

# Determinants of Procurement Performance in Public Entities in Kenya: A Case of Kenya School of Law

MARTIN EVANS KEMBERO<sup>1</sup>

DR. KEPHA OMBUI<sup>2</sup>

MASTER OF SCIENCE IN PROCUREMENT AND LOGISTICS, JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, KENYA<sup>1</sup>

SUPERVISOR, JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, KENYA<sup>2</sup>

DOI: 10.29322/IJSRP.8.5.2018.p7780

<http://dx.doi.org/10.29322/IJSRP.8.5.2018.p7780>

**ABSTRACT:** The purpose of the study was to establish the determinants of performance of procurement in Kenya's public entities. The objectives of the study were: to find out how inventory management influence performance of procurement in the public entities in Kenya; to investigate how supply chain forecasting influence performance procurement in the public entities in Kenya; to establish how Information Communication Technology (ICT) integration influence performance procurement in the public entities in Kenya and to examine how resources influence performance procurement in the public entities in Kenya. The study was conducted at Kenya School of Law which is public organization responsible for training Lawyers into advocated and the 86 respondents were used to provide necessary information concerning the research problem. The study adopted a descriptive research design. Questionnaires were the major instrument for collecting data. Both qualitative as well as quantitative data was collected and used in the analysis process in this study. The collected quantitative data was further analyzed for both descriptive and inferential statistics using SPSS. The findings of the study were presented using frequency tables as well as pie charts and even bar graphs. As shown by the R value of 0.890, the study found out that there is a strong and positive relationship existing between the independent variables and dependent variable. The determination coefficient ( $R^2$ ) which gives an explanation on the extent to which changes that can take place in the dependent variable can also be explained as a result of changes in the independent variables. In this case it was found to be 79.20% meaning that change in the four independent variables explains 79.20% of the procurement performance.

Key Words: Inventory management, supply chain forecasting, Information Communication Technology integration, resources, procurement performance

## 1. INTRODUCTION

Public procurement is increasingly becoming prominent across the globe as a key profession when it comes to public resources' proper management. Many countries are aware of the vulnerability of this area to corruption and mismanagement and thus they have come up with measures and policies that can integrate procurement into the government's strategic efforts. Many countries have decided to employ plans of procurement as their way of solving problems as an effort of adopting a long-run strategic view of the needs of procurement and management. Public procurement is in charge of a wide range of activities, which include the fiduciary obligation of delivering goods and services to the public (Uyarra, 2009). Additionally, the public procurement has been critical in helping the governments to achieve socio-economic objectives like the stimulation of the economic activities, shielding the local industry from international competition, advancing the competency of some sectors in the industry and helping in the removal of the national disparities (Bolton, 2006).

Procurement is the means of getting goods, services and labor through a process of purchase, renting, hire purchase, franchise, license tenancy or by signing of a contract that involves any kind of work, services, asset or even goods that include the livestock or any other combination (PPDA, 2005). It is a vital section of the management of an organization, which ensures that goods and services necessary for the running of the organization are readily provided at the right time and in right quantities and at a reasonable price for the best quality available (WHO, 2007).

Public procurement (PP) as a government function includes the making of decisions concerning the kind of services that will be made available to the local authorities and to communities served (Hughes, 2005). Additionally, the function helps in the implementation of the national policies and in achieving of the social objectives of the government (Thai, 2004). Both national and international instruments give focus towards the creation of an effective and efficient system of procurement. In light of this concern, some procurement procedures like the implementation of the secondary policies, the reviewing of mechanisms that are used to address

complaints, electronic procurement and rules that govern projects that are financed privately have been accorded an in-depth evaluation (De Castro, 2006).

The reformation of the public procurement in Kenya was jointly initiated in the year 1997 by the World Bank and the Kenyan Government. The government made a decision of reviewing the existing system of procurement with the aim of advancing its efficiency, accountability, economy and transparency. The review led to the formation of the 2005 Act, PPDA (Public Procurement Disposal Act) (PPDA, 2005). The PPDA 2005 creates the procedures that ensure an effective and efficient process of public procurement and in the disposal of the obsolete and unserviceable, assets, stores and equipment by the public institutions. Section 29 of the Act gives specifications of open tendering in every procurement process as stated in sections 51, 52, 53, 54 and 55. This is done in an effort to establish a transparent and accountable system of procurement. The use of different procedures in the process of procurement is permissible under part V of the act.

Further, section 34(1) of the procurement Act notes “that the entity that is procuring shall come up with specific requirements in regard to the goods, services or works to be procured that are clear, giving a correct as well as complete description of what is supposed to be procured and which provides room for open and fair competition to those who wish to be part of the proceedings of procurement.” From this section, it can be determined that the act is meant to enhance fairness and a fair competition in the procurement system (PPDA, 2005).

Section 52(2) of the Act gives a recommendation, which states that the tender papers should have all the necessary information to warrant a fair competition among the interested parties that are bidding for the tender. Section 54(1) of the Act supports transparency in the system of procuring by requiring the advertisement of the tenders as a way of inviting the attention of all interested parties and any person or institution that may wish to submit a tender bid. The flexibility in the valuing of the consulting services is demonstrated in Section 81(c) where the proposal requests are required to include the financial proposals. Further, Section 82(3) and Section 84(1) gives a clear support to the idea of price flexibility. Therefore, the PPDA 2005 is meant to guide the public procurement system and help establish transparency, fairness and accountability, which are essential towards ensuring the value of money is gained by the public institutions. Further, the Act specifies possible offences in case of a contravention of the provided procedures and policies for corruption purposes or create a favor to a certain individual (PPDA, 2005). The Act has been made as a guide to most procurement system in the country with most public institutions having a challenge in the process of procurement. Many public Universities have been necessitated by the Act to establish a workable and efficient procurement system that is in line with the Kenyan Procurement Act of 2005. This Act requires all the purchase made by the public institutions to undergo an elaborate procurement procedure, which needs a minimum of three quotations from three different suppliers (PPOA, 2005).

Cap 446 of the State Corporation Act is a parliament Act that creates room for the establishment of public Entities. In the Act, State Corporation is defined as a body that is established under the parliament Act. The president may or by order establish a state corporation and each of them shall have power necessary for performance of functions (State Corporation Act Cap 446). The government of Kenya forms corporations under the state management so as to work towards the realization of the country’s commercial as well as social goals. These corporations play the essential role in regard to correcting failure in the market, exploitation of both social and even political objectives, education provision, health, income redistribution and ensuring that there is development in marginalized areas (Njiru, 2011).

For many developing countries, public sector still remains to be a necessary and an ongoing policy objective. This is done in Kenya in a way so as to overhaul the administrative systems so as to serve better the needs of the government as well as citizens using improved delivery of services of the public services and in the long run improve lives, reduce poverty, and providing sustainable good governance (Kempe, 2012). The government of Kenya committed to transform public service from process oriented, unnecessary bureaucratic practices, empowering speedy delivery of services by risk management and reviewing procurement management systems (Public Sector Reform and Institutional Capacity Building, 2005).

State corporations of Kenya are divided into eight broad categories using their mandate and functions as the basis of categorization. They consist of Commercial and Manufacturing Corporations, Financial Corporations, Regulatory Corporations, Training and Research Corporations, Public Universities, Service Corporations, Tertiary Education and Training Corporations as well as Regional Development Authorities (SCAC, 2004).

The Kenya School of Law is the top most Legal Training institution in Kenya. It was founded in the year 1963 with 11 students being pioneers of the school that year. The school was located at Valley Road next to the University of Nairobi Dental School, on a 4-acre piece of land. It was using then the buildings meant to be for a maternity wing of the Nairobi Hospital. The institution was a part of the Attorney General’s Office up to 2001, after which it was accorded a semi-autonomous status to become a government agency. The government later purchased an ultramodern training facility at Karen to help make better the learning activities in the school. A commission of enquiry has been set up by both the pre and post-colonial governments to help address educational issues and to come up with proper policies to guide the sector. The policies that were formulated include the Denning Committee 1962, the Akiwimi

Committee 1995 to focus on the status and Management of the Kenya School of Law, Kwach Committee 1998, which was meant to look into the administration of justice in Kenya. The Akiwimi Report made recommendations that led to the establishment of the Council of Legal Education Act CAP 16A of the Kenya Laws.

