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Role of Procurement on the Completion of Projects in the Energy Sector in Kenya: A Case Study of Kenya Electricity Generating Company (Kengen)

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Abstract: **This study aimed to find out the role of procurement in completion of public projects. The study sought to establish how various aspects of the procurement contribute to the completion of projects. The specific objectives of the study were; to find out the role of contract management on project completion in the energy sector in Kenya; to determine the role of bidding on project completion in the energy sector in Kenya; to find out the role of procurement planning on project completion in the energy sector in Kenya and to determine the role of scheduling on project completion in the energy sector in Kenya. The study adopted a case study research design. The target population of interest in this study consisted of 58 staff members at KenGen Tana branch in Murang'a County and precisely Supply chain department, Finance department, Operations management department, Administration department, Security and integrity department.This research adopted a stratified sampling technique in selecting the sample. The main instrument for data collection was structured questionnaires that allow for uniformity of responses to questions. The data collected was analyzed using SPSS. Descriptive statistics such as mean, standard deviation, frequency distribution and percentages were used to summarize and present data. Pearson's correlations coefficients was run to examine the relationship among the independent and the dependent study variables that are set out in the objectives of the study. The study findings indicated that change in project completion can be explained by four predictors namely contract management, bidding, procurement planning and project scheduling an implication that the remaining of the variation in project completion could be accounted for by other factors not considered in this study. From the findings, it was established that KenGen had incorporated procurement function in project completion which involve performance targets, planning and control systems, monitoring and evaluation that generates good result. According to the research findings, procurement function was involved in project implementation. Effects of contract management, bidding, procurement planning and project scheduling were found to be statistically significant with a positive impact on project completion. The study recommends that procurement should be involved in all the stages and entire lifecycle of a project from initialization through contract administration to completion of projects. Following the results of the study, it is evident to conclude that there is a positive relationship between procurement and project completion.**

Keywords: **Public project, Project management, contract management.**

1. INTRODUCTION

In the course of recent years, developing nations have stirred on the significance of powerful administration of procurement frameworks in both central and local government levels and additionally in different businesses. Procurement, a capacity that was customarily seen as administrative and responsive errand has subsequently situated itself

among core activities of the organization and any organization would suffer without a good procurement function. A proficient procurement framework is imperative to the progression of African nations and is a solid articulation of the national responsibility to making the ideal utilization of open as well as hierarchical assets (Kabaj, 2003).

A project is an investment action that includes a present or future cost of assets in the desire of a surge of advantages stretching out far into what's to come as indicated by Chandra (2008). A public project is hence one where such a speculation includes the utilization of open assets by a Government body ordered to do certain particular missions to accomplish particular targets for the advantage of greater public majority. Project execution again alludes to the way toward completing the speculation arrangement by setting up certain particular activities and structures keeping in mind the end goal to operationalize the speculation dream and in this manner get the focused on advantages from the project.

According to Brown and Hyer (2010), a project is an interim attempt planned to take care of an issue, sees an open door, or reacts to an order. A wide range of associations take part in venture exercises: Families, Government organizations, small organizations as well as multinational corporations. They further contended that the consideration regarding the administration of ventures without a doubt is developing since organizations, whether private or public, have up-scaled their undertaking portfolios and subsequently spend extensive aggregates of cash on project endeavors. Similarly, a few different nations of the world, including France and Germany among others, have been driven by the inspiration to address certain insufficiencies, irregular characteristics or gaps existing in the economy, which the private area alone could not generally successfully manage. The best approach to achieve this is by initiating pertinent public projects. Past studies on open activities have shown that there exist horde difficulties that obstruct their successful implementation.

In numerous nations, procurement systems in an association, in light with the energy industry has however pulled in feedback for in efficiencies in results, for example, time and cost overruns, low efficiency, low quality and insufficient customer satisfaction. Procurement officers, contractual workers and different professionals in the association have extraordinarily affected the adjustment in association mentalities, conduct and acquisition frameworks with a specific end goal to expand chances for development undertakings to be fruitful and subsequently has prompted enhanced products. (Latham 1994; Erickson 2002).

Choice of acquisition framework for a given project is a troublesome errand for the suppliers, customers or organizations because of the different components overseeing energy projects Maizon (2003). He expressed further that distinctive enterprises or buyers have diverse necessities and prerequisites whereby project in procurement systems fluctuate so significantly that no single strategy for procurement can be reasonable for each project.

Through this, there has been an increased co-operation among different parties in the procurement systems especially in the energy sector. This has been caused by the increased complexity, uncertainty and time pressure on construction projects (Anvour and Kamaraswammy, 2007). Traditionally, relationships have been very competitive and adversarial in the energy industry. This has been majorly contributed by the customary procedures that have led to many problems in all stages of procurement (Erickson and Laan, 2007).

In order to take advantage of collaboration, procurement systems are one key improvement area that can contribute substantially to projects completion. A change of procurement behavior will however be influenced by the habitual clients. Although there is need to work on procurement behavior to enhance fulfillment of different procurement project objectives, clients will often choose procurement procedures that they have a habit of using, notwithstanding the difference between the procurement systems projections. To enhance change, it would be of utmost importance to understand how different procurement procedures have its role and affect different aspects of organizational performance most especially project performance.

On the local front, similar situations affecting successful project implementation within the public sector in Kenya. The Kenya Electricity Generating Company (KenGen) being a public institution is no exception to these challenges. According to Kenya National Audit Office (KENAO,2010), KenGen failed to successfully implement the construction of Hydro Plaza project in Seven Folks within the stipulated contractual period and initial budget. The contractor blamed this failure on delayed payments and unforeseen but necessary works associated with the project. This clearly pointed to poor project planning, procurement procedures in inspection of works and a challenged finance system.

Different studies have confirmed the use of various types of procurement systems for organization performance especially project delivery in Kenya. For instance, the use of traditional design, project management, direct labor and other types such as partnering, alliances and joint ventures.

