

**ANALYSIS OF PROJECT CONTROL ON PERFORMANCE OF KENYA
POWER PROJECTS IN KIAMBU COUNTY KENYA.**

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DECLARATION AND APPROVAL

Declaration

This project is my original work and has never been presented for any academic award in any institution.

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Approval

This project is being submitted for examination with our approval as University supervisors.

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Date: 8TH /11/2024

DEDICATION

To my children Claudia and Anselm, my dear parents Paul Njoroge and Mary Wairimu who have been instrumental in making this project successful. Thank you for your prayers and encouragement. May God richly bless them.

ACKNOWLEDGEMENT

I wish to thank the Almighty God for granting me peace, knowledge and good health that enabled me to complete this research. My sincere appreciation goes to my supervisor Dr. Appolonius Kembu for his counsel, availability, timely response and professional guidance at each stage of writing this research. Lastly am grateful to Mount Kenya University and my colleagues and friends who made it possible to reach this far thank you and God bless you.



ABSTRACT

Despite the inherent challenges faced by project teams in Kenya Power projects in Kiambu County—ranging from time constraints and cost considerations to communication gaps and infrastructure limitations—the central predicament lies in the absence of effective project controls. This deficiency manifests in persistent issues such as budget overruns, delays, unreliability, and operational inefficiency. A 2021 report from the State Department for Planning revealed below-par project performance, leading to legal disputes and inefficient resource utilization. The root causes, identified as inadequate project control, deficient change control management, and ineffective communication, contribute significantly to these project setbacks. This study analyzes the influence of project control mechanisms on the performance of Kenya Power projects in Kiambu County, Kenya. The specific objectives are: to assess the influence of performance reporting on the performance of Kenya Power projects; to establish the influence of change control management on the performance of these projects; and to examine the influence of configuration management on project performance. The study is grounded on three key theories: agency theory, Kurt Lewin's change management model, and systems theory. The study adopts a descriptive research design, chosen for its ability to accurately portray the characteristics of individuals, situations, or groups. This design allows for the generalization of findings to a broader population and provides valuable insights into current practices, beliefs, and trends in project management. The target population consisted of 194 project managers, project team members, and contractors involved in Kenya Power projects in Kiambu County. A sample size of 94 respondents was determined using Nassiuma's (2000) formula. Self-administered questionnaires, consisting of both open-ended and closed-ended questions, were used to collect primary data. A pilot study was conducted with 10% of the sample (10 respondents) from Kenya Power in Nairobi County to refine the questionnaire, ensuring clarity and minimizing potential misinterpretation. The study employed content validity to guarantee the accuracy and relevance of the research instrument. Reliability was assessed using the Spearman-Brown correlation formula, and a construct composite reliability coefficient of 0.7 or higher was considered adequate for this study. Data analysis techniques included descriptive statistics such as frequencies, percentages, means, and standard deviations, as well as inferential statistics including correlation analysis and regression analysis. The study was conducted at a 95% confidence level with a two-tailed analysis. The results showed a strong positive relationship between project control mechanisms and project performance, particularly in the areas of performance reporting ($r = 0.65$), change control management ($r = 0.58$), and configuration management ($r = 0.62$). Regression analysis further revealed that performance reporting had the most significant influence on overall project performance, followed by change control management and configuration management. In conclusion, the findings highlight the importance of implementing robust project control mechanisms in enhancing project performance. The study recommends that Kenya Power invest in strengthening performance reporting, change control management, and configuration management practices to improve project outcomes, reduce delays, and enhance cost efficiency. Future research should explore the impact of organizational culture and leadership on project performance to provide a more comprehensive understanding of project management dynamics.

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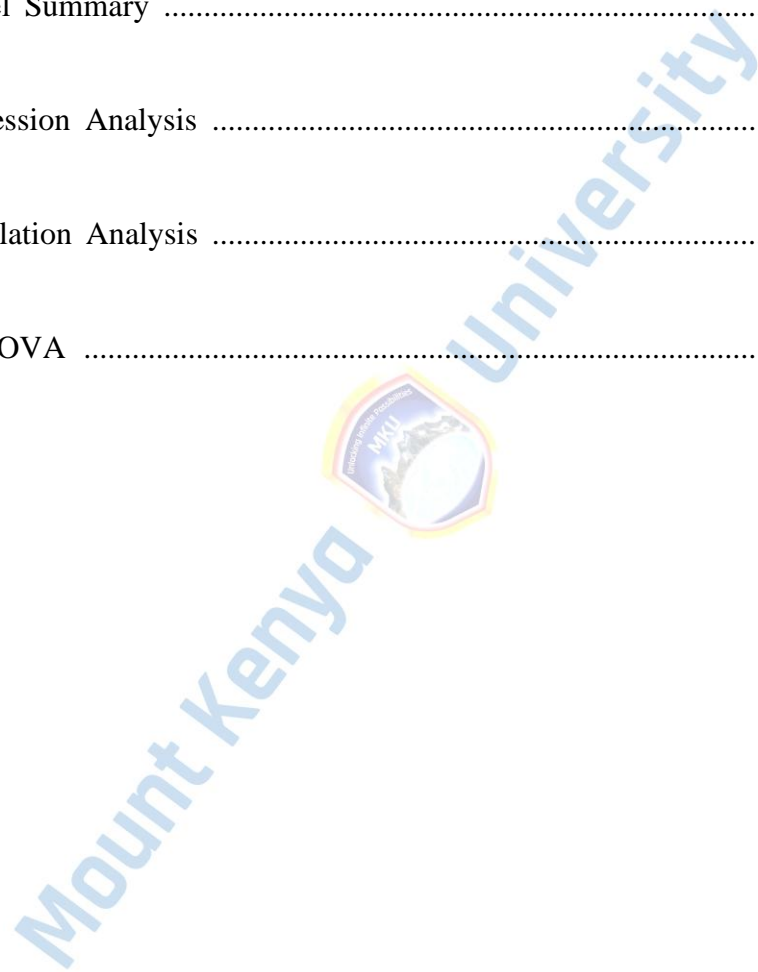
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LIST OF ABBREVIATIONS AND ACRONYMS

