

# **PROJECT CONTRACTUAL PROCESSES AND PERFORMANCE OF CAPITAL PROJECTS IN ENERGY BASED STATE CORPORATIONS IN KENYA**

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## **ABSTRACT**

This study aims at establishing project contractual processes and performance of capital projects in energy-based state corporations in Kenya. Specifically, this study focused on the influence of approval processes, procurement processes, application of project standards and variations in scope in the performance of capital projects in energy-based state corporations in Kenya. The research design used in this study was a descriptive survey. Managers and workers at Kenyan state businesses dealing with energy were the focus of this research. Where a sample size of 191 was selected at random from a pool of 368 using a proportional stratified sampling technique. The main data was gathered via the use of self-administered questionnaires. The data was also analyzed with the use of SPSS 21.0, the Statistical Package for the Social Sciences. Descriptive and inferential statistics were also used to examine the data. Quantitative variables were evaluated using descriptive statistics including frequency, percentage, mean score, and standard deviation. The relationship between the dependent and independent variables was assessed via the use of a multiple regression

analysis. The data that was analyzed was given in tabular form. The research findings indicate a robust and statistically significant correlation between approval processes, procurement processes, project standards, and variations in scope and performance of capital projects in energy-based state corporations in Kenya. This is evidenced by the beta coefficients values of 0.681, 0.592, 0.747, and 0.715 respectively, all of which have p-values less than 0.05. These results suggest that improvements in these four factors have a positive impact on the performance of capital projects in energy-based state corporations in Kenya. Based on the findings of this study, it is advisable for energy-based state corporations in Kenya to enhance the performance and completion rate of their capital projects. This can be achieved by allocating their financial, technical, and human resources towards improving efficiencies in the approval processes, procurement processes, project standards, and management of variations in scope.

**Key Words:** Approval processes, procurement processes, project standards, and management of variations in scope

## **INTRODUCTION**

Across the world, developing nations rely heavily on capital projects to boost their economies (UNDP, 2016). Capital projects are classified into several classifications that are markedly different: They are: housing, non-residential buildings, highways, and industries. Capital projects undertaken by state corporations include constructing new projects, renovating them, and demolishing of buildings. Construction of roads, highways, streets, bridges, tunnels, and

overpasses are all examples of public works projects (UN-Habitat, 2017). Time, budget, a defined scope, and requisite quality specifications that have been assigned for the project are the factors that measure its success and performance. For the capital projects to be successful they are backed up by effective project management skills. The business goals and project outcomes are linked through strategic competency which results to project management. Management of projects by the government involves ensuring that project goes in line with the budgeted resources time, cost, scope, quality, and reliable performance (ISO, 2016).

Management of capital projects has a critical impact in ensuring that the project stakeholders, that is, the client, contractor or developer, the consultants and the service providers meet their contractual obligations; minimizing the negative implications that may arise due to cost overruns, time delays, sub-standard quality, dissatisfied client and changes in scope of works (Sausser, Reilly and Shenhar, 2016). The capital projects are governed by various output aspects and the effectiveness is ensured by several stakeholders. The factors that may influence performance of capital projects include approval processes, procurement processes, quality specification standards, variations in the project scope, Worker protection laws, business coalitions, and state economic strategies. Donor organizations, user groups, design consultants, contractors, suppliers, and government agencies are just some of the many parties involved in this initiative (Kerzner, 2016).

To conduct commercial operations on behalf of the owner government, a parastatal is a government-owned firm (GoK, 2014). Both industrialized and emerging nations have turned to state-owned enterprises as a means of addressing market deficiencies and capital shortages, fostering growth, lowering unemployment rates, and retaining national control over the economic agenda. In contrast to nationalization, which involves the government taking over a privately held company, when firms formerly held by the government are privatized, they are sold to private investors.

During the 1980s, influential organizations such as the World Bank and the International Monetary Fund (IMF) promoted privatization to liberalize economies and encourage private sector involvement. This approach aimed to shift the government's role to that of a facilitator, responsible for creating an enabling environment for the market to function efficiently. Consequently, these institutions emphasized reforms that supported the principles of a free market economy (Muyia, 2018). The implementation of Structural Adjustment Programmes (SAPs) emerged as a reaction to a fundamental change in the global politico-economic framework. The objective of these Structural Adjustment Programs (SAPs) was to restructure state-owned enterprises, with the goal of achieving financial independence and enhancing competitiveness by adopting a privatization approach. The approach in question was delineated in two key documents: the Policy Paper on Public Enterprise Reform and Privatization (1992) and the Policy Framework Paper (1993-96) (Gwaya, Munguti, & Wanyona, 2018).

