THE EFFECT OF PUBLIC PROCUREMENT PROCESS ON COST OF GENERATING POWER IN THE ENERGY SECTOR IN KENYA: A CASE STUDY OF KENYA ELECTRICITY GENERATING COMPANY

BY

SOPHIA KEMUNTO MOMANYI

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School of Business, University of Nairobi

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DECLARATION

This is my original work and has not been presented for a study in any University or College for award of a degree

Signature:…… Date:……

Sophia Kemunto Momanyi **D61/67802/2011**

This Management Research Project has been submitted for examination with my Approval as the appointed supervisor:

Signature:…… Date:……

Onserio Nyamwange,

Lecturer,

Department of Management Science,

School of Business, University Of Nairobi.

DEDICATION

To my husband Alfred oseko, my daughter Isla and Asheen who always challenged and encouraged me during my studies. God bless you all.

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ABSTRACT

The study's main purpose was to ascertain the effect of public procurement process on cost of generating power in the energy sector in Kenya with specific reference to Kenya Electricity Generating Company (KENGEN). Specifically, the study resolved in establishing the effect of public procurement process on cost of generating power in KenGen and to establish measures/actions taken by Kengen to manage costs in their procurement dealings. The study adopted both case study and descriptive research designs. The population under study was all the procurement employees of Kengen. A sample of 134 was taken consisting of the procurement department employees. Data was collected using a structured questionnaire. The data was analyzed using descriptive statistics, regression analysis and frequencies and percentages. The study established that the procurement process has a significant effect on the cost of generating energy at Kengen. It was evident that the three variables that constituted the procurement process: procurement planning, supplier selection and tender process explain 56.2 percent of the cost of generating energy. This implies that as far as energy generation costs are concerned, the procurement process has a significant percentage of the costs originating from it. It was further established that Kengen has taken a number of measures aimed at reducing costs in its procurement activities. These measures include: commitment to continuous improvement by the organization, frequent supply chain performance measurement in order to identify areas of improvement in procurement, ensuring that there is reuse and recycling of materials to avoid wastage and spending money on fresh materials when it is not necessary among others.

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ABBREVIATION AND ACRONYMS

CIPS	- Certificate in Procurement and Supply
ERC	- Energy Regulation Commission,
GDC	- Geothermal Development Company,
GDP	- Gross domestic Product
IPP's	- Independent power producers
KenGen	- Kenya Generating Company Limited
KENTRACO	- Kenya Transmission Company,
KIPRA	- Kenya Institute for Public Policy Research and Analysis
KPC	- Kenya Pipeline Company,
KPLC	- Kenya Power and Lighting Company Limited,
KPLC	- Kenya Power and Lighting Company
MOE	- Ministry of Energy
NSE	- Nairobi Securities Exchange
OECD	- Organization for Economic Co‐operation and Development
PPOA	- Public procurement Oversight Authority
REA	- Rural Electrification Authority,

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Supply chain encompasses all those organization and activities involved in the processing of materials from raw materials stage through the end user as well as information flow (Handfield and Nicholas, 2002). Businesses today operate in a market-driven, customer-oriented era and to survive in such a competitive environment, they have to be flexible, adaptable and above all provide superior service. Firms work in an open environment and have to take into consideration of the key elements in the market that is the suppliers and other entities in the supply chain that affects its operations. Organizations adopt numerous business improvement strategies among them low cost strategies to improve on their performance.

Public organizations are funded by the government to undertake their projects. The organizations are entrusted with the scarce resources and are expected to utilize the funds effectively and efficiently so as to benefit the public at large. To effectively use the resources, they need to adopt lean procurement strategies to remain competitive as well as relevant in the dynamic market. Organizations use purchasing as a tool for cost management and increase the service to customers (Koca-basoglu and Suresh 2006). Procurement strategy can improve a firms competitive edge by enabling it to meet the business needs in a more effective and efficient way. The firm needs to develop a more flexible strategy that does not put pressure on resources at the same time enabling it achieve objectives in a more economical way.

1.1.1 Public Procurement Process

Public procurement process refers to purchase by government and state-owned enterprises of goods, services and works and is guided by the Public Procurement and Asset Disposal, 2015. Procurement starts with need identification and planning for its requirements. The organization then does risk assessment, evaluates the possible solutions and identifies the qualified supplier, award contract and payment for goods and services (Walters 2004). The process enables a firm to get right quality a product, for the right price, with the quantity which is right, at the right time, the goods has to come from the sources which are appropriate (Hawkins, 2004).

Public Procurement and Asset Disposal Act 2015 outlines objectives which must be achieved among them maximizing economy and efficiency; promote competition, integrity and fairness; increase transparency and accountability. The Act requires that decisions be made by a team in various stages of the public procurement process so as to achieve value for money. The value for money concept measures the price of products as well as services rendered, quality of goods and services, resource use, fitness for purpose, timeliness and convenience (Hawkins, 2004).