The public institution in Kenya face a challenge posed by the procurement Act of Kenya, which requires that, all materials in public offices to be subjected to a procurement procedure that should have a minimum of three quotations for every item raised by different suppliers (PPOA, 2005). The procurement Act of 2005 is meant to optimize economy and efficiency in the tendering process as it also promotes competition and a fair and equal treatment of the competitors. These measures ensure transparency and accountability in the procurement process as well as promoting the local industry. Despite the goal of the Act being to make the procurement process efficient and ensure equality among competitors, it is a tedious process that takes much to complete. This delays the process and makes it unsuitable for emergency cases (RoK, 2012).

Well procurement is a vital process in ensuring an efficient performance of the organization. The establishment of the 2015 procurement Act as well as its implementation and even the subsequent guidelines has encountered challenges in the public organization in Kenya because of lack of goodwill in the implementation processes (Mongare, 2012). Mburu & Jeru (2014) note that most of the procurement activities are subject to neglect, lack of good will, improper coordination by the management, bureaucracy and a lack of open tendering. From the information found at the Kenya School of Law (KSL) concerning the tendering process, 75% to 85% of the procurement process does not meet the standards and procedures set by the public procurement and disposal act. Statistics shows that the crisis that is related to management of stores brings hindrance to effective management of the public tendering that ends up in misusing the government tax payee's money. This shows that inefficiency poor performance of staff in procurement, lack of good skills in advertising tenders, inefficiency, competition, integrity, lack of transparent, public confidence and conclusive investment environment for the staffs in procurement department has led to the mismanagement of the government taxpayers.

Local studies have been conducted on the same. Some of them include studies like Otieno (2004) that focused on procurement of public institutions and Akech (2005) that focused on governance of public procurement and the development partners in Kenya. Others include Ombaka (2009) did a research on the management of the procurement of medicine in the countries that are developing and Kiawa (2012) that carried out a study on the accountability of the procurement process in the public sector in accordance to the state Law Office. The aim of this study therefore, is to establish the existing factors that affect the efficiency of the procurement performance in the institution; Kenya School of Law.

The study's purpose was to establish the determinants of performance of procurement in the public entities in Kenya. Specific objectives that guided the study were: to find out how inventory management influence performance of procurement in the public entities in Kenya; to investigate how supply chain forecasting influence performance procurement in the public entities in Kenya; to establish how Information Communication Technology (ICT) integration influence performance procurement in the public entities in Kenya and to examine how resources influence performance procurement in the public entities in Kenya

## **2. LITERATURE REVIEW**

### **2.1 Empirical Literature**

Onkundi and Bichanaga (2016) sought to establish factors that influence management of inventory management in Kisii County but focusing on health hospitals of the public. The study's objectives were: to find out how performance of inventory management in the public health sector is influenced by stock replenishment; to establish how the public health sector's effective inventory management performance is influenced by sharing of information; to find out how the public health sector's inventory management performance is influenced by costs of inventor as well as establishing how the public health sector's inventory management performance is influenced by variability in demand. The outcome of the study was that the inventory under stocking and overstocking in Kisii County's public health sector was as a result of insufficient staff, inadequate requirements for forecasting, receiving scheduled time, deliveries scheduled time, issuing and storage facilities that were unorganized and demand variability. These affected effective management of the inventory.

This study therefore has sought to examine the influence of inventory management on the energy sector performance in Kenya with a special focus on Kenya Power Limited. The study also intended to establish the influence of process auditing on the performance of Kenya Power Limited. It was found out that inventory control influences Kenya Power performance especially the lack of process auditing. The recommendation of the study is that organization should enhance process auditing in the inventory control to enhance efficiency in service delivery. Another study by Onchoke and Wanyoike (2016) to establish the Influence of inventory control practices on procurement performance in Nakuru Central Sub County but the focus being on distributors of Agrochemicals. It was found out that auditing of the inventory and Computerized Inventory Control systems have a positive and significant influence on the performance of procurement.

Other findings were presented by Boyle *et al.* (2008) from the electronics industry. In this study original equipment manufacturers were not able to make predictions on demand of a period exceeding 4 weeks. Moon *et al.* (2000) also presented the forecasting of demand from Lucent and this demonstrated an improvement in accuracy of about 60% to 80-85% in forecasting. Datta (2008) also gave related observations that resulted in the markdowns of inventory. According to Zhao *et al.* (2002) as well as Bayraktar *et al.* (2008) and Wright & Yuan (2008), there is an improvement in the performance of supply chain if advanced tools of forecasting are used as evidenced by the past and recent research provided that some other factors are kept constant and optimized such as inventory collaboration and ordering policies. It has been discovered that in inventory forecast of macroeconomic nature, autoregressive models are effective (Albertson & Ayles, 2003). More emphases is also given by Zhao *et al.* (2002) and Bayraktar *et al.* (2008). In these studies it is emphasized that the primary role of supply chain forecasting is to show the actors the right direction but not being exact at that very moment. According to Chatfield & Yar (2008), selection of a correct method of forecasting is sometimes a very complex issue.

In Kenya, the effective procurement concept has only attracted the attention of the organizations in private sector. In parastatals of the government, no significant measures which have been taken so as to enhance the implementation procurement practices in an effective manner (Patrick 2008). Matunga, Nyanamba and Okibo (2013) carried out a study on the influence of e-procurement on the efficient of public hospitals procurement. It was evident that d that Kisii Level 5 hospital employs e-quotations, e-tendering and e-sourcing as the major e-procurement applications. The greatest challenges encountered while using e-market provider include inadequate funding, inability of the organization to carry out change management and lacking of good training of employees on the use of the system.

Many studies have done in Kenya by many researchers to determine factors that influence procurement in various organizations. For example Chilikona and Muturi (2015) determined to evaluate the factors that influence procurement function performance but in Kisumu County but focusing on technical institutions of the public. Questionnaires were used in collecting primary data and later using descriptive and inferential statistics in its analysis. It was concluded from the study that staff competency, ethics and information technology positively affected procurement performance in these technical institutions of training. Even though that is the case, this study will focus on procurement performance in an organization but will not examine technology itself.

Mahmood (2010) in Bangladesh, studied Public procurement and corruption. The study focussed on opportunities and challenges facing public procurement. The study states that it has been greatly recognized that it is one of the professions that is said to have played a very significant role in the success of managing of public resources. For this reason a good number of countries have been made aware of the importance of procurement being an area that is very vulnerable to corruption and mismanagement. Efforts have therefore been made so as to integrate the procurement function into strategic view of government efforts while planning. Governments have therefore started to use their respective annual procurement plans to solve problems that may arise. In public procurement process, accountability is the central pillar. There is danger of corruption and misuse of funds in case there is no accountability.

A study by Davis (2014) established that not always should allocations emphasizes be on the function of financial aspects in regard to procurement performance. More specifically, perceptions of the viability of influencing management of procurement are supposed to play a significant role in shaping the extent to which rules and regulations are being acted upon since socially responsible methods are sometimes perceived to be more expensive as compared to other methods. Many a times organizations face budget constraints as well as countervailing objectives. For this reason, perceptions about the cost-effectiveness as a result of better management are supposed to play a specific significant role. Public organizations are therefore to pursue the allocation of resources in sectors taken to be of urgency and of greater benefits.

According to Smee (2012), governments of many developing countries suffer from financial and technical capacity inadequacy so as to carry out their oversight and control functions effectively as well as tracking and reporting of the allocations made together with the disbursement of financial resources and their use. It is possible that political and bureaucratic leakage, together with fraud, corruption and abuse practices can take place at all stages of the process due to poor management of expenditure systems, organizational deficiencies ineffective supervision and auditing as well as ineffective fiscal controls regarding the flow of public funds (Peters, *et al.*, 2010).

## 2.2 Critique of Existing Literature

One main and standard critique regarding the institutional theory is that is very static despite the fact that the world of politics which it explains is very dynamic. It is possible that this critique may at times be exaggerated but the fact is that there must be an element of validity in it. Since institutional theories are variance theories, they better explain differences that exist among different types of institutions as compared to explaining the development that may exist in an individual institution (Peters, 2010).

The inherently static nature critique many a times is applicable when using empirical approach based on the fact that it is the epitome of Mohr's "variance" theory in regard to organizations. The question that can be asked is whether the existence of different types of



structures results to any difference in regard to different decisions being made by the institutions. Even though that is the case, on the other part of the coin the focus is on individual institutions and how they develop their internal and common appropriateness as given weight by March and Olsen (2011). The concern is therefore more on institutional development rather than on fundamental changes.