Parastatals play a significant role in the national economy by facilitating service provision and generating revenue for the state (GoK, 2014). According to the 16th Presidential Taskforce on Parastatal Reforms (2013), parastatals fulfil many functions, such as engaging in manufacturing and commercial activities, among others, Financial intermediation and infrastructure development play crucial roles in facilitating economic growth and regional development via the provision of essential services, The three key areas of focus are environmental protection, education and training, and control of the economy. In the past, government-owned businesses had monopoly or near-monopoly power. Despite cuts in government financing and the privatization of parastatals, globalization of economies loosened trade barriers and markets.

Parastatals have encountered a multitude of obstacles and encountered fierce competition from the private sector after the deregulation of many sectors and industries within which they function. This liberalization has resulted in an expanded range of goods and services, reduced prices, increased employment opportunities with higher remuneration, enhanced healthcare provisions, and elevated overall living standards (Kimani, 2017). The liberalization of the energy sector in Kenya occurred with the implementation of the Energy Sector Policy Framework Papers in 1996 and the subsequent changes introduced by Kenya's Electric Power Act in 1997. The reforms implemented were designed with the objective of promoting competition, enticing private investments, and enhancing operational efficiency within the sector (The Presidential Taskforce on Parastatal changes, 2013). This implies that the accountability of parastatal management to the public and their susceptibility to market forces have increased, in contrast to the previous practice of relying on government funds to rescue them during financial difficulties. Therefore, parastatals have been actively seeking out projects that they can both administer and profit from to improve management and fiscal responsibility. Therefore, the funds will be useful to the government and the parastatal. Thus, governments want their public institutions to provide high-quality services while being cost-effective in the face of stringent rules and intense global competition in the political, economic, social, and technical spheres.

### **Problem Statement**

Kenya's capital projects industry has grown rapidly in recent years, particularly in the fields of transportation and energy infrastructure and residential construction. The government's Vision 2030 and the more recent 'Big Four Agenda' have fuelled this development. A successful project is one that is completed on schedule, within budget, and to the required quality standards. Risks in project funding, cost overruns, delays in project completion, project faults, and accountability of procurement plague Kenya's capital projects from the planning to the execution phases. The failures are due to ineffective management of the project success factors that include the approval processes, procurement processes, application of project standards and variations in scope.

The Kenyan Government has undertaken measures that requires investors support in terms of formulating and implementing strategies for developing capital projects in state corporations by focusing on research, training, review, and industry support. However, the results have not been forthcoming as project managers and investors have neither the capacity nor the resources to undertake many of the project functions and responsibilities. According to a report published by PricewaterhouseCoopers (2017), the major causes of cost and time risks and overruns in projects undertaken by state corporations in Kenya during the implementation period are variations in scope, schedule, and budget.

Various researchers, including Muyia (2018) concede that state corporations projects have been difficult to achieve among practitioners and researchers, due to the complexity of factors. Empirical literature (Gwaya, Munguti and Wanyona, 2018; Kerzner, 2016 and Divr and Lechler, 2017) suggests that the financial challenges emerge as the top barrier to capital projects adopted by state corporations. Belassi and Tukel (2016) and Alexandrova (2015) looked at how infrastructural factors influenced state corporations' projects but majorly focused on western countries. This study therefore seeks to cover the gap left by the scanty studies done to establish the project contractual processes and performance of capital projects in energy-based state corporations in Kenya.

## **Empirical Review**

A capital project refers to a project whereby the expenses incurred for the creation of a product are recorded as an asset and then depreciated over time. The most common examples of capital projects under the energy sector include promotion of renewable energy, rural electrification programme, geothermal exploration, and development as well as hydro-power development. Subways, electricity lines, wind turbines, power plants, land, and buildings are all examples of the kinds of infrastructure that make up these projects (Sausser, Reilly, & Shenhar, 2016). Despite the wealth of relevant and generalized information possessed by trustees, employees, or volunteers, most institutions and organizations are not actually equipped to cope with the serious business of delivering successful projects (Divr & Lechler, 2017). Smaller jobs that contribute to the overall success of a capital project are what make up project management. Plans, budgets, resource allocation, and project monitoring are all examples of attainable objectives. Taking on a major construction project may be a roller coaster of emotions. Most businesses see the project to a goal rather than an end in and of itself (Miller, 2013).

