change in supply chain performance.

Holding other factors constant, a unit increase in staff competency would lead to a 0.633 increase in supply chain performance. When all other factors are held constant, a unit increase in green purchasing would lead to 0.731 increase in supply chain performance.

On the other hand, holding other factors constant, a unit increase in buyer-supplier relationship would lead to 0.672 increase in supply chain performance. All the variable under study had a p-value of < 0.05 which means they were all significant and positively influenced the dependent variable.

4.8 Test of Hypothesis

4.8.1 Hypothesis testing

In order to test the research hypothesis, standard multiple regression analysis was conducted using e-procurement, staff competency, green purchasing and buyer supplier relationship as the predicting variables and supply chain performance as the dependent variable.

Hypothesis One: HO_1: E-procurement has no significant effect on supply chain performance in public sector at AFA, Kenya. ($\beta = 0.264$, $p < 0.05$)

The R square value in this case is 0.199 which clearly suggests that there is a strong relationship between e-procurement and supply chain performance as indicated in table above. This indicates that e-procurement share a variation of 19.9% of supply chain Performance.

Table 4.15 indicates that the regression weight for e-procurement was positive and significant ($\beta= 0.264$, $t= 2.789$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that e-procurement has a significant relationship with supply chain performance at AFA, Kenya. The regression estimate for e-procurement was 0.264; this indicates that a unit increase in e-procurement would result in 26.4% increase in supply chain performance in public sector at AFA.

Hypothesis Two: HO_2: Staff competency has no significant effect on supply chain performance in public sector at AFA. ($\beta = 0.290$, $p < 0.05$)

Table 4.15 indicates that the regression weight for Staff competency was positive and significant ($\beta= 0.290$, $t= 2.492$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that staff competency has a significant relationship with supply chain performance in public sector at AFA.

The regression estimate for staff competency was 0.290, this indicates that a unit increase in staff competency would result in 29% increase in supply chain performance in public sector at AFA.

Hypothesis Three: HO_3: Green Purchasing has no significant effect on supply chain performance in public sector at AFA. ($\beta = 0.294$, $p < 0.05$)

Table 4.15 indicates that the regression weight for Green Purchasing was positive and significant ($\beta = 0.294$, $t = 2.565$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that green purchasing has a significant relationship with supply chain performance in public sector at AFA. The regression estimate for green purchasing was 0.294 this indicates that a unit increase in green purchasing would result in 29.4% increase in supply chain performance in public sector at AFA.

Hypothesis Four: HO_4: Buyer Supplier relationship has no significant effect on supply chain performance in public sector at AFA. ($\beta = 0.289$, $p < 0.05$)

Table 4.15 indicates that the regression weight for buyer supplier relationship was positive and significant ($\beta = 0.289$, $t = 2.444$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that buyer supplier relationship has a significant relationship with supply chain performance in public sector at AFA. The regression estimate for buyer supplier relationship was 0.289; this indicates that a unit increase in buyer supplier relationship would result in 28.9% increase in supply chain performance in public sector at AFA.

4.8.2 A summary of the entire study hypothesis tested

The summary results of the entire study hypothesis tested were presented on Table 4.42 below.

Table 4.16: Summary results of hypotheses tested

	P-value	Decision
HO_1-E-procurement has no significant effect on supply chain performance in public sector at AFA, Kenya	p-value=0.000<0.05).	Reject the null hypothesis
HO_2- Staff competency has no significant effect on supply chain performance in public sector at AFA.	p-value=0.000<0.05).	Reject the null hypothesis
HO_3 - Green Purchasing has no significant effect on supply chain performance in public sector at AFA.	p-value=0.000<0.05).	Reject the null hypothesis
HO_4: Buyer Supplier relationship has no significant effect on supply chain performance in public sector at AFA.	p-value=0.000<0.05).	Reject the null hypothesis

4.9 Discussion of Key Findings

4.9.1 E-procurement

On statements touching on e-procurement, the respondents were asked to write down the degree the extent to which they agreed or disagreed with the statements. The responses were placed on a five likert scale with a range of 1 (strongly disagree) to 5 (strongly agree). indicates that the regression weight for e-procurement was positive and significant (β= 0.264, t= 2.789, p < .05). Therefore, the null hypothesis was rejected at P < 0.05 level of significance implying that e-procurement has a significant relationship with supply chain performance at AFA, Kenya. The regression estimate for e-procurement was 0.264; this indicates that a unit increase in e-procurement would result in 26.4% increase in supply chain performance in public sector at AFA. A positive correlation between variables means that if one variable increases also the other

variable increases while a negative correlation between variables means that if one variable increases the other variable decreases. Furthermore, correlation coefficient ranging from 0.10 to 0.29 is considered weak, correlation coefficient ranging from 0.30 to 0.49 is considered medium while correlation coefficient ranging from 0.50 to 1.0 is considered strong.