DoD	Department of Defense
NACOSTI	National Commission for Science, Technology & Innovation
R&D	Research and Development
REIPPPP	Renewable Energy Independent Power Producer Procurement Program
SPSS	Statistical Package for Social Sciences



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Evaluation of project performance serves as the benchmark for measuring the success and efficiency of a project, aligning with predefined criteria and expectations (Sahle, 2018). In the specific context of power projects, performance assessment extends beyond traditional metrics like time, cost, and quality. It encompasses a broader perspective of the sustainability, safety, and overall livability of electrification projects (Boliko & Ialnazov, 2019). The performance of these projects significantly influences the living conditions and well-being of citizens. Project management revolves around meeting project deadlines, and timely completion is crucial for project success. According to Durdyev, Omarov and Ismail (2017), despite potential delays, implementing a set of controls can mitigate project performance challenges. The modern challenge for project managers lies in effectively dealing with controlled activities across different functions, as inadequately controlled projects can face harm in terms of time estimations, cost overruns, and resource deployment issues (Simushi, 2017).

Assessing the performance of power projects is crucial for ensuring their long-term sustainability, efficiency, and economic viability. These evaluations play a pivotal role in identifying potential operational challenges, optimizing resource utilization, and enhancing overall project effectiveness (Colla, Ioannou & Falcone, 2020). Through comprehensive performance assessments, stakeholders can gauge the reliability of power generation systems, pinpoint areas for improvement, and make informed decisions to address technical, financial, and environmental concerns. Furthermore, regular evaluations contribute to the development of best practices, fostering innovation and driving advancements in power project technologies. Ultimately, a thorough and ongoing

assessment of power projects is instrumental in achieving energy security, promoting environmental sustainability, and maximizing the return on investment for both public and private entities involved in the energy sector (Hussain, Wang & Benqian, 2023).

Recognition of project progress increasingly involves project control throughout the project lifecycle. Project control is a fundamental function in project management that involves comparing actual performance with planned performance and initiating corrective actions to achieve desired project outcomes when significant differences arise (Del Pico, 2023). In the context of project control, the integration of cost and schedule data is pivotal for establishing a baseline or guidance system (Sepasgozar et al., 2019). This process, essential for monitoring, measuring, and controlling performance, is a critical aspect of project management that aims to keep projects on track, on time, and within budget. Whether performed by the project manager or an independent discipline within the project team, such as a project analyst or auditor, project control provides the necessary analytic tools to navigate through challenges in power projects, where time and cost are closely linked variables (Sanchez & Terlizzi, 2017). Symptoms indicating a power project is out of control necessitate a system for measuring actual performance against anticipated performance throughout the project's life cycle.

In the U.S., where a diverse range of energy sources and a complex regulatory landscape characterize the power sector, project control is instrumental in ensuring the successful execution of power projects (Howell *et al.*, 2017). The implementation of project control methodologies enables precise planning, efficient resource allocation, and effective risk management, crucial in a dynamic energy market. For large-scale projects like nuclear or renewable energy installations, project control becomes indispensable for meeting regulatory requirements, adhering to environmental standards, and ensuring safety protocols (Lange, Page & Cummins, 2018). The United States' commitment to

transitioning towards cleaner energy sources further underscores the importance of project control in managing the complexities associated with integrating renewable technologies into the existing power grid. As the nation aims for energy security and sustainability, robust project control practices contribute to the successful development and operation of power projects, ensuring their long-term reliability and effectiveness.

In India, where the energy sector is rapidly expanding to meet the demands of a growing population and developing economy, project control is vital for the successful implementation of power projects (Bhatt & Singh, 2021). India relies on a mix of conventional and renewable energy sources to address its energy needs. Project control becomes particularly crucial in navigating the complexities of diverse energy portfolios, managing infrastructure development challenges, and ensuring efficient deployment of resources (Batool & Abbas, 2017). India's ambitious goals in renewable energy, such as the National Solar Mission, require meticulous project control to overcome logistical hurdles, optimize costs, and integrate renewable sources seamlessly into the existing power grid (Patro, Kishore, & Haghighi, 2022). Additionally, in a country where energy access is a critical concern, effective project control plays a key role in timely project completion, contributing to improved energy availability and infrastructure development across different regions.

Brazil, while not as economically developed as the United States, is a rapidly emerging market with a diverse energy matrix that includes a significant share of renewable sources, particularly hydropower (Dranka & Ferreira, 2020). In Brazil, project control is essential for managing large-scale hydroelectric projects, addressing environmental considerations, and ensuring the reliability of the power supply. As the country continues to expand its energy infrastructure to meet the demands of a growing population and industrial sector, project control is crucial for optimizing the development of thermal,

wind, and solar power projects (Bayer, 2018). Effective project control practices are instrumental in mitigating risks, adhering to regulatory requirements, and fostering collaboration among stakeholders in a country striving for energy sustainability. By implementing strong project control measures, Brazil has the performance of its power projects (Dranka *et al.*, 2020).

South Africa, with its diverse energy landscape and economic significance on the African continent, faces the challenge of meeting increasing energy demands while transitioning towards a more sustainable energy mix (Lawrence, Lawrence, & Ballard 2020). Given the importance of reliable energy supply for both industrial and residential needs, effective project control is critical in optimizing costs, ensuring timely completion, and addressing environmental concerns associated with power generation. The country's commitment to renewable energy projects, as demonstrated by the Renewable Energy Independent Power Producer Procurement Program (REIPPPP), underscores the need for meticulous project control to navigate regulatory frameworks and drive the successful integration of renewable sources into the national grid (Jahns, 2023). In the context of South Africa's energy landscape, project control plays a key role in promoting energy security, sustainability, and economic growth. In Nigeria, the impact of robustly controlled projects in power initiatives has played a pivotal role, resonating across various dimensions of the nation's development. Effectively controlled projects have ensured timely completion of power projects, addressed chronic energy shortages, and bolstered the reliability of electricity supply to meet the surging demands of a growing population and expanding industries (Dertinger & Hirth, 2020). Actively mitigating risks, project control has safeguarded against technical, regulatory, and environmental challenges, ensuring the successful execution of projects for long-term sustainability within the dynamic energy sector (Edomah, Foulds & Jones, 2017). Additionally, as

Nigeria has embraced cleaner energy sources, project control has served as a catalyst for adhering to environmental standards, aligning power initiatives with global sustainability goals.

