Determinants of Supplier Development Practice in Public Procurement Performance at Kenya Ports Authority

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Abstract: Most organizations have come to realize that their ability to be competitive on cost, quality, timeliness and service depends on their suppliers’ ability to be contributing members of their supply chains thus the need to practice supplier development. Supplier development is therefore the process of working collaboratively with suppliers to improve or expand their capabilities with the ultimate objective of improving an organization’s operational efficiency. The PPD Act, 2015 has laid down procedures for Supplier selection and evaluation but not supplier development. Thus, this study sought to establish the determinants of supplier development practice in public procurement performance. In today’s global economy, competitiveness depends on the performance of the full supply chain. Helping suppliers meet the growing challenges to their international competitiveness requires KPA to focus on improving the performance of suppliers by investing in collaborative approaches towards supply of materials and service requirements. Descriptive research analysis was used by measure of central tendencies which included frequencies, means, standard deviations and regression. Stratified random sampling technique was used to select the sample for Primary data that was gathered using semi-structured questionnaires to respondents. The target and study population consisted of ten (10) interview sessions whereby interviews were carried out on ten (10) procurement personnel, twenty (20) senior managers from User departments that is, Finance and Operations and 70 union sable staff from both Procurement and User departments. The remaining four (4) sessions were slots for our prequalified key suppliers. To facilitate the analysis, the questionnaires was coded according to each variable of the study to ensure accuracy and minimal error margin during analysis. The Data was presented in tabular form and a few graphs to illustrate the relationships of different variables. The data was adopted and interpreted using the statistical package for social sciences (SPSS) software. In addition the study adopted the inferential statistics where multiple linear regression analysis was applied. The findings provided practical insights into why the Kenyan public sector is experiencing supply chain inefficiencies due to undeveloped suppliers. It sought to determine whether supplier development practices affect supply chain timeliness, cost quality of products and top management commitment to supply chain performance. From the research findings, the study concluded all the independent variables studied have significant effect on value addition as indicated by the strong coefficient of correlation and a p-value which is less than 0.05. The overall effect of the analyzed factors was very high as indicated by the coefficient of determination. The overall P-value of 0.00 which is less than 0.05 (5%) is an indication of relevance of the studied variables, significant at the calculated 95% level of significance. This implies that the studied independent variables namely top management commitment, supply chain timelines, supply chain costs and supply chain products had significant effect on public procurement performance of Kenya Ports Authority. The study recommended that Kenya Ports Authority top management should commit both financial resources and human resources on supplier development; that Kenya Ports Authority should encourage suppliers to supply goods and services on time to improve efficiency in the organization; that Kenya Ports Authority through different supplier development practices, should reduce supply chain costs of goods and services to ensure that they get value for money and that Kenya Ports Authority should involve the suppliers in formulation of specifications and the tendering processes to build synergy and reduce procuring costs.

INTRODUCTION

1.1 Background of the Study

This chapter examined the background information to the study. A statement of the research problem was presented alongside the research objectives and research questions. The geographical and
1.1.1 Global Perspective

Supplier development practice in public procurement is an important function of government for various reasons. First, the procurement expenditures have a great effect on the economy and needs to be managed through better procurement practices that focus on efficiency. Approximations of financial activities of government procurement professionals are believed to be in the order of 10%-30% of Gross National Profit. According to Liker & Wu, (2011), he approximates that the size of public procurement varies between 5% and 8% of GDP in most industrialized countries. According to “Public procurement indicators 2011, Brussels, 5TH December 2011,” For the European Union (EU27), the estimates of the total expenditure on works, goods and services by the general government and utilities sectors for the year 2007 to 2011 is as follows; year 2007-17%, year 2008-18.1%, year 2009-20%, year 2010-19.7% and year 2011-19% (European Tenders Electronic Daily database TED, 2011).

Across the OECD group of countries, public procurement represents close to 20% of GDP (over US $4,733 billion annually), while in developing countries the proportion can be slightly higher. In India, government procurement is worth about US $300 billion and is expected to grow by more than 10% annually in the coming years. Japan’s Green Purchasing Policy, has contributed to the growth of the country’s eco-industries, estimated to be worth about €430 billion in 2010, (United Nations Environmental Programmed, 2011).

These above statistics indicate that public procurement is a vital organ of all governments across the world. In post-World War II Japan the development of logical techniques that would set the standards for many U.S.A firms by the end of the twentieth century emerges. Given the fact that Japan is such a densely populated nation and does not have a seemingly endless supply of resources like the U.S.A, they have to utilize all of their resources to the fullest. Because of this situation, the Japanese had to cooperate extensively with each other in order to succeed, leading Japanese businesses to form an integrated network known as the keiretsu. This type of integrated network was characterized by informal but strict cooperation among members. Given the success that Japanese companies were able to achieve with this tight-knit network, it is no wonder that U.S. firms’ interests were piqued, (Awino, 2015).

Collaborative partnerships between companies and their suppliers are a recent development in the business world. Throughout a great portion of the twentieth century the relationship between a company and its supplier could be characterized as adversarial. At the beginning of the twentieth century, standardization of parts was the norm for most organizations. This sparked the requirement that suppliers produce large volumes of product and offer the lowest price possible. In turn, this created intense rivalry between competing firms, which was actually encouraged by the organization demanding the product. At the time, many large organizations were vertically integrated to ensure a steady, uninterrupted supply stream. The evolution of supplier collaboration over the last 100 years parallels the progress of business models. At the beginning of the century sound business practice could be characterized by a single-focused enterprise with mass-produced products (Felix & Chan, 2014).

By the end of the century the trend was that firms had begun to move to multiple enterprise/mass customized producers (see matrix below).
With global recovery still uncertain, it is more important than ever for companies to establish collaborative relationships with key suppliers to minimize issues on quality, timeliness and reduce costs. The benefits of such an approach include: better alignment of business objectives, achieving sustainable cost reduction, achieving “right” and “consistent” quality, gaining competitive advantage, minimizing compliance risks and activating continuous improvement.

From the onset, compliance to product requirements should be set in collaboration with suppliers to ensure they meet the specification requirements. In this case compliance to product requirements can be characterized by compliance to product specifications, timeliness and reduction of costs, (Handfield and Nichols, 2008)

1.1.2 Kenyan Perspective

In Kenya, public procurement takes up about 13% of GDP (The Organization for Economic Corporation Development, 2001). In the year 2014/15, the Government of Kenya will spend about 70% of the 1.6 Trillion Shillings budget on procurement of goods and services. 30% of all government procurement amounting to approximately 336 Billion Shillings is reserved for women, youth, persons living with disabilities and small and medium enterprises in a bid to even the playing field by developing these groups of suppliers. Categories of goods and services that will be procured on preferential basis to persons who have been previously discriminated or disadvantaged by unfair competition will also be given however the basis of supplier development is not yet stipulated.

Global Integrity (2010) argue that the public procurement process is addressed in the Public Procurement and Disposal Act, however, regulations on conflict of interest are not always enforced evenly. An example of this could be seen in the Anglo-Leasing scandal where uncompetitive contracts were awarded to companies in which government officials had interests. The former Permanent Secretary for Ethics and Governance in the Former President Mwai Kibaki’s government, John Githongo, estimated that public contracts were inflated by 25-100% in the Anglo-Leasing deals between the year 2001 and 2004.

The US Department of State (2013) research points out that there are still serious issues regarding the procurement of public enterprises in Kenya, even though the Public Procurement and Disposal Act established a commission to guard all procurement processes. The private media have often described these as shady deals. Many of Kenya’s large corruption scandals have involved public procurements in which foreign or local companies have skimmed-off resources from over-invoiced contracts. Companies are recommended to use a specialized public procurement due diligence tool in order to mitigate corruption risks involved in public procurement (Business Anti-Corruption Portal, 2013).

Data available from IT Web Africa news article dated 9th August 2012 reveals public procurement scandal related to Kenya's Konza Technology City. The Kenyan government planned a USD 10 billion city project to host an area of the "Silicon Savannah", and the land, where the city is to be built, is purchased at USD 12 million. However, the Ethics and Anti-Corruption Commission is investigating the project along with the permanent secretary in the Ministry of Information and Communications for purchasing the land through direct procurement instead of a public tender that would see competitive selection and development of diverse suppliers.

Data available from AfriCOG March, 2012 reveals that the longest running scandal is the Goldenberg scandal, where the Kenyan government subsidized exports of gold, paying exporters in Kenyan Shillings (Sh) 35% over their foreign currency earnings. In this case, the gold was smuggled from Congo. The Goldenberg scandal cost Kenya the equivalent of more than 10% of the country’s annual GDP resulting to a lot of inefficiencies in the supply chain.

Another specific case as reported from East African Standard 10th August 2005 reveals a Kenyan Sh360 million helicopter servicing contract in South Africa whereby Kenyan Military officers argued that the contract was too extravagant and servicing the helicopters could be done locally thus developing local suppliers. Kenya Air Force (KAF) went ahead to spend Sh108 million as a down payment for servicing the Puma helicopters, whose tail number is logged as 418 at Denel Aviation, a South African firm.

Another case is the Sh4.1 billion Navy ship deal as reported by East African Standard dated, 5th September 2013. The Navy project was given to Euro marine, a company associated with Anura Pereira, the tender awarded in a process that had been criticized as irregular. The tender was worth Sh4.1 billion. Military analysts said a similar vessel could have been built for Sh1.8 billion thus this lead to a lot of inefficiencies due to lack of clear set
guidelines on supplier selection and local supplier development.

Therefore the current legislation governing public procurement contains loopholes which encourage supply chain inefficiencies and amendments should include reforms on value chain management which includes supplier development.