Key performance indicators (KPIs) used in the energy industry to assess project and organizational achievements include several factors, including time, financial resources, quality, client satisfaction, customer modifications, business efficacy, and safety (Locatelli, Invernizzi, & Brookes, 2017). Then, you may use the data as a comparison against other companies; this is a crucial step on the road to best practice (Lind, 2015). Performance difficulties in significant energy

projects may arise from a variety of factors, including the presence of designers and contractors who lack the necessary competence, erroneous projections and challenges in change management, concerns of both social and technical nature, problems specific to the project location, and insufficient processes and instruments (Muyia, 2018).

Key choices, such as approving the brief, design, hiring of consultants and contractors, spending money, and adjusting, will need to be made throughout the project. It is crucial to be transparent about how much authority is being delegated and what still must be determined by the board of trustees or other top-level executives (Ibrahim, Thorpe, & Mahmood, 2019). Decisions must be made quickly, with sufficient information, and with confidence in the outcome. It is critical for the board of directors to be involved in and well-informed about essential areas of project delivery, regardless of the size of the company, due to the risks and implications on organizational operations (Kerzner, 2018). The board, or a subset of it, may provide the necessary professional and even volunteer assistance in smaller, volunteer-run organizations. Responsibility for completing projects may be given to employees in bigger companies, but only within strict guidelines and within the bounds of established reporting structures and levels of authority. In larger businesses, it may make sense for a subset of trustees with specialized expertise to oversee project delivery and look at more details than the whole board can. This kind of team has been given responsibility beyond what would normally fall within their purview, and they report back to the whole board based on predetermined goals and parameters (Seels & Richey, 2012).

Smaller jobs that contribute to the overall success of a capital project are what make up project management. Plan, set a budget, assign resources, and track projects; these are all possible objectives. Let us pretend the company is juggling hundreds of minor capital projects for different departments. There are many stakeholders involved in every given project, and each of them has their own unique goals to achieve. However, the institution itself has aims and purposes. These goals might often be at odds with one another. Institutions often want to reduce capital expenditures and costs, whereas individual projects may have strict time constraints that must be met at any costs. This is problematic since achieving project success requires well-defined objectives (Pinto, 2013). This means that the first order of business is to ensure that all projects and their respective clients are in line with the overall goals of the organization. All investors should have an open and honest conversation. The outcome of this conversation should be a well-defined list of priorities and goals for the project (Ward, 2016).

## **RESEARCH METHODOLOGY**

The purpose of this study was accomplished using a descriptive survey research methodology. Project managers and staff members employed by Kenyan state businesses with an energy-based business made up the target group for this research. A sample size of 191 was ascertained from the total number of 378 respondents with a level of 95% certainty and a 0.05 blunder. The stratified

proportionate arbitrary inspecting method was used in choosing of the study's respondents. The main data was gathered using well-structured questionnaires. The respondents were given the surveys to complete themselves using a drop-and-pick method. Since the questionnaire will ask the questions in a consistent manner, the replies should be compatible. The core data was collected using a series of structured questions that were included in a letter sent out by both UoN and NACOSTI. A pilot study was undertaken to make sure that the instrument items in the data collecting instrument, the questionnaire, are precise and clear. This pilot study evaluated the instrument's precision and clarity as well as the length of time needed to administer it. The reliability and validity tests were then carried out on the randomly chosen respondents who had participated in the pilot research but were left out of the main study sample. For each of the four distinct goals, we employed the universally valid Likert scale questions to collect our data. Expert input was sought throughout its development to assure the study's content validity. To guarantee that the items in each research variable are adequate and reflective of the study's aims and goals, the instruments were developed and operationalized in accordance with those variables. Additionally, supervisory and practical expertise was consulted to confirm the content authenticity. Each research variable's items were established and operationalized in line with the study's objectives and goals to ensure accuracy and reliability. The material was verified via the use of both theoretical and practical knowledge from supervisors and experts.