1.1.1 Project Control

A project is a unique, temporary endeavor aimed at achieving a desired outcome and project management as the process to define, plan, monitor, control, and deliver projects for realized benefits (Tereso et al., 2019). On the other hand, project control encompasses processes and activities designed to monitor, regulate, and guide the execution of a project (Kivilä, Martinsuo & Vuorinen, 2017). It involves comparing project performance and progress against the project management plan, identifying areas where changes are required, and implementing those changes to ensure project objectives are met. According to Kivilä et al. (2017), the comprehensive definition of project control therefore is application of project, program, and portfolio management processes within a governance framework, enabling organizations to undertake the right projects and execute them effectively. It serves as a proactive mechanism to identify potential issues early in the project life cycle, enabling timely corrective actions.

Effective project control is crucial for achieving project success by ensuring that projects are delivered within scope, on time, and within budget. With regard to power projects, project control takes on heightened significance due to the complexity and critical nature of the energy sector (Kermanshachi et al., 2017). The implementation of project control mechanisms is paramount in navigating the intricate landscape of power infrastructure development. The unique challenges associated with power projects, such as stringent regulatory requirements, intricate technological integrations, and the necessity for sustainable practices, necessitate a tailored approach to project control (Sabini, Muzio &

Alderman, 2019). Effective communication is a key tenet, ensuring that all parties are informed of proposed changes and their outcomes.

According to Kivilä et al. (2017), project control involves several key elements, including performance reporting, change control management, and configuration management. Performance reporting involves the systematic and regular assessment of various project aspects, including progress against milestones, budget adherence, and the attainment of key deliverables (Orgut, Batouli, Zhu, Mostafavi & Jaselskis, 2020). Through performance reporting, project managers communicate transparently with stakeholders, providing a real-time picture of the project's health. This process aids in early issue detection, allowing for timely corrective actions to be taken, fostering accountability among team members, and building trust with external stakeholders such as clients, regulatory bodies, and investors. In the context of power projects, performance reporting takes on added significance as it encompasses not only traditional project metrics but also factors related to the reliability and sustainability of power generation and distribution systems (Qazi et al., 2019).

Change control management is a systematic and disciplined approach to handling modifications to project scope, schedule, or costs. In essence, it is a safeguard against scope modification and uncontrolled alterations that can endanger project success (Butler, Vijayarathy, & Roberts, 2020). In the dynamic environment of project execution, changes are inevitable, and effective change control management ensures that each proposed change undergoes a thorough evaluation process. This process involves identifying the need for a change, assessing its impact on project objectives, costs, and timelines, and implementing it only after careful consideration and approval. In power projects, where technology evolves rapidly and regulatory requirements can change, robust change control management becomes pivotal. It not only maintains the integrity

of the project plan but also ensures that adjustments align with industry standards, technological advancements, and compliance mandates, thereby enhancing the project's adaptability (Di Silvestre, Favuzza, Sanseverino & Zizzo, 2018). Configuration management is a comprehensive approach to managing and controlling changes to a project's characteristics, encompassing documentation, hardware, software, and other components. In power projects, where intricate systems interconnect, configuration management plays a crucial role in maintaining the reliability and efficiency of power infrastructure (Larumbe, Garcia-Barruetabena, & Lopez-de-Ipina, 2021). It involves creating a structured process for managing changes to configurations, ensuring that any modifications are well-documented, approved, and implemented seamlessly. Configuration management is particularly relevant in the context of power projects as it safeguards against errors, inconsistencies, and misalignments in the configuration of critical components, contributing to the overall reliability and functionality of power generation and distribution systems.

1.1.2 Project Performance

A project constitutes a specific and time-limited initiative designed to achieve defined objectives within a set timeframe and allocated resources (Zid, Kasim & Soomro, 2020). Distinguished from continuous operations by their unique nature and well-defined goals, projects require management methodologies encompassing planning, execution, and control processes. These methodologies play a crucial role in ensuring the efficient execution of projects, the attainment of their intended objectives, and the delivery of value to stakeholders. Cicmil, Cooke-Davies, Crawford, and Richardson (2017) highlight that projects, despite varying in complexity, scale, and duration, universally share the characteristic of having a clear initiation and conclusion, setting them apart from ongoing, repetitive tasks.

Project performance involves a thorough evaluation of how efficiently and effectively a project has achieved its predetermined objectives and fulfilled established requirements. This assessment encompasses various dimensions, such as scope, schedule, budget, quality, and stakeholder satisfaction (Osei-Kyei & Chan, 2017). A successful project performance indicates adherence to the initial scope, timely accomplishment of milestones, adherence to the allocated budget, delivery of the expected quality of work, and fulfillment of diverse stakeholder needs and expectations. The primary objective of evaluating project performance is to determine the extent to which the project has fulfilled its intended goals and to pinpoint areas for improvement (Iriarte & Bayona, 2020).

Indicators of project performance encompass diverse criteria used to evaluate a project's effectiveness. These criteria include schedule adherence, assessing whether the project was completed on time and according to planned milestones (Osei-Kyei & Chan, 2017). Another crucial indicator is cost, measuring the project's financial performance in terms of budget adherence. Quality of work evaluates the standards and specifications met during project execution, while stakeholder satisfaction gauges the contentment of those involved or affected. Additionally, the effectiveness of risk management is assessed concerning how well the project handled and mitigated potential risks throughout its lifecycle, such as scope changes or unexpected issues. The achievement of specific project objectives, varying between projects, serves as a critical indicator of project success.