Quayle (2006) asserts that the said sub-functions should not be held in isolation from each another. For instance it might lead to an increase in efficiency because of the practice of specialization in allocating either expediting issues or strategic ones so as to bring a separation between persons. Even doing the operational work can also result to selection of more reliable suppliers. For the same reason of making better decisions, it is obvious that the purchasing of strategic matters as well as sales operations are being controlled one and same person. It facilitates smooth flow of the information in the entire organization.

Outsourcing business activities that are of different units and belonging to a given company are usually handled by one central function (Gadde *et al.*, 2007). SCOR has been proven with a good number of clients to have been shared both best as well as worst practices with. Given the higher adoption, your odds of being able to actually do some meaningful benchmarking once you've rolled out the process model are much better. SCOR has been criticized for its inability to support the entire scope of the value chain but quite honestly, to a single company who has been able to roll out a process model that spans from product design to service and still maintains a level of detail that's actually usable (Kanji *et al.*, 2010).

Formalization of the institution expresses the level to which the instructions, patterns of communication, procedures, etc are kept in the company and how they are being followed. According to Wood (2005), it is just the existence as well as prevalence of the written documentation. These two attributes are mostly chosen purposely for adjustment because of the reasons that they are easily applicable and even involving the two structures of an organization be it formal or informal. Governments should hence decentralize their functions. Organizations that offer professional services need to be formalized as they deal with complex procedures. This formalization has to be designed in a way so as to realize the desired outcome from the members and as a result professionals are able to share authority in decision making. It is therefore suitable for the setting of universities and hospitals (Wood, 2005).

### 2.3 Research Gaps

Many researches have been done both locally and internationally with an aim to determine the factors affecting outsourcing in public sector (Odhiabmo, 2013; Chiang, Hillmer & Suresh, 2012). Many of them have concentrated on strategic sourcing but it is only a few that deals with the influence on organizational performance. A study by Odhiambo (2013) focusing on strategic sources of sourcing and factors that influence practices of strategic sourcing of multinational corporations in the manufacturing industry in Kenya. It was found out that the strategic practices of sourcing that are more outstanding include internal integration, strategic purchasing as well as information sharing. Nyagari *et al.* (2014) have considered the relationship that exists between strategic sourcing and the triple bottom line in Kenya's commercial banks.

Chiang *et al.* (2012) did a study on the effect of strategic sourcing and flexibility on supply chain agility of firms. Findings were that the supplier evaluation, strategic supplier partnership, sourcing flexibility as well as sense of trust in members of supply chain are very key on matters of strategic sourcing. These studies show that research that has been done on key drivers that influence the implementation of procurement sources of outsourcing practices in Kenyan government parastatals. Unavailability of reliable as well as valid data remains to be one of the major obstacles as far as the understanding of the procurement performance determinants in Kenya's public entities is concerned. This study therefore strives to build on the locally available data though scarce.

A number of studies tend to identify performance of procurement that may impact an organization's performance even though they are not empirically tested (Kanji *et al.*, 2010; March & Olsen, 2011). Such studies also do not provide a complete as well as coherent cause of the problems associated with traditional procurement and even the potential benefits as well as the facilitators of performance in procurement in the public sector. This study therefore intends to fill this gap by investigating the procurement performance determinants in Kenya's public entities. The study will provide a far richer and deeper data set even though it builds on factors that have already been identified by other studies.

## 3. RESEARCH METHODOLOGY

A descriptive research design was used in this study to establish the determinants of procurement performance in the public entities in Kenya. Studies of this research design are designed in such a way so as to obtain necessary and precise information regarding the current state of the phenomena and where possible be able to draw valid conclusion based on the discovered facts. The design also attempts to give a deeper and clear description of various opinions, views attitudes and preferences of the researcher. In addition to this it aims to obtain information from a representative of the population and the researcher is able to present the outcome of the study and the entire population even though information of the representatives was used (Kothari & Garg, 2014). It is on this premise; the descriptive survey used it to provide the current study with appropriate procedure for examining determinants of procurement performance in the public entities in Kenya.

The target population in this study was 86 employees; the study targeted each division that was involved in the process of procurement at the Kenya School of Law. The study selected five categories that resulted in dividing the target population into five

categories, these categories are classified as Human resource & Administration, Finance & control, legal, procurement and Audit divisions. The target population is as illustrated in Table 3.1.

**Table 3.1: Target Population**

<b>Division</b>	<b>Population</b>	<b>Percentage</b>
Human resource & Administration,	28	37.74%
Finance & control	20	26.42%
Legal	8	7.55%
Procurement	16	15.09%
Audit	10	9.43%
<b>Total</b>	<b>86</b>	<b>100%</b>

**Source: Kenya School of Law (2018)**

In the study, the sampling frame was drawn from the list of the employees in the human and administration, finance and control, legal and audit departments which consists of 86 employees as per the payroll personnel data in the Human Resource department. The study adopted a census to collect primary data. It is recommended that a census survey is used when the population (106) is small that is less than 200 and manageable to collect information for the study (Yin, 2013).

Questionnaires were used to collect primary data from the respondents that were involved as research tools (Kothari, 2005). According to Young (2009), questionnaires are appropriate because they collect information that cannot be observed directly since they inquire about motivations, feelings, attitudes, as well as accomplishments and individual experiences. Questionnaires also have added advantage as they are less costly and not time consuming. Semi-structured questionnaires were used and this type of a questionnaire was administered using the method of drop and pick-later to the sample of a population. This study used primary data which was later compared with secondary data which was available. The respondents were assured that their information was to be treated with confidentiality but only used for study purposes and therefore questionnaires were formulated on the same declaration. The permission was asked to collect data from the target population by attaching an introductory letter on each questionnaire. Introductory letter was therefore sought from the university before proceeding to the field indicating that the researcher is just a student who needs that permission to collect data only for academic purposes. A permit was also sought from the National Council of Science and Technology. Approval from the organization was given and the data collection was given a go ahead. Pilot study was done which involved questionnaire pre testing on 8 respondents. This is supported by (Neumann, 2006) who asserts that a proportion of 10% of the population be used in pilot testing. According to Cooper & Schindler (2008) no statistical conditions are needed therefore there was convenience in selecting respondents in pilot study.

Validity is the extent to which the test item sample represents the content that it is designed to measure. Validity of the instruments was assured through use of simple language not contaminated with jargon that made it very easy to the respondents to understand. The supervisor and other experts were also engaged in giving advice on whether the questions to be asked will really contribute positively to what was supposed to be measured. Content validity was adopted by the researcher. In most cases a CVI of 0.78 is recommended for the research instruments (Lefort & Urzua, 2008) and the study was based on that threshold.

According to Yin (2013), Cronbach alpha refers to the basic formula used to determine reliability but based on internal consistency. By inclusion of many similar items on a measure, reliability is increased and this was done through testing of many individual samples using uniform procedures. Reliability of the instruments was tested through relying on internal consistency techniques using Cronbach's Alpha. The study was based at a threshold of 0.7 which falls within the range of between 0.6-0.7

The study collected both qualitative and quantitative data and analysis was done using both qualitative and quantitative methods with the aid of (SPSS) version The qualitative data was analyzed by the use of content analysis which helped the study in giving recommendation in line with the conclusions drawn for the whole population under study. Quantitative analysis gave rise to quantitative reports through measures of central tendency, percentages and tabulations. Statistical techniques like pie charts, bar charts, percentages as well as frequency counts were used to quantitative data. On the other hand qualitative data was analyzed using content analysis and presented descriptively. Correlation analysis as well as multiple regression analysis was also employed by the study to show the degree of relationship that exists between the variables. The model that was used is as follows:

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

Where;

Y= Implementation of procurement outsourcing practices in state corporations (dependent variable);  $\beta_0$ = constant (coefficient of intercept);

$X_1$ = Inventory Management

$X_2$ = Supply chain forecasting

$X_3$ = ICT integration

$X_4$ = Resources

$\varepsilon$  = Disturbance term;  $\beta_1 \dots \beta_4$ = regression coefficient of four variables.