1.1.3 Profile of Kenya Ports Authority

The Public Procurement system in Kenya has grown from a rudimentary stage during the colonial and post-colonial period to a vibrant regulated system that compares well with the international standards. In 1997, the World Bank conducted country wide review on Public Procurement and reported the following weaknesses; reduced effectiveness of Public Financial Management; Government inability to deliver services effectively; obscure rules not based on fair competition and transparency rendering the system to abuse; no legal framework to enforce procurement rules

Kenya Ports Authority (KPA) is a state corporation with the responsibility to maintain, operate, improve and regulate all scheduled seaports on the Indian Ocean coastline of Kenya, including principally Kilindini Harbour at Mombasa; with other ports namely Lamu, Malindi, Kilifi, Mtwapa, Kiungaa, Shimoni, Funzi and Vanga. KPA was established in 1978 through an act of Parliament and is located in Mombasa. Owing to Kenyan Coast being the port of choice in East Africa KPA has a tremendous responsibility of being the epitome of efficacy and being a large Organization it has several suppliers who supply critical items requisitioned by its nature of operations. Developing its suppliers would therefore, be key for it to achieve its strategic procurement objectives that shall ultimately drive its Vision: "World class seaports of choice" and Mission: "To facilitate and promote global maritime trade through provision of competitive port services"(Retrieved 01 November 2013 from www.kpa.co.ke).

KPA has been very fast forward in adopting the concept of supplier development but due to no past research on the same, the successful implementation and fruits are yet to be enjoyed occasioning this work. Despite increased transformation in the public procurement environment at KPA, supplier development has not received the required attention from studies in public administration, public finance or public budgeting (PPOA, August 2009)

1.2 Statement of the Problem

Kenya Ports Authority is a main economic contributor in Public Procurement in Kenya (Kenya National Industrialization Policy framework, November, 2010). Statistics available from Kenya National Bureau of statistics reveal that Kenya’s GDP was $ 70.85 billion, a gross national income per capita of $1,900, 2011 estimate ) and an annual growth rate (2012) of 4.4%, where KPA contributes over 12% of GNP (RoK,2011).KPA procuring entity professionals confront rapidly emerging innovative digital procurement processes, increasing product diversity, environmental concerns ,and the growing emphasis of compliance to product requirements, not simply lowest price (PPOA, 2011). With all these technical intricacies they experience, procurement professionals have the responsibility of ensuring supplier satisfaction and at the same time satisfy KPA User requirements with regard to product requirement compliance while at the same time focus on fair competition to maximize efficiency in the whole supply chain process. As a result of these intricacies, public procurement face declining resources, higher demands for flexibility and responsiveness and limited strategic support (Drucker, 2014).

Despite its potential KPA has not been dynamic enough to function as "an engine for growth" for the Kenyan economy as has been the case of newly emerging economies. This has been as a result of Cargo delays and inefficiencies in the supply chains that affect cargo handling at KPA (KPA Bulletin, 2014).

The procuring entity at KPA has been put on the spotlight by the Public Oversight Authority for non-compliance with the PPD Act, 2005 in terms of Supplier selection and development which attributes to serious inefficiencies and wastes in the supply chain (PPOA/ARD 14th August, 2009). Despite increased calls for public procurement reforms, KPA’s procuring entity has not fully focused on enhancement of value chain networks
through proper supplier selection, pre-qualification and development. KPA procuring entity has been underscored by the reinvention Government forces as a target for reform (Gore, 2012). Players in the industry attribute several of the problems to the inefficiencies at the port.

The PPOA/ARD, 2012 report indicated that the KPA procurement Unit did not provide comprehensive justification for choosing direct procurement methods which locked out other suppliers hence leaving no room for supplier development practice thus increasing supply chain inefficiencies. The report as well revealed that the Procuring entity did not ensure that User Departments maintain complete and comprehensive procurement records on supplier and contractors performance thus no information on supplier development.

Hartley and Choi, (2013) in their study of Process oriented supplier development confirmed that most medium to large size companies have supplier development programs in place; many of these programs are programs in word only. It has been proven historically that the short term benefits achieved from strategic procurement practices include multiple sourcing strategy or early supplier integration and this do not last in the long term and would infer more costs on the part of the procuring entity Simchi-Levi, (2016). A more integrated approach involves not only engaging suppliers early in the procurement process but also identifying key suppliers to partner with and develop. According to KPA’s top management, the procurement department as has in the past worked on strategies to enhance realization of value for money, however, a novel strategy of supplier development has not been put in place (Snider & Rendon, 2014).

Locally, studies on supplier development practices have been carried out by UNDP with the intention of improving competitiveness among small scale suppliers of agribusiness who supply the former’s products to lead firms (larger buying companies) worldwide. Considering the economic growth that is taking place on the African continent; UNDP AFIM realized the potential for replication of a Supplier Development Programme in Africa. Contributing over 60% towards regional employment and accounting for over 25% of the regions. However, limited local studies have been carried out on determinants of effective supplier development practices, thus this study aims at to emphasize on this particular sphere in the supply chain management.

1.3 Objectives of the Study
This study was guided by both general and specific objectives.

1.3.1 General Objective
The main objective of this study was to assess the determinants of supplier development practice in public procurement performance.

1.3.2 Specific Objectives
1. To determine the effect of top management commitment on public procurement performance with initiation of supplier development practice.
2. To assess the effect of supply chain timeliness in public procurement performance with initiation of supplier development practice.
3. To find out the effects of supply chain costs in public procurement performance with the initiation of supplier development practice.
4. To examine the effects of supply chain product compliance on public procurement performance with the initiation of supplier development practice.

1.4 Research Questions
The study aimed to answer the following questions:
1. How does top management commitment on initiation of supplier development practice in KPA affect public procurement performance?
2. What are the effects of supply chain timeliness in public procurement performance with the initiation of supplier development practice?
3. What is the effect of supply chain costs in public procurement performance with the initiation of supplier development practice?
4. What are the effects of supply chain product compliance on public procurement performance with the initiation of supplier development practice?

1.5 Significance of the Study
The nature of operations at KPA, that is, marine services, stevedoring, shore handling services and reception of cruise passengers implies the use of equipment such as forklifts, Gantry cranes, and reach stalkers to facilitate port services. The aforementioned equipment constitutes 80% of KPA’s expenditure. Being keen on aligning itself strategically towards achievement of Kenya Vision 2030 as a key pillar, KPA has no choice but to
deliver on its mandate. An analysis of the cost structures of KPA reveal that almost 70% of costs can be reduced by 80% or more by a proactive procurement department. Supplier development has been identified as a gateway to managing these costs effectively and in the achievement of procurement departmental objectives. In seeking to determine the reasons for costly supply chain inefficiencies and delays by the KPA Procuring entity as an archetypal of the Kenyan public sector, the study is important in the following ways:

KPA will use the study to train procurement staff to understand efficient procurement procedures in compliance with the PPD Act, 2005 and its attendant regulations; thus enable the Authority to tackle challenges of supply chain inefficiencies that cause delays in cargo handling. The findings will not only assist KPA but also the Public Procurement Oversight Authority at large, to come up with strategies and law enactment that will focus on product compliance and cost reduction in the supply chain through supplier development programs. The research will also be of constructive use to other academic studies in terms of theoretical and practical research for imminent studies in similar fields.

1.6 Scope of the Study
The study covered KPA’s procurement system with specific focus on implications of developing their suppliers on procurement performance. The research was carried on ten (10) staff of procurement which is a representative sample of the population of 100 number of staff in procurement department at KPA. The conceptual framework will be based on online reviews on the subject matter in conjunction with existing literature on supplier development with most of the research findings to be sourced from interviewing personnel at KPA’s procurement department plus a few of its current suppliers.

LITERATURE REVIEW
2.1 Introduction
This chapter summarizes the information from other studies which have previously carried out a research in this similar field of study. The main areas covered here are theoretical review, empirical review, conceptualization and critical review.

2.2 Theoretical Review
A theory is defined as a well-established principle that has been developed to explain some aspect of the natural world. Theories arise from repeated observations and testing and incorporate facts, laws, predictions, and tested hypothesis that are widely accepted. A theoretical framework consists of concepts, together with their definitions, and existing theory(s) that are used for your particular study. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of your research paper that will relate it to the broader fields of knowledge in the class you are taking (Torraco, 2015).

2.2.1 Decision Theory
Public risk management is becoming accepted and promoted by practitioners, scholars and governments in the public sector Hines, (2014). As discussed by Boorsma (2016) there are enough reasons to apply risk management to public organizations; the economization of financial losses and time, the prevention of human life loss and the accomplishment of strategic objectives, among others. Additionally, risk management decisions are concerned primarily with specific steps in risk identification and management processes, and formation of strategies that will be used to mitigate the risks.

They also state that Decision Theory is implicitly contained by the risk management process, since risk management depends on rules derived from general knowledge and precepts of Decision Theory. Especially in recent years, quantitative techniques of decision making have grown, although not neglecting the fact that the analysis of a problem of decision making often requires some qualitative considerations (Hahn, Watts, & Kim, 2015).

The decision theory is relevant to the study focusing on the variable of the top management commitment. Purchasing goods and services that are complex and unique in nature involves a lot of risks for instance compliance to product specifications risks, risk of delivery, cost of end product risks, delivery timeline risks and quality compliance risks. The top management of KPA should consider risk management decisions to mitigate all potential risks in the supply chain through supplier development practices that base on proper supplier selection and early supplier involvement.

2.2.2 Transactional Cost Theory
Cost reduction techniques are increasingly being adapted by organizations around the globe to effectively stay afloat in the market in terms of competitive advantage. A transaction cost is a cost incurred in making an economic exchange. A transaction cost is the cost of participating in a market (Journal of Law and Economics, 2011). According to Hartley and Choi, (2013), transaction costs are divided into three broad categories as follows:
Search and information costs: These are costs incurred in determining the required goods available on the market, and the best prices for the same. Bargaining costs: These are costs required to come to an acceptable agreement with the other party to the transaction and drawing up an appropriate legal framework contracts for the same. Policing and enforcement costs: These are costs that ensure the other party sticks to the terms of the contract, and taking appropriate action often through the legal system, if this turns out not to be the case. For instance, buyers of used Japanese car face a variety of different transaction costs. The search costs are the costs of finding the cars and determining their conditions. The bargaining costs are the costs of negotiating the price with the seller. The policing and enforcement costs are the costs of ensuring that the seller delivers the car in the promised condition (Humphreys, 2013).