1.1.3 Kenya Power projects in Kiambu County

The Kenya Power and Lighting Company (Kenya Power) is the primary entity responsible for owning and operating a significant portion of the electricity transmission and distribution system in Kenya. As of 2023, the company catered to over 8 million

customers. With a vision to become Kenya's preferred energy solutions provider, Kenya Power aims to offer high-quality and reliable services that contribute to societal well-being and sustainable socio-economic development. The company's main responsibilities include strategic planning for adequate electricity generation and transmission capacity, the construction, and maintenance of power distribution and transmission infrastructure, and retailing electricity to consumers. The Kenyan government holds a controlling stake of 50.1%, while private investors own the remaining 49.9%. Additionally, Kenya Power is listed on the Nairobi Securities Exchange.

Kenya Power is actively engaged in diverse projects aimed at enhancing the nation's electricity infrastructure. Initiatives span infrastructure development, including the installation of power lines and equipment to bolster grid capacity. Electrification projects target underserved areas, extending power lines and connecting households. Renewable energy integration involves clean energy projects to diversify the energy mix. Customer service improvements focus on technology for effective interactions. Energy efficiency initiatives reduce distribution losses and promote responsible consumption. Smart grid implementation adopts technologies like smart meters, while capacity enhancement addresses the growing demand for electricity through strategic investments in generation, transmission, and distribution infrastructure. Financial reports for 2021-22 indicated an investment of Kshs.15 billion in network refurbishment and expansion, funded through internal sources and aid from multilateral financing institutions like the World Bank and IDA. To meet Vision 2030's infrastructure goals, especially in Kiambu County, Kenya Power Company aims to expand its distribution projects, acknowledging potential uncertainties and risks associated with simultaneous projects, substantial funding requirements, varying environmental conditions, and diverse project delivery systems (Njoroge, 2018). Kiambu County, being a region in central Kenya, is a focal point for

energy-related developments, considering the importance of reliable power supply for both residential and commercial purposes. The projects undertaken by Kenya Power in this county align with the broader goals of the company, which include enhancing the national electricity grid, expanding access to electricity, and ensuring the efficient functioning of the power infrastructure. The successful implementation of these projects is crucial for meeting the energy needs of the residents and businesses in Kiambu County while contributing to the overall socio-economic development of the region.

1.2 Statement of the Problem

The inherent uniqueness of power projects, coupled with their predefined timelines, poses a considerable challenge for project teams tasked with achieving successful outcomes (Yusuf, 2018). This challenge is particularly pronounced in Kenya Power projects in Kiambu County, where the execution of these projects is marred by a myriad of internal and external factors. Issues such as time constraints, cost considerations, scope definition, risk assessment, communication gaps, conflict management, and inadequate planning, compounded by infrastructure limitations, collectively hinder the attainment of project success. The central predicament underlying these challenges lies in the absence of effective project controls (Mutinda, 2022). Despite the critical importance of project control in project success, performance problems evidenced by persistent issues such as budget overruns, delay in project completion, unreliability, and operational inefficiency still persist. The overarching problem is the inability to control all project activities effectively for successful project deliveries.

As per a report from the State Department for Planning, Monitoring, and Evaluation in 2021, Kenya Power projects, notably in counties like Kiambu, have exhibited belowpar performance characterized by frequent delays and budget overruns. This pattern has led to an escalation in legal disputes, inefficient resource utilization and a failure to achieve

the envisioned outcomes. The fundamental reasons behind Kenya Power's challenges in attaining optimal project results are rooted in inadequate project control (Ndirangu, 2018). Consequently, these issues arise from deficiencies in project change control management and ineffective communication of project performance. Ineffectual project change control management is accountable for 30% to 50% of the failures, while a lack of performance tracking and reporting contributes to an additional 20% to 30% of project setbacks. Kenya Power openly acknowledges that a substantial portion of project difficulties stems from deficient project control practices (Kenya Power, 2019). This motivates this study to examine the effect of project control on the performance of Kenya Power projects in Kiambu County, Kenya.

While the existing studies provide valuable insights into various aspects of project control, there are conceptual, contextual, and methodological gaps that the current study aims to address. Boehm and Turner (2021) examined the impact of configuration management practices on achieving a balance between agility and discipline in project management and highlighted the importance of adaptable configuration management in maintaining equilibrium while Threatt (2019) focused on DoD projects, demonstrating that configuration management factors significantly impact success, with experienced professionals playing a crucial role. These studies while useful narrowed down to configuration management and conceptually failed to include other aspects of project control. Similarly, the studies by Flyvbjerg (2017) on policy and planning for large infrastructure projects; Tam, da Costa Moura, Oliveira and Varajão (2020) on factors influencing the success of on-going agile software development projects; and Wang, Ju, Jiang and Klein (2018) on effects of change control and management review on software flexibility and project performance lack a comprehensive examination of the interplay between project control and specific performance outcomes in the context of

power projects particularly Kenya Power projects in Kiambu County. The current study will to address these gaps.

1.3 Research Objective

1.3.1 Purpose of the Study

The general objective of this study was to analyze the influence of project control on performance of Kenya Power projects in Kiambu County, Kenya.

1.3.2 Research objectives

The study was guided by the following specific research objectives;

- i. To assess the influence of performance reporting on performance of Kenya Power projects in Kiambu County, Kenya.
- ii. To establish the influence of change control management on performance of Kenya Power projects in Kiambu County, Kenya.
- iii. To examine the influence of configuration management on performance of Kenya Power projects in Kiambu County, Kenya.

1.4 Research Questions

This study sought to answer the following questions:

- i. What is the influence of performance reporting on performance of Kenya Power projects in Kiambu County, Kenya?
- ii. How does change control management influence performance of Kenya Power projects in Kiambu County, Kenya?
- iii. What is the influence of configuration management on performance of Kenya Power projects in Kiambu County, Kenya?