The procurement process follows the procurement cycle which includes: planning the whole process, initiating the procurement, checking availability of goods in stores, confirming availability and adequacy of funding, advertising procurement, receiving and opening of bids, bid evaluation, selecting supplier, notifying qualified suppliers, signing contract, administering contract, inspecting and receiving supplies or works (PPOA,

2009). Public procurement is characterized by long bureaucratic processes of acquiring goods and services which lead to delays in acquisition. The entire procurement process needs to be carefully crafted to avoid long lead time, inadequate resources, wrongful award of contracts, cancellation of contracts, litigations, excess or insufficient/emergency stock. An efficient procurement must have rules and regulations to govern it. A sound public procurement process should ensure that an organization achieves value for money when procuring its needs. Efficient procurement process is necessary for development of the economy and well utilization of scarce public resources (Kabaj (2003)

1.1.2 Cost of Power Generation

Cost management is the process by which organizations manage and control the budget. It enables the organization to plan and operate within the set budget. It involves planning, assessing controlling, and evaluating the actions taken to achieve optimal cost (Seuring, 2001). Cost information is needed to manage the future.

Relationships and information flow in the supply chain as well as materials affect cost. According to Handfield and Monczka (2009) suppliers have a very great impact on the cost of the firm as they determine the features of end product. Thus the purchasing function is of great importance as greater percentage of company's costs are factored in by inbound supplies and services (Olaore, 2013). Procurement has a big impact on cost as it affects the price, quality, delivery time of the goods an all this affects the financial performance of the organization as well as the service levels to customers (Lucey, 2002)

1.1.3 Kenya Electricity Generating Company

The Energy Sector in Kenya consists of Companies under the Ministry of Energy and Petroleum. These firms include: KenGen, REA, KPLC, KENTRACO, ERC, GDC, KPC, Oil Refineries and IPPs that include Ibera Africa and Ngong Hills Wind Energy (KenGen, 2009).

KenGen is a limited liability company, registered in Kenya under the Act of companies. Kenya Power Company Limited (KPC)'s incorporation was done in the year 1954 but later re launched as KenGen in 1998. KenGen listed 30% of its shares at the Nairobi securities Exchange, (NSE) in 2006, with the government of Kenya owning the balance of 70% of the shares (KenGen, 2009). KenGen's main goal is the development, management, operation of plants that generate power and electric power supply. KenGen produces 80% of electricity in Kenya (KenGen, 2014) and the rest 20% is by IPPs.

The mission statement of KenGen is to generate electrical energy with competitive price efficiently, and its vision is to lead in the market by providing quality, safe, reliable and electric energy with competitive price within the region of Eastern Africa (KenGen 2014).

1.2 Research Problem

Procurement involves a series of decisions to be made at every stage in the process. These decisions have an impact on the cost, time and quality of output. Poor procurement decisions can be expensive which in turn affects cost of doing business. Procurement is

regarded as an essential enabler of business strategy and desired method for achieving sustainable cost reduction through use of proactive and efficient approach to buying energy. Public procurement has been given great focus because of its impact on service and cost of goods to citizens (Basheka & Bisangabasaiji, 2010). By understanding the procurement process, it's possible to get better insight into the actual cost of producing any goods and services (Bailey et al., 2004).

Studies have been done both locally and internationally on the impact of public procurement process and practices on company's performance. Kakwezi and Nyeko (2010) did a research on the efficiency and effectiveness of the procurement process on performance. They found out procurement function has to be to be measured otherwise it will have impact on decisions which are costly to an organization .Saviour (2014) did an evaluation of the impact of procurement planning on service delivery in 3rd level hospital in Zambia. He found out that procurement planning has a great impact service delivery. The studies done by Coppens (2009), European Economics (2006), and Estache and Limi (2008) quantified the savings of cost incurred through competition as well as transparency in procurement markets and found out that laws as well as regulations which support competition and transparency seem to decrease prices of procurement.

Mokogi (2015) did a study on the procurement practices and its effects on the commercial state owned enterprises' performance around Nairobi City County and established that the relationships between buyers and suppliers, selection procedures of suppliers, capability of organizations as well as management of procedures of

procurement have assisted those enterprises to enhance the performance of their organizations.

A study carried out by Makabira and Waiganjo (2014) on the practices of procurement and corporate institution performance in Kenya with focus on Kenya national police service, indicated that procurement controls, procurement planning, procurement monitoring and training workforce in procurement practices have a great role in the performance. The study did not examine how inventory management affects performance which is one of the practices under investigation in this study. Kagiri (2005) carried out a case study of KenGen which focused on overruns of cost and time in projects of power in Kenya and found out that eight factors significantly contributed to time and cost overruns which include: resource planning, contractor inabilities, interpretation of requirements, improper project preparation, government bureaucracy works definition as well as timeliness.

A review conducted by PPOA (2009), identified a number of challenges faced by procuring entities such as procurement process cost, the time taken when procuring and reacting opportunities of business being too long, suppliers' negotiation, approving process externally and matter of reselling items which are branded were realized. Though most of these studies are on public procurement; none has addressed the impact of public procurement process on the cost of electricity. It is on this basis that I saw need for research to be conducted to fill this knowledge gap.

The study sought to answer the following question: how does public procurement process affect the cost of generating power in KenGen? What measures does Kengen undertake to manage costs in their procurement dealings?

1.3 Research Objectives

The general objective of the study was to establish the relationship between public procurement process and cost management in the energy sector in Kenya. The specific objectives were;

i. To establish the effect of public procurement process on cost of generating power in KenGen.
ii. To establish measures/actions taken by Kengen to manage costs in their procurement dealings.