The use of these methods can adversely affect the performance of many activities in the organization projects. In support of this, public procurement systems in Kenya evolved from crude system with no regulations to an orderly legally regulated system.

In the past decades, procurement systems in Kenya have undergone significant development, from being a system with no regulations in the 1960s to system regulated by treasury circulars in 1970s, 1980s and 1990s, the introduction of PPDA act in 2005 and PPAD 2015 and procurement regulations of 2006. This has introduced new stands for public procurement in Kenya. With the enactment of PPDA 2005 and PPAD 2015 and procurement regulations, Kenya today has in place a sound and comprehensive legal framework for public procurement with a clear hierarchical distinction.

There is a number of project procurement procedures used in this industry during the buying stage. This study uses procurement systems, methods and procedures that include, project design, choice, bid invitation and evaluation, compensation and performance evaluation and supplier relationships. Clearly, procurement systems has significant role to play in helping the organization to achieve their objective and prepare for the uncertainty ahead. Thai 2001 describes two types of goals in the procurement systems, non-procurement goals and procurement goals. Procurement goals are primarily associated with quality, reduction of financial and technical risks and protection over integrity in the system. Non-procurement goals on the other hand usually involve economic, social and political goals within the system. Achieving efficiency of procurement systems is an ambitious task, as procurement faces numerous challenges especially due to the market structure, legal framework and political environment that procuring firms face (Thai 2004).

Statement of the problem:

Projects are part and parcel of the normal operations of public sector organizations. The projects funded by public funds aim at achieving certain organizational objectives set by public sector organizations to facilitate fulfillment of their mission but in some instances, these objectives are not achieved (Chandra, 2010). According to Frese (2010), a successful project must be on time, on budget and deliver quality (features and functions). Anything less will be either a failed project or a challenged project. Thus the envisaged initial project cost, time and project quality (performance) are the three fundamental cornerstones for measuring the effectiveness of any public project. Lysons and Farrington (2010) espouse the view that implementation is about converting a strategic plan into action and doing what needs to be done to achieve the targeted strategic goals and objectives.

Kenya as a country has witnessed a substantial increase in the number of stalled projects due to inappropriate project organization structures and ineffective leadership. There is evidence that the performance of the construction in Kenya is poor as time and cost performance of projects are to the extent that over 70% of the projects initiated are likely to escalate with time with a magnitude of over 50% and over 50% of the projects likely to escalate in cost with a magnitude of over 20% (Nyangilo, 2012). Kibuchi and Muchungu (2012) discovered that despite the high quality of training of consultants in the building industry in Kenya and regulation of the industry in major urban areas, construction projects do not always meet their goals. This is manifested by myriad projects that have cost overrun, delayed completion period and poor quality resulting to collapsed buildings in various parts of the country, high maintenance costs, dissatisfied clients and even buildings which are not functional.

Previous studies in Kenya have provided evidence of the existence of a serious problem of ineffective project implementation within the public domain. KenGen failed to realize one of its key strategic objectives that were to be realized through the Construction of Hydro Plaza Building in Seven folks within a certain timeline due to delayed payments, procurement process in inspection of works, and unforeseen but necessary works associated with the project (KENAO, 2010). Malala (2011), in his study on the effect of procurement on performance of Constituency Development Fund Projects (CDF) in Kenya (Case study of Kikuyu Constituency) found out that 88% of the projects were rated as being behind schedule, pointing to ineffective implementation process. Kirungu (2011) in a study on factors influencing implementation of Donor Funded Projects observed that the Financial and Legal Sector Technical Assistance Project (FLSTAP) under the Ministry of Finance (The National Treasury) has faced challenges to do with implementation and therefore not able to achieve its goals within the stipulated timeframes. On his part, Omanga (2010) found out that 21% of

CDF Projects in Lari Constituency had either stalled or abandoned altogether. Looking at the studies above it is evident that there has not been a study linking procurement and project completion in energy sector in Kenya leaving a gap that necessitated this study since the practices were established to reduce these problems.Procurement procedures provide the framework for implementation and development of project. Time and serious attention are devoted towards establishment of a procurement function that will be suitable for a particular project. A procurement method that is used for particular project is expected to achieve the objectives of the project in terms of cost, time and quality but this has not been the case. Time and cost overruns have been a major problem confronting the Kenyan energy industry and no attempts that have been made so far have been able to yield the expected results.

The statement of the problem proofs clearly that the people affected by the failure of the projects implementation is the public who are the tax payers, public institutions who never meet their objectives and the Government in general which does not fulfill their Millennium Development Goals (MDGs). Problems that have been established from various research work that have been carried out in the past as a result of the use of available procurement methods in execution of projects

Objectives of the study:

The general objective of this study was to examine the role of procurement on project completion in the energy sector in Kenya. The specific objectives of this study were:

a) To find out the role of contract management on project completion in the energy sector in Kenya

b) To determine the role of bidding on project completion in the energy sector in Kenya

c) To find out the role of procurement planning on project completion in the energy sector in Kenya

d) To establish the role of scheduling on project completion in the energy sector in Kenya

2. THEORETICAL BACKGROUND

This research mainly focused on procurement function role on successful project completion. The underpinning theories included; Social Economic Theory, Stakeholder theory and Resource Based View.

Socio-Economic Theory:

Sutinen and Kuperan (2012) propounded the socio-economic theory of compliance by integrating economic theory with theories from psychology and sociology to account for moral obligation and social influence as determinants of individuals' decisions on compliance. According to Lisa (2010), psychological perspectives provide a basis for the success or failure of organizational compliance. Wilmshurst and Frost (2000) also add that the legitimacy theory postulates that the organization is responsible to disclose its practices to the stakeholders, especially to the public and justify its existence within the boundaries of society. This theory, which focuses on the relationship and interaction between an organization and the society, provides a sufficient and superior lens for understanding government procurement system (Hui *et al*., 2011). From this theory, we can understand the procurement policy, planning, supplier selection, contract reviews and sustainable procurement practices in public institutions and their influence on service delivery to the society as well as project implementations.