For this study, it is adequate if the produced composite unshakable quality co-effective (Cronbach alpha) is 0.7 or above for each of the constructs (Cronbach, 1951). Cronbach's alpha was used to determine the reliability coefficient of the study's survey using the following formula:

$$\alpha = \frac{k}{k-1} \times \left[ 1 - \frac{\sum (S^2)}{\sum S^2_{\text{sum}}} \right]$$

Where:

$\alpha$  = Cronbach's alpha

k = Number of responses

$\sum (S^2)$  = Variance of individual items summed up

$\sum S^2_{\text{sum}}$  = Variance of summed up scores

The alpha level was determined using a one-way analysis of variance. The research revealed an alpha coefficient of 0.876 between the 10 items. Their dependability levels were over the required 0.7, therefore it was trustworthy. The results are detailed below: In this study, ethical issues were highly considered and maintained where the privacy, confidentiality, data protection, voluntary participation, and informed consent by participants in data collection was upheld. Initially, a thorough verification process was conducted to ensure the accuracy of the information collected from the respondents. The whole of the surveys that were returned were thoroughly examined, classified, and tallied to guarantee precision. The survey included a combination of open-ended and closed-ended inquiries.

## Results

This section evaluates the performance indicators which are public satisfaction level, functional quality, number of projects, improve infrastructure and improve public livelihood. This will guide the study in understanding their levels of boosting the need for the capital projects. An average score of 3.44 shows that the trend of aspects of project performance in enhancing performance of capital projects in Kenya was moderate.

*Table 1 Project Performance of Capital Projects*

|                           | Mean         | Std. Deviation |
|---------------------------|--------------|----------------|
| Public satisfaction level | 3.23         | .827           |
| Functional quality        | 3.39         | .723           |
| Number of projects        | 3.61         | 1.028          |
| Improve infrastructure    | 3.43         | 1.213          |
| Improve public livelihood | 3.55         | 1.126          |
| <b>Total</b>              | <b>17.21</b> | <b>4.917</b>   |
| <b>Average</b>            | <b>3.44</b>  | <b>0.983</b>   |

Number of projects (mean=3.61), improve public livelihood (mean=3.55), improve infrastructure (mean=3.43), functional quality (mean=3.39) and public satisfaction level (mean=3.23) constantly enhanced performance of capital projects in Kenya. Findings from the tabulation shows that effectiveness of the capital projects will be seen through the number of projected initiated and completed, this will translate to improved livelihood and growth of infrastructure.

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A multiple regression analysis was performed to analyse the influence of approval processes, procurement processes, project standards and variations in scope on performance of capital projects in energy-based state corporations in Kenya. The results were as summarized below.



**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .825 <sup>a</sup> | .681     | .672              | .6484                      |

Predictors: (Constant), approval processes, procurement processes, project standards and variations in scope

The model summary includes the coefficient of determination, denoted as R square, which provides insight into the extent to which changes in the independent variables account for the variation seen in the dependent variable. The R-squared value, as indicated in Table 4.11, was 0.681, indicating that 68.1% of the variation in the dependent variable (performance of capital projects) can be attributed to variations in the four independent variables (approval processes, procurement processes, project standards, and variations in scope). Therefore, it can be concluded that a sizeable portion, namely 31.9%, of the variability seen in the performance of capital projects within energy-based state companies in Kenya cannot be accounted for by the parameters included in the model or examined in the present research.

**ANOVA (Analysis of Variance)**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.               |
|-------|------------|----------------|-----|-------------|-------|--------------------|
| 1     | Regression | 123.973        | 4   | 30.99325    | 72.12 | .0000 <sup>a</sup> |
|       | Residual   | 58.018         | 135 | 0.42976     |       |                    |
|       | Total      | 181.991        | 139 |             |       |                    |

a. Predictors: (Constant), approval processes, procurement processes, project standards and variations in scope

b. Dependent Variable: Performance of capital projects

The Analysis of Variance (ANOVA) procedure involves doing computations to assess the degrees of variability present within a regression model, so establishing a foundation for conducting tests to determine the significance of the model. The "F" column presents a statistical measure used to assess the hypothesis that all  $\beta$  values are not equal to zero, as opposed to the null hypothesis that  $\beta$  is equal to zero (Weisberg, 2005). Based on the results shown in Table 4.12, the obtained significance value was 0.0000, indicating statistical significance at a level lower than the predetermined significance threshold of 0.05. This statement suggests that the regression model used in the study demonstrated statistical significance in predicting the impact of approval

procedures, procurement processes, project standards, and changes in scope on the performance of capital projects within energy-based state businesses in Kenya. Moreover, the critical value of F at a significance level of 5% was determined to be 72.12. The F computed value of 72.12 exceeded the F critical threshold of 2.44, providing further evidence that the overall model was deemed to be suitable.

