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Karina, C. W., & Moronge, M.

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DETERMINANTS OF IMPLEMENTATION OF POWER DISTRIBUTION PROJECTS IN KENYA: A CASE OF KENYA RURAL ELECTRIFICATION AUTHORITY

Karina, C. W.,[*1] & Moronge, M.[2]

[*1] Msc. Candidate, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Nairobi, Kenya
[2] Ph.D, Lecturer, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Nairobi, Kenya

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ABSTRACT

The study sought to assess the determinants of implementation of power distribution projects in Kenya, with a specific reference to Rural Electrification Authority. The study adopted a descriptive research design which was carried out on the study population. The target population was the project managers, consultants, supervisors and contractors at Kenya Rural Electrification Authority where a study population of 210 respondents was selected. It was established that there was notable strong positive relationship between the indepedent variables and depedent variable and determinant coefficient which was (R^2 = 74.30%) implementation of power projects. This implied that these variables were very significant therefore needed to be considered in enhancing implementation of power distribution projects. The study found that nearly all the implementation of power distribution projects had experienced cost overruns. This study therefore recommended the following; organization should improve on project cost management by focusing on project cost budgeting, project cost control and project cost estimation. The study found that project time management had an influence on the implementation of power distribution projects. This study therefore recommended that project managers need to accurately estimate the activities involved in a project, the resources required in those activities and the duration of time it would take to complete those activities. This would help in ensuring that there was little or no cost overrun that comes with inflation and change in material prices. The study found that management of projects had no plans put in place to mitigate occurrence of project risks. This study recommended that organization should always have documented risk management plans in place. The organization should also focus on all aspects of project risk management like risk identification, risk analysis, risk responses, risk control and risk monitoring. The study found that lack of support from the management was one of the factors that were affecting project quality management. This study therefore recommended that top management in the implementation of power distribution projects should give the required support to project quality management team so as to ensure the implementation success of projects.

Key Words: *Cost Management, Time Management, Risk Management, Quality Management, Power Distribution*

INTRODUCTION

Project management as a management discipline underpins much economic activity. In industries as well as economic sector, projects drive business (Winter *et al*., 2006). Project management, therefore, is emphasized as the process of making decisions and operationalizing certain strategies and tactics to bring the project to success. According to Pinto (2007), to increase the chances of a project succeeding, it is necessary for the organization to have an understanding of what the critical success factors are, to systematically and quantitatively assess these critical factors, anticipate possible effects and then choose appropriate methods of dealing with them. Once identified, the success of the project can be achieved.

Projects implementation is usually preceded by a well-defined project plan meant to guide during the implementation stage (Mir & Pinnington, 2014). However, there usually arise variations as activities progress. Pinto (2007) in his focus on the implementation gap or variations defined it as the lack of consensus between the goals set by the top management and those independently set by lower levels of management. According to Jugdev & Muller (2005), the project implementation process is complex, usually requires extensive and collective attention to a broad aspect of human, budgetary and technical variables. In addition, projects often possess a specialized set of critical success factors in which if addressed and attention given will improve the likelihood of implementation (Winter *et al*., 2006). The number and complexity of international projects has been growing rapidly over the last few decades (Flyvbjerg*et al.,* 2003;Grün, 2004). Moreover, many of today's international projects are implemented in institutionally demanding environments and executed by coalition's oforganizations, grouping a number of firms and non-business organizations that form an inter-organizational project network. Consequently, the managerial challenges in international projects are not purely technical; these challenges also arguably entail the management of the social, political and cultural aspects in the context of several stakeholders with differing socio-cultural backgrounds, goals and strategies. Unfortunately many international investment and delivery projects still have strikingly poor performance records in terms of economy, environment and public support (Flyvbjerg*et al.*, 2003; Grün,2004).

According to Kagendo (2012), Major international development partners including, World Bank (WB), European Union (EU), International Finance Corporation (IFC), Germany Technical Cooperation Agency (GTZ), Danish International Development Agency (DANIDA), Swedish International Development Cooperation (SIDA) and other Major Development Partners (MDPs) exert enormous influence on national and international approaches to projects development and implementation.

In Africa, there has been a lot of pressure from these organizations to most recipient countries on stewardship of projects that are financed by them. Yet historically, the communities that experience the direct effects of MDP-financed projects are rarely included in their design or implementation. Consequently, many projects fail to meet local peoples‟ needs, often with disastrous results. Furthermore, local community groups which are best situated to monitor and report on the impacts of projects are typically denied critical information about their rights, the terms and conditions of these projects and the actual content of the banks‟ mandatory policies, (Kagendo M., 2010).

The Government is pursuing the Kenya Vision 2030 that seeks to transform the country into a newly industrialized, middle income country providing a high quality of life to all its citizens in a clean and secure environment (Njagi, 2012). The vision is anchored on three key pillars: economic, social, and political governance. The economic pillar aims to achieve an economic growth rate of 10 per cent per

annum and sustaining the same till year 2030 in order to generate more resources to address the MDGs. The social pillar seeks to create just, cohesive and equitable social development in a clean and secure environment (Njiru, 2008). The political pillar aims to realize an issue based, people centred, result-oriented and accountable democratic system.

About 60 % of Kenya's power is derived from hydroelectric sources and with Kenya in recent times being subjected to perennial drought and erratic rainfall, generation capacity has been affected resulting in widespread voltage variations and increased incidences of power outages - with the more rural areas having been worst affected. The largest share of Kenya's electricity supply comes from hydroelectric stations at dams along the upper Tana River, as well as the Turkwel Gorge Dam in the west. A petroleum-fired plant on the coast, geothermal facilities at Olkaria (near Nairobi), and electricity imported from Uganda make up the rest of the supply. Scaling-up access to electricity and ensuring reliable power supply are key elements of Vision 2030, the Kenyan government's national development strategy to promote economic development, growth and competitiveness, and job creation. The government has an ambitious goal: to achieve 40% energy access by 2030. This will be done by increasing electricity generation capacity to 11,510 Megawatt from the currently estimated installed capacity of 1,473 Megawatt (Ndirangu S. 2013).

