FACTORS INFLUENCING PROCUREMENT STRUCTURES OF FIRMS IN KENYA'S POWER SECTOR

BY

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DECLARATION

I declare that this research project is my original work and has not been submitted for any degree qualification to any other University for examination.

Signature---------- Date----------

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D61/80896/2015

This project has been submitted for examination with my approval as the university supervisor.

Signature---------- Date----------

Mrs. Nancy Marika

Supervisor

DEDICATION

This study is dedicated to my father Mr. M'Nkanata, my mother Dr. Kimathi and to my siblings Mildred and Kenneth.

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My profound gratitude goes out to God for enabling me to pursue my education which has culminated into this research project.

I acknowledge the support received in terms of resources and encouragement. Special appreciation goes out to my parents and siblings throughout my educational pursuits.

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ABSTRACT

Procurement structures of firms in Kenya's power sector vary from one firm to another according to their business needs. To attain optimal customer satisfaction firms in Kenya's power sector have adopted various procurement structures; centralized procurement structures, decentralized procurement structures and hybrid procurement structures. This study set out to determine the factors influencing procurement structures of firms in Kenya's power sector. Kenya is the fourth largest economy in sub-Saharan Africa with an estimated Gross Domestic Product (GDP) of 55 billion USD (USAID, 2015). According to Omenge (2013) only 35% of Kenya's population have access to electricity. The study adopted three theories: Game theory as it stipulates a negotiation model; the Social-system theory as it stipulates interrelation between a whole and its sub-systems; the Contingency theory which stipulates there is no single best organizational structure to be adopted. The objectives of this study are to determine the extent of adoption of procurement structures in Kenya's power sector, to determine factors influencing procurement structures of firms in Kenya's power sector and to determine the relationship between the identified factors and the adoption of procurement structures of firms in Kenya's power sector. Data was collected using a descriptive research design with a population consisting of firms in Kenya's power sector using a census survey. A structured questionnaire was used to collect primary data which was analyzed on SPSS using descriptives, factor analysis and multivariate linear regression. From the study it was found that there are variances in the adoption of procurement structures of firms in Kenya's power sector. Four factors that influence procurement structures of firms in Kenya's power sector were identified through factor analysis; organizational factors, operational factors, economic factors and quality. Organizational factors, economic factors and quality were found to have a positive relationship while only operational factors have a negative relationship with a centralized procurement structure. Economic factors, organizational factors and operational factors were found to have a positive relationship while quality has a negative relationship with decentralized procurement structure. Economic factors and operational factors were found to have a positive relationship while organizational factor has a negative relationship with hybrid procurement structure. The four factors showed that they do not have a statistically significant relationship with the adoption of procurement structures of firms in Kenya's power sector. An examination of the joint relationship confirmed these findings and established that these four variables jointly account for 5.5% of the variability in the adoption of centralized procurement structure, 7.4% of the variability in the adoption of decentralized procurement structure, while 10.1% of the variability in the adoption of hybrid procurement structure of firms in Kenya's power sector. The firms in Kenya's power sector are encouraged to embrace procurement structures that best suit their needs.

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ABBREVIATIONS AND ACRONYMS

CIPS: Chartered Institute of Purchasing and Supply

ERP: Enterprise Resource Planning

ESI: Early Supplier Involvement

GDP: Gross Domestic Product

NYS: National Youth Service

OECD: Organisation for Economic Co-operation and Development

PIDG: Private Infrastructure Development Group

USAID: United States Agency for International Development

KENGEN: Kenya electricity generating company

KPLC: Kenya Power and Lighting Company

KETRACO: Kenya Electricity Transmission Company

IPPs: Independent Power Producers

ERC: Energy Regulatory Commission

REA: Rural Electricity Authority (REA)

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Organizations require a procurement function in order to secure goods, services and works from external sources on their behalf (Dalkin, 2017). Procurement traditionally was referred to as tactical as it was viewed as a support role in obtaining materials and services at competitive prices. However, it shifted to become strategic due to focus on long term benefits through partnerships and collaborative relationships. Rather than in-housing, expertise is capitalized through outsourcing, whereas administrative activities strive to be value-adding to an organization (Slack et. al., 2009).

According to Ingólfsdóttir and Dyndegaard (2012), the manner in which purchasing efforts are coordinated differentiates an organization from another as a result of its purchasing organizational structure. Procurement decisions depend on the level and time frame of decisions made which are distinguished into strategic, operational and tactical decisions.

The selection of contractors, negotiation of prices, and terms and conditions is handled and carried out by a body which is in-charge of the procurement activity in a centralized procurement structure (Baldi & Vannoni, 2014). Decentralization of procurement involves different divisions, business units or plants carrying out their own procurement activities as per their business needs (Karlsen & Tollefsen, 2010).

This study is to determine the factors influencing the procurement structures within firms in Kenya's power sector. Kenya is the fourth largest economy in sub-Saharan Africa with an estimated Gross Domestic Product (GDP) of 55 billion USD (United States Agency

for International Development [USAID], 2015). According to Omenge (2013) only 35% of Kenya's population has access to electricity.

1.1.1 Procurement Structure

According to the Chartered Institute of Procurement [CIPS], (2012) procurement is the purchase of goods and services in the right quality, in the right quantity, to the right place, at the right time and at the right price. These five rights are commonly referred to as the five rights of procurement. According to Marume and Jubenkanda (2016) centralization is the concentration of authority at the top of an administrative system. Decentralization refers to the systematic effort to delegate to the lowest levels functions and activities into relatively self-directed units with overall authority and responsibility for their operations (Chand, 2013).

The structure of an organization determines how a organization performs through the allocation of responsibilities and functions to entities such as its branches, work groups or departments. It also affects processes, procedures and inter-relationships of the procurement function (Karlsen & Tollefsen, 2010). This is usually misunderstood to be a procurement system which is entails the management of the entire acquisition process involving requisitioning, purchase orders, product receipts and ultimately payment (Odhiambo & Odari, 2016).

Centralized procurement is characterized by procurement decisions being made at an organizations' headquarter at divisional or regional level and is mostly preferred by organizations who want to maintain greater control over their procurement processes in order to achieve maximum cost reduction and better quality services through centralized

procurement. Volume purchases enable significant cost reductions in prices of goods and services and the receipt of better services at lower costs (Organisation for Economic Co-operation and Development [OECD], 2000).

Decentralization of procurement involves having procurement managers, project managers, subsidiaries, offices or departments procuring their own products or services. A decentralized procurement function means that an organization's activities are spread over a number of plants or locations (Karani, 2011). In organizations where the procurement structure is decentralized, lower levels of management have opportunities to make decisions regarding the procurement of goods or services. Decentralization enables active participation of employees in decision making across the organization's various branches.

1.1.2 Firms in Kenya's power sector

The power sector is comprised of government, public and private participation in Kenya. Hydro electricity and fossil fuels are the main sources of power supply (Achola, 2016) with 43.18% of electricity generated from hydro power (Omenge, 2013). Kenya's power sector provides electricity to hospitals, schools, offices and for domestic users and offers emergency electricity services to over 6.2 million customers throughout Kenya (Kenya Power & Lighting Company [KPLC], 2017). The unreliable supply of electricity in Kenya has resulted in a 2% loss to the GDP in the economy (Private Infrastructure Development Group [PIDG], 2014).

Kenya aims to provide 70-80% of its population with off-grid electricity by the year 2020 being an increase from 45% (USAID, 2015). Rotich (2016) is of the opinion that

additional power supplies would significantly spur the growth of industries and businesses, reduce the cost of doing business and gradually increase job creation in Kenya. Commercial energy in form of electricity is a prime mover of the modern sector of the economy. In order to reduce its relatively high energy costs, Kenya needs to ensure lower cost electricity generation and enhance the efficiency in energy consumption. This will result in quality and affordable energy for all Kenyans (Kenya Vision 2030, 2008).