Stakeholder theory:

Freeman (1984) defines a stakeholder as any individual, organization or institution that is associated with a firm and is affected by the firm in some way or affects the firm's action and goals. Stakeholder theory posits that an organization is not only responsible for its shareholders' interests, but additionally for the interests of customers, employees and the local community (Piacentini et al, 2000). This includes social, economic and moral responsibilities and goes beyond the purely economic and legal responsibilities once believed to be an organization's only responsibilities. As is obvious from these descriptions, stakeholder theory is a theory that follows the same principles as sustainable development concept and indeed covers the same aspects of business responsibilities – economic, social and environmental. Stakeholder theory describes the purpose and strategic direction of the firm through the concept that managers need to simultaneously incorporate the legitimate interests of all appropriate stakeholders when making business decisions.

Resource Based Theory:

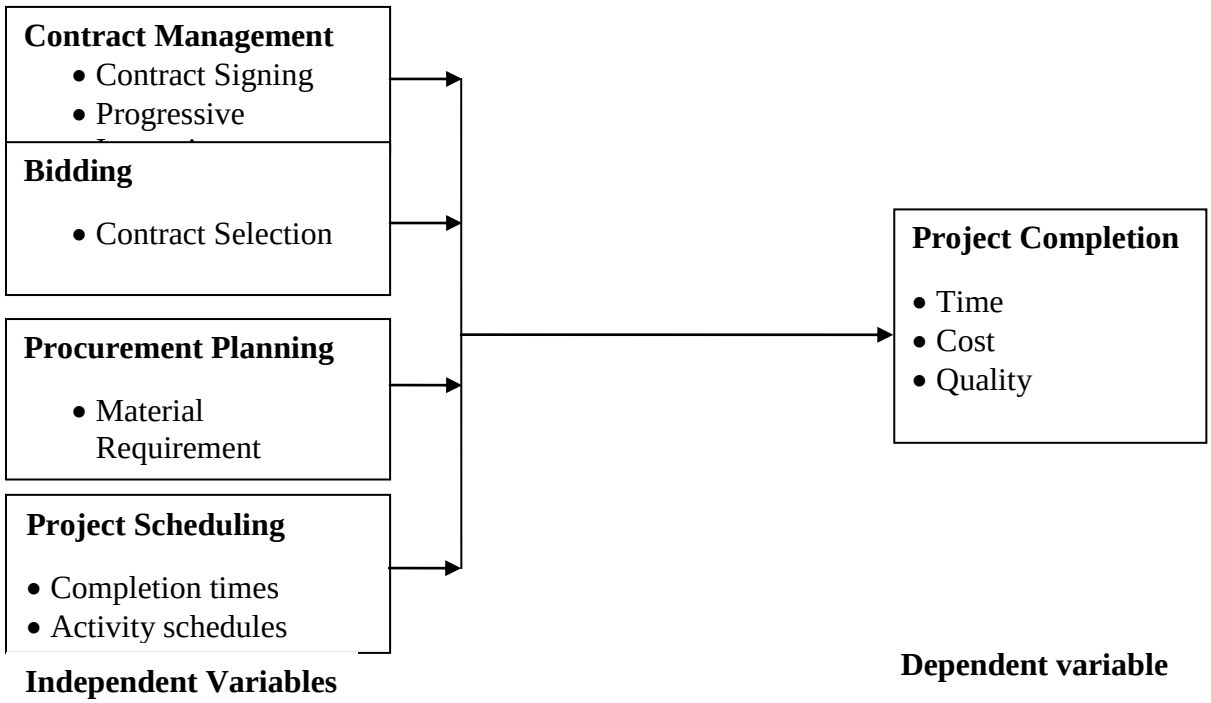
The resource-based view holds that firms can earn sustainable super normal returns if and only they have superior resources which are protected by some form of isolating mechanism preventing their diffusion through industry (Barney, 1991). Resource-Based View (RBV) provides a good theoretical foundation to discuss the contribution of resources and capabilities to firm's performance. The theory gives an insight on the relations among internal resources, capabilities and performance.

Resources are inputs into a firm's production process, such as capital, equipment, skills of individual employees, patents, finance, and talented managers. Resources are either tangible or intangible in nature. With increasing effectiveness, the set of resources available to the firm tends to become larger. Individual resources may not yield to a competitive advantage. It is through the synergistic combination and integration of sets of resources that competitive advantages are formed. The Resource-based Theory (RBV) is a strategic management theory that is widely used in project management. It examines how resources can drive competitive advantage (Killen *et al*., 2012). The RBT has become one of the most influential strategic management theories cited in strategic management literature due to its immediate face validity, appealing core message, and ease to grasp and teach (Kraaijenbrink *et al*, 2010). With the help of this theory one can understand how to utilize the available resources, select our suppliers, do contract reviews to accomplish and implement a given project effectively by prioritizing the project needs.

Conceptual Framework:

According to Thomas (2010), a conceptual framework can be defined as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation. Its aim is to assist a researcher to develop awareness and understanding of the situation under scrutiny and communicate the same in a broad perspective. It highlights the study variables and illustrates the underlying relationships (Thomas, 2010).

This displays the inputs as independent variables and the output as dependent variables. Any changes in the input brought about by the way procurement function is carried out will have an effect on the outputs. The independent variables of the study are contract management, bidding, procurement planning and project scheduling.