The Rural Electrification Authority was established under Section 66 of the Energy Act, 2006 (No 12 of 2006) as a body corporate. The Authority was created in order to accelerate the pace of rural electrification in the country, a function which was previously undertaken by the Ministry of Energy. REA has provided electricity in off grid areas through: Stand-alone diesel generators/extension of power lines from diesel stations, Solar photovoltaic (PV) systems for schools and other public facilities, Extension of powerlines from off-grid towns with diesel stations to other towns within the off-grid areas

Statement of the Problem

Projects are part and parcel of the normal operations of public sector organizations. The projects which are funded by public funds aim at achieving certain organizational objectives set by public sector organizations to facilitate fulfilment of their mission (Mir & Pinnington, 2014). In some instances these objectives are not achieved. The challenge of poor project implementation appears to be a replica across the board within the public sector environment globally (Browne, 2013).

Previous studies in Kenya have provided evidence of the existence of serious problems of ineffective project implementation within the public domain; (Malala, 2011; Njagi, 2012; Kihara, 2013). A case in point is the Kenya Civil Aviation Authority which failed to realize one of its key strategic objectives. The project was not achieved within the contractual period and the contractor blamed it on delayed payments and unforeseen circumstances but necessary works associated with the project. According to Malala (2011), 88% of the projects were rated as being behind schedule, pointing to ineffective implementation process.

Kirungu (2011) indicated that implementation of projects funded by the donors was faced with a number of challenges and therefore not able to achieve goals within the stipulated timeframes. This author further reported that a World Bank Report (2009) which indicated that the current average project funds absorption rate was less than 10% per annum which was attributed to a constrained procurement process. According to Omanga (2010) report, 21% of CDF Projects in Lari Constituency had either stalled or abandoned altogether. This statistic closely tallies with the findings on CDF Projects in Kanduyi Constituency which recorded a 25% project implementation failure during the Financial Year

2007/08. Scholars including Brown and Hyer (2010) report that organizations with systematic project management processes are more effective and successful than those on the lower Project Management Maturity scale. Thus, the current study sought to identify the determinants of implementation of power distribution projects, with a specific reference to Rural Electrification Authority projects.

Objectives of the Study

The main objective of the study was to assess the determinants of the implementation of power distribution projects in Kenya. The specific objectives were:-

- To find out the effect of project cost management on implementation of power distribution projects in Kenya
- To examine the effect of project time management on implementation of power distribution projects in Kenya
- To investigate whether project risk management affects implementation of power distribution projects in Kenya
- To determine whether the project quality management affects implementation of power distribution projects in Kenya

LITERATURE REVIEW

Theoretical Review

ABJ Sticky Cost Theory in Project Management

Traditional models of cost behavior usually posit a linear relation between activities and costs where in the short run, total costs equal fixed costs plus unit variable costs × activity volume. This model implies a mechanical relation between changes in costs and contemporaneous changes in sale activity. According to Müller and Jugdev (2012) resent research has begun to focus on how managerial incentives affect the tradeoff between fixed and variable costs.

The starting point of the sticky costs theory is that many (but, not necessarily, all) costs arise as a result of deliberate resource commitment decisions made by managers (Shahu, Pundir and Ganapathy, 2012). Sudhakar (2012) opined that the concept of cost stickiness is consistent with the thought that costs arise as a result of deliberate resource commitment decisions made by managers. This means that the absolute change in selling, general, and administrative cost associated with decreased sales activity is systematically less than those associated with increased sales activity and they interpret this as evidence of overt cost management (Tabish and Jha, 2012). Verschuren et al. (2010) argue that when sales decrease, managers choose to retain slack resources to avoid resource adjustment costs such as severance payments to dismissed workers or disposal losses on equipment. When demand increases beyond available resource capacity, managers can meet the demand only if they add the required resources.

The Pareto Principle of Time Management

In 1895, Vilfredo Pareto, an Italian economist, noted that about 80% of the land in Italy was owned by about 20% of the people. As he examined his ideas he noticed that this 80/20 rule was equally valid in other ways (Wells, 2012). The idea, which is now called the Pareto principle, relates to time management because 20% of work usually generates about 80% of positive results.

Zwikael and Globerson (2006) define time management as the process of determining needs, setting goals to achieve these needs, prioritising and planning tasks required to achieve these goals. Wells (2012) defines time management as behaviours that aim at achieving an effective use of time while performing certain goal-directed activities. This definition highlights the fact that the use of time is not an aim in itself but more of focusing on some goal-directed activity, such as performing a work task which is carried out in a manner that implies an effective use of time (Zwikael and Globerson, 2006).

Enterprise Risk Management Theory

Risk management refers to the culture process and structures that are directed towards the effective management of potential opportunities and adverse effects (Verschuren et al., 2010). Effective risk management helps to improve the performance of an organization by creating value to the firm through better service delivery, effective manage of change, efficient use of resources, better project management, minimizing waste, minimizing fraud and supporting innovation.

Tabish and Jha (2012) defines ERM as a strategic business discipline that supports the achievement of an organization's objectives by addressing the full spectrum of its risks and managing the combined impact of those risks as an interrelated portfolio. Historically firms managed different kinds of risk separately. This fragmentation of risk management occurred because different functions within a corporation handled different parts of risk management e.g. finance often addressed risks associated with interest rate variations, insurance handled natural catastrophes and liability, and operations managed quality and safety risks (Sudhakar, 2012).