1.5 Significance of the Study

This study on the influence of project control on performance of Kenya power projects will have significant benefits for various stakeholders involved in the energy sector. For government bodies and regulatory authorities, the findings will offer insights into refining policies and frameworks, enhancing better project control practices, and ensuring timely and cost-effective completion of power projects. This, in turn, contributes to achieving national energy goals, promoting sustainable development, and attracting investments into Kenya's power infrastructure. Power project managers and industry practitioners will benefit from a better understanding of effective project control factors. The research outcomes will provide a roadmap for optimizing resource allocation, mitigating risks, and improving overall project performance in the dynamic and challenging landscape of the Kenyan power sector. This knowledge is particularly relevant for individuals involved in power projects, offering practical guidance for maintaining project timelines and achieving success.

Investors and financiers will also stand to gain valuable insights from this study as it emphasizes the role of project control in ensuring project success. By assessing the correlation between effective project control and favorable power project outcomes, the research will provide a basis for making informed project management decisions. Local communities and end-users of electricity in Kenya will benefit from improved project success and reliable power supply resulting from enhanced project control. Timely project completion ensures access to electricity within planned budgets, positively impacting the daily lives of citizens. Moreover, researchers and academicians will find substantial value in this study as it seeks to provide a rich ground for scholarly exploration, offering new insights into project control and its influence on project performance in the distinctive context of Kenya's energy landscape. The study's

outcomes will present practical applications that will enrich curriculum content, ensuring that future professionals and scholars will be well-equipped to navigate the complexities of power projects in Kenya and other contexts at large.

1.6 Scope of the Study

The aim of this study is to analyze the influence of project control on performance of Kenya Power projects in Kiambu County, Kenya. Performance reporting, change control management and configuration management are the specific project control aspects this study will focus on. The research will adopt a descriptive design, with a particular focus on 26 Kenya Power projects in Kiambu County. The study will target 194 project managers, team members, and contractors engaged in Kenya Power projects in Kiambu County. This inclusive approach aims to explore diverse perspectives on the effect of project control, enriching insights into project dynamics and performance. Stratified random sampling will be employed to select the sample of this study. Data will be primarily gathered through semi-structured questionnaires. Descriptive and inferential techniques will be applied in analysing the data. The timeline for this study is expected to span from January to August 2024.

1.7 Limitations and Delimitations of the Study

1.7.1 Limitations

Gaining access to and securing appointments with the respondents will pose difficulties, given their busy office schedules and limited time for questionnaire completion. To address this, the researcher will proactively book appointments in advance, ensuring agreement on the most suitable times for questionnaire retrieval. Additionally, the targeted respondents may be hesitant to provide information due to concerns about potential misuse leading to intimidation or a negative portrayal. The researcher will manage this by presenting an introduction letter from the University, assuring

confidentiality and emphasizing the purely academic use of the information. The study will also face constraints in financial resources and time availability. Consequently, there might be challenges in generalizing the results if the nature of projects undertaken significantly differs from those in Kiambu County.

1.7.2 Delimitations

The study seeks to analyze the influence of project control on performance of Kenya Power projects in Kiambu County, Kenya. The study will examine the influence of performance reporting on performance of Kenya Power projects in Kiambu County; establish the influence of change control management on performance of Kenya Power projects; and examine the influence of configuration management on performance of Kenya Power projects in Kiambu County, Kenya. The study will be carried out at Kenya Power Company Kiambu County offices.

1.8 Assumptions of the Study

The study will assume that the respondents furnish accurate and reliable information for the research. Additionally, it will be assumed that there have been no significant changes in the composition of the target population that could influence the effectiveness of the study sample. The study will also operate under the assumption that respondents will be cooperative and objective in their responses to the research instruments, making themselves available to respond in a timely manner. Lastly, the study will assume that the authorities within the company will grant the necessary permission to collect data from the target population.

1.9. Definition of Key Terms

Change control management is a systematic and disciplined approach to handling modifications to project scope, schedule, or costs.

In essence, it is a safeguard against scope modification and uncontrolled alterations that can endanger project success

Configuration management is a comprehensive approach to managing and controlling

changes to a project's characteristics, encompassing documentation, hardware, software, and other components

Performance reporting involves the systematic and regular assessment of various project aspects, including progress against milestones, budget adherence, and the attainment of key deliverables

Project

refers to a unique, temporary endeavor aimed at achieving a desired outcome and project management as the process to define, plan, monitor, control, and deliver projects for realized benefits

Project control

encompasses processes and activities designed to monitor, regulate, and guide the execution of a project

Project Performance:

The measurement of a project's success based on factors like objective achievement, adherence to schedules, and compliance with budget constraints, reflecting its overall effectiveness.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides an extensive literature and research related to project control and performance of power projects. The chapter is thus structured into theoretical, conceptual

and empirical review. The study also presents the knowledge gap the study seeks to fulfill.

2.1 Theoretical Literature Review

This section discusses the theoretical foundation on which the study is anchored. The study will be grounded on agency theory, Kurt Lewin's change management model and systems theory.

2.2.1 Agency Theory

Agency theory, primarily developed by Jensen and Meckling (1976) addresses challenges arising from the separation of ownership and control within organizations. At its core, this theory explores the principal-agent relationship, where principals delegate tasks to agents, giving rise to potential conflicts of interest and information asymmetry. The foundational concepts of agency theory lay the groundwork for understanding how misalignments in objectives can lead to agency problems within organizational structures. A key argument of agency theory is that agents may not always act in the best interest of principals due to conflicting goals, leading to agency costs such as moral hazard and adverse selection (Fama & Jensen, 1983). To mitigate these costs, the theory suggests the use of contractual agreements, monitoring mechanisms, and incentive structures to align the interests of principals and agents. This perspective is valuable in comprehending the challenges inherent in the principal-agent relationship and the need for mechanisms to ensure alignment of interests.

Within the context of project management, agency theory is relevant to project performance reporting as it addresses the information asymmetry between project managers (agents) and stakeholders (principals) (Eisenhardt, 1989). Effective performance reporting serves as a mechanism to reduce agency problems by providing transparent and timely information to stakeholders. It aligns the interests of project teams

and stakeholders by fostering accountability and enhancing communication, thereby contributing to the overall success of the project. However, agency theory is not without its critics. Some argue that it oversimplifies complex organizational relationships by focusing excessively on formal contractual arrangements (Donaldson & Davis, 1991). Critics contend that the theory neglects the role of trust and social relationships in mitigating agency problems.