#### 4. RESEARCH FINDINGS AND DISCUSSIONS

##### 4.1 Response Rate

In total the questionnaires that were given was 85 and were distributed to the targeted respondents of the identified respondents. Only 60 returned the questionnaires representing a response rate 72.73%. According to Mugenda (2012), a response rate of 50% is said to be adequate, that of 60% and above is said to be good but above 70% is said to be very good. The response rate of 72.73% found in this study is therefore quite adequate. This agreed with Orodho (2009) recommendation that a response rate of over 50% is sufficient.

**Table 4.1: Showing Response Rate of Respondents**

Response.	Frequency.	Percentage.
Actual Response-	64	72.73%
Non-Response-	24	27.7%
<b>Total</b>	<b>88</b>	<b>100%</b>

##### 4.2 Pilot Study

The computation of the Cronbach alpha was in terms of inter-correlations whose average was calculated among various items that measured the concepts. If the Cronbach alpha is closer to 1 then there is high reliability (Sekaran, 2008). A 0.7 value at the lowest is recommended. Cronbach's alpha is the one that is commonly used to measure internal consistency and it is computed since Reliability was done through testing of both stability and consistency. Consistency show how well the items that measure the concepts are held together as a set. Since Cronbach's alpha was employed to measure reliability, it was done on four main objectives of this study. The Cronbach's alpha results range between 0.723 and 0.873 thus acceptable.

**Table 4.2: Reliability Results**

Items	Alpha Reliability
1. Inventory Management	0.92
2. Supply chain Forecasting	0.87
3. ICT Integration	0.79
4. Resources	0.82

##### 4.3 Demographic Information

The study determined to find the demographic characteristics of the sampled population. The analysis of the findings in Table 4.3 shows the distribution of the respondents of the study as per gender, age categories, duration of service and education level. The Table 4.2 shows that most of the respondents (83.1%) were male while female accounted for 16.9%. this shows that both male and female were represented in the study though male gender category was most mainly dominant. In addition, more than half of the respondents (51.4%) were within the age category of 31 to 40 years. This shows that most employees in the commercial state corporations were fairly young hence energetic to perform the tasks ahead. The findings show that most respondents had served in the service for 5-10 years and above 15 years as accounted by 31.7% and 30.4% respectively. Those who had served for Less than 5 years 11-15 years accounted for 17.4% and 20.5% respectively. This shows that most respondents were well experience in the police service and therefore knowledgeable with the information sought in the study. The findings further show that most respondents' had bachelor's degree accounted by 63.6%. Respondents who had primary education were 4.4% while respondents who possessed Diploma certificates were 13.5%. This shows that most respondents joined the commercial state corporations after O' level hence had professional training before joining the organizations. These findings generally show that the study gathered responses from diverse categories of the respondents within the commercial state corporations.

**Table 4.3: Demographic Information**

Demographic Information	Categories	Frequency (n)	Percentage (%)
Gender of the Respondents	Male	50	83.1

	Female	10	16.9
Age Categories	21-30	17	26.8
	31-40	33	51.4
	41-50	10	15.3
	Above 50	4	6.5
Duration of service	Less than 3 years.	11	17.4
	3-6 years.	20	31.7
	7-10 years.	13	20.5
	Above 10 years.	20	30.4
Education level	Primary	3	4.4
	Secondary	9	13.5
	Diploma	11	17.9
	Bachelor's Degree	41	63.6
	Masters	2	0.5
<b>Overall Total (N)</b>		<b>60</b>	<b>100.0</b>

#### 4.4 Inventory Management

The study determined to assess the influence of inventory management on performance of the public entities in Kenya. The findings in this section are provided in regard to the statements that were posed concerning the responses that were given on a five-point likert scale, that is, Strongly Agree which was given 5; Agree which was given 4; Neutral which was given 3; Disagree which was given 2 and Strongly Disagree which was given 1. Table 4.5 gives the findings. The scores were given and those of 'strongly disagree' as well as those of 'disagree' represent a statement of not agreed upon which equivalent to an average score of between 0 and 2.5 is. The 'Neutral' score represents a statement that is moderately agreed and it is equivalent to an average score of between 2.6 to 3.4. Also the score of 'agree' as well as 'strongly agree' represent a statement of highly agreed which is equivalent to an average score of between 3.5 and 5.0. The findings are as given in Table 4.4.

As per the tabulation, most of the respondents were found to be neutral and the organization has ensured that there is tracking of inventory to enhance controlling, procuring of materials, coordination of materials accessibility, and utilization of materials (3.2345); They have correct forecasting methods thus reduction of stock outs in the organization (3.2190); The original equipment manufacturer is used to predict demand beyond a 4 week horizon (3.4908); The forecasting accuracy demonstrate improvements and related observations results in inventory markdowns (3.6723); The organization has advanced forecasting tools that can enable improvements in cost reduction (3.5689).

The forecasting tool accuracy tools synchronizes the demand and supply cycle than using the real time information (3.2248); The organization has adopted Just-in-Time system as the method used in inventory that is designed to ensure that there is minimization of inventory, and at the end of the day move it to the field to be used when exactly needed (3.5232). The findings of the study agree with those of Onkundi and Bichanaga (2016).

**Table 4.4: Influence of Inventory Management on Procurement Performance**

Inventory Management	Mean	Std. Dev
The organization has ensured that there is tracking of inventory to enhance the coordination of materials accessibility, utilization, controlling and procuring of materials.	3.23	0.33
We have the correct forecasting methods thus reduction of stock outs in the organization	3.21	0.67
The original equipment manufacturer is used to predict demand beyond a 4 week horizon	3.49	0.14
The forecasting accuracy demonstrate improvements and related observations results in inventory markdowns	3.67	0.22
The organization has advanced forecasting tools that can enable improvements in cost reduction	3.56	0.23



The forecasting tool accuracy tools synchronizes the demand and supply cycle than the using real time information	3.22	0.35
The organization has adopted Just-in-Time system as the method of inventory control that is designed to minimize inventory, and later move it to the field to be used when needed.	3.52	0.68

#### 4.5 Supply Chain Forecasting

The study determined to assess the influence of supply chain forecasting on procurement performance of the public entities in Kenya. Responses were given on a five-point likert scale, that is, Strongly Agree which was given 5; Agree which was given 4; Neutral which was given 3; Disagree which was given 2 and Strongly Disagree which was given 1. Table 4.5 gives the findings. The scores were given and those of ‘strongly disagree’ as well as those of ‘disagree’ represent a statement of not agreed upon which equivalent to an average score of between 0 and 2.5 is. The ‘Neutral’ score represents a statement that is moderately agreed and it is equivalent to an average score of between 2.6 to 3.4. Also the score of ‘agree’ as well as ‘strongly agree’ represent a statement of highly agreed which is equivalent to an average score of between 3.5 and 5.0. Findings are as given in Table 4.5.

As indicated by high levels of agreement in Table 4.5, a majority of respondents affirm that they have the correct forecasting methods thus reduction of stock outs in the organization ( mean of 3.2145 and Std of 1.2231 ) though the sentiments were very much contested as shown by a standard deviation above 1.0.; The original equipment manufacturer was used to predict demand beyond a 4 week horizon ( mean of 3.6723 and Std of 1.6753) though the sentiments were very much contested as shown by a standard deviation above 1.0.

The forecasting accuracy demonstrate improvements and related observations results in inventory markdowns (mean of 3.3332 and Std of 1.0009) though the sentiments were very much contested as shown by a standard deviation above 1.0; The organization has advanced forecasting tools that can enable improvements in cost reduction (mean of 3.9003 and Std of 1.2373) though the sentiments were very much contested as shown by a standard deviation above 1.0. The organization has advanced forecasting tools that can enable improvements in cost reduction (mean of 3.6782 and Std of 1.3801) though the sentiments were very much contested as shown by a standard deviation above 1.0.

The forecasting tool accuracy tools synchronizes the demand and supply cycle than the using real time information (mean of 3.6782 and Std of 1.3801) though the sentiments were very much contested as shown by a standard deviation above 1.0.; To have years of demand data helps the organization to better predict future demand thus timely purchases-stock out reduction (mean of 3.0091 and Std of 1.6732) though the sentiments were very much contested as shown by a standard deviation above 1.0. The study findings are in agree with those of Boyle et al. (2008) that in case original equipment manufacturers (OEM) are not able to predict demand of more than a 4 week horizon. Moon et al. (2000) also presented demand forecasting demonstrating improvement in forecasting accuracy and related observations resulted in inventory markdowns.).