1.4 Value of the Study

This research focused on assisting the executives of the organizations in formulating best policy which can be adopted in order to necessitate the organization achieve its goals. The research is of great advantage to power producing organization as it will provide insight into public procurement process and how it affects the cost of electricity. The study will serve as a reference point on empirical data pertaining to public procurement process in relation to the impact it has on the cost of electricity in KenGen and it will identify gaps for future studies

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter highlights other scholars information published under the subject matter. It provides an examination of the views of different academicians on the topic of public procurement process. It also covers the concept of procurement process in the public sector, the critical aspects in the procurement process and its impact on service cost.

2.2 Institutional Theory

Institutions comprises of cultural, cognitive and regulatory elements (Scott, 2004). The institutions' pillars are cultural, normative as well as regulatory cognitive. The pillar of regulation advocates for rules usage, the normative norms, laws and sanctions, as well as values and the pillar of cultural-cognitive are applied on the basis of shared understanding. This theory is of great value in evaluating the procurement of public entities. From the theory, one can understand the laws and regulations governing effective procurement in procurement planning, supplier selection, tendering, and contract review and monitoring. The cognitive and normative pillars are equally essential in improving the organizational culture in terms of habits, work ethics, beliefs and values of employees in public procurement for better public service, (Deng 2004).

2.3 Public Procurement Process

Procurement in public sectors is the process of acquiring products and services which is done within public sector organizations or governments (Thai, 2001). Public procurement process involves procurement planning, supplier selection, tender award and contract management (Buchner, Freytag, Gonzalez & Guth,2008) .Procurement process has six

steps: Define specifications, select supplier, contract agreement, ordering, expediting and evaluation (Van Wheel, 2005). (Chong and Ooi, 2008) assert that a good organized and executed procurement will make it possible for companies to decrease their inventories, have better customer service, reduce lead time, diminish costs as well as aid fast inventory turns.

The PPADA (2015) states that all purchases must create value for money. Procuring entities have to do a market research to establish the actual prices of goods, goods be procured from qualified suppliers and that the procurement process be competitive and fair. Record be kept properly and adopt best practices when purchasing (PPOA, 2009).

Procuring entities have to develop plans that must be approved by relevant authorities. Te plans must be realistic and based on real market prices (PPAD,2015). Procurement decisions affect greatly the cost of a product. Careful procurement planning enables efficient resource utilization, anticipated risks and ways to minimize them and reduce lead time. Monitoring of contracts enables an organization deal with any issues coming up at the right time thus minimizing costs associated with litigation and contract cancellations.

2.3.1 Procurement Planning

Brown and Hyer (2010) defines procurement planning as the process of identifying products and services which is to be procured, how to met the needs, the nature of works or goods required, what procurement strategies to be used, time frames, cost, and assigning duties to ensure accountability for the whole process. Public Procurement and Asset Disposal Act (2015) provides elaborate mechanisms for public planning for public

entities. It requires that the entities must have a procurement plan that contains a list of goods to be procured, estimated cost, time frame and delivery date, sources of funds, procurement method among others. According Lysons and Farrington (2010) resource allocation is a key aspect of planning in the procurement process. To ensure the procurement entity meets its objectives in the manner which is more efficient, timely and economical, it must have adequate resources allocated.

Procurement planning significantly impacts on the performance of an organization. if well managed, it can improve on the service delivery and help control cost. Planning helps an organization have a picture of the costs to be incurred and seek funding well in good time and as well anticipate the likely risks to be incurred and develop actions to mitigate them (Basheka, 2004).Procurement planning helps organizations achieve value for money for all their expenditures on goods and services. It sets up a map of what one wants and how to get it in the best way possible using economical means. The value of planning has been echoed by many and need to be emphasized to achieve greatest value (Mullin, 2003).

2.3.2 Supplier Selection

The process of selecting the right supplier to deliver goods and services is known as supplier selection which involves scanning, analyzing, examining and filtering the basic background and bio data of suppliers within the market with the aim of choosing the best one that will propel the performance of the organization to a better direction (Stormy, 2005). The public and procurement asset disposal act 2015 requires that the process of selecting suppliers be transparent, fair and competitive.

Beil and Ross (2009) argue that poor supplier selection criteria can cost the firm millions of loses due to goods being returned if they don't meet the set criteria, contract cancellations, time extension to complete project .To avoid such dire consequences; it is paramount to have effective screening processes that help to identify top notch suppliers before awarding of contracts. Stanley and Wisner (2001) recommended on-time delivery as well as quality of goods and services as being the key aspects of evaluating performance in purchasing.

Relationships with suppliers also contribute to cost management. Developing confidence and trust among suppliers help create a conducive environment that brings forth good results. A company has to do due diligence of the supplier before settling on any engagement with them as this provide crucial information necessary to determine whether to sign contract with him or not. Wang and Che (2007) suggested that technical and financial capability, production cost, reputational history and all other facilitation costs need to be taken into consideration as well in supplier evaluation. (Kumara, 2012) contends that good relationships with suppliers must be incorporated in the supply chain so as to get reap the benefits of the relationship. Flexibility is also another ingredient to consider in the suppliers and ability to deliver within the set timelines without delay as this will ultimately impact on the cost of operations of business. For instance, a little delay may stop the production process leading to shortages in goods and impact on profitability.