The major task of enterprise risk management is therefore to ensure that the organization can keep on creating value under any uncertain environment. Managers can save a lot of money if they deal with uncertain project events in a proactive manner that will minimize the impact of threats and seize the opportunities that occur (Shahu *et al*., 2012).The ERM theory is central to this research since risk resilient organizations must objectively asses their existing risk management capacities, evaluate their organizational culture with regard to risk, performance and reward and implement sustainable risk management practices. The above theory relates to influence of project risk management on project implementation.

Six Sigma Approach to Quality Management

Total Quality Management is a management philosophy that seeks to integrate all organizational functions i.e. marketing, finance, design, engineering, production, customer service, etc. to focus on meeting customer needs and organizational objectives (Parker et al., 2013). Müller and Jugdev (2012) define total quality management as philosophy for managing an organization in a way which enables it to meet stakeholder needs and expectations efficiently and effectively, without compromising ethical values.

Six Sigma is a total quality management tool whose origin comes from statistics. Sigma is a term used in statistics to refer to the frequency of deviation from the standard. According to Flannes and Levin (2001) Bill Smith and Bob Galvin, both of Motorola, developed the Six Sigma quality improvement process in 1986. From a business point of view Six Sigma may be defined as a business strategy used to improve business profitability, effectiveness and efficiency of all operations to meet or exceed customer's needs and expectation.Six Sigma inherited the Deming's approach to continuous improvement and some principles from Total Quality Management such as focus on the customer, decision making based on facts and data, root cause analysis, structured problem solving, rewards for improving and improvement of processes capability. Six Sigma was initially used in the manufacturing industry to reduce wastes due to manufacturing process deficiencies but nowadays it is used by almost all industries (Hulme, 2003).Improvement activities in Six Sigma are carried out through six sigma projects. A six sigma project is a problem solution that has a set of metrics that can be used to set project goals and monitor progress. The Six Sigma remarkable characteristic is its clear linkage between the improvement results and the financial gains (Jetu and Riedl, 2012).

Conceptual Framework

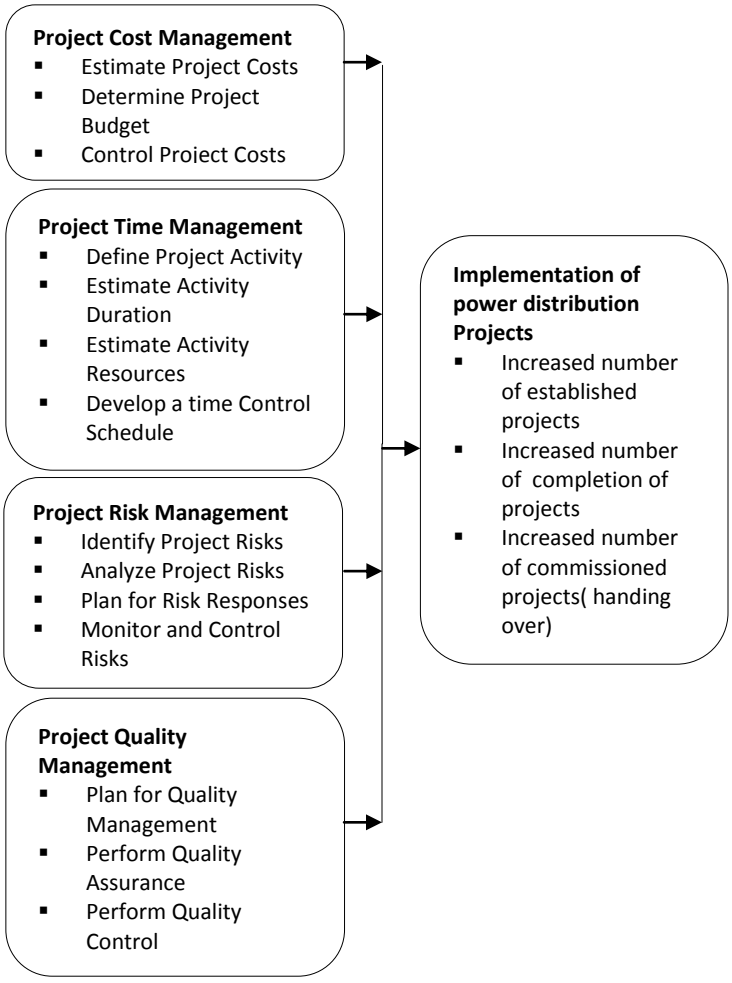

Figure 1: Conceptual Framework

Project Cost Management

Chowdhury (2013) recognize profitability and cost management to be at the core of enterprise performance management as it represents the bottom line for every company. Hwang and Ng (2013) see project cost management as a series of activities for estimating allocating and controlling costs within a project. Project cost management includes the processes involved in planning, estimating, budgeting, and controlling costs so that the project can be completed within the approved budget (Botha, 2013).Project cost control consists of projecting company operations into the future and then using that projection to manage the operations that actually develop (Hewage et al., 2011). Project cost control is important because the project manager must regularly ensure that the money spent is according to budget (Chou, Irawan and Pham, 2013). One major component of the cost control process is project performance reviews. These reviews compare cost performance over time, schedule activities or work packages overrunning and under-running budget, milestones due, and milestones met.

Project Time Management

Project Time Management includes the processes required to manage timely completion of the project. The four key tenets of project time management are activity definition, estimating activity resources needed, estimating activity time and time control schedule.

The technique of decomposition, as applied to defining activities, involves subdividing the project work packages into smaller, more manageable components called activities. Activities represent the effort needed to complete a work package (Kiragu et al., 2013). Project success may be attributed specifically to use of a Work Breakdown Structure (Choge and Muturi, 2014). The Work Breakdown Structure defines the final outputs as activities rather than deliverables, as done in the WBS process the activity list, and WBS dictionary can be developed either sequentially or concurrently.