Car companies and their suppliers often fit into this category, with the car companies forcing price cuts on their suppliers. Defense suppliers and the military appear to have the opposite problem, with cost overruns occurring quite often. Technologies like enterprise resource planning (ERP) can provide technical support for these strategies. Transaction cost theory tries to explain why companies exist, and why companies expand or source out activities to the external environment. The transaction cost theory supposes that companies try to minimize the costs of exchanging resources with the environment, and that companies try to minimize the bureaucratic costs of exchanges within the company. Companies are therefore weighing the costs of exchanging resources with the environment, against the bureaucratic costs of performing activities in-house (Krause, 2015).

The theory sees institutions and market as different possible forms of organizing and coordinating economic transactions. When external transaction costs are higher than the company's internal operations costs for production, the company will grow, because the company is able to perform its in-house activities more cheaply, than if the activities were performed in the market. However, if the bureaucratic costs for coordinating the activity are higher than the external transaction costs, the company will be downsized. Every company will expand as long as the company's activities can be performed cheaper within the company, than outsourcing the activities to external providers in the market (Lamming, 2014).

The relevance of transactional cost theory to this study focuses on the variable of costs in supply chain. KPA should consider analysis of transactional costs to make a decision on operating in house or outsourcing business hence the early involvement of suppliers and their subsequent development to reduce supply chain costs. The lack of transactions cost assessment in terms of whether to carry out in house services or outsource may lead to more costs used up in the supply chain.

2.2.3 Theory of Constraints

The underlying premise of theory of constraints is that organizations can be measured and controlled by variations on three measures: throughput, operational expense, and inventory Hines, (2014). Inventory is all the money that the system has invested in purchasing things which it intends to sell. Operational expense is all the money the system spends in order to turn inventory into throughput. Throughput is the rate at which the system generates money through sales. TOC adopts the common idiom "a chain is no stronger than its weakest link." This means that processes in the organizations are vulnerable because the weakest person or links can always adversely affect the outcome in the supply chain (Hines, 2014).

Before the goal itself can be reached, necessary conditions must first be met. These typically include safety, quality, legal obligations, etc. For most businesses, the goal itself is to make money. However, for many organizations and non-profit businesses, making money is a necessary condition for pursuing the goal. Whether it is the goal or a necessary condition, understanding how to make sound financial decisions based on throughput, inventory, and operating expense is a critical requirement.

Theory of constraints is based on the premise that the rate of goal achievement by a goal-oriented system (i.e., the system's throughput) is limited by at least one constraint. The argument by Absurdum, 2005 is as follows: If there was nothing preventing a system from achieving higher throughput (i.e., more goal units in a unit of time), its throughput would be infinite which is impossible in a real-life system. Only by increasing flow through the constraint can overall throughput be increased, assuming the goal of a system has been articulated and its measurements defined, the steps are: Identify the system's constraint or constraints; Decide how to exploit the system's constraints; Subordinate everything else to the above decisions or decisions; Elevate the system's constraint(s); Warning! If in the previous steps a constraint has been broken, go back to step 1, but do not allow inertia to cause a system's constraint.

The goal of a commercial organization is: "Make more money now and in the future", and its
A constraint is anything that prevents the system from achieving its goal. There are many ways that constraints can show up, but a core principle within TOC is that there are not tens or hundreds of constraints. There is at least one but at most only a few in any given system. Constraints can be internal or external to the system. (Drucker, 2014). An internal constraint is in evidence when the market demands more from the system than it can deliver. If this is the case, then the focus of the organization should be on discovering that constraint and following the five focusing steps to open it up and potentially remove it. An external constraint exists when the system can produce more than the market will bear. If this is the case, then the organization should focus on mechanisms to create more demand for its products or services (Ruch, 2012). Types of (internal) constraints include Equipment-The way equipment is currently used limits the ability of the system to produce more salable goods/services; People- Lack of skilled people limits the system; Mental models held by people can cause behavior that becomes a constraint. Breaking constraints: If a constraint's throughput capacity is elevated to the point where it is no longer the system's limiting factor, this is said to "break" the constraint. The limiting factor is now some other part of the system, or may be external to the system (an external constraint). This is not to be confused with a breakdown (Hahn, Watts, & Kim, 2015).

The theory of constraints is relevant to the study as it focuses on the variable of supplier’s levels of compliance to product/service requirements and timeliness of supply. The capacity of supplier to supply within the required specifications and timelines is crucial in the supply chain. Initiation of Supplier development practices vide this theory will ensure early buyer-supplier involvement thus reduce wastages on time; reduce risks of equipment failure and unnecessary costs related to the product quality. This involves formation of a value supply chain management that will focus on how to identify constraints between the suppliers and KPA that may arise and mitigate them. There is need for KPA to establish sound strategies that will encourage strategic alliances with suppliers for planning and acquisition of goods and services within the required timelines. This supplier development practices through strategic alliances will be based on mutual beneficial agreements and trust based on information gathered on the supplier over a period of time, to reduce uncertainties in terms of delivery period risks and product compliance.

2.2.5 Model Public Procurement of supplier integration and development
The model provides a starting point for debate on how to use the success factors discussed in the previous sections in order to create a consistent supplier development practice in public procurement. In principle, the model could be applied on any level in government institutions. Given the institutional understanding of supplier relationship management in public procurement, supplier development practice becomes remarkable, i.e. an activity that is not part of the mundane. In other words, supplier development practice requires support from the Government.
through the Public Procurement Oversight Authority (PPOA). Thus, in the model, Government support is one essential assumption. This can be manifested as a long-term master plan for a municipality or a strategy issued by a region to develop for instance, development of SMEs (Voss, 2009). It is the Government that can influence development of a culture of supplier development practice in the public sector especially with the recent initiation of sourcing of goods, works and services from target groups namely small enterprises, micro enterprises, disadvantaged groups, citizen contractors, local contractors, citizen contractors in joint-venture or sub-contracting from the arrangements with foreign suppliers (PPD Act No.3 of 2005). This development will be welcomed by the society.

2.3 Conceptual Framework
A conceptual framework is a logically developed, described and elaborated network of interrelationships among variables integral in the dynamics of a situation being investigated. It explains the theory underlying these relationships and describes the nature and direction of these relationships. A variable is a measurable characteristic that assumes different values among the subject. It is therefore a logical way of expressing a particular attribute in a subject. A dependent variable is the variable of primary interest to the study and is affected by independent variable. In this case our independent variable is quality. Supplier development practice for quality of procured goods and services can be measured by supplier compliance to product requirements/specifications, compatibility, timeliness, performance, durability, delivery, appearance, availability, reliability and cost effectiveness. An independent variable is the one that influences the dependent variable in either a positive or negative way (Mugenda & Mugenda, 2008).

![Conceptual Framework Diagram](image-url)
2.4 Determinants of Supplier Development Practice in Public Procurement

Despite the effort by governments to encourage public sector institutions to adopt supplier development, its implementation does not appear to have been smooth and the rate of its success has been less than spectacular, as supported by Steinbergs (2013) claim that “Government supplier capacity building Procurement projects have been notoriously unsuccessful”. The development and implementation of supplier development programs has not been as easy as some of the solution providers have suggested, nor has it necessarily brought the anticipated savings. In Kenya and the rest of Sub-Saharan Africa, the implementation rate of supplier capacity development in public procurement systems has been slow and many government agencies tend to overstate the degree to which they are involved in supplier development programs MacManus, (2015). Despite the benefits that can be achieved from a successful supplier development implementation in the public sector, the business press has reported a number of failures of supplier development program initiatives in a number of public sector agencies in Kenya in the recent past including the Anglo-Leasing Scandal of the mid-2000 which did not allow for competition from other suppliers in the similar field, the biometric kits procurement fiasco which led to many protests about the transparency of the 2012 general elections and the recent primary schools laptop procurement project which had to be cancelled after several firms raised issues concerning corruption.

As observed by Heywood (2010), supplier appraisal, prequalification and development will result in large investments of time and money, without absolute certainty that it’s full potential will be achieved every time (Boudijilda and Pannetto, (2013). However, there is need to first ensure that the supplier capacity building systems are developed to the highest industry standards to minimize criticism and also build a culture of change among stakeholders.

KPA is the first Government Corporation to embrace supplier development by implementing the Supplier Relationship Management (SRM) module on the e – procurement digital platform. Like the government’s Integrated Financial Management Information System (IFMIS), SRM aims at giving equal access and opportunities to all its suppliers by attaining compliance with the Public Procurement and Disposal Act 2005 and Public Procurement and Disposal Regulation (2006) and establishing a customer Care Centre to provide dedicated services to the suppliers. The system also aims at achieving the 30 % affirmative action to guarantee some opportunities to the Youth, Women and Persons with Disabilities. For these reasons Kenya Ports Authority started automation of the port operations in the year 2000 and deployed the system application product (SAP) which incorporates Enterprise Resource Planning (ERP) system for all its financial, procurement, human resources and engineering functions.

The Authority successfully upgraded its SAP, ERP infrastructure to ECC 6.0 from r/3 4.6 c in 2014. In an effort to realize the Governments’ vision of reserving 30% of all government procurement for women, youth, persons living with disabilities and small and medium enterprises in a bid to even the playing field by developing these groups of suppliers. The government wants to ensure that the categories of goods and services that will be procured on preferential basis to persons who have been previously discriminated or disadvantaged by unfair competition will also be given however the basis of supplier development is not yet stipulated.

Subsequently, the Authority sourced for SAP SRM (Supplier Relationship Management) system to facilitate supplier collaboration in e-procurement at their own comfort and location. The system shall enable the suppliers to receive and respond to request for quotations and tenders online via the SAP portal. The suppliers shall also be able to receive the purchase order and creates a purchase order response, confirmation, advance shipping notification and invoice on the supplier portal. The tender opening process shall also be done via the portal. The SAP SRM application requires one to log in to the KPA web to access it. These are the Authority’s gains towards supplier development which is a fairly new field in the public procurement.