3. RESEARCH METHODOLOGY

The research design was a descriptive case study design within KENGEN. Blumberg, Cooper and Schindler (2005) posit that descriptive case studies place more emphasis on a full contextual analysis of fewer events or conditions and their interrelations. The merit of using a case study is that it allows an in-depth understanding of the behavior pattern of the

concerned unit. Additionally a case study allows a researcher to use one or more of the several research methods depending on the circumstances. The study was used to identify the procurement aspects and their role in completion of projects. The reason for this choice was based on the knowledge that case studies are the most appropriate for examining the processes by which events unfold, as well as exploring causal relationships and they provide a holistic understanding of the phenomena (Kitay & Callus, 1998).

The target population of interest in this study consisted of 58 staff members at KenGen Tana branch in Murang'a County and precisely supply Chain department, Finance department, Operations management department, Administration department and security and integrity department .The study targeted these functional levels of management because project management cuts across all business processes and these departments are directly or indirectly involved in the formulation and implementation of projects.

The sampling frame of this study was drawn from 58 employees. The sample of this study was drawn from the population that represents the employees of KenGen Tana unit Supply chain department, Finance department, Operations management department, Administration department, Security and integrity department and will not form part of the final population.The researcher sampled 37 employees from the total 58 which represented 64% of the target population which is in line with Mugenda and Mugenda's (2003) recommended 30% of the population. The goal of sampling techniques is to select a reasonable number of subjects, objects, cases that represent the target population (Savin-Baden & Major, 2013). Using Nassiuma (2001) formula with a confidence level of 95%, coefficient of variation of 0.5 and precision level of 5%. This research adopted a stratified random sampling technique in selecting the sample. The numbers assigned to an element was written on a small paper and folded to conceal them. They were placed in a container and properly shuffled, after a paper was picked randomly. The number on the picked paper was recorded. The exercise was repeated until the sample size was achieved. The technique produces estimates of overall population parameters with greater precision and without bias because the numbers are random (Mark Saunders, et al, 2009). The use of sample enables the researcher to save time and costs associated with studying the entire population (Mark Saunders, et al, 2009). The selected respondents were issued with questionnaires. The sample size is indicated in the table that follows:

Sample Size:

Stratum	Total Employees	Sample Size	%
Supply chain department	5	3	8
Finance department	4	2	5.4
Operations management department	20	14	38
Administration department	25	16	43.2
Security and integrity department	4	2	5.4
Total	**58**	**37**	**100**

The study relied on primary data. Data from the target respondents was collected through administration of structured questionnaire. The questionnaires contained closed ended questions, which allowed quantitative analysis to be done. Questionnaires were preferred because of their simplicity and efficiency in obtaining information from a large number of respondents. The questionnaires were hand-delivered to the respondents and collected after a few days. The questionnaires were administered by drop and pick method. After dropping the questionnaire, the respondents were given at least one week to respond and follow-ups made via emails and phone calls.

Kothari (2004) argues that before using a questionnaire as a data collection tool, it is always advisable to conduct pilot study. For this study, pilot study was undertaken at KenGen Tana Power Station 25 questions were used and the participating employees did not form part of the final study. Mugenda and Mugenda (2003) pointed out that a successful pilot study should use 1to 10 percent of the actual sample size. According to Borg and Gall (2003), piloting of research instruments is important for validity and reliability tests of the instruments.

According to Mugenda and Mugenda (2003), Validity is the accuracy and meaningfulness of inferences, which are based on the research results. It is the degree to which results obtained from the analysis of the data actually represent the variables of the study. Before the actual study, the questionnaire was discussed with supervisors. The feedback from the supervisors and the experts helped in modifying the questionnaires.

Reliability is defined as the measure of the degree to which a research instrument yields consistent and coefficient results on data in another given similar situation. Reliability of instrument is done to ensure that there is consistence across all given variables (Mugenda and Mugenda, 1999).Cronbach's Alpha method was used to check on the reliability and validity of the instruments used by determining the internal consistency of the scale used. Cronbach's Alpha for each value was established by the SPSS application and gauged against each other at a cut off value of 0.7 which is acceptable. Cooper and Schindler (2008). Cronbach's Alpha is a reliable coefficient that indicates how well items are positively related to one another.

Upon completion of the data collection exercise, the data was edited, coded and tabulated for ease of analysis. The data was quantitatively analyzed based on research objectives. It was then presented in form of tables and charts for easy interpretation and recommendation in decision making. The quantitative data was analyzed through descriptive statistics and inferential analysis. Data analyzed descriptively was presented in tables.

Pearson's correlations coefficients was run to examine the relationship among the independent and the dependent study variables that are set out in the objectives of the study.

Regression model:

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

Where

Y = Project Completion

$\boldsymbol{\beta_0}$ =Constant

X_1 = Contract management

X_2 = Bidding

X_3 = Procurement Planning

X_4 = Project Scheduling

$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficients

ε = the error term.

4. RESEARCH FINDINGS AND DISCUSSION

The study sought to investigate the role of procurement on the completion of public projects in the energy sector in Kenya using a case study of Kenya Electricity Generating Company. Particularly the study looked at contract management, bidding, procurement planning and project scheduling and their role on project completion.

The researcher targeted 37 respondents from Kenya Electricity Generating Company**.** However, 29 questionnaires were filled correctly and returned. This translates to 78.38%. This commendable response rate was made a reality after the researcher made personal visits to remind the respondent to fill-in and return the questionnaires. This response rate was considered adequate as recommended by Babbie (2002).

Table 4. 1: Response Rate

Category	Frequency	Percent
Response	29	78.38
Non response	8	21.62
Total	37	100.0

Results of Pilot Study:

A pilot study was undertaken to pretest data collection instrument for validity and reliability. According to Orodho (2003), a pilot study is necessary for testing the reliability of data collection instruments. Cooper & Schindler (2001)

explains reliability of research as determining whether the research truly measures that which it was intended to measure or how truthful the research results are. The researcher pre-tested each of the questionnaires to the pilot sample. These respondents were not used in the main study. It was done in order to refine and ascertain the reliability of the research instruments before they were applied in the actual research (Cooper and Schindler, 2003). As a result of piloting, errors discovered were corrected, ambiguous questions made clear and relevant contents revised.