There are various firms in the Country's power sector, and these include; i) Kenya Power and Lighting Company (KPLC) which is a limited liability company that distributes and retails electricity to customers throughout Kenya. ii) Kenya Electricity Generating Company (KENGEN) which generates electricity and sells it in bulk to Kenya power iii) Energy Regulatory Commission (ERC) a body that regulates tariffs while safeguarding the interests of electricity consumers. iv) Ministry of Energy formulates policies in the energy sector and carries out administration of the Rural Electrification Scheme. v) Rural Electricity Authority (REA) implements rural electrification projects on behalf of the government. vi**)** Kenya Electricity Transmission Company (KETRACO) whose mandate is to construct new transmission lines with government funding in order to accelerate sector infrastructure development. vii) Independent Power Producers (IPPs) which build, own and operate power stations and sell the power in bulk to KPLC (KPLC, 2017; KETRACO, 2017)

Kenya is ailed with a series of power outages, especially for domestic users due to extreme weather conditions such as flooding and lightning, wildlife coming into contact with equipment in a substation, poor maintenance of switches, cables and other

equipment and vandalism. Kenya's power sector faces challenges such as long lead time in the implementation of energy projects, high cost of energy and infrastructure costs, the over reliance on hydro power and the inability to meet national energy needs adequately (Achola, 2016).

1.2 Research Problem

Complete centralization is the concentration of all decision making at the apex of the organizations' management hierarchy, hence the exclusion of subordinate staff from decision making. Conversely, complete decentralization through the delegation of all decision-making functions to the lowest level of the hierarchy eliminates the need for sole decision-making at the top management level. The decision of whether centralization or decentralization should take place, depends upon finding an appropriate balance between these mutually dependent forces (Malone, 2004).

Procurement under supply chain management has been under a negative light due to major incidences of corruption. Locally, Kenya is facing procurement scandals including the National Youth Service (NYS) scandal in the year 2015 and massive waste of public resources in procurement through the newly implemented county governments since the implementation of the Constitution of Kenya (2010) from the year 2012 (Wafula, 2016).

Globally, in Copenhagen, Ingólfsdóttir and Dyndegaard (2012) focused on purchasing structure and competence level effects on category management in a public supply company in the energy sector through organizational structure and skill level. The study findings revealed that product differentiation enabled category managers to focus on total cost of ownership and the optimization of purchasing power. Karslen and Tollefsen

(2010) carried out a study on purchasing structures in the construction industry, a case study of Mesta Entreprenør. The study concluded that project agreements with suppliers are more suitable with a centralized purchasing department, while decentralization is practiced through each project responsible for its own purchasing activity resulting in a combination of both procurement structures.

Regionally, in Ghana, Baidoo (2014) researched on the assessment of operations of centralized procurement system, a case study of process and plant sales. The findings of the study indicated that the plant had effective procurement systems and that they are being managed by competent staff while the challenges identified were benchmarking standards, environmental issues and formal contracting with suppliers. Biodun (2011) researched on the power sector and industrial development in Nigeria. A case study of the power holding company of Nigeria revealed that there is a positive relationship between power and industrial development and encourages economic growth.

Locally, a case study of Florensis Kenya Limited that sought to determine the effects of purchasing on organizational efficiency was carried out by Odhiambo and Odari (2016). Descriptive research design was used on 50 employees and concluded that materials management is more effective during centralized procurement, and inventory management method is dependent upon how it will best suit the organization. During an annual CIPS/IPSA Procurement Congress, Karani (2011) brought forth the discussion of centralized procurement versus decentralized procurement composing of arguments for and against. He concluded that while some organizations may combine both procurement

structures, the decision to centralize or decentralize depends on many dynamics and variables in an organization.

It is evident from the literature above that several studies have been carried out on centralization, decentralization and procurement structures. However, there appears to be little or no research on factors influencing procurement structures, more specifically, of firms in Kenya's power sector. This leads to the following research question: What are the factors influencing procurement structures of firms in Kenya's power sector?

1.3 Research Objectives

The main objective of the study is to establish the factors influencing procurement structures of firms in Kenya's power sector. The specific objectives are:

i. To determine the extent of adoption of procurement structures in Kenya's power sector.
ii. To determine the factors influencing procurement structures of firms in Kenya's power sector.
iii. To determine the relationship between the identified factors and procurement structures in Kenya's power sector firms

1.4 Value of the Study

This study will be beneficial to the government, public and private participants as they evaluate the factors influencing their procurement structures in Kenya's power sector firms This will enable the maximization of strengths and opportunities while minimizing the weaknesses and threats in Kenya's power sector firms.

Once the factors influencing procurement structures have been identified, competitor companies will benefit. Wind power, geothermal power and the use of fossil fuels in order to generate electricity will benefit by learning from the best practices within the sector in order to reduce cases of power interruptions associated with procurement functions.

A study on factors influencing procurement structure will enable potential independent power producers (IPPs), competitors and other players in the power sector to strategically analyze their procurement structures in order to streamline their operations. This study will also assist students and researchers in further studies. Through institutions of higher learning, students will be able to make reference to this study as they pursue research in the areas covered. This will also enhance the body of literature in Kenya's power sector.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on theories relevant to the study, centralized procurement structure and decentralized procurement structure.

2.2 Theoretical Literature Review

The study intends to adopt three theories: the Game theory because it stipulates a negotiation model; the Social-system theory as it stipulates interrelation between a whole and its sub-systems; the Contingency theory which stipulates there is no single best organizational structure to be adopted.

2.2.1 Game Theory

Negotiation is a process of communication where two or more people come together to seek mutual agreement over an issue or issues. Norton (2016) states that the game theory is the study of how individuals make decisions. This theory is a model that factors not only benefits less costs, but also the relationship between participants and the ability to predict their decisions. The party's involved in these games are referred to as players and the different decisions they make are referred to as strategies.

The outcomes of these negotiation strategies result in benefits referred to as pay-offs, which include cost reduction, warranty, lead-time and liability in terms and conditions of agreement. The negotiation is underpinned by the ability of a buying entity to increase pay-offs as much as possible in their favour. Attitudes towards risk in decision making by the parties are determined by three factors, namely: information through adequate preparation; commitment to stand firm in negotiation with available information; and

sufficient time for negotiations resulting in greater pay-off as party motives are better understood (Dyer, 2017). The procurement function is able to generate instant returns on investment through directing and influencing interactions in negotiations for organization-wide value addition.

2.2.2 Social Systems Theory

The social systems theory can also be referred to as the systems theory. Gibson (2017) expounds on it as the adaptation of organization to its environment through the analysis of its environment. The subsystems of an organization influence the system as a whole. It involves the study of society that is made up of individuals and their beliefs. A system receives inputs, produces output, receives feedback and has boundaries.

A system is both independent and complex. It is made up of independent parts that form a whole that regularly interact. Openness and feedback are the main characteristics of this theory. Continuous improvement is enabled as systems are open and interactive with their environment. This theory relies upon the strategy and relationships between subsystems of an organization that make it a whole (Heylighen & Joslyn, 1992).

2.2.3 Contingency Theory

According to Burton, Ericksen and Snow (2006), organizational design is most effective when it is suited to the contingencies. It asserts that there is no single suitable way for organizational structure, decision making nor leadership style, as these are dependent on both the internal and external situations of the organization. A leader that is proactive to contingencies scans and analyzes the environment and applies their own style of leadership to suit the circumstances.

The size of an organization, managerial assumptions concerning employees, strategies, adaptation to environment, operational activities and technology used are some of the contingencies that top level management make decisions on. This theory puts forth the notion that there is no single appropriate method in managing an organization. This is because, organizational structure and subsystems requires a best fit with the environment. Management style also depends upon the tasks to be undertaken and the nature of the work groups in order to meet organizational goals.

The theories adopted are based on the fact that Murray (2017) puts forth the notion that a procurement professional aims to be successful through category and supplier management. This can only be achieved by the realization of better value-for-money, cost control, materials management, inventory management, visibility and accountability and risk mitigation.

2.3 Procurement Structure

Cowley (2014) is of the opinion that procurement functions can be classified into either centralized or decentralized models.

2.3.1 Centralized Procurement Structure

Centralized procurement involves having a central location within an organization in order to carry out the buying of goods and services on behalf of the organization, by a procurement or supply chain management department, rather than various functions undertaking procurement activity across the organization. This particular procurement department is generally located in the organization’s headquarters (Charles, 2015).

Centralized procurement structure is attributed to lower costs, better prices, simplicity, expertise utilization, administrative and standardization attributes. Moreau (2013) is of the opinion that competent staff and key stakeholder support are critical success factors of any centralized procurement system. Conversely, specialization can be achieved through experience over time in decision making when carrying out category procurement.

Charles (2015) puts forward the claim that if an organization faces challenges of managing its purchases, a centralized purchasing structure is recommended. There is greater visibility within an organization as there is a centralized location for all purchasing decisions made. Filing and retrieval of documents related to procurement activities is faster and orderly. I am in agreement with this view as performance measurement is enhanced through evaluation of procurement procedures at a central point to complement continuous improvement within an organizations procedures.