**Table 4.5: Influence of Supply Chain Forecasting on Procurement Performance**

Supply Chain Forecasting	Mean	Std
We have the correct forecasting methods thus reduction of stock outs in the organization	3.21	1.22
The original equipment manufacturer is used to predict demand beyond a 4 week horizon	3.67	1.67
The forecasting accuracy demonstrate improvements and related observations results in inventory markdowns	3.33	1.0009
The organization has advanced forecasting tools that can enable improvements in cost reduction	3.90	1.23
The forecasting tool accuracy tools synchronizes the demand and supply than using real time information	3.67	1.38
To have years of demand data helps the organization to better predict future demand thus timely purchases-stock out reduction	3.01	1.67

#### 4.6 Information Communication and Technology Integration

This section presents findings to survey questions asked with a view to establish the influence of Information Communication Technology integration on procurement performance in public entities in Kenya. Responses were given on a five-point likert scale, that is, Strongly Agree which was given 5; Agree which was given 4; Neutral which was given 3; Disagree which was given 2 and Strongly Disagree which was given 1. Table 4.5 gives the findings. The scores were given and those of ‘strongly disagree’ as well as those of ‘disagree’ represent a statement of not agreed upon which equivalent to an average score of between 0 and 2.5 is. The ‘Neutral’ score represents a statement that is moderately agreed and it is equivalent to an average score of between 2.6 to 3.4. Also the score of ‘agree’ as well as ‘strongly agree’ represent a statement of highly agreed which is equivalent to an average score of between 3.5 and 5.0. Findings are as given in Table 4.6

As indicated by high levels of agreement in Table 4.6, a majority of respondents affirm that the intranet and internet are highly reliable (mean of 3.3345 and Std of 1.7654 ) though the sentiments were very much contested as shown by a standard deviation above 1.0.; The systems can accommodate and process massive data at once ( mean of 3.4561 and Std of 1.5432) though the sentiments were very much contested as shown by a standard deviation above 1.0; The staff are well trained in the existing IT services provided (mean of 3.8923 and Std of 1.3245) though the sentiments were very much contested as shown by a standard deviation above 1.0; Additional investments should be made on existing infrastructure (mean of 3.0921 and Std of 1.2135) though the sentiments were very much contested as shown by a standard deviation above 1.0.

The existing IT infrastructure can lead to greater productivity (mean of 3.6542 and Std of 1.6324) though the sentiments were very much contested as shown by a standard deviation above 1.0. This is in tandem with Bedey (2012) who asserts that overall, enterprises employing organized procedures as well as resources and even ICT systems so as to consistently employ and even align all strategies of procurement in a consistent as well as integrated method that has outperformed peers in matters of cost savings, compliance, expenditure under management, supplier integration, and even greater contribution to value of the enterprise. Simms (2008) adds that most of the entities of the public lack clear accountability in regard to how the provided resources impact their performance thus going against the public procurement fundamental principles due to lack of adoption of information communication and technology.

**Table 4.6: Influence of ICT Integration on Procurement Performance**

ICT Integration	Mean	Std
The intranet and internet are highly reliable	3.33	1.76
The systems can accommodate and process massive data at once	3.45	1.54
The staff are well trained in the existing IT services provided	3.89	1.32
Additional investments should be made on existing ICT infrastructure	3.09	1.21
The existing IT infrastructure can lead to greater reduction of costs	3.65	1.63

#### 4.7 Resources

This sub section of the chapter gives the findings to questions that were asked with a view to determine the influence of resources on procurement performance of the public entities in Kenya. The study sought to establish the extent to which respondents agreed with the statements relating to resources in procurement on performance of the organization. A scale of 1-5 was used on a five-point likert scale, that is, Strongly Agree which was given 5; Agree which was given 4; Neutral which was given 3; Disagree which was given 2 and Strongly Disagree which was given 1. Table 4.5 gives the findings. The scores were given and those of 'strongly disagree' as well as those of 'disagree' represent a statement of not agreed upon which equivalent to an average score of between 0 and 2.5 is. The 'Neutral' score represents a statement that is moderately agreed and it is equivalent to an average score of between 2.6 to 3.4. Also the score of 'agree' as well as 'strongly agree' represent a statement of highly agreed which is equivalent to an average score of between 3.5 and 5.0. The results were given in mean and standard deviation. The average was generated using SPSS version 22.

Further, as presented in Table 4.7, a majority of respondents highly agrees that human resources availability improves the performance level (4.093); and that information technology improve the performance (3.952). A majority however only moderately agrees that procurement plans are followed (3.359) while a majority further disagrees with the view that budget allocation is enough to carry out procurement for the year (2.319). From the foregoing, it can be deduced that human and technological resources are among the key resources influencing procurement performance in the public sector. The budget allocation is enough to carry out procurement for the year (3.995). The organization uses IT in our Procurement process (4.107). This is of the implication that considering these resources are not allocated in sufficient levels; efforts to address the same could prove beneficial in assuring procurement performance thereof.

Respondents were further asked to briefly provide their input on how resources allocation can be improved in the service. To this end, a range of measures were suggested common among which including the need to identify funding resources as well as technical ones so as to support the training of the staff training on how this type of contract is used; reviewing regulations of national procurement so

as to ensure that any policy barriers that limit the use of this contract are not in existence; also strengthening the logistics management information systems, streamlining systems of distribution, identifying resources of financial to be used in procurement as well as supply chain operations, and at the same time necessitate forecasting and even procurement planning.

This is in tandem with Bedey (2012) who asserts that overall, enterprises employing organized procedures as well as resources and even ICT systems so as to consistently employ and even align all strategies of procurement in a consistent as well as integrated method that has outperformed peers in matters of cost savings, compliance, expenditure under management, supplier integration, and even greater contribution to value of the enterprise. Simms (2008) adds that most of the entities of the public lack clear accountability in regard to how the provided resources impact their performance thus going against the public procurement

**Table 4.7: Influence of Resources on Procurement Performance**

Statement	Mean	Std.
Is the human resource in the procurement department adequate?	4.103	0.33
Are the finances allocated to NPS sufficient for the organization's annual procurement requirement?	3.954	0.37
Technological resource is sufficient to influence procurement performance	4.016	0.44
Do the funds allocated by the government on areas of spend influence procurement performance?	3.997	0.65
Do budgetary allocations influence procurement performance	4.108	0.33
Is the human resource in the procurement department adequate?	3.959	0.37
Are the finances allocated to NPS sufficient for the organization's annual procurement requirement?	2.01	0.45
Our organization uses IT in our Procurement process	3.00	0.66
There is enough human resource in our procurement Department	4.10	0.32
We follow annual procurement plans in our organization	3.95	0.36
Our budget allocation is enough to carry out procurement for the year	4.0	0.65
Our organization uses IT in our Procurement process	4.10	0.32

#### 4.8 Procurement Performance of Public Entities

The study sought to examine the determinants of procurement performance of public entities, attributed to the influence of inventory management, supply chain forecasting, ICT integration and resources. The study sought to determine procurement performance in the public sector with reference to NPS, attributed to the influence of resources, inventory management, supply chain forecasting and ICT integration. The study was particularly interested in three key indicators, namely Quality of goods purchased, Cost reduction and Timely Purchases-stock out reduction, with all the three studied over a 5 year period, running from 2013 to 2017. Table 4.8 below presents the findings.

Findings in Table 4.8 above reveal improved procurement performance across the 5 year period running from the year 2013 to 2017. Quality of goods purchased recorded positive growth with a majority affirming to less than 10% in 2011 (42.3%) and 2012 (37.7%), to 10% in 2013 (36.1%) then more than 10% in 2014 (41.1%) and 2015 (37.5%). A similar trend was recorded in Cost reduction, growing from less than 10% (44.1%) in 2011, to more than 10% in 2013 (36.4%), 2014 (40.4%) and 2015 (37.3%).

Timely Purchases-stock out reduction further recorded positive growth with a majority affirming to less than 10% in 2011 (37.9%) and 2012 (35.9%), to 10% in 2013 (35.9%) and 2014 (35.3%) then by more than 10% in 2015 (36.2%). It can be deduced from the findings that key procurement performance indicators have considerably improved as influenced by among other procurement management attributes, the influence of resources, government laws and regulations, procurement planning and contract management.