Cronbach's Alpha method was used to check on the reliability and validity of the instruments used by determining the internal consistency of the scale used. Data reliability played an important role towards generalization of the gathered data to reflect the true characteristics of the study problem (Klein & Ford, 2003). Cronbach's Alpha for each value was established by the SPSS application and gauged against each other at a cut off value of 0.7 which is acceptable according to Cooper and Schindler (2008).

Cronbach's Alpha is a reliable coefficient that indicates how well items are positively related to one another. The average Cronbach's Alpha value was 0.688 as shown in Table 4.2 below meaning the items under each variable were consistent.

Table 4. 2: Reliability Test

Variable	Cronbach's Alpha	No of Items
Contract management	.601	5
Bidding	.662	6
Procurement planning	.682	6
Project scheduling	.859	5
Project completion	.639	3
Average Cronbach's Alpha	**.688**	**25**

Demographic Characteristics of the respondents

This analyses the background information of the respondents from their gender, age, level of management, duration in the company, department and the respondents' level of education.

Gender Distribution

The gender of the respondent was sought. Majority of the respondents (55.172%) were male while the rest 44.828 % were female as shown in Figure 4.1, an implication that Kenya Electricity Generating Company has more male employees than females. This is a good distribution which depicts a fair balance of gender. Since majority of the responses for this study relies on the perceptual measures of the respondents, this gender distribution is expected to accommodate the opinions and views from both sides of the gender. Nevertheless the balance in gender in public sector may also be an evidence of successful efforts of various gender mainstreaming campaigns.

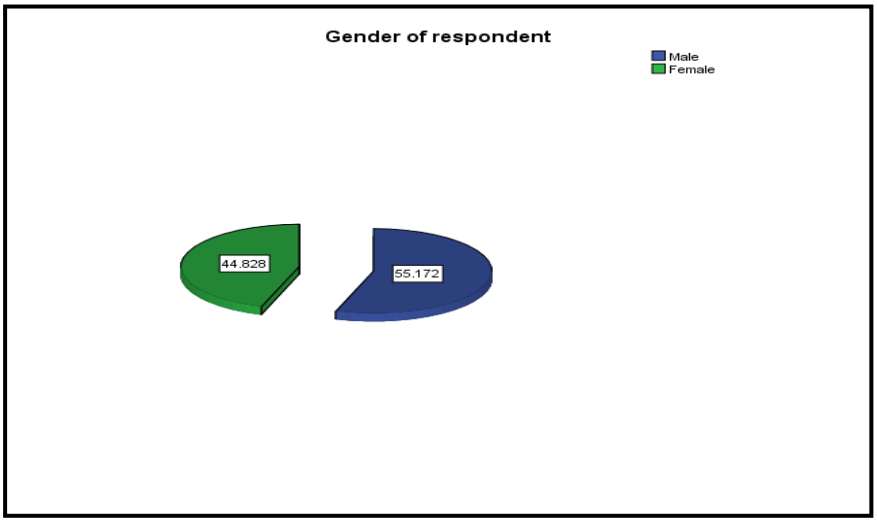


Figure 4. 1: Gender of Respondents

Working Experience of the Respondents:

The study sought to investigate the number of years each respondent had worked with KENGEN. Majority (48.3%) of the respondents had a working experience of between 11-15 years. 27.6% less than 5 years, 10.3% between 16-20 years and 13.8% had a working experience of 6-10 years as shown in the results of Table 4.3.

This shows that the respondents had adequate working experience with the company and therefore they possess the necessary project procurement management knowledge and skills considered useful for this study.

Table 4. 3 Working Experience of the Respondents

Number of years worked	Frequency	Percent
Less than 5 Years	8	27.6
6-10 Years	4	13.8
11-15 Years	14	48.3
16-20 Years	3	10.3
Total	**29**	**100.0**

Level of Education of Respondents:

The results of Table 4.4 show that majority of management staff are holders of a bachelor's degree represented by 55.2%. 10.3% of the respondents were holders of post graduate qualifications as 24.1% hold diploma and 6.9% hold certificate qualifications. Only 3.5 % of the respondents were KCSE holders. This is interpreted to mean that recruitment in Kengen is based on academic qualifications and therefore those employees are possibly contributors of project procurement management activities in one way or the other. Moreover, the well-educated respondents mean that they were well informed with project procurement activities and furnished this study with better information which added value.

Table 4. 4: Level of education

Education level	Frequency	Percent
KCSE	1	3.5
Certificate	2	6.9
Diploma	7	24.1
Bachelor's Degree	16	55.2
Postgraduate Degree	3	10.3
Total	**29**	**100.0**

Level of management:

The study sought to establish the level of management of the respondents occupied in Kengen. The respondents profile constituted majority of the middle level managers (65.4%) followed closely by the lower level managers (27.8 %) with few top managers (6.8%). This is because both low level and middle level managers are directly involved in implementation of projects.Top management is involved in strategic decision making related to project management. The research findings were as listed in the Table 4.5 below.

Table 4. 5: Level of management

Level of management	Frequency	Percent	(%)
Lower management	8		27.8
Middle Management	19		65.4
Top management	2		6.8
Total	**29**		**100.00**

Descriptive Analysis:

Descriptive statistics are a set of brief descriptive coefficients that summarizes a given data set, which can either be a representation of the entire population or a sample. The measures used to describe the data set are measures of central tendency and measures of variability or dispersion. This helped describe, show or summarize data in a meaningful way. It helped in the simplification of large amounts of data in a sensible and manageable form. It expressed the variables, frequencies, percentages, means and standard deviation.

Contract Management:

The study sought to establish the role of contract management on the completion of projects in kengen.