Project Risk Management

Risk management refers to the culture process and structures that are directed towards the effective management of potential opportunities and adverse effects (Davies and Hobday, 2005). When it comes to project risk management the four key areas are risk identification, risk analysis, risk responses and risk control and monitoring.

Identifying Risk; The Delphi technique developed Rand Corporation in the 1950's aims to achieve a

convergence of opinion on a specific real-world issue(Anfara and Mertz, 2006). Project risk experts use this technique to solicit ideas about the important project risks (Milunovic and Filipovic, 2013).Common surveys try to identify "what is," whereas the Delphi technique attempts to address "what could/should be" (Miller, 2006). The responses are summarized and are then recirculated to the experts for further comment. Theoretically, the Delphi process can be continuously iterated until consensus is determined to have been achieved. However, Müller and Jugdev (2012) point out that three iterations is often sufficient to collect the needed information and to reach a consensus in most cases. The Delphi technique helps reduce bias in the data and prevents any one person from having undue influence on the outcome.

Project Quality Management

Quality management includes both quality assurance planning to meet quality requirements and the quality control steps taken to monitor results to see if they conform to requirements (Wells, 2012). The whole aspect of project quality management is usually made up of quality management, quality assurance and quality control.

Quality Management Plan are the modern quality management complements project management. Since both disciplines recognize the importance of customer satisfaction and uses concept of prevention over inspection (Ward and Daniel, 2013). One of the fundamental tenets of modern quality management states that quality is planned, designed, and built in and not inspected in.

Project Implementation

Milunovic and Filipovic (2013) define performance measurement as the process of quantifying the efficiency and effectiveness of action. Müller and Jugdev (2012) see performance measurement as the use of a multi-dimensional set of performance measures for planning and management of a business. According to Shahu et al. (2012), performance measurement systems are considered to be important for evaluating the accomplishments of firm goals, constructing strategies for development, making decisions for investments and compensating managers.

Sudhakar (2012) consider a project as the achievement of a specified objective, which involves a series of activities and tasks that consume resources. Criterion is defined as standard of judge mentor principle by which something is measured for value. In the early 90s', project success was inherently tied to performance measures, which in turn were tied to project objectives. At project level, success was measured on the bases of time, monetary cost and project performance (Tabish and Jha (2012). Verschuren et al. (2010) advocates that measures for project success should also include project psychosocial outcomes - the satisfaction of interpersonal relations with project team members. One way in which project managers in the banking industry can measure the success of their projects is through the Shenhar model.

Empirical Review

Roque and de Carvalho (2013) carried a study on understanding the impact of project risk management, assessment of risks on project performance in Brazillian Vendor companies. The objective of the study was to comprehend the impact of risk assessment on IT project performance and to investigate the degree of diffusion of project risk assessment in Brazilian Project risk identification-Risk reporting, -Risk registration-Risk allocation, -Risk control, Risk checklist. IT Project performance-Project timeliness-Schedule-Quality of products Achieving project objectives-Profitability Project risk assessment-Reduction, -Transferring-Time available, -Avoidance, -Occurrence of risks. The methodological approach involved a survey of 415 projects at different companies in IT sectors in Brazil. The results demonstrate that adopting risk assessment and

planning has a significant positive impact on project success as project staff were able to identify and take measures to mitigate occurrence of risks to a greater extent. The study found that assessing uncertainties during the project, making use of the risk management strategies and deeply understand the business environment are critical success factors had a significant impact on project performance ($P<0.05$, $r=0.002$,$b=0.413$). The results demonstrated that the impact of project risk assessment on project success was positive.

The documented design, materials specifications for functional and aesthetic reasons, actual site conditions, in conjunction with pre-planned work schedules merge during implementation. This may present another set of issues that are influence the contractors' performance. Saqib et. *al*.,(2008) categorised a number of these key issues. Among the issues they noted were the clear and precise definition of project scope and objectives, timely decision-making, risk attitude and emphasis on low construction cost/ high quality of construction/ quick construction. Other aspects include project design complexity, mistakes/delays in producing design documents, adequacy of plans and specifications, project planning, scheduling, communication and speed of information flow, and supervision. Alarcon L. and Mardones D.,(2009) presented the factors in three categories: design quality related to design drawings and specifications, design standards coupled with suitability for the existing technology, and constructability of the designs(Amalraj et. al., 2007).

Addison and Vallabh, (2002) carried out a study on impact of project risk Identification performance of software projects in IT enterprises in China. The study adopted a survey research design. Data collection was achieved through the use of a structured questionnaire, which asked respondents questions aimed at achieving the study objective. A total of 70 project managers from IT enterprises were sampled the method of sample selection referred to as 'snowball' sampling was used. Of the 70 questionnaires distributed, 36 were returned. The study found out that software project risks identification of unclear or misunderstood scope/objectives, unrealistic schedules and budgets, inadequate knowledge/skills and lack of effective project management methodology and misunderstanding the requirements identified by many researchers, subcontracting risk and regularly occur in software projects influence management adopting appropriate risk mitigation measures influencing software projects completion within time and increase profitability. The study further found that as management involvement increases, the risk of unclear or misunderstood scope/objectives appears to decrease and improve project performance. The p-value showed a relationship between project risk identification and project performance was significant at a 95% confidence level.