Despite criticism, supporters argue that agency theory provides valuable insights into designing effective governance structures to address conflicts of interest and improve organizational performance. In this study, agency theory is relevant to understanding the information needs of stakeholders. Effective project performance reporting aligns the interests of project teams and stakeholders, helping to overcome agency problems. The theory guides the exploration of how performance reporting mechanisms can be designed to enhance transparency, accountability, and communication in the management of power projects.

2.2.2 Kurt Lewin's Change Management Model

The change management model, also known as unfreeze-change-refreeze, introduced by Lewin (1947) outlines a three-step process for managing change within organizations. The first step is "unfreezing," where existing mindsets and behaviors are disrupted to prepare for change. The second step is the actual "change" itself, involving the introduction of new practices, processes, or structures. The final step is "refreezing," where the changes are stabilized and integrated as the new norm. In project management, change management model is highly applicable to the change control process. The "unfreezing" stage aligns with the recognition of the need for change, preparing project teams and stakeholders for upcoming modifications (Armenakis & Harris, 2009). The change stage involves the implementation of new project controls and adjustments, and

the "refreezing" stage ensures that the changes become ingrained in the project's culture and practices.

While the model provides a clear framework for understanding and managing change, critics argue that it may oversimplify the complexities of organizational change (Burnes, 2004). Some contend that the model's linear approach may not capture the iterative and dynamic nature of change processes. However, proponents appreciate its simplicity and applicability, especially in guiding initial steps during change initiatives. In the context of this study change management model is relevant for navigating the challenges associated with change control. Project managers can leverage this model to systematically approach changes, ensuring that the project team is adequately prepared, changes are implemented effectively, and the new processes or controls become embedded in the project's standard operating procedures (Cameron & Green, 2004).

This model therefore anchors the change control management variable of this study.

2.2.3 Systems Theory

Systems theory, pioneered by Bertalanffy (1968), views organizations as complex systems with interconnected and interdependent components. It posits that understanding the whole is essential to comprehending the functioning of its parts. Systems theory emphasizes the relationships and interactions among components, fostering a holistic perspective in addressing organizational challenges. In the realm of project management, systems theory provides a valuable lens through which to view configuration management. Project tools and equipment, considered as components of the project system, are interconnected, and changes to one component may impact the entire system. Configuration management, within this framework, becomes a systematic approach to maintaining the coherence and integrity of the project system (Stark, 2019). By acknowledging the interdependencies among various project artifacts, configuration

management ensures that changes are systematically controlled and communicated throughout the project system.

Proponents of systems theory appreciate its holistic approach, recognizing that understanding the whole system is crucial for effective management (Checkland, 1981). Within project management, systems theory guides project managers in adopting a holistic perspective when implementing configuration management processes. Project managers can leverage systems theory to recognize the broader impact of configuration changes on the overall project system, enabling them to make informed decisions that align with the project's objectives (CMMI Institute, 2017). Systems theory therefore anchors configuration management variable examined in this study.

2.2 Theoretical Framework

The theories anchoring the study variables are shown in Figure 1.

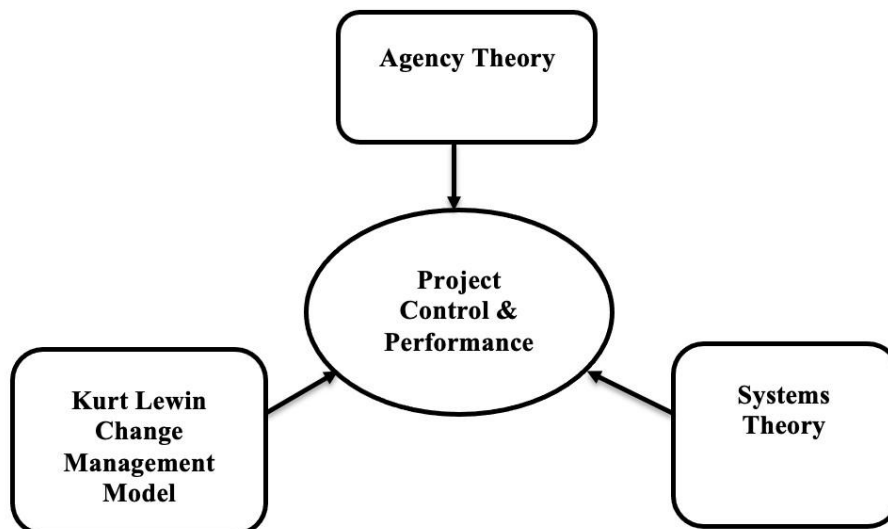


Figure 1: Theoretical Framework

Source: Researcher (2024)

2.3 Empirical Literature

2.3.1 Performance Reporting and Project Performance

In the study by Flyvbjerg (2017) on policy and planning for large-infrastructure projects: problems, causes, cures, a meta-analysis of 258 large-scale infrastructure projects was conducted across diverse sectors, involving an examination of project documentation and

reports. The primary objectives were to identify challenges in policy and planning and assess their impact on project performance. The findings uncovered that optimism bias, strategic misrepresentation, and insufficient risk assessment within project reporting were major contributors to cost overruns and delays, thereby influencing overall project performance. This study underscored the critical role of transparent reporting and risk assessment in addressing challenges inherent in policy and planning for large infrastructure projects.

Ahola, Ruuska, Artto and Kujala (2014) investigated project governance and employed a comprehensive methodology comprising literature reviews and case studies across diverse industries. The research aimed to define and comprehend project governance while evaluating its impact on project performance. The findings underscored the significance of well-defined project governance structures, revealing a positive correlation between robust governance and enhanced project performance. The study emphasized that a clear governance framework contributes to improved project reporting structures, providing valuable insights into the pivotal role governance plays in shaping successful project outcomes.