Quality of goods purchased and Timely Purchases-stock out reduction have particularly improved by at least 10 percent across most of the institutions pointing to the significance of supplier relations management in the supply chain process.

**Table 4.8: Procurement Performance**

<b>Quality of goods purchased</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Increased by less than 10%	42.3	37.7	31.6	30.7	29.5
Increased by 10%	31.8	32.9	36.1	28.2	33
Increased by more than 10%	25.9	29.4	32.3	41.1	37.5
<b>Cost reduction</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Increased by less than 10%	44.1	35.2	33.4	25.7	27.1
Increased by 10%	31.7	32.6	30.2	33.9	35.6
Increased by more than 10%	23.5	32.2	36.4	40.4	37.3
<b>Timely Purchases-stock out reduction</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Increased by less than 10%	37.9	35.9	31.2	25.7	33.1
Increased by 10%	36.2	31.3	35.9	35.3	30.7
Increased by more than 10%	25.9	32.8	32.9	39	36.2

#### 4.8 Multiple Regression Analysis

SPSS version 22 was used to compute the measurements so as to find the relationship that exist between independent variables and the dependent variable, that is procurement performance in Public Entities in Kenya. Multiple regression analysis explains variation in a dependent variable as the result of change in independent variables. This is assessed with the help of the coefficient of determination (R square) and if the coefficient is large, then the effect of the independent variable on the dependent variable is also larger. The R Square ranges between 0.000 to 1.000, where 1.000 shows a perfect fit indicating that each point lies on the line (Carver, 2009).

The coefficients allows the researcher to provide a comparison of the relative significance of each of the independent variable. Both unstandardized and standardized coefficients have been given for this study but only the standardized ones will be used for study.

It is notable that there is a strong positive relationship between independent and dependent variable since value of R is 0.890. The coefficient of determination ( $R^2$ ) is 79.2 meaning that changes in the independent variables explain 79.20% of the procurement performance. This implies that other factors that were not considered in the study only contribute to 20.80% of the procurement performance. These variables therefore are very significant thus necessary for them to be considered in any effort to boost procurement performance in the organization. The study therefore identifies the set of the independent variables influence procurement performance of public entities.

**Table 4.9: Model Summary.**

Model.	R.	$R^2$	Adjusted $R^2$	Std. Error of the Estimate.
1	.890	.792	.788	.000

#### 4.8.1. ANOVA Results

F-test is carried out so as to test the effect on dependent variable by the independent variables simultaneously. It tests whether all the independent variables held jointly affect the dependent variable. Based on the study results of the ANOVA Test or F-test in Table 4.10 obtained F-count (calculated) was 10.765 greater the F-critical (table) (8.123) with significance of 0.000. Since the significance level of  $0.000 < 0.05$  we therefore conclude that the set of independent variables affect the procurement performance of the organization and this shows that the overall model was significant.

**Table 4.10: ANOVA Results**

Model.	Sum of Squares.	Df.	Mean Square.	F.	Sig.
Regression.	10.890	4	2.7225	10.765	.000 <sup>a</sup>
Residual.	13.908	55	.25229		
Total	24.798	59			

NB: F-Critical Value = 8.123

Table 4.11 gives the results of the regression. From the study findings on the regression equation established, taking all factors into account (independent variables) constant giving it a value of sero, procurement performance will be 9.859. Also with all other other independent variables held at zero, a unit increase in inventory management will lead to a 0.763 increase in procurement performance; a unit increase in supply chain forecasting will lead to a 0.690 increase in procurement performance, a unit increase in ICT integration will lead to 0.632 increase in procurement performance and a unit increase in resources will lead to 0.598 increase in procurement performance. This infers that inventory management contributed most to procurement performance in the public entities. Based at 5% level of significance, inventory management had a .000 level of significance; supply chain forecasting show a .003 level of significance, ICT integration show a .009 level of significance and resources show a .012 level of significance hence the most significant factor was inventory management.

**Table 4.11: Coefficient Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	$\beta$	Std. Error			
(Constant)	9.859	0.002		5.32	0.00
X <sub>1</sub> _Inventory Management	0.76	0.18	0.47	4.33	0.003
X <sub>2</sub> _Supply chain Forecasting	0.69	0.16	0.35	4.22	0.01
X <sub>3</sub> _ICT Integration	0.63	0.16	0.26	4.01	0.01
X <sub>4</sub> _Resources	0.60	0.18	0.23	3.25	0.01

The general form of the equation was to predict procurement performance from inventory management, supply chain forecasting, ICT integration and resources is:  $(Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon)$  becomes:  $Y = 9.859 + 0.763X_1 + 0.690X_2 + 0.632X_3 + 0.598X_4$ . This indicates that procurement performance = 9.859 + 0.763\* Inventory Management + 0.690\*Supply Chain Forecasting + 0.632\*ICT Integration + 0.598\*Resources+ 9.859.

## 5. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary of Findings

From the descriptive statistics the study established that the organization has ensured that there is tracking of inventory to enhance coordination of materials accessibility, controlling, utilization and procuring of materials. They have correct forecasting methods thus reduction of stock outs in the organization. To a moderate extent the original equipment manufacturer is used to predict demand beyond a 4 week horizon. The forecasting accuracy demonstrates improvements and related observations results in inventory markdowns. The organization has advanced forecasting tools that can enable improvements in cost reduction. The forecasting tool accuracy tool synchronizes the demand and supply cycle than using real time information. The organization has adopted Just-in-Time system as the inventory control method designed to minimize inventory, and move it to the field for use exactly when needed.

The study established to a moderate extent that majority of respondents affirm that they had the correct forecasting methods thus reduction of stock outs in the organization. The original equipment manufacturer was used to predict demand beyond a 4 week horizon. The forecasting accuracy demonstrates improvements and related observations results in inventory. The organization has advanced forecasting tools that can enable improvements in cost reduction. The organization has advanced forecasting tools that can



enable improvements in cost reduction. The forecasting tool accuracy tools synchronize the supply and demand cycle than the use of real time information. Having years of demand data helps the organization to better predict future demand thus timely purchases-stock out reduction.

The study established that ICT Integration influence procurement performance in the public entities in Kenya. The systems can accommodate and process massive data at once and the staff are well trained in the existing IT services provided. The additional investments should be made on existing infrastructure and can lead to greater reduction of costs. Employing organized procedures, resources and ICT systems to consistently employ and align all procurement strategies in a consistent and integrated method outperformed peers in cost savings, expenditure under management, compliance, supplier integration, and greater contribution to enterprise value. The public entities lack clear accountability on how the resources provide impact on their performance therefore going against the fundamental principles of public procurement due to lack of adoption of information communication and technology.

The study established that resources influence procurement performance in the public entities in Kenya. The majority of respondents highly agree that human resources availability improves the performance level and that information technology improve the performance to a moderate extent the procurement plans are followed and budget allocation is enough to carry out procurement for the year. The budget allocation is enough to carry out procurement for the year and rarely the organization uses IT in our Procurement process.

## 5.2 Conclusion

Based on the study findings, the study concludes that procurement performance in the public entities in Kenya is affected by the independent variables. The inventory management is the first important factor which influences procurement performance in the public entities in Kenya. The regression coefficients of the study show that inventory control has a significant influence procurement performance in the public entities in Kenya. This implies that increasing levels of inventory control would increase the procurement performance in the public entities in Kenya.

The study concludes that supply chain forecasting is the second most important factor which influences procurement performance in the public entities in Kenya. The regression coefficients of the study show that supply chain forecasting has a significant influence procurement performance in the public entities in Kenya. This implies that increasing levels of supply chain forecasting would increase the procurement performance in the public entities.

The study concludes that ICT integration is the third most important factor which influences procurement performance in the public entities in Kenya. The regression coefficients of the study show that ICT integration has a significant influence procurement performance in the public entities in Kenya. This implies that increasing levels of ICT integration would increase the procurement performance in the public entities in Kenya.

Finally, the study concludes that resources are the fourth most important factor which influences procurement performance in the public entities in Kenya. The regression coefficients of the study show that a resource has a significant influence procurement performance in the public entities in Kenya. This implies that increasing levels of resources would increase the procurement performance in the public entities in Kenya.

