DETERMINANTS OF SUCCESSFUL COMPLETION OF POWER PROJECTS IN KENYA POWER AND LIGHTING COMPANY

Samuel Mburu Macharia
Jomo Kenyatta University of Agriculture and Technology, Kenya

Dr. Karanja Ngugi
Kenyatta University


ABSTRACT

Kenya Power & Lighting Company was mandated by government of Kenya to construct/rehabilitate 45 substations and 1,775 kilometers of distribution lines between 2005 and 2013. However, statistics from World Bank indicates KPLC constructed 32 substations and 1,307 kilometers of distribution indicating a shortage of 13 substations and 468 kilometers of distribution lines whose cost is Kshs.5 billion. What are the factors that would lead to successful completion of power projects in KPLC? The general objective of this research is to examine the determinants of successful completion of power projects in Kenya Power & Lighting Company. The study adopted descriptive survey and case study design. The study targeted 749 employees at KPLC’ Head Office. The data was analyzed using SPSS to generate quantitative reports. The study found that top management support, stakeholder influence, information technology, and organization structure have a great positive influence on successful completion of power projects in Kenya Power & Lighting Company.

Key Words: power projects, top management support, stakeholder influence, information technology, organization structure

Introduction

The study sought to investigate determinants of successful completion of power projects in Kenya with reference to Kenya Power and Lighting Company. According to Mobey and Parker (2002), to increase the chances of a project succeeding it is necessary for the organization to have an understanding of what are the critical success factors, to systematically and quantitatively assess these critical success factors, anticipating possible effects, and then choose appropriate methods of dealing with them.

In the United Kingdom, Li, Akintoye, Edwards and Hardcastle (2005) contends that effective procurement, project implementation ability, government guarantees, and favourable economic conditions are critical success factors (CSFs) for public-private partnership projects. In Bulgaria, Alexandrova and Ivanova (2012) considers competence of project
manager, competence of project team, quality of subcontractor services, and top management support as CSFs of project management. In Lithuania, Gudiene, Ramelyte and Banaitis (2013) states that project management’s experience, project value, project manager’s experience, experience of contractor, project size, competence of project team members, clear and realistic goals, decision making effectiveness of project management, and technical capability of project management are the most important success factors for construction projects.

Similar studies have been carried in Kenya with a wide range of success factors identified. Ondari, (2013) considers management support, design specifications, contractor’s capacity and supervision capacity as influencers of successful completion of roads projects in Kenya. In the same way, Meroka (2011) contends that financial viability, management, market analysis and quality of project management to be success factors of industrial and commercial projects in Kenya. Mono, (2013) concludes that contractor’s experience, contractor cash flow, site management, employer’s ability to honour contractor’s certificates on time, and adequacy of funding from external sources to be determinants of successful delivery of housing construction projects in the Ministry of Housing in Nairobi, Kenya.

Wanjiku (2012) contends that financial issues, human resources conditions, site characteristics and design quality aspects to be factors influencing performance of contractors of government funded building projects in Kirinyaga County. Wambugu (2012) identifies strategy, project term capacity, project communication, monitoring and evaluation, and client consultation as factors influencing success of Constituency Development Funds (CDF) projects in Nyeri County. Moreover, Kabutu (2013) argues that top management support, technology, training and competence, organizational resource, and funds management to be success factors for offshore software development and implementation projects in public organizations.

**Statement of the Problem**

According to World Bank report (WB, 2013), the objective of the Energy Sector Recovery Project (ESRP) is to increase access to electricity in urban and peri-urban while improving the efficiency, reliability and quality of service to customers. To realize this objective, KPLC was mandated to undertake ESRP with a target of constructing/rehabilitating 45 substations and 1,775 kilometers of distribution lines between 2005 and 2013 (WB, 2013). However, statistics from World Bank indicates KPLC constructed 32 substations and 1,307 kilometers of distribution lines between 2005 and 2013 (WB, 2013). This indicates a shortage of 13 substations and 468 kilometers of distribution lines whose cost is Kshs.5 billion (WB, 2013). According to RoK (2013), late utilization of such massive investment leads costly economic development in the Country. Further statistics indicate the projects had time overruns ranging from –4.6% to 53.4 %, while the cost overruns varied between 9.4% and 29% (WB, 2013).

Previous studies have identified project personnel, communications, site management, supervision, client competencies, contractor competencies, top management support, project manager’s experience amongst others as determinants of successful completion of various projects.
projects around the globe (Li et al, 2005; Gudiene et al, 2013; Yong, 2013; Chan et al, 2001; Alexandrova et al, 2012; Ondari, 2013). Most of these studies conducted on determinants of successful completions of projects have focused on developed countries outside Africa. Therefore, the study seeks to investigate determinants of successful completion of power projects in Kenya Power & Lighting Company.

Overall Objective

The overall objective of the study was to investigate the determinants of successful completion of power projects in Kenya Power & Lighting Company.