Employee expertise is leveraged as they can practice category procurement instead of each employee focusing on low risk and low value items. Knowledge management and the application of technology enhances the overall skillset of employees within an organization. I agree with this as increased specialization as the procurement professionals have the authority within an organization to carry out all procurement activities (Brito, 2016).

Inventory is any raw materials, assemblies, components, work in progress or finished goods kept in an organization for use. Inventory management is the management of stock items at levels which provide maximum service levels at minimum cost (Dadzie, Atanga

& Ghansah, 2016). Superior inventory management is achieved through efficiency of operations as inventory is kept at optimum levels depending on organization-wide use. I concur with the authors as inventory is a high investment which has the potential to tie up capital in form of stock (Odhiambo & Odari, 2016).

On the other hand, flexibility is essential in pursuit of excellent customer service. Customers in niche markets demand for tailor-made products which can result in major revenue increments for an organization. This is enabled by decentralized purchasing as there is greater customer service provided and higher levels of customer retention (Busch, 2014).

During a period of crisis, work operations are hindered. However, organizations' have disaster management plans to ensure the continuity of business with minimum disturbance to operations. There is a very high probability of delays in decision making in centralized procurement structures. Additionally, the receipt of materials from the main organization headquarters also results in delays. This is for the reason that materials cannot be purchased locally, resulting in poor customer satisfaction (Hyttinen, 2013). Further research in this area is by PRECORO (2017) who are in agreement that there is normally a delay in the replacement of defective materials for local organizational branches.

Many large organizations are as a result of acquisitions or mergers, therefore they often have several procurement departments, who have the authority to purchase items in relation to their business needs. According to Anklesaria (2014), centralized procurement

is based on an organizations reasoning that it knows best of its divisions requirements while disregarding the needs and wants of the customer.

2.3.2 Decentralized Procurement Structure

According to Soft (2016), decentralized procurement refers to the acquisition of goods, services or works by all organizational departments and branches independently in order to fulfill their needs. The main characteristic of a decentralized procurement structure is that there is no individual purchasing manager who has the authority to purchase materials for the organization as a whole.

Baidoo (2014) is of the notion that business needs in order to fulfil customer satisfaction require decision making to be related to customer wants and needs. Proximity of local sources of supply provides time and place utility as a result of close buyer-seller relationships in a local business environment. Decentralized purchasing is characterized by separate business units being in-charge of their own procurement in accordance to their needs (Karlsen & Tollefsen, 2010).

Sustainable and superior competitive advantage is acquired and maintained through the analysis of customer wants and needs. This is achieved by closely designing goods and services as demanded by customers. Understanding the local environment is key to customer fulfilment. Results of the analysis of the local market is enhanced by decentralized procurement activities as procurement is more economical and efficient in meeting customer needs and wants (OECD, 2000).

Procurement activities carried out at department level ensure accountability for profits and losses made. An organization is able to monitor, evaluate and control its costs

through greater cost control. Goods, services and works required are procured on a need-to-need basis hence minimizing cost and waste in terms of excessive inventory. Contract negotiation is also enabled without the need for long-term contracts hence eliminating a supplier lock-in situation (Karjalainen, 2009)

Stock outs and product shortages are unanticipated events that are controlled through prompt response. The shorter the chain of command, the shorter the lines of communication and the more relevant decisions made reflect the current market situation, as referrals are not made to top executive management up the hierarchy. Employee motivation is also enhanced through job enlargement as they acquire self-actualization through status and accomplishments as employees are involved in decision making in day-to-day operations (Karlsen & Tollefsen, 2010).

Communication is the means by which information is transferred from one recipient to another. Poor information transition results in poor co-ordination of activities in a top-bottom approach to management. Information can be easily misrepresented and distorted through transmission hence lacking authenticity. Organization-wide activities are better co-ordinated and integrated through effective communication. Information is not shared on best practices which can improve the organizations performance (Porteous, 2016).

Information sharing and co-ordination between divisions is challenging as investments in information technology are required to facilitate communication from the organizational headquarters, through personal computers and mobile phone technology. Information sharing between divisions is highly limited and suffer from transmission errors. Multiple

function organizations which operate as independent entities with a high degree of autonomy (ENPORION, 2009).

According to Karani (2011) in his research on centralization versus decentralization in procurement, a case study of the coca cola company in Africa, duplication of work efforts by employees and poor housekeeping are as a result of decentralized procurement which also increases administrative costs. Standardization of procedures and purchases is problematic when procurement is decentralized as it results in wastes in supply chain management, that increase aggregate procurement costs.

2.4 Factors influencing Procurement Structure

According to Karlsen and Tollefsen (2010) the availability of competent managers influences the capability of an organization to decentralize its operations. A decentralized purchasing structure renders it impossible to have the required knowledge and expertise within one department. Centralization is preferred in procurement departments which undertake highly technical operations in order to achieve business continuity through the management of challenges and problems that may arise.

The size of an organization affects an organization as it is easier to manage fewer employees through a centralized procurement structure. It may be difficult to co-ordinate functions of different departments, as the result is inefficiency and delayed decision making which can be reduced in a large organization if authority is decentralized (Baidoo, 2014).

For business survival in a highly competitive environment, available opportunities require to be capitalized on (Montana & Charnov, 1993). Where an organization is

centralized, it will be challenging for quick decision making by a procurement department head due to bureaucracy, however, in a decentralized organization decision making is faster and more responsive to the current situation through the appropriate head of department or manager of a particular department through speedy communication.

The location of an organization affects its procurement structure especially if it has several branches globally. With advancements in technology businesses are able to run effectively despite differences in geographical location. This influences the procurement structure as a procurement department needs to consider which procurement structure is more convenient and cost effective to the business (Karlsen & Tollefsen, 2010).

According to Marume and Jubenkanda (2016), centralization is more appropriate for an organization that requires greater control in the implementation of decisions made by top management. Operations performed by a procurement specialist that are technical in nature require uniformity in decision making for transparency and accountability. Decentralization is more appropriate in scenarios where an organization carries out category procurement, which requires technical competence. Need for uniformity in procurement activities is vital in communication and planning which all favour centralization.

An organization that exists in a location which is accident prone, such as flood prone areas, emergency decisions are required to be taken instantaneously in order to ensure business continuity. A task with a lower uncertainty is more efficient when performed in a centralized structure, since this allows for better planning and coordination. On the contrary, a task with very high uncertainty, a decentralized structure is preferred as ad

hoc solutions are relied upon (Odhiambo & Odari, 2016). Centralization of a procurement department will ensure that timely and accurate decisions are made within a timely manner. Disasters and crises are majorly as a result of environmental and technological change. The future is uncertain as it cannot be predicted accurately, innovation and adaptability is therefore required in order for an organizations survival.

Risk management is proactively reduced through the continuous scanning of the environment. Decisions that involve high risk, have high impact not only on costs but also on the organization as a whole, are made by top management, while decisions that involve low risk and are routine in nature are delegated to subordinates (Glock & Hochrein, 2011). Decentralization of a procurement function is enabled through the need for a local understanding of customer needs and wants work against centralization.

2.5 Summary of literature review

To centralize or decentralize operations is a question that many procuring organizations contemplate upon. Each structure has its own advantages and disadvantages, however, this does not imply that one structure is better than the other as each organization utilizes the structure that it finds as most appropriate. Soft (2016) is of the opinion that a better understanding of an organization's business needs enables the determination of the most suitable procurement structure to be chosen.

Procurement structure has been attributed to be influenced by factors such as the size of an organization, the availability of competent managers, the need for quick decision making during disaster management. A centralized procurement structure is advantageous as it enables control over contracts an organization enters into, its ability to

aggregate expenditures and develop competencies easily (Busch, 2014). A decentralized procurement structure is advantageous as it reduces the burden of decision making on top level executives, facilitates successional planning and results in faster decision making (Sharma, 2017).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology used in the study. It entails the research design, population, data collection instruments and data analysis techniques used to answer the research questions.

3.2 Research Design

The study used a descriptive research design to identify the factors influencing procurement structures in Kenya's power sector firms. Descriptive research describes a current phenomenon and helps to uncover new facts through observation, description and documentation as it naturally occurs and also seeks to determine the existence of relationships among the research findings (Polit & Hungler, 1999).