## 5.3 Recommendations

Better management of inventories would release capital for use elsewhere productively. Hence Inventory control implies the coordination of materials accessibility, controlling, utilization and procuring of material. The inventory control includes cost minimization, profit maximization, avoidance of running out of stock and to prevent surplus stock that are unnecessary. The study recommends for most efficient ways of inventory control is the use of Just-in-Time system

The study recommends for correct forecasting methods thus reduction of stock outs in the organization. The forecasting accuracy can lead to improvement and related observations results in inventory markdowns. The organization should have advanced forecasting tools to synchronize the supply and demand cycle than the use of real time information and minimize inventory, and move it to the field for use exactly when needed.

The study established that ICT Integration influence procurement performance in the public entities in Kenya. The systems can accommodate and process massive data at once and the staff are well trained in the existing IT services provided. The additional investments should be made on existing infrastructure and can lead to greater reduction of costs. Employing organized procedures as well as resources and even ICT systems to consistently use and align all procurement strategies in a consistent and integrated method outperformed peers in cost savings, expenditure under management, compliance, supplier integration, and greater contribution to enterprise value. The public entities lack clear accountability on how the resources provide impact on their performance therefore going against the fundamental principles of public procurement due to lack of adoption of information communication and technology.

In determining how effective the whole process of procurement will be, resource allocation is a significant aspect to be considered. This therefore calls for public enterprises to try and ensure balance in allocating resources and even allocating more funds to the department of procurement. This is because procurement acts as the base on which all other departments depend on and its success is felt in the whole organization.

It is advisable that as the allocation of procurement resource plan is being prepared, caution need to be taken so that the planning is done in a manner while taking care of the pursued strategic fit in the public entities.

#### 5.4 Areas for Further Research

This study is significant for further study in this field of procurement performance in Africa and particularly in Kenya. The findings have demonstrated influence of the inventory management, supply chain forecasting, ICT Integration and resources on procurement performance in the public entities in Kenya. The current study therefore need to be expanded further in future so as to determine other factors that may influence procurement performance in the public enterprises in Kenya since the study established there could be the remaining 20.80% is explained by the variables or other aspects outside the model. Further, the available literature shows that as a future avenue of research, it is important to undertake same type of research in other private organizations and public sector in general in Kenya so as to find out whether the factors that have been explored can be generalized.

#### REFERENCES

- Agus, A., & Shukri Hajinoor, M. (2012). Lean production supply chain management as driver towards enhancing product quality and business performance: Case study of manufacturing companies in Malaysia. *International Journal of Quality & Reliability Management*, 29(1), 92-121.
- Albertson, K., & Aylen, J. (2003). Forecasting the behavior of manufacturing inventory. *International Journal of Forecasting*, 19(2), 299-311.
- Anderson, N. H. (2006). "Integration Theory and Attitude Change - Psychological Review" *New York*, 78, 171-206.
- Amid Amin et al. (2007). Analysis and review the impact of strategic planning of information systems to improve performance in supply chain management, *Management perspective*, 7 (25):5-32
- Aosa, E. (1992). An empirical investigation of aspects of strategy formulation and implementation within large, private manufacturing companies in Kenya.
- Awuor, L. N. (2013). Factors affecting effective stores management in the Public Sector. *International Journal of Social Sciences and Entrepreneurship*, 1(3), 1.
- Barratt M. H. (2004). Unveiling Enablers and Inhibitors of Collaborative Planning: *International Journal of Logistics Management* (15)1,73-91.
- Bayraktar, E., Koh, S. L., Gunasekaran, A., Sari, K., & Tatoglu, E. (2008). The role of forecasting on bullwhip effect for E-SCM applications. *International Journal of Production Economics*, 113(1), 193-204.
- BidcoAfrica. (2016). Profile of the Company. Retrieved from <http://www.bidcoafrika.com/>
- Boyle, E., Humphreys, P., & McIvor, R. (2008). Reducing supply chain environmental uncertainty through e-intermediation: An organization theory perspective. *International Journal of Production Economics*, 114(1), 347-362.
- Bravo, Jose, Juan and Vidal, Julio, Carlos. (2013). Freight Transportation function in Supply Chain Optimization Models: A critical Review of recent trends. *Journal of Expert Systems with Applications*, Vol. 40, Issue 17.
- Bogdan, R. C., & Biklen, S. K. (2007). *Qualitative Research for Education. An Introduction to Theories and Methods* (4th ed.). New York: Pearson Education Group.
- Borg, W.R. and Gall, M.D. (2008). *Educational Research: An Introduction*. New York: Longman
- Cao, S., Sun, G., Zhang, Z., Chen, L., Feng, Q., Fu, B., & Wei, X. (2011). Greening China naturally. *Ambio*, 40(7), 828-831.
- Cachon, G. P., & Netessine, S. (2004). Game theory in supply chain analysis. In *Handbook of Quantitative Supply Chain Analysis* (pp. 13-65). Springer US.
- Cao, M., & Zhang, Q. (2011). Supply chain collaboration: Impact on collaborative advantage and firm performance. *Journal of Operations Management*, 29(3), 163-180.
- Chandra, C., & Kumar, S. (2000). Supply chain management in theory and practice: a passing fad or a fundamental change?. *Industrial Management & Data Systems*, 100(3), 100-114.
- Chatfield, C., & Yar, M. (1988). Holt-Winters forecasting: some practical issues. *The Statistician*, 129-140.
- Che, Z. H. (2012). A particle swarm optimization algorithm for solving unbalanced supply chain planning problems. *Applied Soft Computing*, 12(4), 1279-1287.
- Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioral research*, 209-240.
- Datta, S. (2008). Forecasting and Risk Simulation: Proposed Analytical Tool.
- Dencker, J. C., Gruber, M., & Shah, S. K. (2009). Pre-entry knowledge, learning, and the survival of new firms. *Organization Science*, 20(3), 516-537.
- DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization science*, 5(2), 121-147.