According to Kenya Roads Board (KRB) report, Kenya National Highways Authority is annually allocated approximately 30% of the total fund allocated to the ministry of roads. Many projects experience cost overrun and thereby exceed initial contract amount. In Kenya, the number of public roads construction projects is increasing from time to time. However, it becomes difficult to complete projects in the allocated cost budget. Taking into account the scarce financial resources of the country, cost overrun is one of the major problems in Kenya. Statistics from the republic of Kenya report show that KeNHA has been experiencing cost overruns in its Roads projects. For instance, in the construction of Thika Super Highway, the cost escalated from 26.44 billion to 34.45 billion (World Bank, 2014). In addition, the initial deadline of the Thika super highway project was July 2011, which was later revised to July 2013. Further, the sewerage system in Lot1-RD 0530 of Thika superhighway project was changed after the construction of the road

METHODOLOGY

The study adopted a descriptive research design with an aim of assessing the determinants of successful project implementation of power distribution projects in Kenya parastatals by focusing on projects undertaken by Rural Electrification Authority. Accordingto Saunders *et al*. (2009) a descriptive study is concerned with finding out the what, where and how of a phenomenon. The target population comprised of 210 project team (project managers, supervisors, contractors and consultants) involved in the implementation of power distribution projects as per the records at Rural Electrification Authority by December, 2017. The study adopted a census with respect of unit of analysis which was the power distribution project. The study used primary data collected using semi-structured questionnaires with both close-ended and open-ended questions. Questionnaires were advantageous as the responses were gathered in a standardized way, more objective, and more focused than interviews, (Trochim, 2006). The completed questionnaires were coded and entries made into the Statistical Package for Social Sciences (SPSS Version 21). The following is the statistical model which was used.

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \alpha$$

Where:Y = Project Implementation;
X_1= Project Cost Management;
X_2 = Project Time Management;
X_3 = Project Risk Management;
X_4 =Project Quality Management;
$\beta_1 \ldots \beta_4$= regression coefficient of four variables;
α= Error

RESULTS

Project Cost Management

The first objective of this study was to find out how project cost management affected the implementation of power distribution projects. The respondents were asked to indicate whether projects implemented had been experiencing cost overrun in the last 5 years. From the findings, 75.8% of the respondents indicated that projects in their bank had been experiencing cost overrun in the last 5 years while 24.2% disagreed. These findings agreed with Sunindijo (2015) who opines that major infrastructure projects have a history of problems from cost overruns or delays. The findings of the study were consistent with those of (Memon,Rahman Abdalla and Aziz,2013) who when looking at cost management of large projects in Mara found out that 85% of the projects usually experience cost overrun which usually lies between 5-10% of the project costs.

The respondents were asked to rate various aspects of project cost management and their influence on success of financed projects. From the findings, the respondents rated project cost budgeting as good as showed by a mean of 3.606 and a standard deviation of 0.704. In addition, the respondents rated project cost control in their banks as good as shown by a mean of 3.787 and a standard deviation of 0.649. Further, the respondents rated project cost estimation in their banks as good. This was indicated by a mean of 3.606 and a standard deviation of 0.933. These findings agreed with (Chiu-Chi et al., 2002) who opined that project cost management includes a series of activities for estimating, allocating, and controlling costs within the project. It involves determining and approving budget for the project and controlling spending.

Table 1: Aspects of Project Cost Management

	Very bad	Bad	Moderate	Good	Excellent	Mean	Std. Deviation
Project cost budgeting	0	6.1	33.3	54.5	6.1	3.606	.704
Project cost control	0	3	24.2	63.6	9.1	3.787	.649
Project cost estimation	3	9.1	24.2	51.5	12.1	3.606	.933

The respondents were asked to indicate the effect of project cost management on the success of projects. From the findings, the respondents indicated that project cost control was important because the project manager must regularly ensured that the money spent was according to budget. These findings agreed with Zwikael and Globerson (2006) argument that project cost helps in ensuring that the money spent for is according to budget. In addition, the respondents reported that project cost management helped to ensure the resources available were enough for the success of the project. The findings also agreed with Wells (2012) argument that project cost management helped in ensuring budgeted cost did not significantly differ with the final project cost. Further, the respondents indicated that project cost estimation helped the project managers determine whether the project was achievable or not. As well, the respondents indicated that estimation of labor, materials, equipment, services, facilities, and special categories helped in sourcing at a better price. These findings concurred with Chou, Irawan and Pham (2013) who indicated that project cost management helps to ensure that inflation does not affect the cost of material. The respondents also indicated that poor project financial management reduces project costs control.

Project Time Management

The second objective of this study was to find out how project time management affects the implementation of power distribution projects. The study investigated the effects of developing a time control schedule on the implementation of the projects. The findings of the study revealed that 62% of the respondents cited that it assisted in handling new projects, 72% of the respondents cited that it enhanced business success, 86% of the respondents indicated that it led to a positive impact on customer satisfaction and 64% of the respondents indicated that it increased project efficiency of the projects being implemented.

The respondents were asked to indicate whether project time management influenced the implementation of projects. From the findings, 78.8% of the respondents indicated that project time management influences the success of projects while 21.2% disagreed. From these findings it was deduce that project time management influences the implementation of power distribution projects. These findings agreed with Kiragu et al. (2013) argument that time management in projects affects the success of the project in terms of customer satisfaction and cost.

The respondents were also asked to indicate the extent to which project time management influence the implementation of power distribution projects. According to the findings, the respondents indicated with a mean of 3.878 and a standard deviation of 0.780 that estimation of activity resources influences the implementation of power distribution projects to a great extent. These findings agreed with Choge and Muturi (2014) argument that estimation of resources helps the project managers to estimate the cost of the project more accurately. In addition, the respondents indicated with a mean of 3.818 and a standard deviation of 0.808 that estimation activity duration influences the success of implementation of power distribution projects to a great extent. The findings also showed that time control schedule

influences the success of implementation of power distribution projects to a great extent as shown by a mean of 3.818 and a standard deviation of 0.808. Further, the respondents indicated with a mean of 3.575 and a standard deviation of 0.791 that defining project activities influences the implementation of power distribution projects to a great extent. These findings concurred with Choge and Muturi (2014) findings that defining project activities helps in estimating the cost and time it will take to complete the project.