3.3 Population

The target population comprises all the firms in Kenya's power sector. Currently there are six firms in the sector. Since the population is relatively small, the study will use a census survey.

3.4 Data Collection

Primary data was collected primary data from personnel within the procurement departments in the 6 firms in Kenya's power industry. This was considered appropriate because of their knowledge and experience concerning procurement structures.

A structured questionnaire was administered through the drop and pick later method. The questionnaire was in the form of a 5 point Likert scale ranging from 1 to 5 with a rating of strongly disagree to strongly agree. This questionnaire was composed of 3 sections in

order to obtain conclusive information: Section A was to obtain general information on the respondents. Section B was to determine the extent of adoption of procurement structures in Kenya's power sector. Section C collected data on factors influencing procurement structures of firms in Kenya's power sector.

3.5 Data Analysis

The data collected was sorted and coded then entered into the Statistical Packages for Social Sciences (SPPS) as it used more than one variable. SPSS version 25 was used to analyze and interpret the collected data. Descriptive statistics was used to summarize the results of each of the main variables in order to identify the extent of adoption of procurement structures in Kenya's power sector. Factor analysis was used to determine the factors that influence procurement structures of firms in Kenya's power sector while regression analysis and correlation analysis were used to determine whether there is a relationship between the identified factors and procurement structures of firms in Kenya's power sector.

The regression equation was as follows:

$$Y = a + b_i x_i$$

Where,

Y = Dependent variable

a = Constant

b = Coefficient of the variable

x_i = Independent variable

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND INTERPRETATION

4.1 Introduction

This chapter contains data analysis results and the interpretation of findings. The overall objective of this study was to determine the factors influencing procurement structures of firms in Kenya's power sector. Data was collected from head of departments, senior procurement officers and procurement officers. Data analysis was done using frequencies, mean standard deviation, factor analysis, regression analysis and correlation analysis as the primary tools of analysis. Results are presented in tables below.

4.2 Response rate

The study was comprised of 6 firms in Kenya's power sector. The table below represents the response rate.

Table 4.1 Distribution of response rate

Firm	Target count	Received (count)	Response rate
KPLC	15	10	66.67
KENGEN	15	12	80.00
ERC	15	8	53.33
KETRACO	15	13	86.67
REA	15	10	66.67
IPP	10	5	50.00
Total	**85**	**60**	**70.59**

Source: Research data

From the above table 15 respondents were targeted in 5 firms while 10 respondents were targeted in IPP's. A total of 85 respondents were targeted and a response rate of 70.59% was achieved giving a relatively high response rate. IPPs had a lower target count as they are fewer in number, and these include Strathmore university in Nairobi that generates electricity for its own use.

4.3 Background Information

4.3.1 Gender

The respondents were asked to indicate their gender. The table below represents their responses.

Table 4.2 Distribution of respondents by gender

	Frequency	**Percent**
Male	40	66.7
Female	20	33.3
Total	**60**	**100**

Source: Research data

From the table above, 66.7% of the respondents were male while only 33.3% were female. This suggests that majority of the respondents were of the male gender.

4.3.2 Education Level

This study sought to establish the respondents' level of education. The respondents were asked to indicate their highest level of education.

Table 4.3 Distribution of responses by level of education

	Frequency	Percent
Certificate	1	1.7
Diploma	31	51.7
Degree	18	30.0
Masters	10	16.7
Total	**60**	**100.0**

Source: Research data

From the table above, majority (51.7%) of the respondents had attained diploma certificates while 30% were degree holders. 16.7% had a masters degree and 1.7% had certificate level educational qualification. These findings indicate that the respondents were relatively highly educated hence understood and could easily interpret the questions.

4.3.3 Working experience

The respondents were asked to indicate how long they worked in their firm. The table below represents the responses obtained.

Table 4.4 Distribution of respondents by number of years worked in the firm

	Frequency	Percent
1 - 2 years	12	20.0
3 - 4 years	14	23.3
over 5 years	34	56.7
Total	**60**	**100.0**

Source: Research data

From the table above, majority (56.7%) of the respondents have worked for their firm for over 5 years. 23.3% have worked for 3 to 4 years while only 20% have worked for 1 to 2

years. This therefore indicates that the respondents have sufficient working experience in the power sector firms.

4.3.4 Position

The study sought to find out the positions held by the respondents. The respondents were asked to indicate their position and the responses were as shown in the table below.

Table 4.5 Distribution of the respondents by position

Type of organization	Frequency	Percent
Head of department	1	1.7
Senior procurement officer	29	48.3
Procurement officer	30	50.0
Total	**60**	**100**

Source: Research data

From the table above, majority (50%) of the respondents were procurement officers and 48.3% were senior procurement officers. The heads of departments represented 1.7%. The responses therefore show that the respondents have relatively high knowledge of the procurement function in their firm.

4.3.5 Form of organization

The respondents were asked to state their organization type is and the findings are presented below.

Table 4.6 Distribution of respondents by type of firm

	Frequency	Percent
Government	39	65.0
Private	21	35.0
Total	**60**	**100.0**

Source: Research data

From the table 4.6 above, majority of the respondents work for the government at 65% while 35% of the respondents work for private institutions. These findings indicate that the government firms represent majority of the firms in Kenya's power sector.

4.4 Extent of adoption of Procurement Structure

The study sought to establish the extent of procurement structure adoption. The respondents were asked to rate their level of agreement with the various statements which were used as indicators of the extent of procurement structure adopted in firms in Kenya's power sector on a scale of 1 - 5 where 1 is Strongly disagree and 5 was Strongly agree. The mean ratings were composed and ranked as analyzed in the table below.

Table 4.7 Extent of adoption of Procurement Structure

STATEMENT	MEAN	STANDARD DEVIATION
The organization has fully adopted a centralized procurement structure	4.08	1.013
The organization has fully adopted a decentralized procurement structure	3.60	1.355
The organization has fully adopted a hybrid procurement structure	4.23	1.198

Source: Research data

From the table above, the extent to which the various procurement structures have been adopted were realized with a round off weighted mean of 4.0 with a minimum value of 1 and a maximum value of 5. The adoption of hybrid procurement structure had the highest mean of 4.23. The adoption of centralized procurement structure was represented by 4.08 while the adoption of a decentralized procurement structure had the lowest mean of 3.60. These findings indicate that the hybrid procurement structure has been adopted to a greater extent by firms in Kenya's power sector.

These findings contradict the opinion of Cowley (2014) that procurement functions can only be classified into either centralized or decentralized models.

4.5 Factors Influencing Procurement Structure

The study also sought to determine whether there are factors that influence procurement structures. The respondents were asked to rate their level of agreement with 53 items which were used as indicators of the factors influencing procurement structures on a scale of 1 - 5 where 1 was Strongly disagree and 5 is Strongly agree. The 53 items were subjected to factor analysis which established that all the 53 items have a diagonal matrix

with a value of more than 0.5. Factor analysis used varimax rotation by linking each of the three procurement structures with the 53 items.

4.5.1 Centralized Procurement Structure

Table 4.8 Factor loadings and univariate descriptives of identified factors compared with the centralized procurement structure

	Factor Loadings	Underlying factor	Mean	Standard Deviation
Time management	-0.548	**Operational**	4.27	0.821
Operational efficiency	0.83		4.23	0.998
Information technology	0.67		4.22	1.01
Number of employees in the procurement department	0.48		4.27	0.972
Materials handling	-0.443		4.23	0.89
Effectiveness of inventory management	0.273		4.28	0.825
Lead time	-0.609		4.37	0.974
On-time delivery	0.083		4.28	0.904
Degree of communication	-0.193		4.27	0.88
Co-ordination of activities	-0.302		4.37	0.863
Delays in decision making	-0.78		4.28	0.958
Amount of paperwork required	0.145		4.27	0.98
Response to supplier delay	0.742		4.22	0.865
E-procurement systems	-0.85		4.3	1.046
Effectiveness of inventory control	-0.077		4.15	1.102
Competitive advantage	-0.335		4.1	1.175
Continuous environmental scanning	-0.065		4.32	0.873
Systems integration	-0.133		4.63	0.688

cost control	0.37	**Economic**	4.25	0.773
value for money achieved	0.278		4.23	0.963
ceiling on procurement budget	-0.695		4.18	0.948
impact of procurement decisions on cost	-0.694		4.13	1.157
consortium buying	0.415		4.22	1.01
mobilizing additional resources	-1.464		4.27	0.944
contract agreements/ hedging	0.13		4.42	0.809
resource utilization	0.34		4.18	1
financial capability	0.046		4.15	1.233

policies and procedures in place	0.18	**Quality**	4.32	0.983
standardization of procedures	1.172		4.18	1.049
supplier failure	0.243		4.22	1.043
continuous improvement	-0.387		4.17	1.237
data protection	0.106		4.48	0.873
quality assurance	-1.042		4.2	1.176
Risk assessment	-0.826		4.28	0.885
integration of procurement activities	-1.068		4.32	0.833
technical knowledge	0.268		4.15	1.087
administrative skills	0.042		4.05	1.111
risk identification	-0.307		4.33	0.896
service delivery	1.209		4.02	1.097
risk mitigation	2.524		4.25	0.914
customer satisfaction	0.471		4.2	1.022
visibility of decision making	0.06		4.32	0.813