2.4.1 Top management commitment

Handfield, (2013) in Greece did research with an objective of determining if the implementation of supplier appraisal management in purchasing had a positive impact on business performance. The sample frame consisted of 1,400 purchasing managers who were selected from the Dun and Bradstreet database of the largest manufacturing companies in Greece. Purchasing managers were determined as the most appropriate respondents, because they are most familiar with their organization’s purchasing practices and performance outcomes. The respondent sample was composed of high-level purchasing executives, including 200 directors of purchasing (50%), 89 general managers of purchasing (27%), 19 purchasing managers (8%), and 45 “other” titles (15%). An important finding was that the extent of adoption of supplier appraisal management in purchasing has a direct positive impact on
improving both internal and external customer satisfaction and indirectly increases output in terms of business performance. Therefore, it was found that the implementation of the practices included the holistic involvement of top management commitment contribute to add value to the supply chain thus increase efficiency. Therefore top management commitment is an important element of any strategy implementation.

2.4.2 Supply Chain Timeliness

Supply chain performance has become an area of interest due to competitive pressures experienced by organizations (Boyle, 2007). In the current era of dynamic competition, production costs are not the only factors that could help organizations to gain and sustain competitive advantage other factors such as product delivery times are a major contributor to the organization’s competitiveness (Starling, 2008).

Mose, Njihia, and Magutu, (2013) of University of Nairobi in Kenya did research with the objective of determining the relationship between supply chain performance and supply chain responsiveness of supermarkets in Kenya. Supply chain performance has become an area of interest due to competitive pressures experienced by organizations. Due to this, supply chain responsiveness is receiving a lot of attention from supermarket chains all over the world. This is due to constant pressure that customers are exerting to the retailers in terms of; demand variability, reduced lead-times, need for customized products and services. The research was carried through a descriptive survey design which questioned respondents on supply chain performance and supply chain responsiveness. The population of study mainly constituted of 50% procurement officers, 30% store managers, 20% operations managers or their equivalents in supermarket headquarters within Nairobi. The sample in this study consisted of 50 respondents who were drawn from 50 supermarkets across Nairobi. The data collected was analyzed by use of frequency, percentage, means and correlation analysis. The rank order of the relationship between supply chain performance and supply chain responsiveness timeliness, reliability and flexibility respectively indicated very strong relationship with supply chain performance. An important finding therefore was that reduced lead-times had a direct positive impact on improvement of supply chain performance.

2.4.3 Supply chain costs

Awino, (2015) are of the opinion that optimizing supply chain activities is critical to all industries since it saves money, increases through put, decreases inventory levels and increases revenues, thereby improving the organizations financial status. Therefore different firms will attempt to realign their activities in way that will maximize revenue and minimize cost.

According to Gachora1, Kibet and Musiega (2014) in Kakamega County, Kenya did research on Supply Chain Cost Reduction Impact on Performance of Small Scale Agricultural Enterprise . This study aimed to investigate the effect of supplier development efforts on the performance of small-scale agricultural enterprise. The study recognized the important role small-scale agricultural enterprise plays in agrarian based economy in supplying food for domestic use as well as raw material for industrial use in agro-processing firms. As essential partners in the agri-food supply chain small scale agricultural enterprise enable agro-processing firms, the capacity to deliver the expectation of their consumer not only in satisfying their needs but also to compete competitively with respect to cost, quality timely delivery. Supplier development efforts helps the buyer establish a relationship within which they can identify and develop the performance capacity of their suppliers in order to be able to deliver superior customer value at less cost to the supply chain as whole.

Simple random sampling technique was used to collect the primary data from 142 respondents. Descriptive statistics, independent t-test and One-Way ANOVA were used to analyze the data. The results show there is a significant difference in effectiveness in cost reduction by sourcing inputs from different sources. Further the independent samples t-test results confirmed that there is a significant increase in revenue generated by farmers as they adopt new farming methods as well as use of the right output enhancing inputs. It was also noted that there is a mutual benefits derived from trust in the relationship between the buyers and the suppliers (farmers). Farmers should be encouraged to form groups through which they can enjoy economies of scale when bulk sourcing of inputs, transporting to the farm, training and when delivering their produce to the market. Further, buyers should strengthen their relationships with the farmers to transition the rural subsistence production to market oriented production. The challenge confronted in all cases is to strike an appropriate balance and convince all stakeholders in the supply chain on commitment to supplier development practice to reduce costs in the supply chain despite their varying goals.

2.4.4 Supply chain product compliance

The shift towards integrated value supply chains requires deeper understanding of value chain structures and supplier capabilities. More expertise
is required at the buyer’s side to understand suppliers’ potential to respond to demand signals for product requirements and compliance (Liu, Ding, & Loll, 2013).

While from an innovation promotion perspective where relationship based management approach would be called for, it is clear that it there is a risk to encourage favoritism, oligopoly and artificial creation of barriers to new entrants in their Purchasing Performance standards stated that purchasing managers need to periodically evaluate supplier performance in order to retain those suppliers who meet their requirements in terms of several performance criteria. The evaluation element typically consists of identifying the attributes, criteria, or factors relevant to the decision and then measuring or rating each vendor by considering each of the relevant factors. Three outputs (performance indicators) and three inputs (supplier attributes) were used for analysis. The traditional, indicators/ attributes of product price, shipment quality, and delivery compliance were used for supplier performance (Krause, 2015).

The methodology proposed was applied to the supplier selection process of a medium-sized manufacturer of bottling machinery and complete packaging lines. The firm’s production program includes the design and manufacture of a range of equipment to handle plastic containers, another group of equipment to handle glass containers, and a third type which can be used for both plastic and glass containers. Machines and bottling lines are specially designed and manufactured for the mineral water, soft drink, fruit juice, wine, beer, liqueur, and pharmaceutical industries. The company has an annual sales volume of $43 million and employs 240 individuals (60 in technical departments). More than 20 suppliers were available in the marketplace for this type of component. The analysis was carried out on 23 suppliers as the sample size. The attributes measured included management capabilities, facilities and capacity, technological capabilities, price, quality and delivery compliance. Supplier four had the highest points for the best performances with respect to the three components identified (Lamming, 2014).

2.5 Critique of the existing literature
There is no study that provides a specific analytical model for supplier development. Most studies conducted are general on supplier performance; there is no intensive specific research which has been conducted. The writers agree that supplier development implementation is a cross country challenge. There studies do not provide specificity on the real benefits and challenges of supplier development implementation in public procurement. This would have helped to focus the study in terms of the public procurement performance.

There have been a few, if any studies which explicitly focus on the public sector, in general or the adoption of supplier development by the Kenya public sector organizations in particular. There are a number of studies that identify factors that might affect the adoption of supplier development programs but they tend not to be empirically tested Kiprono, (2014). Moreover, such studies do not provide complete and coherent classification of the problems with traditional procurement, or the potential benefits of and inhibitors of supplier development practice implementation.

Similarly, Hartley and Choi, (2013) have unswervingly argued that better quality practices can reduce the cost associated with quality control, inspection, appraisal and warranty returns. The inadequacy of competency among procurement professionals about suitable value addition procurement processes for fulfilling wider public goals seems to be a global phenomenon Bywater, (2014). Indeed procurement staff should be proactive and innovative in this process of supplier development practice since they have exposure to different fields such as civil works, mechanical works, agriculture inputs/outputs, as procurement is a buyer facilitator of all fields.

Lack of awareness and readiness by public authorities to understand markets and technologies can be regarded as an additional barrier Liu, et al, (2013). The adoption of Supplier development practices through supplier integration is not considered strategic in so far as these technologies can impact value chains Kauffman, (2016). Investment in Supplier Development has not made significant positive contribution to business performance as it lacks top organization commitment. The challenges of supplier development implementation have not been confronted by the public sector despite their varying objectives.

Where empirical studies of the adoption of supplier development practice, have been conducted, they tend to be questionnaire-based, private sector-oriented, focusing on a restricted set of few strategic suppliers who the public sector feel are more important than others. In particular, it is important that more case studies are conducted, so that the issue of supplier prequalification, appraisal, and development can be addressed explicitly. The existing empirical literature tends not to explicitly draw upon constraint theory, to help interpret their results. Consequently, the extent to which an organization’s adoption of supplier development...
practices might be explained through the use of an appropriate theoretical lens, such as theory of constraints, which has not been widely explored. Against this backdrop, this study is initiated to investigate the determinants of effective supplier development practice in public procurement. Whilst this study was explicitly built upon the factors identified in prior studies, it was envisaged that it would provide a far deeper and richer data set, upon which to draw conclusions.

2.6 Research Gap
The public procurement in Kenya has been marred by value supply chain challenges due to loopholes in the procurement legislation and if the status quo is retained, public funds will be subject to wastefulness that results from obsolesce, overstocking, repeated acquisition of same requirement because of mismatch and other related quality failure costs. As previously established, the current legislation governing public contracting in Kenya contains loopholes which encourage corruption and an amendment of the law should be part of the reform process. One of the flaws is laws governing supplier capacity development. There is basically little research done in Kenya focusing on supplier development. Most of the research on supplier development in procurement places quality as an independent variable to procurement performance for goods and services bought of-the-shelf under the PPDA regulations. It is, therefore, necessary that the public sector invest time and conduct research to establish the determinants of an effective supplier development practice in public procurement performance. Kiprono, (2014) examined the determinants of an effective supplier development practice in the Kenyan Public sector: a survey of parastatals in the ministry of finance. Therefore, there is a gap in examining the determinants for implementation of supplier development in the public sector.

2.7 Summary
The literature reviewed the determinants of supplier development practice in public procurement performance at Kenya Ports Authority. These include; top management commitment, supply chain timelines, supply chain costs and supply chain product compliance. Review of literature generally agrees that these variables affect supplier development. Research has shown that supplier development is a good management practice that benefits the business financially, lays ground work for developing the strategic capabilities needed for high performance and it’s also deliberate in that management takes a conscious decision to make a radical change by embracing new strategies. Technological and market competitiveness are not only hinged on the sources and costs of resources but also the technology embraced. Cutting edge technologies increase profitability and decrease wastage thus making the organizations to compete competitively.