Table 2: Aspects of Project Time Management

	No extent at all	low extent	moderate extent	great extent	very great extent	Mean	Std. Deviation
Defining Project Activities		12.1	24.2	57.6	6.1	3.575	.791
Estimate of activity resources		3.0	27.3	48.5	21.2	3.878	.780
Estimate activity durations		9.1	15.2	60.6	15.2	3.818	.808
Time control schedule		9.1	15.2	60.6	15.2	3.818	.808

The respondents were asked to indicate the effects of project time management on the success of projects in their bank. From the findings, the respondents indicated that defining of project activities helped in estimating the project cost. These findings concurred with Chowdhury (2013) argument that defining of project activities help project managers to estimate the project cost and timeline. In addition, the respondents indicated that project time management creates schedule buffers that prevent undesired variations and help reach task completion by the target date. The respondents also indicated that project time management prevents cost overrun that comes with inflation and change in material prices. Further, the respondents indicated that time, with its associated costs, are vitally important for each participant in the process including the lender, owner, architect engineers, contractor, and subcontractors, as well as those who provide bonding and insurance coverage. The respondents further indicated that effective management and the administration of the contract time and change provisions are central to the avoidance and mitigation extended time and cost overruns. These findings agree with Zou and Sunindijo (2013) argument that effective management of a project time is key to the avoidance and mitigation extended time and cost overruns.

Project Risk Management

The third objective of the study was to find out how project risk management affected the implementation of power distribution projects. The study investigated the effects of identifying project risks on implementation of power distribution projects by the organization. The study revealed that 72% of the respondents cited that it assisted in handling new projects, 82% of the respondents cited that it enhanced business success, 70% of the respondents indicated that it led to a positive impact on customer satisfaction and 55% of the respondents indicated that it increased project efficiency of the projects being implemented by the organization.

The respondents were asked to indicate the extent to which project risk management influenced the success of implementation of power distribution projects. 57.6% of the respondents indicated that project risk management influenced the success implementation of power distribution projects to a great extent, 15.2% indicated to a very great extent, the same percent indicated to a moderate extent, 9.1% indicated to a moderate extent and 3% indicated to no extent at all. From these findings it

was deduce that project risk management influences the success implementation of power distribution projects to a great extent. These findings agreed with Milunovic and Filipovic (2013) findings that project risk management helps in the prevention cost and time overrun, which are key to project success.

The respondents were asked to indicate whether there were plans put in place to mitigate occurrence of project risks. From the findings, 93.9% of the respondents indicated that there were plans put in place to mitigate occurrence of project risks while 6.1% noted that there were no plans put in place to mitigate risks. From these findings it was deduced that the organization had got plans put in place to mitigate occurrence of project risks. These findings agreed with Müller and Jugdev (2012) findings that most organizations always plan for various types of risks by use of risk identification, assessment and mitigation.

The respondents were asked to rate the level of project risk planning in implementation of power distribution projects. According to the findings, 51.5% of the respondents rated the level of project risk planning as high, 33.3% rated it as medium and 15.2% rated it as low. From these findings it was deduce that the level of project risk planning in most of implementation of power distribution projects was high. These findings disagreed with Davies and Hobday (2005) argument that the level of risk planning in most projects is medium.

The respondents were asked to indicate the extent to which various aspects of project risk management influenced success of financed projects. From the findings, the respondents indicated with a mean of 4.151 and a standard deviation of 0.507 that risk monitoring influenced success of projects in banks to a great extent. These findings agreed with Anfara and Mertz (2006) argument that risk monitoring helps project managers to identify possible risks during the implementation of a project with an aim of mitigating them. The respondents also indicated with a mean of 4.000 and a standard deviation of 0.612 that risk control influences success of projects to a great extent. The respondents further indicated with a mean of 3.878 and a standard deviation of 0.5453 that risk analysis influences success of projects to a great extent. In addition, the respondents indicated that risk responses influences success of projects to a great extent. This implied that project risks management influence implementation of power distribution projects.

These findings agreed with Zwikael and Globerson (2006) argument that risk responses involve the process of developing options and actions to enhance opportunities and to reduce threats to project objectives. This is shown by a mean of 3.757 and a standard deviation of 0.751. The respondents also indicated with a mean of 3.727 and a standard deviation of 0.761 that risk identification influences success of projects to a great extent as indicated by (Flannes and Levin, 2001) who see project risk management as the process of identifying, analysing, and responding to risk factors through the life of a project and in the best interest of its objectives.

Table 3: Aspects of Project Risk Management

	No extent at all	low extent	moderate extent	great extent	very great extent	Mean	Std. Deviation
Risk identification	3.0	3.0	18.2	69.7	6.1	3.7273	.76128
Risk analysis		3.0	12.1	78.8	6.1	3.8788	.54530
Risk responses		6.1	24.2	57.6	12.1	3.7576	.75126
Risk control		3.0	9.1	72.7	15.2	4.0000	.61237
Risk monitoring			6.1	72.7	21.2	4.1515	.50752

The respondents were requested to indicate the effects of project risk management on the success of projects in their banks. From the findings, the respondents indicated that project risk identification helps the managers to budget for the possible risks in the project budget. The respondents also indicated that risk responses addresses the risks by their priority, inserting resources and activities into the budget, schedule and project management plan as needed. These findings agree with Zwikael and Globerson (2006) argument that risk responses addresses the risks by their priority, inserting resources and activities into the budget, schedule and project management plan as needed.

The respondents further indicated that risk identification informs risk avoidance and hence changing the project management plan to eliminate the threat entirely. In addition, the respondents indicated that risk management leads to identifying and analyzing risks, and improvement of project management processes and effective use of resources. Further, the respondents indicated that risk management helps the key project participants – client, contractor or developer, consultant, and supplier – to meet their commitments and minimize negative impacts on project performance in relation to cost, time and quality objectives.