2.3.3 Tender Process

Tendering is process of making an offer or expression of interest in response to an invitation a for a tender. Public entities procure goods by through tenders. The tender documents outline the what is needed, the requirements, instructions, criteria and terms. (Lysons and Farrington, 2006). Tendering is governed by the principle of fairness, competitiveness, accessibility as well as openness (World Bank, 2000).

The different suppliers are evaluated based on the set criteria like financial and technical capability, quality, and price among other terms as per the tender documents. Sometimes a company has to pre-qualify to avoid the costly process and work on the pre-qualified people who have demonstrated their capability the list to be evaluated (Stormy, 2005). Public entities are legally required to select suppliers who have the capability to perform the task at hand (public procurement and asset Disposal act 2015)

2.4 Public procurement and cost of generating power

Lucey (1993) noted that the business' main goal is making and maximizing its profit margin with subsidiary aims being based on business growth, corporate social responsibility, going concern etcetera. The maximization of profit margin is the final objective since it entails expansion of wealth of shareholders. Individuals tend to naturally like investing in businesses which thrive well (Charles 1998). However, for adequate profits to be achieved, cost has to be controlled. Robert (2007) states that an organization with enough cost structure increases its chances to attain targets on profit margins.

Public Procurement and Asset Disposal Act 2015 provide framework to be followed by public entities so as to achieve create value for money as well as fairness, transparency and competitiveness. The entities should have a public procurement plan in place, use appropriate procurement method, use competitive tendering where the successful bidder must have the capability to undertake the task at hand. The public procurement process has great potential in reducing an organization's total cost through: reducing souring cost, reducing cycle times, paper work reduction, reduction of ordering cost and achieving competitive bids (Aberdeen, 2011, Suleiman, 2015, Muiha and Afande, 2015). According to Miles (2009) most people who work in product design agree that over 80% of the costs of manufacturing a product are determined during the design and procurement phases. Proper procurement procedures and consolidation of procurement activities greatly therefore reduce the price of products purchased and leads to rationalization of the purchased materials from the suppliers; leading to increased quantities purchased from each supplier thus dramatically providing great leverage to the purchasing organization (Hans, 2009).

2.5 Empirical Studies

Mokogi (2015), in a study to establish the procurement practices and its impact on the commercial state owned enterprises' performance within Nairobi city county observed that, poor management of procurement process including planning, budgeting, length of time involved, use of quotations and sub contracting directly led to inefficiencies which missed targets and eventually to poor performance. Procurement practices such as Buyer-supplier relationships, supplier selection procedures, organizational capacities and

procurement process management assist enterprises to enhance the performance of their organizations.

Kiage (2013) in his study on the aspects that affect performance of procurement in ministry of energy observed that procurement planning is the key aspect and management of contract following it. The reason being, results on appropriate planning which is accompanied with efficiency as well as effectiveness experienced in meeting the anticipated goals. The key barrier in public procurement is experienced through poor management as well as planning in the process of procurement (Mamiro, 2010)

Mulari and Wen (2007), in their research whose aim was the identification of the delaying aspects and how they affect completion of project in Malaysia observed that most important causes of project delays are poor contractors planning, site management, inexperience, lack of finances to pay for work completed, equipment availability and failure, shortage in materials and labor supply, problems with sub-contractors, lack of communication between parties and mistakes during project implementation phase. The study identified effects of delays as: time overrun, cost overrun, disputes, arbitration, litigation, and total abandonment

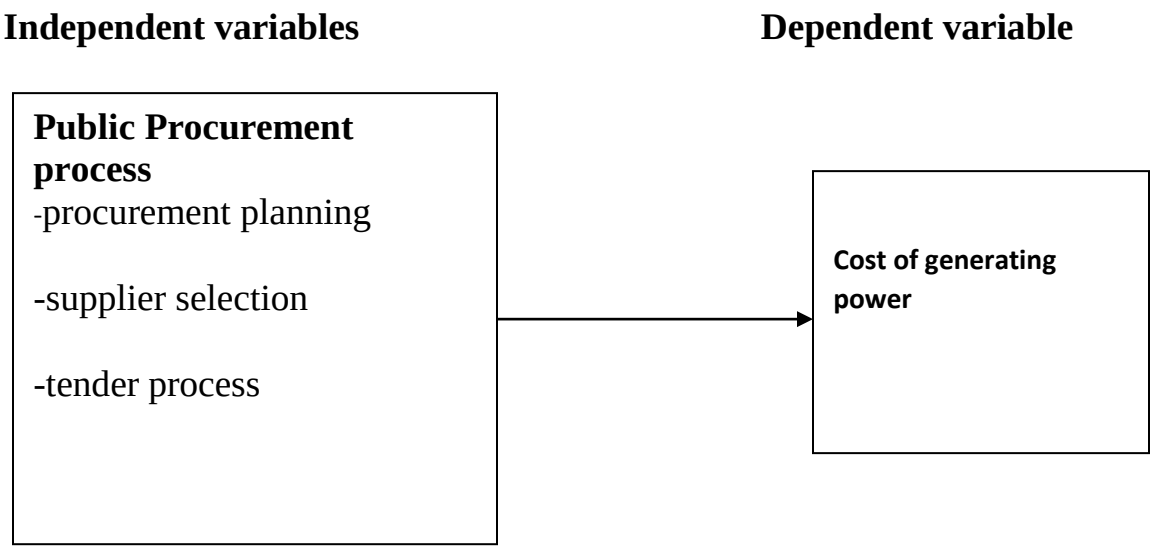
Munyua (2012) observes that in order for selection to work as an advantage to an organization, there is the use of competitive sourcing initiatives which include: tenders, bidding, supplier analysis, and supplier firm collaboration. These initiatives works best at ensuring the best supplier is selected which in return help improve the supply chain performance. Ogot (2008) observe that the principles of transparency, accountability as well as value for money need to be greatly considered.