Specific Objectives

1. To determine the effect of top management support as determinant of successful completion of power projects in Kenya Power & Lighting Company.
2. To find out the effect of stakeholder influence as determinant of successful completion of power projects in Kenya Power & Lighting Company.
3. To establish the effect of information technology as determinant of successful completion of power projects in Kenya Power & Lighting Company.
4. To establish the effect of organization structure as determinant of successful completion of power projects in Kenya Power & Lighting Company.

Justification of the Study

Since the level and the intensity of energy use in a country is a key indicator of economic growth and development, a deeper understanding of determinants of successful completion of power projects is important. The successful completion of power projects is below expectations. This study provides insight and a model that should enable KPLC and energy sector in general to deliver power project successfully. Therefore, this study sought to explore determinants of successful completion of power projects in Kenya Power & Lighting Company.

Significance of the Study

This study will be of significance to implementing agencies such as KPLC, KENGEN, REA, KETRACO, and ERC. The findings of study will be important to Kenya government through Ministry of Energy and Petroleum whose objective is to increase national access to electricity from the current 28.9% to 50% by 2020. The study will be valuable to World Bank and other development partners that have invested over US$ 280 million in Energy Sector Recovery Project in Kenya. The study will also be used by other researches and scholars for relevant desk research and literature reviews.
Theoretical Review

Resource-based theory has been developed to understand how organizations achieve sustainable competitive advantages (Barney, 1986). The theory focuses on the idea of costly-to-copy attributes of the firm as sources of business returns and the means to achieve superior performance and competitive advantage (Conner, 1991; Hamel & Prahalad, 1996).

One of the objectives of the theory is to help managers to appreciate why competences can be perceived as a firms’ most valuable asset and, at the same time, to understand how those assets can be used to improve business performance. A resource-based view of the firm accepts that attributes related to past experiences, organizational culture and competences are critical for the success of the firm (Hamel and Prahalad, 1996).

Conceptual Framework

According to Mugenda (2008), conceptual framework is a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. Young (2009) defines conceptual framework as a diagrammatical representation that shows the relationship between dependent variable and independent variables. In the study, the conceptual framework will look at the relationship between determinants of successful completion of power projects and project success in Kenya Power & Lighting Company.

Independent variables

- Top management support
- Stakeholder influence
- Information technology
- Organization structure

Dependent variable

Successful completion of power projects

Figure 1: Conceptual Framework
Critical Review

Kuen et al, (2009) made a research in the Malaysian manufacturing companies in order to investigate critical factors-project mission, top management support, client consultation, technical task, personnel competency, client acceptance, trouble shooting, project plan monitoring, effective communication-that influence the project success. The study found project personnel competency and project mission were critical factors influencing the micro project success and as for macro project success, top management support and project mission were two main critical factors. However, the study evaluated top management support as determinant of project success in manufacturing companies and not in power projects. The study was done in a developed country.

Research Gap

Ondari, (2013) carried a study on factors influencing successful completion of road projects in Kenya. Since he focused mainly on road projects; the study failed to cover power projects which are under the study. Ubani (2012) evaluated the effects of organizational structures on the effective delivery of civil engineering projects in Nigeria. The study focused on civil engineering project which are different from power projects which are under the study. Nahm et al (2003) did a study on the impact of organizational structure on time-based manufacturing and plant performance in USA. This study can be criticized that it focused on time based manufacturing and plant performance instead of power projects.

Research Methodology

The research study adopted a descriptive survey design. A descriptive study is concerned with finding out the what, where and how of a phenomenon (Donald & Pamela, 1998). For purpose of this study the target population was stratified as top management, middle management and the support staff. The target population comprised of 749 employees in different managerial levels currently working at the Kenya Power Lighting Company’s Head office. This population suited the research in view of the fact that it is involved in the implementation of power projects. As a result, they are well conversant with determinants of successful completion of power projects. The research used questionnaires to collect mainly quantitative data.

Research findings and Discussion

Effect of top management support on successful completion of power projects

The finding of the study revealed that top management support managerial positively influence the successful completion of power projects in Kenya Power & Lighting Company. Results of the inferential statistics such as ANOVA show that top management support has a major positive significance contribution on the successful completion of power projects in Kenya Power & Lighting Company. This further indicates that allocation of human capital resources, financial capital resources, physical capital resources and competence
development of project staff has a significant effect on the successful completion of power projects in Kenya Power & Lighting Company.

**Effect of stakeholder influence on successful completion of power projects**

The study found out that stakeholder influence has a great positive influence the successful completion of power projects in Kenya Power & Lighting Company. One can therefore, deduce that project manager must be able to analyze the various demands presented by stakeholders so that communication between them is facilitated since they have great influence on successful completion of power projects Kenya Power & Lighting Company.