The study also found out that the respondents agreed that ICT adoption has greatly improved efficiency of our procurement processes and has therefore enhance performance of AFA (Mean=4.36455), respondents agreed that AFA has skilled employees that are able to use ICT Systems in all procurement processes (Mean=3.8452), respondents agreed that ICT adoption has greatly helped AFA procurement particularly through coordination of its departmental processes (Mean=3.3745), respondents agreed that Through the use of ICT AFA has realized greater cost/expenditure transparency (Mean=3.45735), respondents also agreed that ICT adoption in AFA has enabled provision of real-time information for quick decision making and enabling collaboration between trading partners (Mean=4.19466).

4.9.2 Staff competency

According to the findings in the table above, the respondents agreed that AFA has qualified employees in the supply chain department (Mean=4.1634), the respondents agreed that AFA supply chain department employees have high Level of expertise and knowledge of procurement laws and regulations and this enhances efficiency (mean=3.2476), the respondents also agreed that there is employee rationalization in the supply chain performance (mean=3.1383), furthermore, respondents agreed that recruitment of all staff in AFA is purely based on competency (mean=3.1167). There was a Pearson Correlation of 0.768 (r=0.768) between staff competency and supply chain performance at AFA. The variable model was statistically significant in

predicting how staff competency influenced supply chain performance because the significance level was 0.03 ($p<0.05$) and the value of F critical at 5% significance level was 1.836 in the analysis of variance. The beta value for staff competency and supply chain performance in the regression model was 0.290. regression weight for Staff competency was positive and significant ($\beta= 0.290$, $t= 2.492$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that staff competency has a significant relationship with supply chain performance in public sector at AFA. The regression estimate for staff competency was 0.290, this indicates that a unit increase in staff competency would result in 29% increase in supply chain performance in public sector at AFA.

4.9.3 Green purchasing

On statements regarding Green purchasing, the respondents were likely asked to write down or indicate their extent of agreements or disagreements with the statements. The responses were placed on a five likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The study found out that mean standard deviation was used. High standard deviation simply implies that the data is spread out over a large range of values while on the opposite, a low standard deviation imply that the data points are very close to the mean. indicates that the regression weight for green purchasing was positive and significant ($\beta= 0.294$, $t= 2.565$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that green purchasing has a significant relationship with supply chain performance in public sector at AFA. The regression estimate for green purchasing was 0.294 this indicates that a unit increase in green purchasing would result in 29.4% increase in supply chain performance in public sector at AFA. There was a Pearson Correlation of 0.745 ($r=0.745$) between green purchasing and supply chain performance at AFA. The variable model was statistically significant

in predicting how staff competency influenced supply chain performance because the significance level was 0.03 ($p<0.05$) and the value of F critical at 5% significance level was 1.836 in the analysis of

4.9.4 Buyer-supplier relationship

The study found out that there was a Pearson Correlation of 0.618 ($r=0.618$) between buyer-supplier relationship and supply chain performance at AFA.

The variable model was statistically significant in predicting how buyer-supplier relationship influenced supply chain performance because the significance level was 0.04 ($p<0.05$) and the value of F critical at 5% significance level was 1.836 in the analysis of variance. The beta value for green purchasing and supply chain performance in the regression model was 0.289. The study findings also indicate that the regression weight for green purchasing was positive and significant ($\beta= 0.289$, $t= 2.444$, $p < .05$). Therefore, the null hypothesis was rejected at $P < 0.05$ level of significance implying that green purchasing has a significant relationship with supply chain performance in public sector at AFA. The regression estimate for green purchasing was 0.289 this indicates that a unit increase in green purchasing would result in 28.9% increase in supply chain performance in public sector at AFA.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter highlights a summary of the study findings, conclusions and recommendations for the effect of procurement practices on performance of supply chain in public sector: a case study of agriculture and food authority in Kenya. It also serves as an eye-opener for further studies.

5.2 Summary of Findings

The findings of the study were summarized below as per the study objectives. The findings were supported by the frequencies of the responses

5.2.1 E-procurement

E-procurement, staff competency, green purchasing and buyer-supplier relationship were found to have much effects on supply chain performance at Agriculture and Food Authority. The study found that e-procurement as a component of broader procurement practices had a major effect on supply chain. According to the respondents, ICT adoption has greatly improved efficiency of procurement processes and has therefore enhanced performance within AFA. AFA has skilled employees that are able to use ICT Systems in all procurement processes. ICT adoption has greatly helped AFA procurement particularly through coordination of its departmental processes, through the use of ICT AFA has realized greater cost/expenditure transparency and that ICT adoption in AFA has enabled provision of real-time information for quick decision making and enabling collaboration between trading partners.