Kagiri (2005) identified three variables that contributed to Projects' time and cost overruns. Factor analysis established eight main factors as; resource planning interpretation of requirements, contractor inabilities, risk allocation works definition, government bureaucracy improper project preparation, as well as timeliness as contributors which are significant to overruns.

2.6 Conceptual Framework

The analysis of the dependent variable and its influence on the independent variables enables us find solution to the research problem represented in a conceptual framework (Sekaran, 2009). In this study, the independent variables are: procurement planning, supplier selection, tender process, contract management, and project delivery while the dependent variable is the impact of procurement process on cost of electricity as shown

Figure 2.1: Conceptual framework



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The methodology which was used in conducting the study is outlined in this chapter. The issues discussed include the research design, the target population, the sampling design, data collection methods and data analysis plus data presentation method. This is against the research objective, the impact of the procurement process on cost of electricity.

3.2 Research Design

The research design of the study was case study of KenGen. A case study was was considered the most appropriate for providing an in depth and thorough investigation of the impact of procurement on cost of electricity in Kenya and considering that Kengen contributes 80% of electric power generated in Kenya. The study used descriptive research design to obtain information concerning the relationship between the public procurement process and the cost f generating power. The design described the public procurement process in KenGen and established its impact on cost of generating power.

3.3 Target Population

The target population was KenGen employees. According to KenGen human resource department, the total workforce of the procurement department was 134 .The respondents were from the procurement department, those who were personally involved in the procurement of goods and services in KenGen.

3.4 Data Collection

The researcher collected data through administering a questionnaire. The design of the questionnaire was based on the effect of public procurement process at KenGen on cost of generating power and each item in the questionnaire addressed a specific objective of the study. The questionnaires were given to those in charge of procurement planning, supplier selection, tender evaluation and award in the procurement department. The questionnaire comprised of two parts. Part one captured the general particulars of the respondents, part two focused on the independent variables identified from literature review.

3.5 Data Analysis

The data was collected using questionnaires. The questionnaires were checked for completeness, errors and consistency before processing. Data from this research was quantitatively. Primary data from the field was analyzed quantitatively. This was done using descriptive statistics, frequencies, percentages and regression analysis to analyze the data as shown in the table below.

Table 3.3 Tools of Analysis

Objective	Section of Questionnaire or which secondary data to collect	Analysis
To establish the effect of public procurement process on the cost of generating power	B b),c),d)	Descriptive statistics and regression analysis
To find out the actions taken by KenGen to manage cost in their procurement dealings	B e), f)	Frequencies and percentages

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The objective of this study was to determine the effect of public procurement process on cost of generating power in the energy sector in Kenya with specific reference to Kenya Electricity Generating Company (KENGEN). The study had two specific objectives: to establish the effect of public procurement process on cost of generating power in KenGen and to establish measures/actions taken by Kengen to manage costs in their procurement dealings. This chapter contains the research findings and their interpretation.

4.2 General Information

This study had a sample of 134 respondents who were drawn from the procurement department at Kengen. Questionnaires were issued to the 134 respondents. 94 respondents returned the questionnaires whereas 40 respondents did not. This implies that the study achieved a response rate of 70.15 percent. This response rate was considered adequate to represent a true picture of the effect of the procurement process on the cost of generating energy at Kengen.

The study sought some information about the respondents to assist in determining whether they were suitable in providing reliable data on the effect of the procurement process on the cost of generating energy. The respondents were required to indicate the duration they had worked with Kengen. They were provided with three options containing the years of experience and were expected to select the category that best described the duration one had worked at Kengen. It was established from the research findings that 53.2 percent of the respondents had worked with Kengen for 5 to 8 years,

26.6 percent of the respondents had more than 8 years working experience whereas 20.2 percent of the respondents had 1 to 4years working experience. This was an indication that majority of the respondents had worked for a relatively longer time with the organization hence could provide reliable information.

The study also sought some information concerning the designation of the respondents who took part in this study. Table 4.3 contains the results that categorize the respondents according to their designations. It was observed that 53.2 percent of the respondents held the position of procurement officers, 35.1 percent held the position of procurement clerk, 10.6 percent held the position of stores manager whereas 1.1 percent held the position of procurement manager. This implies that all the categories of respondents were well represented hence views did not represent only one category

4.3 Procurement Process

This study had three independent variables: procurement planning, supplier selection and the tender process. The dependent variable of the study was the cost of generating energy. For the independent variables, the respondents were required to rank the extent to which they agreed with various statements using the scale: 5 strongly agree, 4 agree, 3 not sure, 2 disagree and 1 strongly disagree. The results are presented in Tables 4.1, 4.2 and 4.3.