The respondents also reported that project risks management helps to establish the source of the risk (such as staff incompetency) and develop strategies to deal with them. It was also established that to increase the chances of a proposed project succeeding, it is necessary for the organization to have an understanding of potential risks, to systematically and quantitatively assess these risks, anticipating possible causes and effects, and then choose appropriate methods of dealing with them. The respondents further indicated that applying principles of risk management supports the quality improvement and improves cost estimation by identifying and mitigating potential risks before a project begins. These findings concur with Verschuren et al. (2010) argument that risk management supports the quality improvement and improves cost estimation by identifying and mitigating potential risks. The respondents also indicated that risk management puts processes in place to ensure management receives organized risk information early enough to apply corrective actions that will allow realistic schedule and cost estimates. These findings concur with Shahu, Pundir and Ganapathy (2012) argument that risk management puts processes in place to ensure management receives organized risk information early enough to apply corrective actions. Lastly, the respondents indicated that risk management principles increase team involvement by providing a mechanism for the reporting of potential problems and increasing the team's stake in the overall success of the project.

Project Quality Management

The fourth objective of this study was to examine the effect of project quality management on the implementation of power distribution projects. The respondents were also asked to indicate the extent to which project quality management influenced the success of implementation of power distribution projects. From the findings, 72.7% of the respondents indicated that project quality management influenced the success of implementation of power distribution projects to a great extent, 12.1% indicated to a low extent, 9.1% indicated to a moderate extent and 6.1% indicated to a very great extent. From these findings it was deduced that project quality management influenced the success of projects. Davies and Hobday (2005) see quality management as being very important because failure to meet quality standards in project management can have serious negative consequences like cost overrun and dissatisfaction of customers.

The respondents were asked to indicate the factors affect project quality management in their bank. From the findings, the respondents indicated that

these factors included lack of support from the management, lack of the required resources, staff adequacy, a heavy workload and inadequate communication. These findings agreed with Wells (2012) findings that the most common factors affecting project quality management include staff incompetency, lack of enough resources and lack of support from the top management. The respondents were asked to indicate the extent to which various aspects of project quality management influence the success of projects in their banks. From the findings, the respondents indicated with a mean of 3.939 and a standard deviation of 0.555 that quality assurance influenced the success of projects in their banks to a great extent. According Hulme (2003), quality Assurance is a program covering activities necessary to provide quality in the work to meet the project requirements. The respondents also indicated with a mean of 3.939 and a standard deviation 0.555 that quality control influences the success of projects in their banks to a great extent. Further, the respondents indicated with a mean of 3.909 and standard deviations of 0.678 that quality management plan influence the success of projects in their banks to a great extent. These findings agree with Parker et al. (2013) argument that without an effective quality management plan in place, performance improvement can be very difficult to identify and measure.

Table 4: Aspects of Project Quality Management

	No extent at all	low extent	moderate extent	great extent	very great extent	Mean	Std. Deviation
Quality management plan	0	3.0	18.2	63.6	15.2	3.9091	.67840
Quality assurance		3.0	9.1	78.8	9.1	3.9394	.55562
Quality control			18.2	69.7	12.1	3.9394	.55562

The respondents were asked to indicate the effects of project quality management on the success of projects in their banks. From the findings, the respondents indicated that when the quality of project is compromised then this may lead to a repeat of the project and hence time and cost overrun. These findings agreed with Jetu and Riedl (2012) findings that the quality of the project influences its cost and time of completion. The respondents also indicated that the quality of a project may positively or negatively affect the satisfaction of the customers. The respondents further indicated that project quality control helps in monitoring specific project results to determine whether they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory results. Further, the respondents indicated that project quality control usually includes taking action to eliminate causes of unsatisfactory project performance. In addition, the respondents indicated that quality Control helps in determining if they comply with the relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance. Chin et al. (2011) argues that quality control helps in monitoring specific project results to determine whether they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory results that may lead to the repeat of a project.

Implementation of Power Distribution Projects

The respondents were asked to rate various aspects of success of implementation of projects being implemented by the organization. From the findings, the respondents rated the impact of projects on customers as good as shown by a mean of 4.090 and a standard deviation of 0.723. The respondents also indicated with a mean of 4.000 and a standard deviation of 0.707 that projects were meeting customer expectations. According to Chiu-Chi et al.

(2002), any failure to satisfy the customer is a loss determined by variation of performance from optimum target values. The respondents also rated business enhancement as a result of projects as good. This was shown by a mean of 4.000 and a standard deviation of 0.829. The respondents also rated organization success as a result of projects as good as shown by a mean of 3.909 and a standard deviation of 0.842. The respondents further rated quality of the project as good as shown by a mean of 3.845 and a standard deviation of 0.870. The respondents rated cost matches with the budget in budget as good as shown by a mean of 3.666 and a standard deviation 0.816. Tabish and Jha (2012) measured success on the bases of time, monetary cost and project performance. Further, the respondents rated project efficiency in their banks as good as indicated by a mean of 3.575 and a standard deviation of 0.751. In addition, the respondents rated project completion within timeline in their banks as good as shown by a mean of 3.5152 and a standard deviation of 0.795.