5.2.2 Staff competency

The study also found that staff competency as a broader component of procurement practices had a major impact on supply chain performance. According to the respondents, AFA has qualified employees in the supply chain department, AFA supply chain department employees have relatively higher Levels of knowledge and experience of procurement laws and regulations and this enhances efficiency, there is employee rationalization in the supply chain performance, and the Recruitment of all staff in AFA is purely based on competency.

5.2.3 Green purchasing

The study also found that green purchasing as a broader component of procurement practices had a major effect on supply chain performance. According to the respondents, AFA has adopted green procurement policies in all its procurement areas, AFA favours products which provide information about their effect on the environment, AFA provides specific designs to suppliers that may among other things include environmental requirements for purchased items, AFA partners with suppliers who are compliant with environmentally related legislation and that AFA has environmental management systems in place. variance.

5.2.4 Buyer-supplier relationship

The study also found that buyer-supplier relationship as a broader component of procurement practices had a major effect on supply chain performance. According to the respondents, buyer-supplier relationship enhances rapid and faster integration in the organization, Buyer-supplier relationship improves product quality, buyer-supplier relationship also helps an organization to adopt cost-friendly design choices, buyer-supplier partnership promotes both mutual planning and efforts that are geared towards

problem-solving. Lastly but not least, Buyer-supplier partnership promotes effective information sharing.

5.3 Conclusions of the Study

5.3.1 E-procurement

The findings show a firm and positive relationship or link between e-procurement and supply chain performance. This is a clear indication that if e-procurement is well installed and operated by non-malicious workers who will not manipulate the system for self-gains, this country will save much money through all procurements done by public entities to fund other development programmes.

5.3.2 Staff competency

Similarly, there is a positive correlation between staff competency and supply chain performance. This shows that staff competency is a key factor in supply chain performance. Therefore, recruiting a positive minded, flexible and goal-oriented staffs as well as establishing a continuous capacity development among the staffs would spearhead and install an ethical procurement culture among the employees. This will enable the country to save through procurement processes and invest on other avenues that can create more jobs.

5.3.3 Green purchasing

Green purchasing is also a crucial factor in supply chain performance. There is a positive correlation between green purchasing and supply chain performance. This shows that green purchasing is a key variable in supply chain performance. Therefore, establishing an environment through which all public entities consider green purchasing

when making public procurements will boost our environmental conservation strategies by higher margins.

5.3.4 Buyer-supplier relationship

Buyer-supplier relationship is also a very important factor in supply chain performance. There is a positive correlation between buyer-supplier relationship and supply chain performance. This shows that buyer-supplier relationship is quite important in any institutional setup because it leads to supply of high-quality products by suppliers as well as promoting mutual planning and problem-solving efforts. All public procurement entities should set up a positive and strong buyer-supplier relationship.

5.4 Recommendations of the Study

5.4.1 Supply chain performance

The following recommendations can be made from the findings of this study: supply chain performance has improved as a result of procurement practices adopted in public organizations. Based on the findings the study recommends that the government should encourage public organizations to fully adopt procurement practices that add value to supply chain among them the specific variables examined under this study. In addition, the government should also put in resources for further research to find out other variables that positively impacts on performance of supply chain.

5.4.2 E-procurement

E-procurement plays a significant role in performance of supply chain. Therefore, the study recommend that all public institutions should adopt e-procurement and ensure it is fully and effectively implemented. This can be well achieved by ensuring existence of regulations that obliges e-procurement adoption.

5.4.3 Staff competency

Based on the finding, staff competency affects performance of supply chain positively. The study recommend that all public institutions should ensure there is existent of continuous training programs that builds employee's capacity as well as recruiting new employees based on competency. This will ensure there is existence of human resource that can scale supply chain to the next level.

5.4.4 Green purchasing

Green purchasing is another variable that positively affects supply chain performance. Green purchasing is quite important in the view that it conserves and protects our beautiful environment. Therefore, the study recommend that all public institutions should adequately adopt green purchasing practice through a common understanding. In addition, the study recommend that the government can as well come in to force adoption of green purchasing through regulations that favours it.

5.4.5 Buyer-supplier relationship

Buyer-supplier relationship positively affects performance of supply chain. Based on the findings the study recommend that all public institutions should put in place mechanisms to ensure there exist a healthy relationship between them and their suppliers. This can be achieved by ensuring transparency in all procurement stages as well as paying suppliers in good time.

5.6 Suggestions for Further Research

The study focused on the Agriculture and Food Authority (AFA), there are also other public institutions in Kenya that may portray a different scenario/perspective in regard to procurement practices and supply chain performance. Therefore, a study should be

carried out in other institutions regarding the same objective. Similar studies on other variables that affect the performance of supply chains may also be carried out.