The descriptive statistics for procurement planning as illustrated in Table 4.1 reveal that Kengen makes early financial considerations during the procurement planning process. This was supported by a mean of 4.58. This is in line with Wang and Che (2007) who suggested that technical and financial capability, production cost, reputational history and

all other facilitation costs need to be taken into consideration as well in supplier evaluation.

Table 4.1: Procurement planning

	Mean	Std. Deviation
Early financial considerations in procurement planning	4.58	.524
Stakeholder involvement in procurement planning	4.06	.627
Proper market analysis during planning	4.23	.781
Clear procurement methodology	3.93	.833
Clear procurement timeframes	3.74	.754

Stakeholder involvement in the procurement planning stage had a mean of 4.06 implying that most of the respondents agreed that stakeholder involvement was done during procurement planning. Conducting proper market analysis during procurement planning had a mean of 4.23 an indication that most of the respondents agreed that this was being done as part of procurement planning best practice. This study concurred with Kennard (2006) that procurement planning plays a great role in budget controls and if adopted well coordinated in the entire organization then economies of scale can be achieved.

Table 4.2: Supplier selection

	Mean	Std. Deviation
There is strict supplier selection criteria	4.51	.524
Materials and components tested during selection	4.16	.627
Supplier financial ability evaluated during selection	4.05	.781
Assessment of supplier quality systems	3.93	.833
Commitment to continuous improvement used as criteria in selection	3.89	.754

Concerning supplier selection, Table 4.2 revealed that existence of strict supplier selection criteria had a mean of 4.51, testing of materials and components had during

supplier selection had a mean of 4.16 and probity and transparency had a mean of 4.05. This implies that most of the respondents agreed that Kengen had a strict supplier selection criterion that had to be observed, testing of materials and components was done during supplier selection to ensure the right quality and there was probity and transparency in supplier selection. Procurement and Asset Disposal Act (2015) calls for public entities to use selection criteria that are fair and competitive so as to achieve value for money and create equal opportunities for all and prevent loopholes for corruption. The findings tally with Ogot et al (2009) that selection process need to be governed by ethics and rules so as to achieve great value for money.

Table 4.3: Tender process

	Mean	**Std. Deviation**
Value for money is considered during tendering	4.19	.524
Fair competition is encouraged in tendering	4.10	.627
Probity and transparency is practiced	4.07	.781
Tendering costs are minimized	3.85	.833
Local suppliers used whenever they offer value for money	4.03	.754

The results in Table 4.3 on tender process established that value for money consideration during the tender process had a mean of 4.19. This implies that majority of the respondents agreed that the organization ensures that value for money is achieved when tendering for products. Encouraging fair competition in order to get the most competitive prices had a mean of 4.10 an indication that most respondents agreed that there was fair competition during tendering.

4.4 Effect of Procurement Process on Cost of Energy Generation

The first objective of the study was to establish the effect of public procurement process on cost of generating power in KenGen. In order to achieve this, a multivariate regression analysis was conducted where procurement planning, supplier selection and tender process were the independent variables whereas the cost of generating energy was the dependent variable. The independent variables were measured using the composite index from the responses whereas the cost of generating energy was measured by the opinion of the respondents concerning the cost of generating energy incurred by Kengen in comparison with other countries within the region. The results are presented in Tables 4.4, 4.4 and 4.6.

Table 4.4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.750[a]	.562	.463	.803	.406	5.840	3	90	.001

a. Predictors: (Constant), Tender process, Supplier selection, Procurement planning

The study sought to establish the effect of public procurement on cost of generating power at KenGen. Correlation and regression analysis was used to establish the relationship between procurement performance and cost of generating power. The study adopted the following linear multiple regression to establish the relationship between the variables;

$PPP = \alpha + \beta_1 PP_1 + \beta_2 SS_2 + \beta_3 TP_3 + \varepsilon$ Where: PPP = Public procurement process; α = the Y intercept when X is zero; β_1 β_2 and β_3 are regression weights attached to the variables;

PP_1 = procurement planning; SS_2 = supplier selection; TP_3 = tender process α is regression constants and e is the error term.

Table 4.5: Analysis of variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.313	3	4.771	2.740	.001 [a]
	Residual	58.176	90	.646		
	Total	63.489	93			

a. Predictors: (Constant), Tender process, Procurement planning , Supplier selection

b. Dependent Variable: Cost of generating power

Table 4.6: Model coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.669	.662		4.033	.000
	Procurement planning	3.106	1.134	1.081	3.789	.000
	Supplier selection	2.307	1.119	1.267	2.584	.001
	Tender process	.853	.569	.932	.712	.001

a. Dependent Variable: Cost of generating power

The results in Table 4.4 reveal that the coefficient of determination (R square) had a value of 0.562. This is an indication that procurement process explains 56.2 percent of the variance on the cost of generating energy at Kengen. The remaining 43.8 percent of the variance is explained by other variables that are outside the scope of this study. Table 4.6 confirms that the relationship between the public procurement process and the cost of generating energy was significant at 0.001 which was within the significance level of 0.05. The three variables: procurement planning, supplier selection and tender process were all found to have statistically significant relationship with the cost of generating energy.