RESEARCH METHODOLOGY

3.1 Introduction
This chapter is a description of the methodology that was used to find answers to the research questions related to this study. It presents the research design, target population, sampling frame and size, sampling procedure, data collection methods, instruments of data collection and the pilot study. The section well explained how collected data was analyzed and presented.

3.2 Research Design
This study adopted a descriptive research design. A descriptive study is concerned with determining the frequency with which something occurs or the relationship between variables Cohen, Manion, and Morrison, (2013). According to Cooper and Schinder, (2013) a descriptive study finds out the “who, what, where, and how” of a phenomenon which is the aim of this study. The study seeked to investigate the determinants of an effective supplier development practice in public procurement. Thus, this approach was appropriate for this study, since the study intended to collect detailed information through descriptions that would be useful for identifying variables and hypothetical constructs that is of a qualitative nature. Bryman and Bell, (2015) notes that a research design is the structure of the research, it is the “glue” that holds all the elements in a research project together. According to Sekaran, (2013), research design can be thought of as the structure of research.

3.3 Target Population
The target population for this study comprised of staff currently employed in KPA who are over 5,000. However, the sampling frame only focused on correspondent from the Procurement and User departments who are 1,000 in total (KPA Handbook, 2012) as shown in table 3.1.

<table>
<thead>
<tr>
<th>Staff level</th>
<th>Population</th>
<th>Percentage of Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management</td>
<td>100</td>
<td>10%</td>
</tr>
<tr>
<td>Middle level</td>
<td>200</td>
<td>20%</td>
</tr>
<tr>
<td>Low Level</td>
<td>700</td>
<td>70%</td>
</tr>
<tr>
<td>Total</td>
<td>1,000</td>
<td>100%</td>
</tr>
</tbody>
</table>
3.4 Sampling Technique
Stratified random sampling technique was used in this study to select a sample size. For the purpose of this study the sample frame was stratified into various groups. The structure in KPA has put staff in three categories. Top management level consists of the Managing Director and General Managers who head divisions; middle level management comprises functional heads of department and line managers while low level management is mainly unionisable staff. The sample frame was stratified through top management level, middle level management and low level management. According to Kothari and Gang, (2014), the technique produces estimates of overall population parameters with greater precision and ensures a more representative sample is derived from a relatively heterogeneous population to make each stratum homogenous.

3.5 Sampling and sample size
A sample size of KPA staff mostly procurement executives was selected in the study out of the entire KPA staff. Stratified proportionate random sampling technique was used to select the sample. According to Bryman and Bell, (2015) stratified proportionate random sampling technique produce estimates of overall population parameters with greater precision and ensures a more representative sample will be derived from a relatively homogeneous population. Stratification aimed to reduce standard error by providing some control over variance. From each stratum the study used simple random sampling to select respondents by taking 30% of each category. Statistically, in order for generalization to take place, a sample of at least 30 elements (respondents) must exist Cohen, et. al (2013). Mugenda and Mugenda, (2007) argue that if well chosen, samples of about 10% of a population can often give good reliability. The selection was as follows.

<table>
<thead>
<tr>
<th>Level</th>
<th>Population</th>
<th>Sample ratio</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top level management</td>
<td>100</td>
<td>0.1</td>
<td>10</td>
</tr>
<tr>
<td>Middle level management</td>
<td>200</td>
<td>0.1</td>
<td>20</td>
</tr>
<tr>
<td>Low level management</td>
<td>700</td>
<td>0.1</td>
<td>70</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,000</strong></td>
<td><strong>0.1</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

3.6 Data Collection Methods and Instruments
According to Bryman and Bell, (2015) the choice of a tool and instrument depends mainly on the attributes of the subjects, research topic, problem question, objectives, design, expected data and results. This was because each tool and instrument collects specific data. The study employed a survey questionnaire for data collection. Primary data is information gathered directly from respondents Cooper and Schinder, (2013) and for this study the study administered questionnaires. Secondary data was collected from published material and information from other sources such as annual reports, journals websites, articles etc.

3.6.1 Data Collection Instrument
The study disseminated a survey questionnaire to each member of the sample population at KPA Mombasa. The questionnaire entailed both open and close-ended questions. The close-ended questions provided more structured responses to facilitate tangible recommendations. The closed ended questions was used to test the rating of various attributes and this helped in reducing the number of related responses in order to obtain more varied responses. The open-ended questions were used to provide additional qualitative information that was not captured in the close-ended questions.

Secondary data was also be collected for this study. This data was useful in generating additional information for the study from already documented data or available reports. Cooper and Schindler (2013) further explain that secondary data were a useful quantitative technique for evaluating historical or contemporary confidential or public records, reports, government documents and opinions.

3.6.2 Data Collection Method
The study disseminated the questionnaire individually to all respondents of the study. The study was carried out meticulously and ensured all questionnaires issued to the respondents were received. To achieve this, the study had an allowance of accommodating various methods of administering questionnaires to support the main method depending on the convenience of the respondents. The study maintained a register of the questionnaires issued and received. The questionnaire was disseminated using a drop and pick later method as the primary method of administering.

3.7 The Pilot Study
Cooper and Schindler (2013) indicated that a pilot test was conducted to detect weakness in design and instrumentation and to provide proxy data for
selection of a probability sample. Pilot testing provides an opportunity to detect and remedy a wide range of potential problems with an instrument. By conducting a Pilot testing it ensures that appropriate questions are asked, the right data is collected, and the data collection methods works. A pilot study was undertaken on 20 respondents to test the reliability and validity of the questionnaire. The rule of the thumb is that 1% of the sample should constitute the pilot test (Cooper & Schindler, 2013, Creswell, 2013). The proposed pilot test is within the recommendation.

3.7.1 Reliability Analysis
Testing of the reliability of the scale is very important as it shows the extent to which a scale produces consistent results if measurements are made repeatedly. This was done by determining the association in between scores obtained from different administrations of the scale. If the association is high, the scale yields consistent results, thus it is reliable. Cronbach’s alpha was used to determine the internal reliability of the questionnaire that will be used in this study. Values range between 0 and 1.0; while 1.0 indicates perfect reliability, the value 0.70 is deemed to be the lower level of acceptability (Hair, Black, Barry, Anderson, & Tatham, 2006).

3.7.1 Validity
Validity is the degree to which results obtained for the analysis of the data actually represent the phenomena under study. It indicates how accurate the data obtained in the study represent the variables of the study (Mugenda & Mugenda, 2009). The researcher used the most common internal consistency measure known as KMO Bartlett test. It may be mentioned that its value varies from 0 to 1 but, satisfactorily value is required to be more than 0.6 for the scale to be reliable (Bryman & Bell, 2015). The recommended value of 0.7 is the cut off of reliability.

3.7 Data Processing Analysis and Presentation
Before processing the responses, the completed questionnaires were edited for clarity of questions, completeness and consistency. Quantitative data collected were entered and analyzed. Descriptive statistics analysis was carried out by measures of central tendencies which included frequencies, means, standard deviations and regression. The results were presented by use of charts, graphs and tables. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of statistical package for social sciences (SPSS) software. In addition the study adopted inferential statistics whereby multiple linear regression analysis was applied in determining the extent to which the factors investigated affect the quality of supplier development practices in public procurement in Kenya. Content analysis was used on data that is qualitative in nature i.e. the data that was collected from the open ended questions. This offered a systematic and qualitative description of the objectives of the study. Descriptive and inferential statistics was done using SPSS version 22 and specifically multiple regression model was applied. Set of data was described using percentage, mean standard deviation and coefficient of variation and presented using tables, charts and graphs. Bryman and Bell, (2015) argue that regression is the working out of a statistical relationship between one or more variables. The researcher used multiple regression analysis to show the effect and influence of the independent variables on the dependent variable.

The relationship is as follows;

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

Where $Y$ represents Public Procurement Performance (dependent variable), $X_1$ = Top Management Commitment, $X_2$ = Supply Chain Timelines, $X_3$ = Supply Chain Costs, $X_4$ = Supply Chain Products, $\beta_0$ is Constant Term, $\beta_1$, $\beta_2$, $\beta_3$ and $\beta_4$ are regression coefficients and $\epsilon$ is the disturbance/error.

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction
This chapter presents analysis of the data on the determinants of determinants of supplier development practice in public procurement performance in Kenya Ports Authority, Kenya. The chapter also provides the major findings and results of the study and discusses those findings and results against the literature reviewed and study objectives. The data is mainly presented in frequency tables, means and standard deviation.

4.2 Response Rate
The study targeted 100 employees of Kenya Ports Authority, Mombasa County, Kenya. From the study, 74 out of the 100 sample respondents filled-in and returned the questionnaires making a response rate of 74% as per Table 4.1 below.
Table 4.1 Questionnaire Response Rate

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>74</td>
<td>74%</td>
</tr>
<tr>
<td>Non-Respondents</td>
<td>26</td>
<td>26%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

According to (Kothari & Gang, 2014) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore, this response rate was adequate for analysis and reporting.

4.2.1 Validity

Factor analysis was used to check validity of the constructs. Kaiser-Mayor-Oklin measures of sampling adequacy (KMO) & Bartlett’s Test of Sphericity is a measure of sampling adequacy that is recommended to check the case to variable ratio for the analysis being conducted. In most academic and business studies, KMO & Bartlett’s test play an important role for accepting the sample adequacy. While the KMO ranges from 0 to 1, the world-over accepted index is over 0.5. Also, the Bartlett’s Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. For Factor Analysis to be recommended suitable, the Bartlett’s Test of Sphericity must be less than 0.05.

The study applied the KMO measures of sampling adequacy and Bartlett’s test of sphericity to test whether the relationship among the variables has been significant or not as shown in below in table 4.2. Factor 1 was based on six items that represented top management commitment; Factor 2 was based on eleven items that represented supply chain timelines, Factor 3 was based on supply chain costs items that represented twelve items, Factor 4 with thirteen items represented measurement of supply chain product, Factor 5 with four items represented public procurement performance. The Kaiser-Mayor-Oklin measures of sampling adequacy shows the value of test statistic as 0.716, which is greater than 0.5 hence an acceptable index. While Bartlett’s test of sphericity shows the value of test statistic as 0.000 which is less than 0.05 acceptable indexes. This result indicates a highly significant relationship among variables.