**Regression coefficients results**

|   | Unstandardized Coefficients |            | Standardize d Coefficients | T     | Sig.  |
|---|-----------------------------|------------|----------------------------|-------|-------|
|   | B                           | Std. Error | Beta                       |       |       |
| (Constant)                              | 4.608                       | 0.982      |                            | 4.692 | 0.000 |
| Approval processes [X <sub>1</sub> ]    | 0.681                       | 0.195      | 0.636                      | 3.492 | 0.001 |
| Procurement processes [X <sub>2</sub> ] | 0.592                       | 0.189      | 0.546                      | 3.132 | 0.003 |
| Project standards [X <sub>3</sub> ]     | 0.747                       | 0.151      | 0.732                      | 4.947 | 0.000 |
| Variations in scope [X <sub>4</sub> ]   | 0.715                       | 0.160      | 0.694                      | 4.469 | 0.000 |

Based on the regression results shown in Table 4.13 above, the regression model became.

$$Y = 4.608 + 0.681 X_1 + 0.592 X_2 + 0.747 X_3 + 0.715 X_4 + \epsilon$$

From the regression equation above, taking all the predictor variables (approval processes, procurement processes, project standards and variations in scope) constant at zero, performance of capital projects in energy-based state corporations in Kenya would be 4.608.

Table 4.13 also shows that there is a positive and statistically significant relationship between the number of approval processes and the performance of capital projects in energy-based state corporations in Kenya, with each unit increase in approval processes resulting in a 0.681 increase in performance of capital projects; a unit increase in procurement procedures resulted in a 0.592 rise in performance of capital projects in energy-based state businesses in Kenya, suggesting a strong positive and substantial relationship between the two variables; in energy-based state corporations in Kenya, a unit increase in project standards was associated with a 0.747 increase in performance of capital projects, and in the same corporations, a unit increase in variations in scope was associated with a 0.715 increase in performance of capital projects, both of which were statistically significant. The p-value for each predictor variable was less than 0.05.

This indicated that improvements in the four constructs/factors of approval processes, procurement processes, project standards, and variations in scope significantly predicted performance of capital projects in energy-based state corporations in Kenya.

## **Conclusions**

The study concluded that aspects of approval process influenced performance of capital projects in state corporations in Kenya. Capital project approval processes are set to attain the capital project goals in a planned way. Even though each project has its own unique approval procedure, the end aim is always the same: to finish the capital project on schedule and under budget.

The procurement process was considered to ensure performance of capital projects in state corporations in Kenya to a great extent. In the capital projects, procurement processes should be followed to the core with exception of simple processes such as: the case of micro procurement of some items in which stages may not have to be followed to the letter. There are also unique circumstances where complex procurements obtain special waivers from the regulatory authorities necessitating non-compliance to stipulated procurement procedures.

Capital projects in Kenyan state-owned companies benefited from strict adherence to project standards. Guidelines for managing time and money spent on a project, including how to organize tasks, keep track of finances, and assess progress. Data management guidelines, including those for the capital project archive, document naming, document numbering, and document formatting. Guidelines for managing configurations, including best practices for inventorying, monitoring, and reporting on configuration elements. Quality management protocols, including but not limited to inspections, walkthroughs, reviews, archiving, packing, shipping, and root-cause-analysis techniques.

The research also found that capital project outcomes in Kenyan state-owned enterprises were significantly affected by scope differences. Therefore, it is crucial to carefully manage variations to lessen the possibility of going over budget and finishing the tasks late. The capital project schedule and budget can only be met if no changes are made to the contract throughout its performance. Before a contract is granted, the client agency will have authorized the scope of work to be performed under the contract. It is important to remember that the principal's representative has no authority to "improve" the final design that has been authorized.

## **Recommendations**

The research suggests that all important stakeholders in procurement be engaged in acquiring the resources, commodities, and services that are required. In addition, the procurement division should evaluate the expertise and capabilities of potential suppliers and service providers to guarantee on-time service delivery that meets all requirements.

A set of standards for planning a project effectively should outline how the project will be managed, provide a comprehensive outline detailing the sequential process of defining project management standards, streamlining project reporting, and including essential documentation.

Standards for project planning should be able to both describe broad categories of project work and cater to the unique needs of each project. All members of the team should be able to recognize the project's goals and see how their work contributes to achieving them, therefore specificity is essential in the project standards. Timely and effective project completion is predicated on having well-defined goals. All relevant stakeholders should have input on the project standards and requirements as much as feasible.

Throughout the project's lifespan, identifying, conveying, and reconciling new requests is essential for effective scope management. Changes to the project's scope usually result in more work, more money, more people, more time, and more risk.

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