**Effect of information technology on successful completion of power projects**

The finding of the study indicates that information technology influences the successful completion of power projects Kenya Power & Lighting Company. One can therefore, deduce that integrating information technology into project management process could be one of the ways that contribute to successful completion of power projects in Kenya Power & Lighting Company.

**Effect of organizational structure on successful completion of power projects**

According to the findings of the study, organization structure influences the successful completion of power projects in Kenya Power & Lighting Company. The findings indicate that role of organization structure such as project manager’s authority have great influence on the successful completion of power project in Kenya Power & Lighting Company.

**Regression Analysis**

From the findings in the table below the value of R squared was 0.792, an indication that there was variation of 79.2% on the successful completion of power projects due to changes in top management support, stakeholder influence, information technology, and organization structure at 95% confidence level. This shows that 79.2% changes in successful completion of power projects could be accounted to changes in top management support, stakeholder influence, information technology, and organization structure. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table below there was a strong positive relationship between the study variables as shown by 0.890.

**Table 1: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.890</td>
<td>.792</td>
</tr>
</tbody>
</table>

From the ANOVA statistics in the table below, the processed data, which is the population parameters, had a significance level of 3.15% which shows that the data is ideal for making conclusion on the population parameters as the value of significance (p-value) is less than 5%. This is an indication that independent variables which include top management support,
stakeholder influence, information technology, organization structure are significant in influencing successful completion of power projects.

Table 2: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3.348</td>
<td>3</td>
<td>1.116</td>
<td>11.221</td>
<td>.0315</td>
</tr>
<tr>
<td>Residual</td>
<td>36.561</td>
<td>40</td>
<td>.914</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39.909</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The established regression equation was:

\[ Y = 2.895 + 7.876X_1 + 5.386X_2 + 6.302X_3 + 5.953X_4 \]

From the above regression model, holding top management support, stakeholder influence, information technology and organization structure to constant zero successful completion of power projects in Kenya Power & Lighting Company would be at 2.895. A unit increase in top management support would lead to increase in successful completion of power projects by a factor of 7.876. A unit increase in stakeholder influence would lead to increase in successful completion of power projects by a factor of 5.386. A unit increase in information technology would lead to increase in successful completion of power projects by a factor of 6.302. A unit increase in organization structure would lead to increase in successful completion of power projects by a factor of 5.953. The study further revealed that top management support, stakeholder influence, information technology, and organization structure were statistically significant to affect the successful completion of power projects, as all the p value (sig) were less than 0.05%. The study also found that there was a positive relationship between successful completion of power projects and top management support, stakeholder influence, information technology, and organization structure.

Table 3: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.895</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top management support</td>
<td>7.876</td>
<td>4.210</td>
<td>0.016</td>
</tr>
<tr>
<td>Stakeholder influence</td>
<td>5.386</td>
<td>2.749</td>
<td>0.042</td>
</tr>
<tr>
<td>Information technology</td>
<td>6.302</td>
<td>4.114</td>
<td>0.029</td>
</tr>
<tr>
<td>Organization structure</td>
<td>5.953</td>
<td>3.803</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Dependent variable: SUCCESSFUL COMPLETION OF POWER PROJECTS
Conclusions

The core of this study was to explore the determinants of successful completion of power projects in Kenya Power & Lighting Company. Based on previous studies, independent variables were expected to have positive relation with successful completion of power projects in Kenya Power & Lighting Company. The output given from the findings indicate that there is a significant positive relationship between independent variables namely Top management support, Stakeholder influence, Information technology, Organization structure with successful completion of power projects in Kenya Power & Lighting Company.

The findings also indicated that top management support have been a major contributor towards the successful completion of power projects in Kenya Power & Lighting Company. This is line with Kuen et al, (2009) who found that top management support is critical success factor of project success in Malaysia. The results also revealed that the stakeholder influence, information technology, and organization structure have positive relationship with successful completion of power projects in Kenya Power & Lighting Company.

Recommendations

The study recommends that there is need to provide top management support to project teams as it is necessary to allocate valuable organizational resources which is considered vital for effectively implementation of project. Top management support promotes training of project managers, planning and provision of organizational project resources in order to successfully complete of power projects. The study also recommends that there is need to understand stakeholder influence is a key ingredient of successful completion of power projects in Kenya Power & Lighting Company. KPLC’s project managers should try to acknowledge concerns of all stakeholders and in a dialogue seek to reconcile conflicting interests, culminating in the successful completion of power projects. The study further recommends that KPLC should integrate information technology in implementation of power projects. Information technology encompasses IT policy, IT skills, provision of suitable project management software, and promoting positive staff perception on IT innovations effectively leading to improved consistency of power project execution by enabling greater visibility to project data and allowing managers to report track progress more easily.Finally, KPLC should promote organization structure that entails establishing project manager’s authority over project team, ensures resources availability, control of project’s budget, and project management administrative staff as this has a positive and significant influence on the successful completion of power projects.

References