Table 4.2 KMO Bartlett

<table>
<thead>
<tr>
<th>KMO and Bartlett's Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</td>
<td>.716</td>
</tr>
<tr>
<td>Bartlett's Test of Sphericity</td>
<td>Approx. Chi-Square</td>
</tr>
<tr>
<td></td>
<td>Df</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
</tr>
</tbody>
</table>

4.2.2 Reliability Analysis

Prior to the actual study, a pilot study was carried out to pre-test the validity and reliability of data collected using the questionnaire. The pilot study allowed for pre-testing of the research instrument. The results on reliability of the research instruments are presented in Table 4.3

Table 4.3 Reliability Coefficient

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach's Alpha</th>
<th>Number of Items</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management Commitment</td>
<td>0.713</td>
<td>6</td>
<td>Accepted</td>
</tr>
<tr>
<td>Supply Chain Timelines</td>
<td>0.778</td>
<td>11</td>
<td>Accepted</td>
</tr>
<tr>
<td>Supply Chain Costs</td>
<td>0.883</td>
<td>12</td>
<td>Accepted</td>
</tr>
<tr>
<td>Supply Chain Product</td>
<td>0.798</td>
<td>13</td>
<td>Accepted</td>
</tr>
<tr>
<td>Procurement Performance</td>
<td>0.777</td>
<td>4</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

The overall Cronbach's alpha for the four categories which is 0.802. The findings of the pilot study showed that all the four scales were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Mugenda & Mugenda, 2008).
4.3 Background Information
The background information gathered was based on gender, department working in, age, level of education, position held and working experience.

4.3.1 Gender
The study sought to establish the gender of respondents. The study findings showed that male respondents were 64.9% and female were 35.1% with a mean score of 1.35 and a standard deviation of 0.481. This shows that majority of respondents that participated in the study were male as shown in figure 4.1.

4.3.2 Age
The study sought to establish the age of respondents. The study results showed that 13.5% of the respondents were aged between 18-25 years, 41.9% were between 26-35 years, 31.1% were 36-45 years and over 46 years were 13.5% with a mean score of 2.45 and a standard deviation of 0.894. This shows that majority of respondents who participated in the study were of the ages of 26-35 years. This implies that respondents are energetic and young as shown in figure 4.3.

4.3.3 Level of Education
The study sought to establish the level of education of respondents. The study results revealed that 21.6% of the respondents hold diploma certificates, 51.4% first degree, 16.2% post graduate and 10.8% hold none of the above certificate with a mean score of 2.16 and a standard deviation of 0.892. This shows that majority of respondents that participated in the study hold first degrees. This implies that Kenya Ports Authority are well trained and therefore they are to implement strategies that are aimed at increasing efficiency and procurement performance as shown in figure 4.3.

4.3.4 Position Held in the Organization
The study sought to establish the positions held by respondents. The study findings revealed that top management were held by 43.2%, middle management were 37.8% and supervisory were 18.9% with a mean score of 1.76 and a standard deviation of 0.755. This shows that the majority of respondents that participated in the study were in top management as shown in figure 4.4. This implies that the information gathered is reliable and authentic and adds value to the study.
4.3.5 Working Experience

The study sought to establish the working experience of respondents. The study results revealed that respondents that have working experience of between 1-5 years were 24.3%, between 5-9 years were 24.3%, between 9-13 years were 31.1% and those over 13 years were 20.3% with a mean score of 2.47 and a standard deviation of 1.076. This shows that majority of respondents that participated in the study have an experience of between 9-13 years. This implies that respondents have experience in the public procurement processes as shown in figure 4.5 below.

![Figure 4.5 Working Experience](image)

4.4 Analysis of Objectives

In the research analysis the researcher used a Likert rating scale of 5 to 1; where 5 were the highest and 1 the lowest. Opinions given by the respondents were rated as follows, 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree. The analyses for mean, standard deviation were based on this rating scale.

4.4.1 Top Management Commitment

**Table 4.4 Top Management Commitment**

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top management is not committed to professional supplier evaluation and prequalification</td>
<td>74</td>
<td>3.07</td>
<td>1.307</td>
</tr>
<tr>
<td>Top management are committed to professional supplier performance appraisal and categorization on supplier capacity levels</td>
<td>74</td>
<td>3.73</td>
<td>1.338</td>
</tr>
<tr>
<td>Top management are committed to staff skills enhancement to carry out supplier pre-qualification and categorization of the same in accordance with their supplier capacity</td>
<td>74</td>
<td>3.27</td>
<td>1.555</td>
</tr>
<tr>
<td>Top management is committed to staff skills enhancement to carry out supplier performance appraisal and categorization of the same in accordance with their supplier capacity.</td>
<td>74</td>
<td>3.88</td>
<td>1.097</td>
</tr>
<tr>
<td>Top management encourages collaborative relationships with suppliers to enhance their capacity</td>
<td>74</td>
<td>3.50</td>
<td>1.581</td>
</tr>
<tr>
<td>Top management does not make efforts to standardize the procurement process that would reach all suppliers with fairness</td>
<td>74</td>
<td>2.49</td>
<td>1.464</td>
</tr>
</tbody>
</table>

The first objective of the study was to establish the effects of top management commitment on public procurement performance. Respondents were required to respond to set questions related to top management commitment and give their opinions. The statement that top management are not committed to professional supplier evaluation and prequalification had a mean score of 3.07 and a standard deviation of 1.307. The statement that was in agreement that top management are committed to professional supplier performance appraisal and categorization on supplier capacity levels had a mean score of 3.73 and a standard deviation of 1.338. The statement that top management are committed to staff skills enhancement to carry out supplier prequalification and categorization of the same in accordance with their supplier capacity had a mean score of 3.27 and a standard deviation of 1.555. The statement that was in agreement that top management are committed to staff skill enhancement to carry out supplier performance appraisal and categorization of the same in...
accordance with their supplier capacity had a mean score of 3.88 and a standard deviation of 1.097. The statement that was in agreement that top management encourages collaborative relationships with suppliers to enhance their capacity had a mean score of 3.50 and a standard deviation of 1.581. The statement that was in disagreement that top management does not make efforts to standardize the procurement process that would reach all suppliers with fairness had a mean score of 2.49 and a standard deviation of 1.464. These statement is in disagreement with Milimu, (2015) and Mahinda, (2015) that procurement processes in government corporations are fully standardized.

4.4.2 Supply Chain Timelines

Table 4.5 Supply Chain Timeline

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>User complaints on supplier delivery delays are handled effectively by the procurement department</td>
<td>74</td>
<td>3.68</td>
<td>1.509</td>
</tr>
<tr>
<td>There is routine communication to suppliers on the importance of compliance to goods delivery timeliness</td>
<td>74</td>
<td>3.93</td>
<td>1.242</td>
</tr>
<tr>
<td>Serious action is taken on who delays delivery of goods, works and services Suppliers engaged in complex projects are usually taken through supplier development programs</td>
<td>74</td>
<td>3.93</td>
<td>.998</td>
</tr>
<tr>
<td>Contractors who meet the scheduled project milestones are usually rewarded Contractors and Suppliers who do fail to meet project completion periods are never addressed accordingly.</td>
<td>74</td>
<td>4.36</td>
<td>.885</td>
</tr>
<tr>
<td>Most suppliers in the disadvantaged category (Women, Youth and Persons with disability) are not trained on public procurement policy. Many contracts for the disadvantaged group category (Women, Youth and Persons with disabilities) have been terminated due to non-adherence to timelines.</td>
<td>74</td>
<td>4.15</td>
<td>1.002</td>
</tr>
<tr>
<td>Supplier adherence to timelines makes no significant contribution to performance in public procurement. There is little commitment on supplier development with focus on adherence to timelines.</td>
<td>74</td>
<td>2.74</td>
<td>1.111</td>
</tr>
<tr>
<td>The adversarial of relationship between supplier and users affect delivery periods for goods, works and services.</td>
<td>74</td>
<td>2.93</td>
<td>1.102</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The second objective of the study was to establish the effects of supply chain timelines on public procurement performance. Respondents were required to respond to set questions related to supply chain timelines and give their opinions. The statement that was in agreement that user complaints on supplier delivery delays are handled effectively by procurement department had a mean score of 3.68 and a standard deviation of 1.509. The statement that was in agreement that there is routine communication to suppliers on the importance of compliance to goods delivery timelines had a mean score of 3.93 and a standard deviation of 1.242. The statement that was in agreement that serious action is taken on who delays delivery of goods, works and services had a mean score of 3.93 and a standard deviation of 0.998. The statement that was strongly in agreement that suppliers engaged in complex projects are usually taken through supplier development programs had a mean score of 4.36 and a standard deviation of 0.885. The statement that was in agreement that contractors who meet the scheduled project milestones are usually rewarded had a mean score of 4.15 and a standard deviation of 1.002.

The statement that contractors and suppliers who do fail to meet project completion periods are never addressed accordingly had a mean score of 3.15 and a standard deviation of 1.002. The statement that was in agreement that most suppliers in the disadvantaged category (women, youth and persons with disability) are not trained on public procurement timelines had a mean score of 4.04 and standard deviation of 0.691. This statement is in agreement Muema, (2015) that majority of the disadvantaged groups do not know procurement
processes. The statement that many contractors for the disadvantaged group category (women, youth and persons with disability) have been terminated due to non-adherence to timelines had a mean score of 3.47 and a standard deviation of 1.455. The statement that was in disagreement that supplier adherence to timelines makes no significant contribution to performance in public procurement had a mean score of 2.74 and a standard deviation of 1.11. The statement in disagreement that there is little commitment on supplier development with a focus on adherence to timelines had a mean score of 2.93 and a standard deviation of 1.102. The statement that the adversarial relationship between suppliers and users affect the delivery periods for goods, works and services had a mean score of 3.54 and a standard deviation of 1.113.