Table 4. 6: Percentages distribution of respondents' perception on contract management

Contract management	Not at all	Small extent	Moderate extent	Large Extent	Very large extent	Mean
Contract management affects time of project completion	0%	0%	27.6%	34.5%	37.9%	4.10
The degree of project execution is affected by contract management	0%	6.9%	10.3%	58.6%	24.1%	4.00
Way of managing a contract has a bearing on project costs	0%	0%	0%	72.4%	27.6%	4.28
Contract management improves project quality	0%	0%	10.3%	27.6%	62.1%	4.52
Project Monitoring affects project completion	0%	0%	0%	20.7%	79.3%	4.79

From the Table 4.6 Contract management affects time of project completion. This is as per the analysis where 27.6% moderately agreed while 34.5% and 37.9% to a large extent and very large extent agreed to the fact. This implies that hiccups in contract management can cause delays in project completion hence affecting the time taken to complete projects.

The degree of project execution is affected by contract management (Mean=4.00). This means that the completeness of a project is a factor of contract management.

From the findings also contract management has an effect on project costs in kengen (Mean=4.28). Contract management attracts costs which have an ultimate effect to the final project cost. This is likely to have an adverse effect on the project budget.

Proper Contract management improves project quality (Mean =4.52). Though quality is subjective, it is one of the constraints of a project. How contracts are managed has an effect on the scope of projects. Finally, Project Monitoring affects project completion (Mean=4.79). The findings agree with Brown and Hyer (2010), that monitoring alludes to any tracking framework from a basic checklist to complex dashboard style approaches, for distinguishing differences from the original plan. Project control along these lines predicts an undertaking change administration process for choosing when changes are fitting and when to continue through to the end.

Bidding:

Table 4. 7: Percentages distribution of respondents' perception on bidding

Bidding	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Mean
Our organization obtain project supplies through competitive bidding	0	0	20.7	65.5	13.8	3.93
Bidding process takes time hence affecting project completion time	0	55.2	0	34.5	10.3	3.00

A lot of finances are dedicated towards project bidding	6.9	34.5	31.0	27.6	0%	2.79
Significant benefits to the project results from investment made in bidding	0	6.9	62.1	31.0	0	3.24
Bidding contributes to improved quality of project supplies	0	10.3	41.4	34.5%	24.1	3.72
Quality objectives are attained as a result of bidding of project supplies	10.3	0	48.3	41.4	0	3.21

Respondents were asked to indicate the extent bidding affect project completion in kengen. From the findings in Table 4.7, It is evident that kengen obtains project supplies and materials from suppliers through competitive bidding (Mean=3.93). Supplier selection is the process by which firms identify, evaluate, and contract with suppliers.

The supplier selection process deploys a tremendous amount of firms' financial resources. In return, firms expect significant benefits from contracting with suppliers offering high value. Weber, Current, and Benton, (2011) affirm that firms cannot successfully produce low cost, high quality projects without judicious selection and maintenance of a competent group of suppliers.

Bidding takes time hence affecting the project completion time. This is as per the findings (Mean=3.00) where bidding is a process that buys time in advertising, receiving offers, evaluating and awarding contracts for project execution. The bureaucratic process takes much time hence affecting the final time of project completion. Bidding also attract costs that affect the project budget (Mean 2.79). From the findings, bidding amounts to several benefits to the project such as improved quality of materials, this is as per the Mean of 3.72.

Procurement Planning:

Table 4. 8: Percentages distribution of respondents' perception on Procurement planning

Procurement planning	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Mean
Our company project management team prepares periodic procurement plans	0	0	10.3	72.4	17.2	4.07
The procurement plan ensure availability of materials when needed throughout the project lifecycle	0	0	79.3	6.9	13.8	3.34
Availability of materials ensures timely completion of the project	0	0	20.7	44.8	34.5	4.14
Having a procurement plan leads to project costs saving	0	0	37.9	34.5	27.6	3.90
Procurement plan leads to improved quality	0	10.3	10.3	62.1	17.2	3.86
Procurement plans is recommended for any project team	0	0	24.1	62.1	13.8	3.90

The study sought to establish the role of procurement planning on project completion in kengen. From the findings, kengen prepares periodic procurement plans for their projects as attributed by Mean of 4.07. Procurement planning is the process of identifying which project needs can be best met by procuring products or services outside the project organization.

It involves consideration of whether to procure, how to procure, what to procure, how much to procure and when to procure.

The procurement plans ensure availability of materials when needed throughout the project lifecycle (Mean 3.34). The availability necessitates timely and continuity of project proceedings without interruption which is likely to cause delays or unwanted costs (Mean=4.14). Procurement plans save on project costs and improve project quality as attributed by Mean of 3.86. Procurement plans are recommended for any type of projects because of the imperative role they play in the completion of projects (Mean 3.90)

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Project Scheduling:

Table 4. 9: Percentages distribution of respondents' perception on project scheduling

Project scheduling	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Mean
Timescales and sequence of activities is done when handling projects in our company	0%	10.3	31.0	58.6	0%	3.48
Scheduling helps in proper management of project time	0	10.3	0	65.5	24.1	4.03
Project scheduling reduces the general cost of the project	0	10.3	62.1	27.6	0	3.17
Quality of project is affected positively by project scheduling	10.2	0	58.6	31	0	3.10
Our organization uses Gantt charts, PERT and critical path method in project scheduling		10.3	65.5	24.1	0	3.14

The study sought to establish the role of project scheduling on project completion in kengen. This phase is primarily concerned with attaching a timescale and sequence to the activities to be conducted within the project. Materials and people needed at each stage of the project are determined and the time each is to take will be set.

From the findings in Table 4.9 Kengen uses timescales and sequence of activities when handling projects (Mean 3.48). Scheduling helps in proper management of project time (Mean =4.03) and also reduces the general cost of a project (Mean=3.17). Project scheduling is done in kengen by use of Gantt charts, PERT and critical path method (mean 3.14). Gantt charts reflect time estimates and can be easily understood. Horizontal bars are drawn against a time scale for each project activity, the length of which represent the time taken to complete. A Gantt chart is a simple technique that can be used to attach a time scale and sequence to a project. However, where projects become complex, it becomes difficult to see relationships between activities by using a Gantt chart. For projects that are more complex Network Analysis techniques are used.