- Donald, K. K., Delno, L., & Tromp, A. (2006). Project Writing: An Introduction. Don Bosco Press.
- Droodchy Mahmoud - Nick Mehr Navid. (2008). The study and application of information technology in supply chain management, Fourth National Conference on e-commerce.
- Economic Survey Report, 2015.2015 economic survey Report highlights. Retrieved from [gory&download=719: economic-survey-2015&id=16: economic-survey-highlights&Itemid=563](#)
- Essig, M. & Dorobek, S. (2006). 'Adapting the Balanced Scorecard to Public Supply Chain Management'. Working Paper for the 15th Annual IPSERA Conference, SanDiego, CA.
- Fawcett, S. E., Wallin, C., Allred, C., Fawcett, A. M., & Magnan, G. M. (2011). Information technology as an enabler of supply chain collaboration: a dynamic-capabilities perspective. *Journal of Supply Chain Management*, 4 7(1), 38-59.
- Gheidar-Kheljani, J., Ghodsypour, S., H. and Fatemi, Ghomi, S., M., T. (2010). Supply chain Optimization policy for a supplier selection problem: a mathematical programming approach. *Iranian Journal of Operations Research*, Vol. 2, No.1, pp. 17-31.
- Government of Kenya (2005). The Public Procurement and Disposal Act. Nairobi; Government Printers
- Herbert S. (2013). "Overchanging: Throwing away money and clogging Landfills in the Name of Safe Product Delivery". Westpak.
- Sitwala. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks? *J Soc Sci*, 38(2): 185-195.
- Jin, Y., Vonderembse, M., Ragu-Nathan, T. S., & Smith, J. T. (2014). Exploring relationships among IT-enabled sharing capability, supply chain flexibility, and competitive performance. *International Journal of Production Economics*, 153, 24-34.
- Johnson R., B., Onwuegbuzie, A., J., Turner, L., A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2): 112-133.
- Kathurima, R. I., Ombul, K., & Iravo, M. A. (2016). Effects of materials handling systems on performance of cement manufacturing firms in Machakos County. *International Academic Journal of Procurement and Supply Chain Management*, 2(1), 21-36.
- Kasomi, F.M. (2009). Effect of Supply Chain management on Performance in the public sector. MSC Project. JKUAT.
- Kenya Bureau of Statistics. (2015). Retrieved from <http://www.knbs.or.ke/>
- Kimani, M. W. (2013). Lean Supply Chain Management in Manufacturing Firms in Kenya (Doctoral dissertation, University of Nairobi).
- Kingoo, Elizabeth, M. (2013). Supply chain Governance and organizational Performance among Parastatals in Kenya. Masters Project.
- Kinsey M. (2009) "Building a flexible supply chain for uncertain times". Chicago.
- Kopczak, L.R. and Johnston, M.E. (2010), 'The Supply-chain Management Effect', *MIT Sloan Management Review*, 44(3): 27
- Koszevska, M. (2004). Outsourcing as a modern management strategy prospects for its development in the protective clothing market. *AUTEX Research Journal*, 4(4), 228-231.
- Kothari, C. R. (2008). *Research Methodology: Methods and Techniques*. New Delhi: New Age International Publishers.
- Kumar D. (2012). Supply Chain and Procurement Network. *Operations Research* 1(2): 13-28. South Africa.
- Lejeune, M.A., Yakova, N. (2005), "On characterizing the 4 Cs in supply chain management", *Journal of Operations Management*, Vol. 23 No.1, pp.81-100.
- Lewin, J. E., & Johnston, W. J. (1996). The effects of organizational restructuring on industrial Buying behavior: 1990 and beyond. *Journal of business & Industrial marketing*, 11(6), 93-111.
- Macher, J. & Richman, B. 2008. Transaction cost economics: An assessment of empirical Research in the social sciences. *Business and Politics*. 10 (1): article 1.
- Madhok, A. (2002). Reassessing the fundamentals and beyond: Ronald Coase, the transaction cost and resource-based theories of the firm and the institutional structure of production. *Strategic Management Journal*, 23(6): 535-550.
- Mahoney JT. (2001). A resource-based theory of sustainable rents. *Journal of Management* 27 (6): 651-660.
- Martins, Rodrigo, Serra, Fernando, Ribeiro, Leite, André da, Silva, Ferreira, Manuel, Portugal and Li, Dan. (2010). Transactions Cost Theory influence in strategy research: A review through a bibliometric study in leading journals. Working paper no. 61/2010.
- McAdam, R., Hazlett, S.A. & Casey, C. (2005). Performance management in the UK public Sector: Addressing multiple stakeholder complexity, *The International Journal of Public Sector Management*, (18).3, 256-273.
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G.(2011). "Defining Supply Chain Management." *Journal of Business Logistics*, Vol 22, No 2, pp.1-25.
- Migiro, Ambe, I. M. (2008). Evaluation of the implementation of public sector supply Chain Management and challenges: A case study of the central district municipality, West province, South Africa; *African Journal of Business Management*, (December 2008), Vol.2 (12), pp. 230-242.
- Min, S., Roath, A. S., Daugherty, P. J., Genchev, S. E., Chen, H., Arndt, A. D., & Glenn Richey, R. (2005). Supply chain collaboration: The international journal of logistics management, 16(2), 237-256.
- Moon, M. A., Mentzer, J. T., & Thomas, D. E. (2000). Customer demand planning at Lucent

- Technologies: a case study in continuous improvement through sales forecast auditing. *Industrial Marketing Management*, 29(1), 19-26.
- Mugenda, O.M and Mugenda, A.G. (2008). *Research Methods. Quantitative and Qualitative Approaches*. Nairobi: ACTS Press.
- Monappa, A & Saiyadain, M. (2008). *Personnel Management 2nd ed.* Tata McGraw-Hill, New Delhi.
- Mwale, H. (2014). *Supply chain management practices and organizational performance of large Manufacturing firms in Nairobi, Kenya* (Doctoral dissertation, University of Nairobi).
- Naliaka, V. W., & Namusonge, G. S. (2015). Role of Inventory Management on Competitive Advantage among Manufacturing Firms in Kenya: A Case Study of Unga Group Limited. *International Journal of Academic Research in Business and Social Sciences*, 5(5), 87-104.
- Neuman, W. L. (2006). *Social Research Methods: Qualitative and Quantitative Approaches*. Pearson Education Inc. Boston. USA.
- Nooy, Wouter d., A. Mrvar and Vladimir Batagelj. (2005). *Exploratory Social Network Analysis With Pajek*. Cambridge: Cambridge University Press. ISBN 0-521-84173-9
- Norman, K. L. (2007). "A solution for weights and scale values in functional Measurement. *Psychological Review*", 83, 80–84.
- O'Neill, J. J., Congdon, C., Ramanujam, R., Borac, S., & Henderson, R. (2010). *A Performance Optimization Study for the DreamWorks Animation Fluid Solver*.
- Osborne, M. J., & Rubinstein, A. (1990). *Bargaining and markets* (Economic theory, Econometrics, and mathematical economics).
- Otieno (2004). *Procurement activities in public institutions*. Unpublished thesis. Jomo Kenyatta University of Science and Technology, Kenya
- PWC and Eco Vadis (2010). *Value of sustainable public procurement practices. PWC and Eco Vadis in Collaboration with the INSEAD Social Innovation Centre*.
- Richard .R. G, Tokman, M, Dalela, and V (2009). *Examining collaborative supply chain service Technologies: a study of intensity, relationships and resources*.
- Salhi, S. and G. Nagy (2009). "Local improvement in planar facility location using vehicle Routing." *Annals of Operations Research* 167(1): 287-296.
- Shen, Z.-J. M. (2006). "A profit-maximizing supply chain network design model with demand choice flexibility." *Operations Research Letters* 34(6): 673-682.
- Soft Kenya (2016). *Bidco Oil Refineries Limited*. Retrieved from <http://softkenya.com/industry/bidco-oil-refineries-limited/>
- Svensson, G. (2003). Holistic and cross-disciplinary deficiencies in the theory generation of supply chain management. *Supply Chain Management: An International Journal*, 8(4), 303-316.
- Szucs, Daniel and Hassen, Kadir. (2012). *Supply Chain Optimization in the Oil Industry: A Case Study of MOL Hungarian Oil and Gas PLC. Master's Thesis in International Logistics and Supply Chain Management*.
- Taticchi, Paolo, Tonelli, Flavio and Cagnazzo, Luca. (2010). *Performance measurement and management: a literature review and a research agenda*, *Measuring Business excellence*, Vol. 14 NO. 1, pp. 4-18.
- Teddlie, C., & Yu, F. (2007). Mixed methods sampling a typology with examples. *Journal of Mixed methods research*, 1(1), 77-100.
- Theriou, Nikolaos, G., Aggelidis, Vassilis, Theriou, Georgios N. (2009). *A Theoretical Framework Contrasting the Resource-Based Perspective and the Knowledge-Based View*. *European Research Studies*, Volume XII, Issue (3).
- Vitasek, K. L., Manrodt, K. B., & Abbott, J. (2005). What makes a lean supply chain? *Supply Chain management review*, v. 9, no. 7 (Oct. 2005), p. 39-45: ill.
- Wainaina, G. (2014). *Reverse logistics practices and profitability of large scale manufacturing Firms in Nairobi, Kenya* (Doctoral dissertation, University of Nairobi).
- Wanjihia, D. K. (2011). *Innovation management in Kenya's manufacturing sector* (Doctoral Dissertation, University of Nairobi, Kenya).
- Weng, M. (2007). *A Multimedia Social-Networking Community for Mobile Devices Interactive Telecommunications Program*, Tisch School of the Arts/ New York University.
- Wouldiamson O. (2005). *Markets and hierarchies: Analysis and Antitrust Implications*. New York
- Wright, D., & Yuan, X. (2008). Mitigating the bullwhip effect by ordering policies and Forecasting methods. *International Journal of Production Economics*, 113(2), 587-597.
- Xu, N. and Nozick, L. (2009), Modeling supplier selection and the use of option contracts for Global supply chain design. *Computers & Operations Research* 36, 2786 – 2800
- Yung, K.L., Tang, J., Ip, A.W.H. and Wang, D. (2006), Heuristics for Joint Decisions in Production, transportation, and order quantity. *Transportation Science* 40(1), 99-116.

- Zhang, X., & Wang, H. (2011). Empirical research on associations among information technology, supply chain robustness and supply chain performance. *International Journal of Business and Management*, 6(2), 231.
- Zhao, X., Xie, J., & Leung, J. (2002). The impact of forecasting model selection on the value of information sharing in a supply chain. *European Journal of Operational Research*, 142(2), 321-344.
- Zima, Peter V. (2007). "What is theory? Cultural theory as discourse and dialogue". London: Continuum.