Size of the organization	-0.534	**Organizational**	4.37	0.736
Corporate social responsibility	0.2		4.27	0.954
Top management support	-0.595		4.23	0.927
Competition	-0.181		4.1	0.969
Availability of competent managers	0.348		4.28	1.01
Number of organizational branches	0.113		4.02	0.9
Organizational layout	0.256		4.48	0.676
Importance of a decision	-0.489		4.25	1.035
Uniformity of decisions	1.529		4.3	0.908
Organizational structure	0.692		4.28	0.993
Accountability of decision making process	-1.072		4.12	0.846
Satisfaction with procurement structure	0.099		4.25	0.773

Extraction Method: Principal Component Analysis

Source: Research data

From the table above, factor analysis identified 4 (four) underlying variables. The first variable identified was operational factor with means lying between 4.23 and 4.63. This indicates that operational factors have a relatively high influence on centralized procurement structures Kenya's power sector with system integration as the main variable considered with the highest mean of 4.63. The second variable identified was the economic factor with mean of 4.13 and 4.27 indicating that economic factors had a relatively moderate influence on centralized procurement structures in Kenya's power sector with contract agreements/ hedging as the main variable considered with the highest

mean of 4.42. The third variable identified was quality with a mean between 4.17 and 4.33. This indicates that quality has a relatively moderate influence on centralized procurement structures in Kenya's power sector with data protection as the main variable considered with the highest with a mean of 4.48. The fourth variable identified was organizational factor with mean lying between 4.02 and 4.37. This indicates that organizational factors have a relatively low influence on centralized procurement structures in Kenya's power sector with size of the organization as the main variable considered with the highest mean of 4.37.

4.5.2 Decentralized Procurement Structure

Table 4.9 Factor loadings and univariate descriptives of identified factors compared with the decentralized procurement structure

	Factor Loadings	Underlying factor	Mean	Standard Deviation
Time management	-1.517	**Operational**	4.27	0.821
Operational efficiency	-1.767		4.23	0.998
Information technology	4.377		4.22	1.01
Number of employees in the procurement department	2.259		4.27	0.972
Materials handling	-2.606		4.23	0.89
Effectiveness of inventory management	5.127		4.28	0.825
Lead time	1.387		4.37	0.974
On-time delivery	2.324		4.28	0.904
Degree of communication	1.262		4.27	0.88
Co-ordination of activities	-0.639		4.37	0.863
Delays in decision making	1.011		4.28	0.958

Amount of paperwork required	1.686		4.27	0.98
Response to supplier delay	-1.968		4.22	0.865
E-procurement systems	0.703		4.3	1.046
Competitive advantage	-1.528		4.32	0.873
Continuous environmental scanning	1.615		4.1	1.175
Systems integration	-2.391		4.63	0.688
cost control	6.778	**Economic**	4.25	0.773
value for money achieved	2.344		4.23	0.963
Effectiveness of inventory control	5.528		4.15	1.102
ceiling on procurement budget	-3.283		4.18	0.948
impact of procurement decisions on cost	0.541		4.13	1.157
consortium buying	1.171		4.22	1.01
mobilizing additional resources	-3.256		4.27	0.944
contract agreements/ hedging	1.581		4.42	0.809
resource utilization	1.518		4.18	1
financial capability	-1.253		4.15	1.233
policies and procedures in place	-2.136	**Quality**	4.32	0.983
standardization of procedures	1.318		4.18	1.049
supplier failure	-6.433		4.22	1.043
continuous improvement	-4.366		4.17	1.237
data protection	-3.892		4.48	0.873
quality assurance	0.06		4.2	1.176
integration of procurement activities	-9.507		4.32	0.833
Risk assessment	0.437		4.28	0.885
technical knowledge	1.47		4.15	1.087

administrative skills	0.138		4.05	1.111
risk identification	2.752		4.33	0.896
risk mitigation	4.422		4.25	0.914
service delivery	4.455		4.02	1.097
customer satisfaction	0.41		4.2	1.022
visibility of decision making	0.626		4.32	0.813
Size of the organization	1.269	**Organizational**	4.37	0.736
Corporate social responsibility	-1.734		4.27	0.954
Top management support	-3.883		4.23	0.927
Competition	-1.317		4.1	0.969
Availability of competent managers	1.152		4.28	1.01
Number of organizational branches	-3.706		4.02	0.9
Organizational layout	2.591		4.48	0.676
Importance of a decision	-3.571		4.25	1.035
Uniformity of decisions made	-3.828		4.3	0.908
Organization structure	2.135		4.28	0.993
Accountability of decision making process	-1.745		4.12	0.846
Satisfaction with procurement structure	-0.752		4.25	0.773

Source: Research data

In decentralized procurement structure, operational variable had means lying between 4.10 and 4.63. This indicates that operational factors have a relatively high influence procurement structures within Kenya's power firms with system integration as the main variable considered with the highest mean of 4.63. The second variable identified was the economic factor with mean of 4.13 and 4.42 indicating that economic factors had a relatively moderate influence over procurement structures in firms in Kenya's power sector with contract agreements/ hedging as the main variable considered with the highest mean of 4.42. The third variable identified was quality with a mean between 4.05 and 4.48. This indicates that quality also has a relatively moderate influence on the decentralized procurement structure in firms in Kenya's power sector with data protection considered as the main variable considered with the highest with a mean of 4.48. The fourth variable identified was organizational factor with mean lying between 4.02 and 4.48. This indicates that organizational factors have a relatively low influence on the decentralized procurement structure in firms in Kenya's power sector with organizational layout as the main variable considered with the highest mean of 4.48.

4.5.3 Hybrid Procurement Structure

Table 4.10 Factor loadings and univariate descriptives of identified factors compared with the hybrid procurement structure

	Factor Loadings	Underlying factor	Mean	Standard Deviation
Time management	-0.245	**Operational**	4.27	0.821
Operational efficiency	-0.612		4.23	0.998
Information technology	2.463		4.22	1.01
Number of employees in the procurement department	0.629		4.27	0.972
Materials handling	-0.283		4.23	0.89
Effectiveness of inventory management	-3.477		4.28	0.825
Lead time	-2.405		4.37	0.974
On-time delivery	-1.458		4.28	0.904
Degree of communication	-1.111		4.27	0.88
Co-ordination of activities	0.834		4.37	0.863
Delays in decision making	-0.807		4.28	0.958
Amount of paperwork required	0.297		4.27	0.98
Response to supplier delay	-2.168		4.22	0.865
E-procurement systems	-2.509		4.3	1.046
Competitive advantage	0.035		4.32	0.873
Continuous environmental scanning	-0.569		4.1	1.175
`Systems integration	0.057		4.63	0.688
cost control	-3.4	**Economic**	4.25	0.773
value for money achieved	0.028		4.23	0.963
Effectiveness of inventory control	-1.197		4.15	1.102

ceiling on procurement budget	1.454		4.18	0.948
impact of procurement decisions on cost	-0.353		4.13	1.157
consortium buying	1.646		4.22	1.01
mobilizing additional resources	1.797		4.27	0.944
contract agreements/ hedging	2.663		4.42	0.809
resource utilization	-0.669		4.18	1
financial capability	-0.721		4.15	1.233
policies and procedures in place	2.159	**Quality**	4.32	0.983
standardization of procedures	0.081		4.18	1.049
supplier failure	5.491		4.22	1.043
continuous improvement	4.981		4.17	1.237
data protection	4.086		4.48	0.873
quality assurance	-0.81		4.2	1.176
integration of procurement activities	2.831		4.32	0.833
Risk assessment	0.687		4.28	0.885
technical knowledge	-0.58		4.15	1.087
administrative skills	2.314		4.05	1.111
risk identification	-0.399		4.33	0.896
risk mitigation	-0.513		4.25	0.914
service delivery	-1.3		4.02	1.097
customer satisfaction	-0.685		4.2	1.022
visibility of decision making	1.543		4.32	0.813
Size of the organization	-0.227	**Organizational**	4.37	0.736
Corporate social responsibility	-0.283		4.27	0.954