4.4.3 Supply Chain Costs

Table 4.6 Supply Chain Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs in the supply chain make no contribution to quality of goods, works and services procured by your organization.</td>
<td>74</td>
<td>2.78</td>
<td>1.126</td>
</tr>
<tr>
<td>Many suppliers request for price variations are declined without justification.</td>
<td>74</td>
<td>4.08</td>
<td>.717</td>
</tr>
<tr>
<td>Complaints on supplier over quoting and under-quoting by suppliers are not addressed accordingly.</td>
<td>74</td>
<td>3.54</td>
<td>1.563</td>
</tr>
<tr>
<td>Many contracts awarded to the disadvantaged groups of suppliers (Women, Youth and Persons with disabilities) in the last one year have been terminated due to under quoting.</td>
<td>74</td>
<td>3.11</td>
<td>1.015</td>
</tr>
<tr>
<td>KPA fully complies with the Public Procurement Act and regulations that guide and control the costs in the supply chain.</td>
<td>74</td>
<td>3.96</td>
<td>1.389</td>
</tr>
<tr>
<td>Cost reduction in supply chain only focused on the procuring entity in KPA and not the whole organization.</td>
<td>74</td>
<td>3.74</td>
<td>1.272</td>
</tr>
<tr>
<td>There is no early supplier involvement in tender preparation on cost of goods, works and services.</td>
<td>74</td>
<td>3.78</td>
<td>1.537</td>
</tr>
<tr>
<td>Termination of costly projects results to drastic reduction of costs in the supply chain.</td>
<td>74</td>
<td>3.80</td>
<td>1.424</td>
</tr>
<tr>
<td>The adversarial relationships with your suppliers affect costing of goods works and services in an adverse manner.</td>
<td>74</td>
<td>4.28</td>
<td>.768</td>
</tr>
<tr>
<td>There is no commitment by the Procuring entity to form strategic partnerships with suppliers for complex capital intensive projects.</td>
<td>74</td>
<td>3.45</td>
<td>1.160</td>
</tr>
<tr>
<td>Global sourcing contributes to cost reduction in the supply chain.</td>
<td>74</td>
<td>3.38</td>
<td>1.003</td>
</tr>
<tr>
<td>Supplier development practice with a bias in cost reduction is a major activity undertaken by the procuring department</td>
<td>74</td>
<td>3.68</td>
<td>1.673</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The third objective of the study was to establish the effects of supply chain costs on public procurement performance. Respondents were required to respond to set questions related to supply chain costs and give their opinions. The statement that was in disagreement that costs in the supply chain makes no contribution to quality of goods, works and services procured by your organization had a mean score of 2.78 and a standard deviation of 1.26. The statement that was in agreement that many suppliers’ requests for price variations are declined without justifications had a mean score of 4.08 and a standard deviation of 0.717. The statement that was in agreement that complaints on suppliers over quoting and under quoting by suppliers are not addressed accordingly had a mean score of 3.54 and standard deviation of 1.563. The statement that many contracts are awarded to the disadvantaged group of suppliers (women, youth and persons with disability) in the last one year have been terminated due to under quoting had a mean score of 3.11 and a standard deviation of 1.015. The statement that was in agreement that KPA fully complies with the public procurement Act and regulations that guide and control the costs in the supply chain had a mean score of 3.96 and a standard deviation of 1.389. The statement that was in agreement that cost reduction in supply chain only focuses on the procuring entity in KPA and not the whole organization had a mean score of 3.74 and a standard deviation of 1.272. The statement that was in agreement there is no early supplier involvement in tender preparation on costs of goods, works and services had a mean score of 3.78 and a standard deviation of 1.537. The statement that was in agreement that termination of
costly projects results to drastic reduction of costs in the supply chain had a mean score of 3.80 and a standard deviation of 1.424. The statement was in strong agreement that the adversarial relationships with your suppliers affects costing of goods works and services in an adverse manner had a mean score of 4.28 and a standard deviation of 0.78. The statement that there is no commitment by the procuring entity to form strategic partnerships with suppliers for complex capital intensive projects had a mean score of 3.45 and a standard deviation of 1.160. The statement global sourcing contributes to cost reduction in the supply chain had a mean score of 3.38 and a standard deviation of 1.003. The statement that was in agreement that supplier development practice with a bias in cost reduction is a major activity undertaken by the procuring department had a mean score of 3.68 and a standard deviation of 1.673.

4.4.4 Supply Chain Product

Table 4.7 Supply Chain Product

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier compliance to product specifications makes no contribution to the quality of goods and services procured.</td>
<td>74</td>
<td>3.92</td>
<td>1.311</td>
</tr>
<tr>
<td>Many complaints have been received from the users on supplier poor performance in the last one year.</td>
<td>74</td>
<td>3.69</td>
<td>1.059</td>
</tr>
<tr>
<td>There is an effective structured way of sensitizing suppliers on up-coming innovative product qualification.</td>
<td>74</td>
<td>3.81</td>
<td>1.321</td>
</tr>
<tr>
<td>A bigger percentage of the disadvantaged group of suppliers has been trained on product compliance in the last one year.</td>
<td>74</td>
<td>4.32</td>
<td>.778</td>
</tr>
<tr>
<td>Suppliers are extensively involved in formulation of specifications at the initial stage of the tendering process.</td>
<td>74</td>
<td>4.14</td>
<td>.604</td>
</tr>
<tr>
<td>Effective action is taken on suppliers for non-adherence to product specifications.</td>
<td>74</td>
<td>3.53</td>
<td>1.337</td>
</tr>
<tr>
<td>Most contractors do not meet the scheduled milestone.</td>
<td>74</td>
<td>3.65</td>
<td>1.308</td>
</tr>
<tr>
<td>There is adequate commitment on supplier development with a focus on &quot;supplier compliance to product specifications&quot;.</td>
<td>74</td>
<td>4.19</td>
<td>.975</td>
</tr>
<tr>
<td>There is enough supplier involvement in the formulation of user product specifications.</td>
<td>74</td>
<td>3.95</td>
<td>1.192</td>
</tr>
<tr>
<td>Suppliers vide the suggestion box input, views the public sector as a good customer due to the supplier development programs offered.</td>
<td>74</td>
<td>3.99</td>
<td>.785</td>
</tr>
<tr>
<td>Lack professionalism is high among the top management and procurement officers at KPA thus hinders the supplier development on product specifications.</td>
<td>74</td>
<td>2.99</td>
<td>1.233</td>
</tr>
<tr>
<td>The use of online business processes in your organization has encouraged supplier development with focus on product specifications and compliance.</td>
<td>74</td>
<td>3.81</td>
<td>1.411</td>
</tr>
<tr>
<td>Supplier development does not contribute to compliance with product specification.</td>
<td>74</td>
<td>3.38</td>
<td>1.342</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The fourth objective of the study was to establish the effects of supply chain product on public procurement performance. Respondents were required to respond to set questions related to supply chain product and give their opinions. The statement that was in agreement that supplier compliance to product specifications makes no to the quality of goods and services procured had a mean score of 3.92 and a standard deviation of 1.311. The statement that was in agreement that many complaints have been received from the users on supplier poor performance in the last one year had a mean score of 3.69 and a standard deviation of 1.059. The statement that was in agreement that there is an effective structured way of sensitizing suppliers on upcoming innovative product specifications had a mean score of 3.81 and a standard deviation of 1.321. The statement that was in strong agreement that a big percentage of the disadvantaged group of suppliers has been trained on product compliance in the last one year had a mean score of 4.32 and a standard deviation of 0.778. The statement that was in agreement that suppliers are extensively involved in formulation of
specifications at the initial stage of the tendering process had a mean score of 4.14 and a standard deviation of 0.604. The statement that effective action is taken on suppliers for non-adherence to product specifications had a mean score of 3.53 and a standard deviation of 1.337.

The statement that was in agreement that most contractors do not meet the scheduled project milestones had a mean score of 3.65 and a standard deviation of 1.308. The statement that was in agreement that there is adequate commitment on supplier development with a focus on “supplier compliance to product specifications” had a mean score of 4.19 and a standard deviation of 0.975. The statement that was in agreement that there is early supplier involvement in the formulation of user product specifications had a mean score of 3.95 and a standard deviation of 1.192. The statement that was in agreement that suppliers view the suggestion box input views the public sector as a good customer due to the supplier development programs offered had a mean score of 3.99 and a standard deviation of 0.785. The statement that was in disagreement that lack of professionalism in high among top management and procurement officers at KOPA thus hinders the supplier development on product development had a mean score of 2.99 and a standard deviation of 1.233. The statement that was in agreement that the use of online business processes in your organization has encouraged supplier development with a focus on product specifications and compliance had a mean score of 3.81 and a standard deviation of 1.411. The statement that supplier development does not contribute to compliance with product specifications had a mean score of 3.38 and a standard deviation of 1.342.

4.4.5 Public Procurement Performance
Table 4.8 Public Procurement Performance

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain development enables suppliers to create capacity</td>
<td>74</td>
<td>4.18</td>
<td>.866</td>
</tr>
<tr>
<td>Supply chain development helps suppliers to improve delivery periods</td>
<td>74</td>
<td>4.36</td>
<td>.945</td>
</tr>
<tr>
<td>Supply chain development helps supplier to be conscience of cost of goods</td>
<td>74</td>
<td>4.24</td>
<td>1.156</td>
</tr>
<tr>
<td>Supply chain development helps suppliers to deliver quality goods</td>
<td>74</td>
<td>4.47</td>
<td>.624</td>
</tr>
</tbody>
</table>

The statement that was in agreement that supply chain development enables suppliers to create capacity had a mean score of 4.18 and a standard deviation of 0.866. The statement that was in agreement that supply chain development helps suppliers to improve delivery periods had a mean score of 4.36 and a standard deviation of 0.945. The statement that was in agreement that supply chain development helps supplier to be conscience of cost of goods had a mean score of 4.24 and a standard deviation of 1.156. The statement that was in agreement that supply chain development helps suppliers to deliver quality goods had a mean score of 4.47 and a standard deviation of 0.624.