Project Completion:

The effectiveness of project management is critical in assuring the success of any substantial undertaking. From the findings in the Table 4.10 below its evident that the company has realized a wide range of benefits resultant from the involvement of procurement in project management. Among the listed include; timely completion of projects (Mean=3.76) projects completed within budgets (Mean=3.55) and also quality completion of projects (Mean=3.62) in kengen.

Table 4. 10: Percentages distribution of respondents' perception on Project completion

Project completion	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Mean
Timely completion of projects	0	0	37.9	48.3	13.8	3.76
Projects completed within budgets	0	0	44.8	55.2	0	3.55
Quality completion of projects	0	10.	41.4	24.1	24.1	3.62

Inferential Analysis:

Inferential statistics infer from the sample to the population. They determine probability of characteristics of population based on the characteristics of the sample. Inferential statistics help assess strength of the relationship between the independent variables and the dependent variables.

Correlations of the Study Variables

Table 4.11 illustrates the correlation matrix among the independent variables. Correlation is often used to explore the relationship among a group of variables (Pallant, 2010), in turn helping in testing for Multicollinearity. If the correlation values are not close to 1 or -1, this is an indication that the factors are sufficiently different measures of separate variables (Farndale, Hope-Hailey &Kelliher, 2010). It is also an indication that the variables are not multicollinear. Absence of Multicollinearity allows the study to utilize all the independent variables.

Table 4. 11: Correlations of the Study Variables

Correlations		Contract management	Bidding	Procurement planning	Project scheduling	Project completion
Contract management	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	29				
Bidding	Pearson Correlation	.386*	1			
	Sig. (2-tailed)	.038				
	N	29	29			
Procurement planning	Pearson Correlation	.316	.397*	1		
	Sig. (2-tailed)	.095	.033			
	N	29	29	29		
Project scheduling	Pearson Correlation	.598**	.872**	.632**	1	
	Sig. (2-tailed)	.001	.000	.000		
	N	29	29	29	29	
Project completion	Pearson Correlation	.302	.341	.503**	.504**	1
	Sig. (2-tailed)	.011	.007	.005	.005	
		29	29	29	29	29

Table 4.11 indicated that procurement planning and contract management have insignificant positive relationship as attributed by the correlation coefficient of 0.316 and p-value of 0.095.

This relationship is because procurement planning involves knowing what and when to buy for the project and this has an imperative role to the contract management. In the first place, all projects must be planned out in advance if they are to be successfully executed. Secondly, the execution of the project must be controlled to ensure that the desired results are achieved

The results shows presence of a positive and significant weak relationship between contract management and bidding as proved by the p-value and the correlation coefficient (r=0.386, p=0.038). There is a weak but significant relationship between procurement planning and bidding since the p value of 0.033 is less than 0.05 level of significance and the correlation coefficient is 0.397. Procurement planning involves knowing in advance where to procure hence selection of sources of supply.

The correlation matrix table shows presence of strong and significant positive relationship between project scheduling and bidding (r=0.872, p=0.000). This is because timescales are set on when and where to acquire supplies for projects. There is an evidence of significant moderate relationship between project scheduling and procurement planning as attributed by the p value and correlation coefficient (r=0.632, p=0.000). Scheduling and planning are one and the same. In both advance knowledge is needed to plan for the completion of the project in time, within budget and within the scope,

From the table, all the independent variables are positively related to project completion as attested by the respective correlation coefficients: contract management (r=0.302), bidding (r=0.341), procurement planning (r=0.503) and project scheduling (r=0.504).

All the relationships apart from procurement planning and contract management are rendered significant since their p values are less than 0.05. Accordingly, the ranking of the independent variables with their contribution to project completion was: project scheduling contributed more to project completion of Kengen (50.3%), followed by procurement planning (50.3%), and followed by bidding (34.1%) and finally contract management (30.2%).

Regression Analysis Results:

This study utilized multiple linear regression analysis to examine the relationship of the predictor variables with the dependent variable. Adjusted R^2 which is known as the coefficient of determination was used to explain how project completion varied with contract management, bidding, procurement planning and project scheduling. The model summary table 4.12 shows that 60.5% of change in project completion can be explained by four predictors namely contract management, bidding, procurement planning and project scheduling an implication that the remaining 39.5% of the variation in project completion could be accounted for by other factors not involved in this study.

Table 4. 12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.806[a]	.650	.605	.465

Analysis of variance (ANOVA) was done to establish the fitness of the model used. The ANOVA table shows that the F-ratio (F=2.888, p=.044) was statistically significant. This means that the model used was appropriate and the relationship of the variables shown could not have occurred by chance.

Table 4. 13: ANOVA

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.716	4	2.179	2.888	.044[b]
	Residual	18.111	24	.755		
	Total	26.828	28			

a. Dependent Variable: project completion

b. Predictors: (Constant), Contract Management, Bidding, Procurement Planning And Project Scheduling

Table 4. 14: Regression Co-efficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.881	1.234		.714	.148
Contract management	.054	.330	.038	.164	.087
Bidding	.292	.421	.286	.694	.049
Procurement planning	.269	.289	.229	.930	.000
Project scheduling	.752	.660	.632	1.139	.001

a. Dependent Variable: project completion

Table 4.14 gives the results for the regression coefficient for the multiple linear equation

$(Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon)$ which by supplying the coefficients becomes:

$Y = 0.881 + 0.054X_1 + 0.292X_2 + 0.269X_3 + 0.752X_4$

Where;

$Y =$ Public Project Completion

$X_1 =$ Contract management

$X_2 =$ Bidding

$X_3 =$ Procurement Planning

$X_4 =$ Project Scheduling

According to the regression equation established, holding all independent factors a constant, project completion will be 0.881 units. From the regression equation holding all other independent variables a constant, a unit increase in contract management will lead to a 0.054 improvement in project completion; a unit change in bidding will lead to a 0.292 increase in project completion; a unit increase in procurement planning will lead to a 0.269 increase in project completion and a unit increase in project scheduling will lead to a 0.752 increase in project completion.