Top management support	-0.836	4.23	0.927
Competition	-0.031	4.1	0.969
Availability of competent managers	-2.088	4.28	1.01
Number of organizational branches	1.553	4.02	0.9
Organizational layout	-4.704	4.48	0.676
Importance of a decision	0.136	4.25	1.035
Uniformity of decisions	0.742	4.3	0.908
Organizational structure	-1.815	4.28	0.993
Accountability of decision making process	-0.466	4.12	0.846
Satisfaction with procurement structure	-1.102	4.25	0.773

Source: Research data

In the hybrid procurement structure, operational variable had means lying between 4.10 and 4.63. This indicates that operational factors have a relatively high influence on the hybrid procurement structure within Kenya's power firms with system integration as the main variable considered with the highest mean of 4.63. The second variable identified was the economic factor with mean of 4.13 and 4.42 indicating that economic factors had a relatively moderate influence over the hybrid procurement structure in firms in Kenya's power sector with contract agreements/ hedging considered as the main variable with the highest mean of 4.42. The third variable identified was quality with a mean between 4.05 and 4.48. This indicates that quality also has a relatively moderate influence on the hybrid procurement structure in firms in Kenya's power sector with data protection was rated highest with a mean of 4.48. The fourth variable identified was organizational factor with

mean lying between 4.10 and 4.37. This indicates that organizational factors have a relatively low influence the hybrid procurement structure in firms in Kenya's power sector with size of the organization rated with the highest mean of 4.48

4.6 Relationship between the identified factors and the procurement structures in firms in Kenya's power sector

The study sought to determine the relationship between the factors identified from factor analysis with the procurement structures in Kenya's power sector firms. A multivariate linear regression equation was fitted to the data with the identified factors as the independent variables and the procurement structure as the dependent variable.

The table below shows the coefficient estimates

4.6.1 Centralized Procurement Structure

Table 4.11 Coefficient Estimates

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**z**	**Sig.**
(Constant)	3.814	1.193		3.196	0.002
Economic factor	0.153	0.396	0.091	0.386	0.701
Organizational factor	0.135	0.537	0.066	0.252	0.802
Quality	0.565	0.507	0.290	1.113	0.270
Operational factor	-0.780	-0.489	-0.403	-1.595	0.117

Source: Research data

From table 4.10 above, the equation obtained was as follows:

CPS = 3.814 + .153*EF + .135*OF + .565*Q -.780*OP

Where, CPS = Centralized Procurement Structure

EF = Economic Factor

OF = Organizational factor

Q = Quality

OP = Operational Factor

From the above table, Quality has a positive and relatively high statistical significant relationship with centralized procurement structure (β=0.565). Economic factor has a positive and relatively low statistical significant relationship of (β=0.153). Organizational factors has a positive and relatively low and statistical significant relationship (β=0.135). Operational factor had a negative and relatively high statistical significant relationship (β=-0.780) with centralized procurement structure.

Table 4.12 Coefficient Estimates

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.236	.055	-0.013	1.020

Source: Research data

From table 4.12 above, the coefficient of determination had a R^2 value of .055 indicating that the four independent variables explain 5.5% of the variance in the factors for the extent of centralized procurement structure implementation. These independent variables contribute to a relatively low extent centralized procurement structure implementation. This indicates that there is an unexplained variance of 94.5% for adoption to a centralized procurement structure.

Table 4.13 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.361	4	.840	.808	.526
	Residual	57.223	55	1.040		
	Total	60.583	59			

Source: Research data

In the analysis of variance, the sig value should be less than 0.05 for the results derived at to be statistically significant. From the table above F is .808 and p-value is .526. This indicates that the model is not statistically significant as sig. value is greater than 5%, therefore and that the identified factors do not have a significant relationship with the centralized procurement structure.

4.6.2 Decentralized Procurement Structure

Table 4.14 Coefficient Estimates

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**z**	**Sig.**
(Constant)	-1.000	1.775		-.563	.575
Economic factor	.028	.589	.011	.047	.963
Organizational factor	.447	.798	.146	.560	.578
Quality	-.127	.755	-.043	-.168	.867
Operational factor	.448	.728	.168	.670	.505

Source: Research data

From table 4.10 above, the equation obtained was as follows:

DPS = -1.000 + .028*EF + .447*OF + -.127*Q + .448*OP

Where, DPS = Decentralized Procurement Structure

EF = Economic Factor

OF = Organizational factor

Q = Quality

OP = Operational Factor

From the above table, Operational factor has the highest positive and statistical relationship (β=.448) with decentralized procurement structure. Economic factor has a positive and relatively low statistical significant relationship (β=.028). Organizational factors have a positive statistical significance (β=.447). Quality is the only factor that has negative statistical significance (β=-.395) with decentralized procurement structure

Table 4.15 Coefficient Estimates
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.272	.074	0.006	1.517

Source: Research data

From table 4.12 above, the coefficient of determination was found to be .074 indicating that the four independent variables explain 7.4% of the variance in the factors for the extent of centralized procurement structure implementation. These independent variables contribute to a relatively low extent centralized procurement structure implementation. This indicates that there is an unexplained variance of 92.6% for the adoption of decentralized procurement structure.

Table 4.16 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.099	4	2.525	1.097	.367
	Residual	126.635	55	2.302		
	Total	136.733	59			

Source: Research data

From the table above F is 1.097 and the p-value is .367. This indicates that the model is not statistically significant as it has a sig. value greater than 5%, therefore the identified factors do not have a statistical relationship with centralized procurement.

4.6.3 Hybrid Procurement Structure

Table 4.17 Coefficient Estimates

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**z**	**Sig.**
(Constant)	-.659	1.714		-.384	.702
Economic factor	.593	.569	0.239	1.042	.302
Organizational factor	-.284	0.771	-.095	-.369	.713
Quality	-.395	.729	-.138	-.541	.590
Operational factor	.862	.703	.302	1.226	.225

Source: Research data

From table 4.10 above, the equation obtained was as follows:

HPS = -. 659+ .593*EF + -.284*OF + -.395*Q + .862*OP

Where, HPS = Hybrid Procurement Structure

EF = Economic Factor

OF = Organizational factor

Q = Quality

OP = Operational Factor

From the above table, Operational factor had a relatively high positively significant relationship (β=.862) with hybrid procurement structure. Economic factor have a positive value (β=0.593) which shows a statistically relatively moderate significance. Organizational factors have a negative value of (β=-.284) which indicates a statistically relatively low significance. Quality has a relatively low negative statistical significance of (β=-.395).

Table 4.18 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.318	0.101	0.036	1.465

Source: Research data

From table 4.12 above, the coefficient of determination was found to be .101 indicating that the four independent variables explain 10.1% of the variance in the factors for the extent of centralized procurement structure implementation. These independent variables contribute to a relatively low extent of hybrid procurement structure implementation. This indicates that there is an unexplained variance of 89.9% for the adoption to a hybrid procurement structure.

Table 4.19 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.284	4	3.321	1.547	.201
	Residual	118.049	55	2.146		
	Total	131.333	59			

Source: Research data

From the table above F is 1.547 and the p-value is .201. This indicates that the model is not statistically significant as the sig. value is greater than 5% and hence the identified factors do not have a statistical relationship with centralized procurement.

4.7 Summary of the Findings

According to the study, system integration, data protection and contract agreements/ hedging are the main variables that commonly influence procurement structures in firms in Kenya's power sector across the three procurement structures.

These findings are contradictory with Karlsen and Tollefsen (2010) who are of the opinion that the availability of competent managers is a variable to consider in a decentralized procurement structure.

Baidoo (2014) is of the opinion that the size of an organization affects an organization with a centralized procurement structure. This was confirmed by the study findings that organizational factors influence the firms procurement structure with the size of the organization with the highest rankings.

Risk management according to Glock and Hochrein (2011), is a factor that influences procurement structure. Risk identification, risk assessment and risk mitigation under quality had relatively low ratings which is in contradiction with the authors.