4.5 Correlation Analysis
To establish the relationship between the independent variables and the dependent variable the study conducted correlation analysis which involved coefficient of correlation and coefficient of determination.

4.5.1 Coefficient of Correlation
Pearson Bivariate correlation coefficient was used to compute the correlation between the dependent variable (Public Procurement Performance) and the independent variables (top management commitment, supply chain timelines, supply chain costs and supply chain product). According to Sekaran, (2015), this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship). The correlation coefficient was calculated to determine the strength of the relationship between dependent and independent variables (Kothari & Gang, 2014).
Table 4.9 Pearson Correlation Coefficient

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Public Procurement Performance</th>
<th>Top Management Commitment</th>
<th>Supply Chain Timelines</th>
<th>Supply Chain Costs</th>
<th>Supply Chain Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Procurement Performance</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Management Commitment</td>
<td>.687**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Chain Timelines</td>
<td>.435</td>
<td>.089</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Chain Costs</td>
<td>.708**</td>
<td>.373**</td>
<td>.199</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Supply Chain Product</td>
<td>.280</td>
<td>.409**</td>
<td>.350**</td>
<td>.512**</td>
<td>1</td>
</tr>
</tbody>
</table>

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

In trying to show the relationship between the study variables and their findings, the study used the Karl Pearson’s coefficient of correlation (r). This is as shown in Table 4.9 below. According to the findings, it was clear that there was a positive correlation between the independent variables, top management commitment, supply chain timelines, supply chain costs and supply chain product and the dependent variable public procurement performance. The analysis indicates the coefficient of correlation, r equal to 0.687, 0.435, 0.708 and 0.280 for top management commitment, supply chain timelines, supply chain costs and supply chain product respectively. This indicates positive relationship between the independent variable namely top management commitment, supply chain timeline, supply chain costs and supply chain product and the dependent variable public procurement performance.

4.5.2 Coefficient of Determination (R²)

To assess the research model, a confirmatory factors analysis was conducted. The four factors were then subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between independent variables (Top management commitment, supply chain timelines, supply chain cost and supply chain products), and the dependent variable (Public Procurement Performance).

Table 4.10 Coefficient of Determination (R²)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.851*</td>
<td>.723</td>
<td>.707</td>
<td>1.08578</td>
<td>.723</td>
<td>45.121</td>
<td>4</td>
<td>69</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Supply Chain Product, Supply Chain Timelines, Top Management Commitment, Supply Chain Costs

The model explains 72.3% of the variance (Adjusted R Square = 0.707) on public procurement performance. Clearly, there are factors other than the four proposed in this model which can be used to predict public procurement performance mobilization. However, this is still a
good model as Gaur and Gaur (2009) pointed out that as much as lower value R square 0.10-0.20 is acceptable in social science research.

This means that 72.3% of the relationship is explained by the identified four factors namely top management commitment, supply chain timelines, supply chain costs and supply chain products. The rest 27.7% is explained by other factors in the public procurement performance not studied in this research. In summary the four factors studied namely, top management commitment, supply chain timelines, supply chain costs and supply chain products determines 72.3% of the relationship while the rest 27.7% is explained or determined by other factors.

4.6 Regression Analysis

4.6.1 Analysis of Variance (ANOVA)
The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05. The significance of the regression model is as per Table 4.11 below with P-value of 0.00 which is less than 0.05. This indicates that the regression model is statistically significant in predicting factors of public procurement performance. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. The overall Anova results indicates that the model was significant at F = 45.121, p = 0.000.

Table 4.11 ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>212.776</td>
<td>4</td>
<td>53.194</td>
<td>45.121</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>81.346</td>
<td>69</td>
<td>1.179</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>294.122</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Public Procurement Performance
b. Predictors: (Constant), Supply Chain Product, Supply Chain Timelines, Top Management Commitment, Supply Chain Costs

4.6.2 Multiple Regression

The researcher conducted a multiple regression analysis as shown in Table 4.12 so as to determine the relationship between value chain and the four variables investigated in this study.

Table 4.12 Multiple Regression

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>7.064</td>
<td>2.150</td>
</tr>
<tr>
<td>Top Management</td>
<td>.258</td>
<td>.050</td>
</tr>
<tr>
<td>Commitment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Chain Timelines</td>
<td>.087</td>
<td>.046</td>
</tr>
<tr>
<td>Supply Chain Costs</td>
<td>.161</td>
<td>.036</td>
</tr>
<tr>
<td>Supply Chain Product</td>
<td>.031</td>
<td>.038</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Public Procurement Performance

The regression equation was:

\[ Y = 7.064 + 0.258X_1 + 0.087X_2 + 0.161X_3 + 0.021X_4 \]

Where:

\( Y \) = the dependent variable (Public Procurement Performance)

\( X_1 \) = Top Management Commitment

\( X_2 \) = Supply Chain Timelines

\( X_3 \) = Supply Chain Costs

\( X_4 \) = Supply Chain Products
The regression equation above has established that taking all factors into account (Public procurement performance as a result of top management commitment, supply chain timelines, supply chain costs and supply chain products) constant at zero value addition will be 7.064. The findings presented also shows that taking all other independent variables at zero, a unit increase in top management commitment will lead to a 0.258 increase in the scores of public procurement performance; a unit increase in supply chain timelines will lead to a 0.087 increase in public procurement performance; a unit increase in supply chain costs will lead to a 0.161 increase in the scores of public procurement performance; a unit increase in supply chain product will lead to a 0.031 increase in the score of public procurement policy. This therefore implies that all the three variables have a positive relationship with top management commitment contributing most to the dependent variable. This therefore implies that all the four variables have a positive relationship with public procurement performance with top management commitment contributing most to the dependent variable. From the table we can see that the predictor variables of top management commitment, supply chain timelines, supply chain costs and supply chain products got variable coefficients statistically significant since their p-values are less than the common alpha level of 0.05.

SUMMARY OF THE FINDINGS,
CONCLUSION AND RECOMMENDATIONS

5.1 Introduction
The chapter provides the summary of the findings from chapter four, and it also gives the conclusions and recommendations of the study based on the objectives of the study. The chapter finally presents the limitations of the study and suggestions for further studies and research.

5.2 Summary of the Findings
The objectives of this study were to examine the determinants of supplier development practice in public procurement at Kenya Ports Authority. The study was conducted on 74 out of 100 that constituted the sample size. To collect data the researcher used a structured questionnaire that was personally administered to the respondents. The questionnaire constituted 46 items. The respondents were the employees of Kenya Ports Authority. In this study, data was analyzed using frequencies, mean scores, standard deviations, percentage, Correlation and Regression analysis.

The results revealed that majority of the respondents that participated in the study were male of the ages of between 26-35 years holding first degree in top management with a working experience of between 9-13 years. Further the results revealed that there was a strong positive correlation between the independent variables and dependent variable. The coefficient of determination was 72.3%.

5.2.1 Top management commitment
The study results showed that the top management of Kenya ports Authority is committed a professional supplier evaluation, prequalification, appraisal and categorization on supplier capacity levels. Top management is committed to staff enhancing their procurement skills by pursuing further studies in the area of procurement. Further the top management is committed to standardize the procurement processes.

5.2.2 Supply Chain Timelines
The study results revealed that there is constant communication to the vendors on the importance of compliance to goods delivery timeliness and serious action is usually taken against any vendor who fails to meet deadlines. Further the study revealed that vendors who perform their obligations as required are recognized and rewarded. It was established that the disadvantaged groups category vendors delay to supply goods and services and that they are not familiar with procurement processes.

5.2.3 Supply Chain Costs
The study results revealed that many suppliers request for price variations are declined without reasons being made. That the disadvantaged group’s vendors have been terminated in the last one year due to under quoting of prices. Further the study revealed that costs in the supply chain make no contribution to quality of goods, works and services procured by the organizations.

5.2.4 Supply Chain Product
The study results showed that suppliers are extensively involved in formulation of specifications at the initial stage of the tendering process and that suppliers are extensively involved in formulation of specifications at the initial stages of tendering processes. There is an effective structured way of sensitizing suppliers on incoming innovative product specification. Suppliers are extensively involved in formulation of specifications at the initial stage of the tendering processes. There is an effective structured way of sensitizing suppliers on incoming innovative product specifications.

5.3 Conclusion
The study concluded the following:
5.3.1 Top Management Commitment
On Top management commitment, the study concluded that the top management have a significant effect on supplier development as shown by the strong coefficient of correlation. Top management are concerned with the formulation of policies that are geared to supplier development and wellness.

5.3.2 Supply Chain Timelines
That supply chain timelines helps the organization to achieve its objectives since good and services are delivered on time. That rewarding contractors that meet project milestones creates competition amongst them thus encouraging supplier development which leads to efficiency at Kenya Ports Authority operations. That supplier should be encouraged suppliers to apply tenders online to be able to meet deadlines and timelines.

5.3.3 Supply Chain Costs
That the organization is fully compliant with the public procurement Act and regulations that guide and control the costs in the supply chain. That Kenya Ports Authority build relationship with suppliers to minimise adverse costings of goods and services that can reduce efficiency of operations.

5.3.4 Supply Chain Product
Those suppliers are allowed in the formulation of specifications and designing of the tendering processes. That Kenya Ports Authority commits to supplier development with focus of supplier compliance. That Kenya Ports Authority lacks professionalism in its top management in the procurement department that hinders supplier development on product specifications.

5.4 Recommendations
The study recommended the following:

1. That Kenya Ports Authority top management should commitment both financial resources and human resources on supplier development.
2. That Kenya Ports Authority should encourage suppliers to supply goods and services on time to improve efficiency in the organization.
3. That Kenya Ports Authority should reduce supply chain costs of goods and services to ensure that they get value for money.
4. That Kenya Ports Authority should involve the suppliers in formulation of specifications and the tendering processes to build synergy.
5. That Kenya Ports Authority should carry out supplier development assessment and train them on product specifications.

REFERENCE


Hartley, J., & Choi, T. (2013). Supplier Development:Customers as A Catalyst of