Güngör and Gözlü (2016) performed an analysis of the links between project success factors and project performance. Employing a comparative analysis methodology, they integrated quantitative performance metrics and qualitative interviews with project teams across 30 construction projects. The primary objectives were to scrutinize the relationship between specific elements of performance reporting, including frequency and format, and the success of construction projects. The findings revealed that projects employing regular and visually oriented performance reporting formats achieved heightened levels of stakeholder satisfaction, consequently contributing to superior overall project performance.

Tam, da Costa Moura, Oliveira and Varajão (2020) studied the factors influencing the success of on-going agile software development projects. One of the primary objectives was to explore the evolution of performance reporting practices and understand their impact on project success over time. The findings uncovered a positive correlation between the ongoing enhancement of performance reporting practices and sustained project success. Projects that actively adapted and refined their reporting processes demonstrated superior long-term performance outcomes.

In their study on the impact of performance reporting on project success, Nguyen et al, (2019) employed a quantitative approach to investigate the relationship between performance reporting practices and project success. The methodology involved surveying 150 project managers across various industries in Nepal. The specific objectives aimed to examine how the frequency and accuracy of performance reporting influenced overall project success. The findings indicated a positive correlation between the frequency and accuracy of performance reporting and project success. Projects with more frequent and accurate reporting tended to exhibit better overall performance outcomes.

2.3.2 Change control management and Project Performance

Wang, Ju, Jiang and Klein (2018) explored the effects of change control and management review on software flexibility and project performance. This study explored the delicate balance between software flexibility and project efficiency in software development. The research investigated the relationship between project performance, software flexibility, and management interventions, specifically examining the mediating role of software flexibility between management control mechanisms (management review and change control) and project success. The empirical evaluation, based on data collected from 212 project managers in the Project Management Institute, confirmed that effective control

activities during system development significantly facilitated software flexibility. This flexibility, in turn, contributed to enhanced project success. The findings suggested that higher levels of controls could lead to increased software flexibility, benefiting not only the maintainability of complex applications but also overall project performance. Kivilä, Martinsuo and Vuorinen (2017) aimed to identify control practices for sustainable project management, addressing ethical, eco-friendly, and economically efficient aspects throughout a project's life cycle. Employing a qualitative single-case study on a large infrastructure project, specifically a road tunnel construction in a demanding environment with multiple stakeholders in an alliance contract, the research explored sustainable project management practices. Findings revealed the implementation of a holistic control package, incorporating various control mechanisms for different sustainability dimensions. Sustainable project management included internal project control, sustainable project governance, and activation of innovation opportunities through the alliance contract, contributing to economic, environmental, and social sustainability.

Obare, Kyalo, Mulwa and Mbugua (2018) adopting a pragmatism paradigm and correlational survey design, investigated the influence of project team experience diversity on the relationship between the implementation process of project control systems and the performance of rural roads construction projects in Kenya. Results indicated a significant relationship between project control system implementation and project performance, but the interaction with project team experience diversity did not significantly affect this relationship. The study recommended encouraging, communicating, and sharing project team experience diversity to achieve high project performance. Ali, Hussain and Al-Ayesh (2022) underscored the inevitability of changes in projects and emphasized the crucial role of a systematic approach in controlling and

mitigating their adverse impact on project performance. The study focused on the significance of well-managed change control. The findings revealed that inadequate change control management had the potential to cause cost overruns and schedule delays. Therefore, change management systems were proposed to proactively address potential changes through preventive measures and corrective actions, minimizing negative impacts.

Stasis, Whyte and Dentten (2013) conducted a critical examination of change control processes in project management. They reviewed studies on change control processes in construction to inform future research and began by defining and distinguishing change-related terms, including variations, change orders, change management processes, and control. The review identified two streams in the literature: one empirically describing change order causes and effects, and the other developing new models for managing change processes. The findings indicated the timely implementation of control management principles, particularly in major projects like Crossrail. While existing model-building work offers a starting point, the paper emphasized the need for more empirically grounded research to examine, test, and extend control management principles.

2.3.3 Configuration Management and Project Performance

Boehm and Turner (2021) aimed to assess the influence of configuration management practices on achieving a harmonious balance between agility and discipline in project management. Employing a comparative analysis methodology across projects utilizing both agile and plan-driven methods, the research shed light on the vital role of adaptable configuration management. The findings underscored that an agile and flexible approach

to configuration management significantly contributes to achieving equilibrium between the agility required for adaptability and the discipline essential for structured project execution.

Barbosa et al, (2021) delved into the challenges of executing open innovation projects in R&D, examining them through the project management lens with a focus on the external partner's nature as a contingent factor. Through a qualitative fuzzy-set comparative analysis of 50 R&D open innovation projects, the research introduced a contingent project management approach, contrasting it with the traditional best practice model. Findings revealed that certain practices previously linked to lower performance, when considered in a configuration view, formed combinations leading to high performance in R&D projects. This study advocates for a configurational perspective in project management, challenging the notion that a universal approach suits all situations.

Joslin and Müller (2016) aimed to qualitatively validate a theoretically derived research model, exploring methodologies, their components, and their influence on project success. Employing a deductive approach, the research conducted 19 interviews across 11 industrial sectors and four countries to collect data. The analysis utilized patternmatching techniques to deductively validate the research model. The findings indicated a positive relationship between project methodology elements and project success characteristics. However, environmental factors, particularly project governance, were identified as influencing the utilization and effectiveness of project methodologies and their elements, subsequently impacting the characteristics of project success.

Threatt (2019) focused on the increasing importance of configuration management in DoD projects, evaluating the relevance of factors influencing the success of the configuration management process. The research also investigated the correlation

between years of experience and academic qualifications of configuration management professionals supporting DoD projects and the criticality of these factors. Hypothesis testing revealed that all facilitating and obstructing factors significantly impacted the success of the overall configuration management process in DoD projects. Additionally, positive correlations were identified between years of experience and the criticality of specific facilitating factors, including management support, previous configuration management experience, professional development, and effective support from stakeholders.