Competition under organizational factors had relatively low ratings which is in contradiction with Montana and Charnov (1993) who are of the opinion that in order for business survival in a competitive world competition was enhanced through quick decision making.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the findings, conclusions, and recommendations. It is organized as follows; first it presents the summary of the findings organized as per the research objectives, then the conclusions drawn from those findings and gives recommendations and suggestions for further studies.

5.2 Summary of Findings

The study sought to determine the factors influencing procurement structure of firms in Kenya's power sector. From the study it was found that the hybrid procurement structure was the relatively highest adopted procurement structure in Kenya's power sector. Hybrid procurement structure entails the adoption of both a centralized and decentralized procurement structure. Decentralized procurement structure was the moderately adopted procurement structure in Kenya's power sector, while Centralized procurement structure was the lowest adopted procurement structure in Kenya's power sector.

Four factors were identified as influencing procurement structures of firms in Kenya's power sector, and these are: operational factors, economic factors, quality and organizational factors. Quality was found to influence the adoption of a centralized procurement structure in Kenya's power sector. Decentralized procurement structure was majorly influenced by operational factors in Kenya's power sector and the hybrid procurement structure was majorly influenced by operational factors.

An examination of the joint relationship confirmed these findings and established that the four variables jointly account for 5.5% of adoption of centralized procurement structures,

the four variables jointly account for 7.4% of adoption of decentralized procurement structures and the four variables jointly account for 10.1% of adoption of hybrid procurement structures.

5.3 Conclusions

From the above findings there are three procurement structures adopted in firms in Kenya's power sector. The hybrid procurement structure has been relatively highly adopted within firms in Kenya's power sector. It was also concluded that all the three procurement structures are adopted in firms in Kenya's power sector. Procurement structures in firms in Kenya's power sector are relatively lowly influenced by the four factors identified in factor analysis.

System integration, data protection and contract agreements/ hedging are the main variables that commonly influence procurement structures of firms in Kenya's power sector across the three procurement structures.

It therefore suffices to conclude that procurement structures of firms in Kenya's power sector are essentially not statistically significantly influenced by the selected factors under this study.

5.4 Recommendations

After the research on the factors influencing procurement structures in firms in Kenya's power sector, according to the findings and conclusions the following recommendations were arrived at;

The study has confirmed that procurement structures of firms in Kenya's power sector are not significantly influenced by the factors in the study. Firms in Kenya's power sector require to determine their procurement structures in line with their needs and the benefits to be realized from each procurement structure.

It is also evident that choice of procurement structure has enabled firms in Kenya's power sector not to achieve real time processing of transactions thus the government and other stakeholders need to work on incentives to encourage on technology use on running businesses.

Firms in Kenya's power sector should improve their procurement structures as employees are relatively lowly satisfied with their current procurement structure. This would also enhance service delivery during customer service which was lowly ranked.

Other firms are encouraged not to adopt traditional procurement structures in order to provide faster and efficient services to their customers, but to link their business needs with their procurement structures.

5.5 Limitations and Suggestions for Further Research

The power sector in Kenya is largely controlled and regulated by the government. Therefore variables such as financial capability and value for money were not significant in the study.

Further studies should be carried out on this research topic in order to determine whether there are factors that influence procurement structures with statistical significance.

Procurement largely relies on the enterprise resource planning (ERP) system as the primary integration tool. Information technology is very dynamic and keeps on changing hence the need to replicate this study in line with major trends that may influence the performance of firms in Kenya's power sector.

REFERENCES

Achola, K. (2016). *The Past, Present and the Future of Kenya's Power Sector*. Retrieved from https://www.kenyaengineer.co.ke/201-05-28-20-43-28/latest-news/item/818-the-past-present-and-future-of-kenya-s-power-sector

Anklesaria, J. (2014). *Centralize or Decentralize Procurement? No Longer a Clear-Cut Choice.* Retrieved from https://www.mypurchasingcenter.com/purchasing/industry-articles/centralize-or-decentralize-procurement-no-longer-clear-cut-choice/

Australian Public Service Commission (Australian Government). (2014*). Contingency Theory*. Retrieved from http://www.apsc.gov.au/publications-and-media/current-publications/thinking-about-leadership-a-brief-history-of-leadership-thought/contingency-theory

Baidoo, M. (2014). *Assessing the Operations of Centralized Procurement System: The Case of Process and Plant Sales Ghana Limited (PPS).* MSC: Kwame Nkrumah University of Science and Technology, Kumasi.

Baldi, S. and Vannoni, D. (2014). *The Impact of Centralization, Corruption and Institutional Quality on Procurement Prices: An Application to Pharmaceutical Purchasing in Italy*. Collegio Carlo Alberto, Italy.

Basta, L. R. (1999). *Decentralization: Key Issues, Major Trends and Future Developments*. [Professor]. University of Fribourg, Switzerland.

Biodun, A. A. (2011). *The Power Sector and Industrial Development in Nigeria: Case of Power Holding Company of Nigeria.* Thesis. Lahti University. Nigeria.

Brady, N. (2002). *Striking a Balance: Centralised and Decentralised Decisions in Government*. The Treasury. Wellington, New Zealand.

Brito, B., S. (2016). *Centralization of Supply Chain Management Operations: The Case of Unilever Ultralogistik.* MA. Europe.

Burton, R. M., Ericksen, B. & Snow, C. C. (2006). *Organization Design. The evolving state- of-the-art.* Springer, Boston.

Busch, J. (2014). *Centralized vs. Decentralized Procurement: No debate Necessary.*
Retrieved from http://spendmatters.com/2014/09/17/centralized-vs-decentralized-procurement-no-debate-necessary/

Chand, S. (2013). Delegation and Decentralization of Authority. Retrieved from http://www.yourarticlelibrary.com/management/delegation-and-decentralisation-of-authority-business-management/5347/

Charles, J. (2015). Should You Centralize Your Procurement Operations? Retrieved from
http://www.technologyconcepts.com/should-you-centralize-your-procurement-operations/

Chartered Institute of Purchasing and Supply [CIPS]. (2012). *Contexts in procurement*
and supply chain. Profex Publishing. Stamford, Lincolnshire

Cowley, M. (2014). *Which Model is best: Decentralized or Centralized?* Retrieved from
http://www.facilitiesnet.com/faciliriesmanagent/article/Which-Model-is-Best-Decentralized-or-Centralized-Facility-Management-Facilities-Management-Feature-14991

Dadzie, E. B., Atanga, R. A., & Ghansah, E. E. T. (2016). The Role of Inventory. Management on Productivity in the Manufacturing Sector. [Lecturer]. *Dama International Journal of Researchers.* Volume I (Issue 8), Page 39-104

Dalkin, J. (2017). *Definition-What is Procurement?* Capital. Retrieved from https://www.capital.uk.com/2014/07/definition-procurement/

Dyer, S. (2017). *Applying Game Theory to Procurement's Negotiations*. Procurement
Leaders. Retrieved from https://www.procurementleaders.com/blog/blog/applying-game-theory-to-procurements-negotiations-680020

ENPORION, (2009). Supply Chain Organization Models That Drive Success. Retrieved
from https://www.supplychainbrain.com.content/single-article/article/supply-chain-organization-models-that-drive-success/

Financial Times Limited {FT Ltd}. (2017, October 15). Business news newspaper.
Retrieved from https://markets.ft.com/data/equities/tearsheet/profile?s=KPLA:NAI

Gibson, B. (2017, September 7). *Systems theory.* Retrieved from http://www.britannica.com/topic/systems-theory

Gligor, D. M. (2015). *The five dimensions of supply chain agility.* Retrieved from Retrieved from http://www.supplychainquarterly.com/topics/Strategy/20151022-the-five-dimensions-of-supply-chain-agility/

Glock, C. H., & Hochrein, S. **(**2011). Purchasing Organization and Design: A Literature
Review. *Official Open Access Journal of VHB.* Volume 4. Page 149-191

Heylighen, F. & Joslyn, C. (1992). *What is Systems Theory?* Retrieved from ftp://ftp.vub.ac.be/pub/projects/Principia_Cybernetica/PCP-Web/SYSTHEOR.html

Hyttinen, J. (2013). *Improvement of indirect materials' purchasing centralization within*
business process service engagement: Case of Company X. Degree. Lahti.