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APPENDICES

Appendix I: Letter of Introduction

Dear Respondent,

RE: RESEARCH DATA COLLECTION

I am a graduate student at the Moi University pursuing a Master degree in Business Management. Currently, I am in the process of collecting data for my research project on '**effect of procurement practices on performance of supply chain in public sector: a case study of agriculture and food authority in Kenya.**

In view of the above, I feel humbled to request for your sincere cooperation in providing answers to the questions in the questionnaires attached. Kindly, peruse through the specified instructions and respond to the questions as outlined. I also request you to provide me with the necessary documentation and information as regards the topic of interest (procurement practices and supply chain performance). This will be of invaluable help to me not only in the collection of the requisite data, but also in the analysis which will showcase how the objectives of study have been achieved.

The information provided by you as the respondent or any other respondent will and shall remain confidential. Besides, the information provided is exclusively and purely for research purposes and will be used for any other purpose whatsoever. As such, your cooperation and responses are warmly welcomed and will be highly appreciated.

Thanks in advance,

Yours Faithfully,

Naibei Benson Barasa

Appendix II: Questionnaire

This questionnaire contains questions and statements highlights and outlines the effect of procurement practices on performance of supply chain within the public sector. Kindly, help us with necessary information by completing the questionnaire as guided. Consider all your responses handled with a high degree of confidentiality.

Section A: Demographics

1. Gender (a). Female { }
   (b). Male { }

2. Age Bracket

a) 20 - 30 years { }
b) 31 – 40 years { }
c) 41 - 50 years { }
d) 51-60 { }
e) above 60 years { }

3. Level of Education

a) Secondary Education { }
b) Diploma { }
c) Bachelor's Degree { }
d) Master's Degree { }
e) PHD { }

4. State your job designation.....

5. How long have you been an employee of this organization?

a) a) Less than 1 year { } b) 2 to 5 years { }

c) 5 to 10 years { } d) Over 10 years { }

Section B: Supply chain performance

Kindly take your time and respond to the following statements by indicating the degree or extent to which you are in agreement or disagreement using the Likert scale by ticking the box that defines your answer best.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agreed
Procurement practices have led to reduction of cost associated with supply chain.					
Procurement practices have led to Quality product development in AFA.					
Procurement practices have enabled AFA to provide quality services to the general public.					
Procurement practices at AFA have contributed to good environmental conservation and management practices					

Section C: E-procurement

Kindly respond to the following statements by indicating the extent to which you agree or disagree using the Likert scale by ticking the box that defines your answer best.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agreed
ICT adoption has greatly improved efficiency of our procurement processes and has therefore enhance performance of AFA					
AFA has skilled employees that are able to use ICT Systems in all procurement processes					
ICT adoption has greatly helped AFA procurement particularly through coordination of business Processes					
Through the use of ICT AFA has realized greater cost/expenditure transparency					
ICT adoption in AFA has enabled provision of real-time information for quick decision making and					

enabling collaboration between trading partners					

Section D: staff competency

Kindly respond to the following statements by indicating the extent to which you agree or disagree using the Likert scale by ticking the box that defines your answer best.

Staff competency	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agreed**
AFA has qualified employees in the supply chain department.					
AFA supply chain department employees have high Level of experience and knowledge of procurement laws and regulations and this enhances efficiency					
There is employee rationalization in the supply chain performance.					
Recruitment of all staff in AFA is purely based on competency					

Section E: Green purchasing

Kindly respond to the following statements by indicating the extent to which you agree or disagree using the Likert scale by ticking the box that defines your answer best.

Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agreed**
AFA has adopted green procurement policies in all its procurement areas					
AFA favours products which provide information about their effect on the environment					
AFA provides design specification to suppliers that include environmental					

requirements for purchased items					
AFA partners with suppliers who are compliant with environmentally related legislation					
AFA has environmental management systems in place					

Section F: Buyer-supplier relationship

Kindly give answers to the following statements through the indication of the extent to which you agree or disagree using the Likert scale by ticking the box that defines your answer best.

Buyer-supplier relationship	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agreed**
Buyer-supplier relationship promotes rapid integration in the organization					
Buyer-supplier relationship improves product quality					
Buyer-supplier relationship aid organization adoption of cost-effective design choices					
Buyer-supplier partnership promote mutual planning and problem-solving efforts					
Buyer-supplier partnership promote effective information sharing					

Appendix III: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **641079**

Date of Issue: **23/October/2019**

RESEARCH LICENSE

This is to Certify that Mr.. Benson Naibei of Moi University, has been licensed to conduct research in Nairobi on the topic: Effect of Procurement Practices on Performance of Supply Chain in Public Sector: A case study of agriculture and Food Authority in Kenya for the period ending : 23/October/2020.

License No: **NACOSTI/P/19/2364**

641079

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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