The study produced the following predictor model:

$PPP = 2.669 + 1.081PP_1 + 1.267SS_2 + 0.932TP_3 + \varepsilon$

4.5 Measures Taken to Reduce Costs in Procurement

The second objective of the study was to establish the measures taken by Kengen in order to reduce costs in its procurement dealings. For the study to achieve this objective, the respondents were provided with a number of possible measures and were required to indicate the extent to which each one of them was adopted in Kengen. The findings are presented in Table 4.7

It was established that 76.6 percent of the respondents indicated that better procurement planning had been adopted to a large extent, 10.6 percent to moderate extent, 8.5 percent to a very large extent and 4.3 percent to a small extent. Therefore most of the respondents confirmed that better procurement planning has been adopted to a learge extent as a procurement cost reduction measure by Kengen. It was also established that the orgnaization conducts procurement only when it is necessary. On taking advantage of bulk purchases, it was revealed that 60.6 percent of the respondents indicated that it was adopted to a large extent. Majority of the respondents also revealed that outsourcing of non-core business was adopted to large extent by the company ans indicated by 59.6 percent and 24.5 percent of respondents who indicated to a large and very large extent respectively.

Table 4.7: Measures Taken to Reduce Costs in Procurement

Measure	Response	Frequency	Percent
Better procurement planning	Very large extent	8	8.5
	Large extent	72	76.6
	Moderate extent	10	10.6
	Small extent	4	4.0
	Total	**94**	**100.0**
Procurement is done only when necessary	Very large extent	10	10.6
	Large extent	65	69.1
	Moderate extent	16	17.0
	Small extent	3	3.2
	Total	**94**	**100.0**
Taking advantage of bulk purchase	Very large extent	10	10.6
	Large extent	57	60.6
	Moderate extent	21	22.3
	Small extent	2	2.1
	Very small extent	4	4.3
	Total	**94**	**100.0**
Outsourcing of noncore business	Very large extent	56	59.6
	Large extent	23	24.5
	Moderate extent	15	16.0
	Total	**94**	**100.0**
Global sourcing for competitiveness	Very large extent	12	12.8
	Large extent	42	44.7
	Moderate extent	27	28.7
	Small extent	13	13.8
	Total	**94**	**100.0**
Considering value for money during procurement	Very large extent	43	45.7
	Large extent	38	40.4
	Moderate extent	13	13.8
	Total	**94**	**100.0**
Procuring at prevailing market prices	Very large extent	41	43.6
	Large extent	43	45.7
	Moderate extent	10	10.6
	Total	**94**	**100.0**
Re-use and recycling of materials	Very large extent	10	10.6
	Large extent	79	84.0
	Moderate extent	5	5.3
	Total	**94**	**100.0**
Commitment to continuous improvement	Large extent	84	89.4
	Moderate extent	10	10.6
	Total	**94**	**100.0**
Supply chain performance measurement	Very large extent	15	16.0
	Large extent	79	84.0
	Total	**94**	**100.0**

The measures that had the highest ratings were commitment to continuous improvement 89.4 percent respondents indicated it is adopted to a large extent, re-use and recycling of materials 84.0 percent of the respondents indicated that it has been adopted as a measure of reducing procurement costs as well as supply chain perfromance measurement of which also 84 percent of the respeondents agreed that its has been adopted to a large extent.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of research findings on the effect of the procurement process on the cost of generating energy at Kengen. It also includes the conclusion, recommendations and suggestions for future research.

5.2 Summary of Findings

The study had two objectives. The first objective was to establish the effect of procurement process on the cost of generating energy at Kengen. From the regression results that were conducted, it was established that the three variables of procurement process namely: procurement planning, supplier selection and tender process explain 56.2 percent of the variance on the cost of generating energy at Kengen. This was a clear indication that the procurement process attributed to 56.2 percent of the cost of generating energy. However, 43.8 percent of the variance that remains is not explained by the procurement process but rather other variables that are outside the scope of the current study. All the three independent variables: procurement planning, supplier selection and tender process were found to have statistically significant relationships with the cost of generating energy.

The second objective of the study was to establish the measures that have been taken by Kengen in order to reduce costs in its procurement activities. The research findings established that there are several measures that have been adopted by the company to achieve cost reduction in procurement activities. Among the most prominent measures

from the study were commitment to continuous improvement by the organization, frequent supply chain performance measurement in order to identify areas of improvement in procurement, ensuring that there is reuse and recycling of materials to avoid wastage and spending money on fresh materials when it is not necessary, embarking of efficient and effective procurement planning processes to ensure all procurement activities are carefully budgeted for by the organization as well as taking advantage of bulk purchase of materials.

5.3 Conclusion

The procurement process has a significant effect on the cost of generating energy at Kengen. It was evident that the three variables that constituted the procurement process: procurement planning, supplier selection and tender process explain 56.2 percent of the cost of generating energy. This implies that as far as energy generation costs are concerned, the procurement process has a significant percentage of the costs originating from it. It was further established that Kengen has taken a number of measures aimed at reducing costs in its procurement activities. These measures include: commitment to continuous improvement by the organization, frequent supply chain performance measurement in order to identify areas of improvement in procurement, ensuring that there is reuse and recycling of materials to avoid wastage and spending money on fresh materials when it is not necessary among others.