Table 5: Implementation of Power Distribution Projects

	Very bad	Bad	Moderate	Good	Excellent	Mean	Std. Deviation
Project efficiency		6.1	39.4	45.5	9.1	3.5758	.75126
Completion within timeline		9.1	39.4	42.4	9.1	3.5152	.79535
Cost matches with the budget		9.1	27.3	51.5	12.1	3.6667	.81650
Quality of the project		9.1	18.2	51.5	21.2	3.8485	.87039
Meeting customer expectations		3.0	15.2	60.6	21.2	4.0000	.70711
Organizational success		6.1	21.2	48.5	24.2	3.9091	.84275
Impact on customer		3.0	12.1	57.6	27.3	4.0909	.72300
Enhanced business success		6.1	15.2	51.5	27.3	4.0000	.82916

The study established that the number of projects established increased with an average of 30% of the respondents stated that it increased by 10%, with an average of 40% of the respondents indicated that it increased by more than 10%, with an average of 32% of the respondents posited that it increased by less than 10%, with an average of 35 % of the respondents cited that it decreased by 10%, with an average of 55% of the respondents indicated that it decreased by more than 10% and an average of 23% of the respondents indicated that it decreased by less than 10% in the last five years. The study findings implied that there was poor improvement on number of projects established in the last five years.

The study established that the successfully implemented projects had made a good increase with an average with an average of 44% of the respondents stated that it increased by 10%, with an average of 55% of the respondents indicated that it increased by more than 10%, with an average of 65% of the respondents posited that it increased by less than 44 %, with an average of 76 % of the respondents cited that it decreased by 10%, with an average of 54 % of the respondents indicated that it decreased by more than 10% and an average of 54 % of the respondents indicated that it decreased by less than 10% in the last five years. The study findings imply that there was poor implementation of projects in in the last five years.

The study established that the sustainable projects increased with an average of 36% of the respondents stated that it increased by 10%, with an average of 68 % of the respondents indicated that it increased by more than 10%, with an average of 54 % of the respondents posited that it increased by less than 10%, with an average of 54 % of the respondents cited that it decreased by 10%, with an average of 44 % of the respondents indicated that it decreased by

more than 10% and an average of 53 % of the respondents indicated that it decreased by less than 10% in the last five years. The study findings implied that there was low sustainability of projects in the last five years.

Multiple Regression Analysis

Table 6: Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-watson
1	.862	.743	.721	.323	1.001

a. Predictors: project cost management, project time management, project risk management and project quality management

b. Implementation of power distribution projects

Table 7: ANOVA

Model	Sum of Squares	d.f	Mean Square	F	Sig.
Regression	41.1917	4	10.2979	43.543	.000
Residual	39.0225	165	.2365		
Total	80.2142	169			

NB: F-critical Value = 11.682

Predictors: (Constant): Project cost management, project time management, project risk management and project quality management

As per the SPSS generated table above, the regression model was;

Whereby Y = Implementation of power distribution projects, X_1= project cost management, X_2= project time management, X_3= project risk Management and X4= project Quality Management. B_0=Constant term while β_1, β_2, β_3 and β_4 are coefficients of determination and finally ε represents the Error term (standard error). This becomes:

$Y= 5.853+ 0.784X_1+ 0.737X_2+ 0.657X_3 + 0.639X_4$.

According to the regression equation established, taking all factors into account (Project cost management, project time management, project risk management and project quality management) constant at zero implementation of power projects was 5.853. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in project cost management will lead to a 0.784 increase in implementation of power projects; a unit increase in project time management will lead to a 0.737 increase in implementation of power projects, a unit increase in project risk management will lead to a 0.657 increase on implementation of power projects and a unit increase in project quality management will lead to a 0.639 increase on implementation of power projects. This infers that project risk management contributed most to implementation of power projects.

Table 8: Regression Coefficient Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

(Constant)	5.853	1.223		4.786	.000
Project cost	.784	.124	.452	6.324	.001
Project time t	.737	.133	.354	5.674	.003
Project risk	.657	.138	.516	4.765	.005
Project quality	.639	.140	.263	4.564	.007

a. Dependent Variable: Implementation of Projects

CONCLUSION

The study concluded that there is a positive and significant relationship between project cost management and implementation of power distribution projects. The study found that project cost budgeting, project cost control and project cost estimation influence the implementation of power distribution projects.

The study also concluded that there is a positive significant relationship between project time management and implementation of power distribution projects. The study established that defining project activities, estimate of activity resources, estimate activity durations and time control schedule positively influences the implementation of power distribution projects.

The study further concluded that there is a positive significant relationship between project risk management and the implementation of power distribution projects. The study found that risk identification, risk analysis, risk responses, risk control and risk monitoring influence the implementation of power distribution projects.

Further, the study concluded that there is a positive significant relationship between project quality management and the implementation of power distribution projects. The study revealed that quality management plan, quality assurance and quality control influence the implementation of power distribution projects.

RECOMMENDATIONS

The study found that nearly all the implementation of power distribution projects had experienced cost overruns. This study therefore recommended the following; organization should improve on project cost management by focusing on project cost budgeting, project cost control and project cost estimation.

The study found that project time management had an influence on the implementation of power distribution projects. This study therefore recommended that project managers need to accurately estimate the activities involved in a project, the resources required in those activities and the duration of time it will take to complete those activities. This will help in ensuring that there is little or no cost overrun that comes with inflation and change in material prices.

The study found that management of projects had no plans put in place to mitigate occurrence of project risks. This study recommended that organization should always have documented risk management plans in place. The organization should also focus on all aspects of project risk management like risk identification, risk analysis, risk responses, risk control and risk monitoring.

The study found that lack of support from the management was one of the factors that were affecting project quality management. This study therefore recommended that top management in the implementation of power distribution projects should give the required support to project quality management team so as to ensure the implementation success of projects.

Recommendations for Further Studies

Since this study sought to establish the determinants of implementation of power distribution projects Kenya, it was established that from literature review that there are scanty studies available. The study variables examined in this study (project cost management, project time management, project risk management and project quality management) only accounted for 74.30% of the implementation of power distribution projects. The study recommended that other variables which account for the remaining 25.70% of other determinants such as project scope management, project human resource management, project communication management project procurement management and project integration management be researched on. Also there is need to carry out similar study on the influence of the same independent variables in other types of projects and countries in order to establish whether the link between these factors and project the implementation of power distribution projects can be generalized.

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