Ingólfsdóttir, E. S., & Dyndegaard, J. H. S. (2012). *Purchasing organizational structure*
and competence level effects on a category management project in a publicly owned supply company. MBA. Copenhagen Business School, Copenhagen.

Karani, J. (2011). *Centralized vs. Decentralized Procurement: The Case Study of Coca-*
Cola Africa. [Power Point Presentation]. Johannesburg

Karjalainen, K. (2009). *Challenges of Purchasing Centralization: Empirical Evidence*
from Public Procurement. Helsinki, Netherlands

Karlsen, F. & Tollefsen, L. (2010). *Purchasing Structures in the Construction Industry:*
Mesta Entreprenør. MA. BI Norwegian School of Management. Norway.

Kenya Electricity Transmission Company [KETRACO] website. 2017). *The Electricity*
Sub-sector. Retrieved from https://www.ketraco.co.ke/learn/electricity-sub-sector.html

Kenya Power & Lighting Company [KPLC]. (2017). *Energy sector players.* Retrieved
from https://www.kplc.co.ke/content/item/66/key-sector-players

Kipkemoi, E. (2012). Purchasing structure & design. *Journal of Research in Humanities and Social Science.* Retrieved from

https://www.scribd.com/document/96520623/Purchasing-Structure

Malone, T. W. (2004). *Making the Decision to Decentralize*. Working Knowledge:
Business Research for Business Leaders. Retrieved from
https://hbswkhbs.edu/archive/making-the-decision-to-decentralize

Marume, S. B. M., & Jubenkanda. R. R. (2016). Centralization and Decentralization.
Journal of Research in Humanities and Social Science. Volume 4 (Issue 6), Page 106-104

Montana, P., & Charnov, B. (1993). *Organizational Structures: Concepts and Formats.*
In a Streamlined Course for Students and Business People. Hauppauge, New York.

Moreau, O. (2013). Central Purchasing Systems in the European Union. *A meeting held*
by Leading Practitioners on Public Procurement. [PowerPoint Presentation].
Paris.

Norton, S. (2016). *Game theory*. Retrieved from
https://www.linkedin.com/pulse/game-theory-procurement-steven-norton

Odhiambo, J. A., & Odari, S. (2016). Effects of Centralised Purchasing on Organizational Efficiency: A Case Study of Florensis Kenya Limited. *IOSR Journal of Business and Management.* Volume 18 (Issue 11), Page 68-78

OECD (2000). *Organisation for Economic Co-operation and Development. Centralised and Decentralised Public Procurement.* SIGMA Papers. OECD Publishing. France.

Omenge, J. M. (2013). *Policy on Feed-in Tariff by the Government of Kenya: Inclusive*
Green Growth. [Chief Geologist, MoEP]. Moscow, Russia.

Polit, D. F., & Hungler, B. (1999). *Nursing Research: Principle and Method*. 6th Edition. Lippincott Company, Philadelphia.

Porteous, E. (2016). *Is Hybrid Best? The Centralised vs Decentralised Debate-Procurement News*. Retrieved from https://www.procurious.com/procurement-news/hybrid-centralised-decentralised-debate

PRECORO. (2017, July 22). *What is centralized purchasing?* Retrieved from
https://precoro.com/blog/what-is-centralized-purchasing

Private Infrastructure Development Group [PIDG]. (2014, October 1). *Kenya Power & Lighting Company.* London, United Kingdom. Retrieved from https://www.pidg.org/what-we-do/projects/kenya/kenya-power-lighting-company-ltd-kplc

Rotich, H. (2016, June 8). Kenya's National Budget Speech. [Cabinet Secretary]. Retrieved from https://www.esi-africa.com/features/kenya-home-one-africas-active-energy-sectors/

Saylor, T. (2011). *Toyota struggles with organizational structure case study in Organizational Structure and Change in Principles of Management.* Saylor Foundation. New World University, United States.

Sharma, H. (2017, July 28). *Factors affecting centralization and decentralization.* Retrieved from https://www.slideshare.net/buddy1sharmaa/factors-affecting-centralisation-and-decentrslisationppt

Shea. C. M. (2000). *Handbook of Public Information Systems*. 2nd Edition. Retrieved from https://books.google.com/books?isbn=0824782445.

Slack, N., Chambers, S., & Johnson, R. (2009). Operations Management. Financial Times, Prentice Hall. England.

Soft, E. (2016). Centralized vs. Decentralized Purchasing. Retrieved from https://effiasoft.com/centralized-vs-decentralized-purchasing/

Suarez, J., G. (1992). *Three Experts on Quality Management: Philip B. Crosby, W. Edwards Deming, Joseph M. Juran.* Total Quality Leadership Office. Arlington, Virginia.

United States Agency for International Development (USAID) Kenya & East Africa. (2015). *Development of Kenya's power sector 2015-2020: Power Africa.* Nairobi, Kenya.

Vilet, V. (2014, September 30). *Five functions of management (fayol).* Retrieved from https://www.toolshero.com/management/five-functions-of-management/

Wafula, P. (2016, November 10). *Up to Sh1.4b was stolen in NYS scandal, new audit now reveals.* Retrieved from http://www.standardmedia.co.ke/article/2000204386/up-to-sh1-4b-was-solen-in-nys-scandal-new-audit-now-reveals

Zaineb, A. (2011, September 24). *Centralization in an Organization: Advantages and Disadvantages.* Retrieved from http://blog.commlabindia.com/elearning-design/system-of-centralization

APPENDIX I: QUESTIONNAIRE

The current study is aimed at finding out factors that influence procurement structures of firms in Kenya's power sector. Your participation will enhance the quality of this project and the results obtained. Kindly answer the following questions honesty and feel free to ask any questions or clarification. Your name is not required and your responses will be kept strictly confidential and will be used only for the purpose of this study.

Instructions: This questionnaire contains three sections: **A, B** and **C.** Tick the appropriate box and give a brief explanation in the black spaces provided.

Section A: General information

1. What is your position within the procurement department?

Head of department [ ]

Senior procurement officer [ ]

Procurement Officer [ ]

2. What is your level of education?

Certificate [ ] Diploma [ ] Degree [ ]

Masters [ ] Other specify …….

3. How long have you worked in the organization?

1 to 2 years [ ] 3 to 4 years [ ] Over 5 years [ ]

4. What form of business organization is your firm?

Government [ ]

Private [ ]

Other (please specify).....

SECTION B: EXTENT OF ADOPTION OF PROCUREMENT STRUCTURE

The following table contains questions on the extent of adoption of procurement structures in Kenya's power sector. Rate the statements indicated by ticking on the appropriate space provided from a scale of 1 to 5.

Key: 1=Strongly Disagree 2= Disagree 3=Neutral 4= Agree 5=Strongly Agree

FACTOR	**1**	**2**	**3**	**4**	**5**
The firm has adapted a centralized procurement structure					
The firm has adapted a decentralized procurement structure					
The firm has adapted a hybrid (combination) procurement structure					

Section C: Factors influencing procurement structure.

10. The following table has factors influencing procurement structures of firms in Kenya's power sector. Rate the statements indicated by ticking on the appropriate space provided from a scale of 1 to 5.

Key: 1=Strongly Disagree 2= Disagree 3=Neutral 4= Agree 5=Strongly Agree

FACTOR	**1**	**2**	**3**	**4**	**5**
Availability of competent managers					
Administrative skills					
Supplier failure					
Amount of paper work					
Value for money achieved					

E-procurement systems					
Quality assurance					
Accountability of decision making process					
Consortium buying					
Operational efficiency					
Standardization of procedures					
Information technology					
Importance of a decision					
Risk identification					
Effectiveness of inventory management					
Customer satisfaction					
Co-ordination of activities					
Continuous improvement					
Visibility of decision making					
Number of employees in the procurement department					
Data protection					
Size of the organization					
Impact of procurement decisions on cost					
Lead time					
Number of organizational branches					
Response to supplier delay					

Continuous environmental scanning					
Competitive advantage					
Service delivery					
Satisfaction with procurement structure					
Risk mitigation					
Ceiling on procurement budget					
Time management					
Degree of communication					
Top management support					
Policies and procedures in place					
Technical knowledge					
Uniformity of decisions					
Resource utilization					
Materials handling					
Systems integration					
Cost control					
Delays in decision making					
Risk assessment					
Mobilizing additional resources					
Competition					
Financial capability					
Corporate Social Responsibility					

Integration of procurement activities					
Organization structure					
On-time delivery					
Contract agreements/ hedging					
Organizational layout					