5.4 Recommendations

The study established that the procurement process explains a significant percentage of the cost of generating energy at Kengen. It will be important for the organization to put

more deliberate effort to reduce its procurement related costs in order to bring down the cost of generating energy.

Commitment to continuous improvement emerged as one of the most popular measures of reducing costs in the procurement activities of Kengen. There is need for the organization to clearly identify areas of improvement in order to reduce costs of generating energy.

5.5 Limitations of the Study

The respondents took time to fill the questionnaires as they were busy and other didn't feel free to answer the questions. Nevertheless, the response rate was adequate enough to and it didn't affect the significant effect on the findings of the

5.6 Suggestions for Further Research

Based on the research findings, it was evident that 43.8 percent of the cost of generating energy is not explained by the procurement process. There is need to carry out a study to determine the factors that explain this variance.

Since this study was a case study, it will be necessary to carry out another study that will focus on the entire industry. This will assist in coming up with information that gives a larger scope of this problem.

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APPENDIX I: RESEARCH QUESTIONNAIRE

This questionnaire is designed to collect data on impact of public procurement process on cost of electricity at KenGen. Please answer the following questions by ticking or filling in the spaces provides. The information collected will be treated with the highest degree of confidentiality.

PART A

General questions

1. What is your designation in the organization
   a) Procurement officer
   b) Procurement Manager
   c) Finance Manager
   d) Other (Specify)

2. How long have you worked in the organization?
   a) 1 to 4 years
   b) To 8 years
   c) Over 9 years

3. Are you conversant with the public procurement process in KenGen
   a) Yes
   b) No

PART B: Procurement Planning

a) Kindly indicate the extent to which you agree with the following statements concerning procurement planning at KENGEN. Use ranking of 5 to 1 where 5 is strongly agree, 4 agree, 3 not sure, 2 disagree and 1 strongly disagree

No	Statement	1	2	3	4	5
1	Organization ensures early financial considerations for items to be procured during procurement planning					
2	All stakeholders are involved early in the procurement planning process to avoid resistance					
3	Proper market analysis is conducted to ascertain costs and potential suppliers					
4	Clear procurement methodology is set out during procurement planning to avoid wastage					
5	There are clear procurement timeframes set out during the planning stage					

PART C: Supplier Selection

Kindly indicate the extent to which you agree with the following statements concerning supplier selection at KENGEN. Use ranking of 5 to 1 where 5 is strongly agree, 4 agree, 3 not sure, 2 disagree and 1 strongly disagree.

No.	Statement	1	2	3	4	5
1	There is strict supplier selection criteria that is always observed					
2	Testing of materials and components is always conducted during supplier selection to ensure proper quality					
3	Supplier financial ability, regulatory compliance and logistics are carefully evaluated during supplier selection to avoid non delivery of products after contract award					
4	Assessment of supplier quality systems is often done after contract award to ascertain quality					
5	Commitment to continuous improvement is one of the key determinants of supplier selection					

Part D: Tender Process

Kindly indicate the extent to which you agree with the following statements concerning tender process at KENGEN. Use ranking of 5 to 1 where 5 is strongly agree, 4 agree, 3 not sure, 2 disagree and 1 strongly disagree.

No.	Statement	1	2	3	4	5
1	During tendering the organizations considers value for money by procuring at optimal cost and considers life cycle costs					
2	Open and fair competition is encouraged in order to award tender to most competent supplier					
3	Probity and transparency is practiced during tendering process to avoid malpractices and civil suits					
4	Tendering costs are minimized in order to ensure a cost effective process					
5	The organization uses local suppliers whenever they offer best value for money					

Part E: Cost of Generating power

Kindly select the statement that best describes the cost of generating power as it is currently.

a) The cost of generating power is very high compared to other countries in the region

b) The cost of generating power is high compared to other countries in the region

c) The cost of generating power is moderate compared to other countries in the region

d) The cost of generating power is low compared to other countries in the region

e) The cost of generating power is very low compared to other countries in the region

Part F: Measures to manage procurement costs

Please indicate the extent to which the following measures have been adopted by KENGEN to reduce costs in its procurement dealings. Use the scale of 1=To a very large extent, 2= to a large extent, 3= to a moderate extent, 4= to a small extent and 5= to a very small extent.

No.	Cost reduction measure	1	2	3	4	5
1	The organization ensures better procurement planning at all times					
2	The organization ensures that procurement is done only when it is necessary					
3	Taking advantage of bulk purchase in order to reduce costs associated with acquisition of materials					
4	The organization has ensured that non core activities can be outsourced from cheaper sources					
5	The organization encourages global sourcing in cases where high quality can be obtained at a more competitive price					
6	Value for money is encouraged any time procurement is being carried out					
7	The organization encourages procurement of materials at prevailing market prices to avoid wastage					
8	Re-use and recycling of materials is highly encouraged to reduce the cost of buying new materials					
9	The organization is ever committed to continuous improvement in both process and product quality					
10	Supply chain performance measurement is always done to identify areas of improvement.					

Thank you for taking your time to complete the questionnaire