However, at 5% level of significance and 95% level of confidence Contract Management, Bidding, Procurement Planning and Project Scheduling have a significance influence on project completion with p-values of 0.087, 0.049, 0.000 and 0.001 respectively and therefore their coefficients should be retained in the final model.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study sought to ascertain the role of procurement on the completion of projects in kengen. The specific objectives that guided the study included; to find out the role of contract management on project completion in the energy sector in Kenya; to determine the role of bidding on project completion in the energy sector in Kenya; to find out the role of procurement planning on project completion in the energy sector in Kenya and to establish the role of scheduling on project completion in the energy sector in Kenya.

Contract management affects time of project completion. This implies that hiccups in contract management can cause delays in project completion hence affecting the time taken to complete projects. From the findings, contract management also has an effect on project costs, Contract management attracts costs which have an ultimate effect to the final project cost. This is likely to have an adverse effect to the project budget.

Bidding takes time hence affecting the project completion time. The bureaucratic process of advertising, receiving offers, evaluating and awarding contracts takes much time hence affecting the final time of project completion.

Bidding also attract costs that affect the project budget expenses like clerical works, stationary and follow up calls are expenses that are factored in the final project budget .From the findings, bidding amounts to several benefits to the project such as attainment of project objectives, quality supplies and inputs to projects leading to improved quality project execution.

The procurement plan ensure availability of materials when needed throughout the project lifecycle .The availability necessitates timely and continuity of project proceedings without interruption which is likely to cause delays or unwanted costs. Procurement plans save on project costs and improve project quality .Procurement plans are recommended for any type of projects because of the imperative role they play in the completion of projects.

Project scheduling is primarily concerned with attaching a timescale and sequence to the activities to be conducted within the project. Materials and people needed at each stage of the project are determined and the time each is to take will be set. Scheduling helps in proper management of project and also reduces the general cost of a project.

Conclusion:

From the finding, the study concludes that Project completion is affected by procurement planning, contract management, bidding and project scheduling. From the findings also, it was established that KenGen had incorporated procurement function in project completion which involve performance targets, planning and control systems, monitoring and evaluation that generates good result.

Bidding which includes supplier selection and evaluation represents one of the significant roles of purchasing and supply management functions in project completion.

Arguably, purchasing and supply chain plays a crucial role in project management through proper selection of competent suppliers and contractors. This concurs with Weber, Current, and Benton (2011) that firms cannot successfully produce low cost, high quality projects without judicious selection and maintenance of a competent group of suppliers.

Contract management helps in Understanding the basics of the procurement process within projects, Reducing risks in contracting, learning how to select the best contractors, learning about the different types of contracts and how to select the right one, Understanding basic contract clauses, learning contract administration processes, learning effective contract change management and learning how to legally close out a contract

Procurement plan assists planners assess feasibility of combining or dividing procurement requirements into different contract packages, it also allows for the consolidation of similar requirements under one contract or the division of a requirement into several contract packages for economies of scale. From the number of requirements on the procurement plan, the procuring entity can determine beforehand any need for additional staffing, including external assistance for the purpose of completing all procurement requirements listed on the procurement plan.

Project scheduling will help to organize and complete your projects in a timely, quality and financially responsible manner, you need to schedule projects carefully. Effective project scheduling plays a crucial role in ensuring project success. To keep projects on track, set realistic time frames, assign resources appropriately and manage quality to decrease product errors. This typically results in reduced costs and increased customer satisfaction.

The findings of this study concurs with Meredith and Mantel (2012), that the key things to be arranged, checked and controlled are time (plan), cost (spending plan) and degree (execution) for proper project completion.

Recommendations:

The study established that procurement has an effect on project completion, therefore there is need to be checked in a more appropriate way for a successful implementation of the project. The KenGen resources need to be more utilized to enables more development and less wastage in the company.

Bidding should be done in an efficient and effective manner eradicating all the beauracracies to ensure the project is completed on time. Evaluation and awarding contracts should be done within the stipulated time frame as per the PPDA2015 Bidding also attract costs that affect the project budget ,these costs should be factored in the final project budget .

Project scheduling is primarily concerned with attaching a timescale and sequence to the activities to be conducted within the project. Materials and people needed at each stage of the project are determined and the time each is to take will be set. Project scheduling impacts the overall finances of a project. Time constraints require project managers to schedule resources effectively.

Contract management affects time of project completion therefore appointing the right person who is well versed in the nature of the project is key to the success of a particular endeavor. Once the contract is finalized and services are procured, many parties fail to properly monitor and oversee the implementation of these contracts and fail to fulfil their contractual obligations. Failure to meet these obligations can result in missed savings, heavy fines, costly litigation, and broken relationships all of which constitute decreased public benefits and Value for Money.

Procurement plan assists planners assess feasibility of combining or dividing procurement requirements into different contract packages, it also allows for the consolidation of similar requirements under one contract or the division of a requirement into several contract packages for economies of scale. A thorough and detailed procurement plan should be in plan. It improves procurement performance and the five rights are easily met i.e. right time, right delivery place, right price, right source and right quality.

Suggestions for Further Research:

The results of this study can be further utilized to suggest several directions for future research. A field study can focus on investigating on procurement practices influencing project implementation in public institutions in Kenya. Finally, more research on this area is needed because this study has investigated a subset of the variables found to be important determinants. Other variables that may provide in procurement practices influencing project completion in private institutions in Kenya. Further research can examine these possibilities and the extent of their influence.

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