2.4 Conceptual Framework

A conceptual framework is a model that presents and explains the relationship between various variables. In a conceptual framework there are two types of variables: dependent variable and independent variable. In this study, independent variables are; performance reporting, change control management and configuration management while performance of projects is the dependent variable. The indicators of each of these variables are presented in Figure 2.

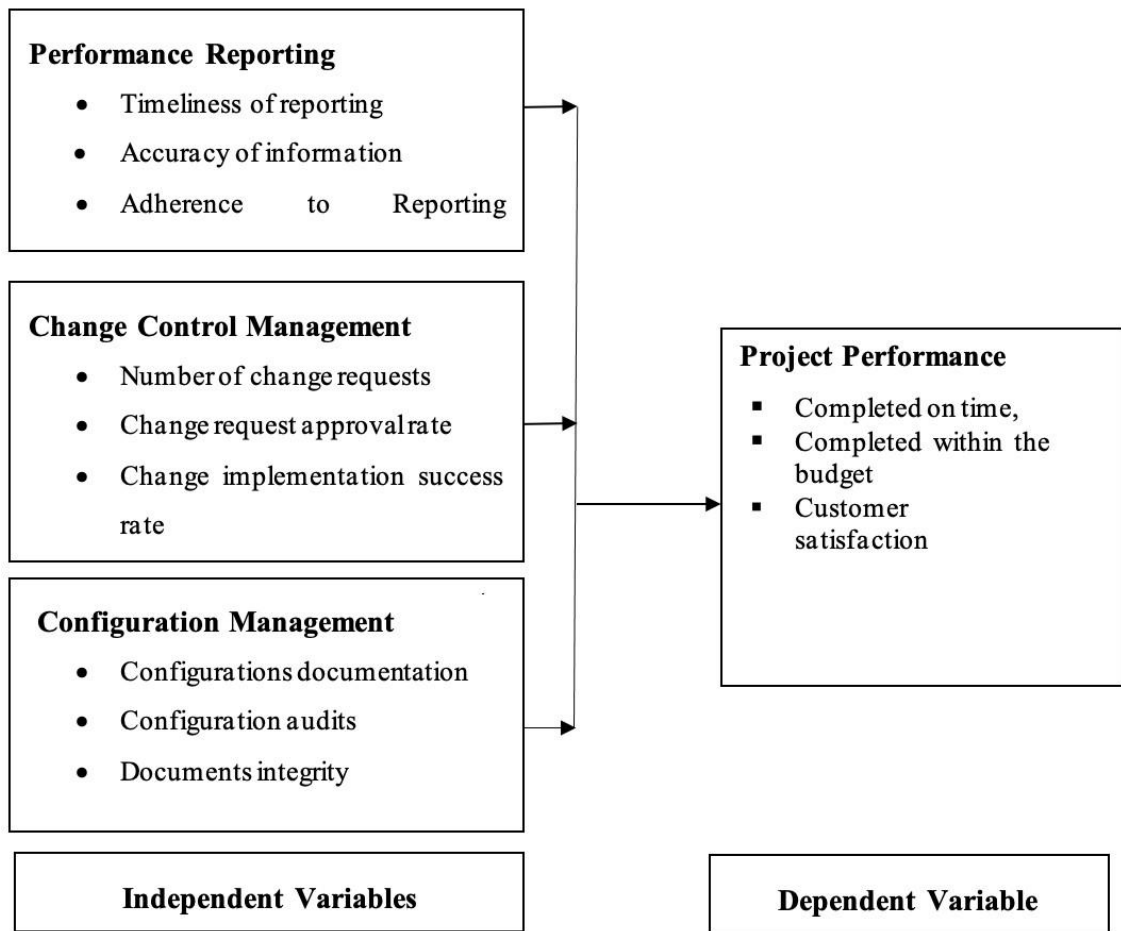


Figure 2: Conceptual Framework

Source: Researcher (2024)

2.5 Research Gaps

While the existing studies provide valuable insights into various aspects of project management, including infrastructure projects, project governance, success factors, agile software development, change control, and sustainable project management, there are conceptual, contextual, and methodological gaps that the current study aims to address. Conceptually, the prior research focuses on diverse elements of project management but often lacks a comprehensive examination of the interplay between project control and specific performance outcomes in the context of power projects in a particular geographical setting, such as Kenya Power projects in Kiambu County. Each study, while contributing to the broader understanding of project management, does not specifically delve into the unique challenges and dynamics associated with power projects in the

specified region. Contextually, the existing literature spans various industries, sectors, and geographical locations, resulting in a broad but sometimes generalized understanding of project management practices. The current study aims to bridge this gap by grounding the research objectives in the specific context of Kenya Power projects in Kiambu County. This localized approach ensures a more targeted investigation into the challenges and opportunities unique to the power projects in this region.

Methodologically, the prior studies employ diverse research methodologies, including meta-analysis, qualitative case studies, surveys, and comparative analyses. While each method offers valuable insights, the current study seeks to employ a mixed-methods approach that combines quantitative and qualitative techniques. This comprehensive methodology allows for a more nuanced understanding of the influence of project control on the performance of Kenya Power projects, considering both quantitative metrics and qualitative perspectives from project teams and stakeholders. Moreover, the current study aims to contribute to the gap in the literature by specifically addressing the influence of performance reporting, change control management, and configuration management on the outcomes of Kenya Power projects. By focusing on these specific variables within the unique context of Kiambu County, the study endeavors to provide actionable insights that can inform project management practices in the power sector in this specific region. Overall, the current study seeks to build upon the foundation laid by prior research and contribute a tailored and contextually relevant perspective to the understanding of project control and its impact on performance in the context of Kenya Power projects in Kiambu County.

2.6 Summary of Literature Reviewed

This section reviews theories and empirical studies on the theme of this study. The theoretical review focuses on three key theories shaping the study on project control and

performance: agency theory, emphasizing the principal-agent relationship and information gaps; Kurt Lewin's change management model, guiding the exploration of change control management in a systematic three-step process; and systems theory, viewing organizations as interconnected systems and guiding the holistic perspective in configuration management. While agency theory addresses stakeholders' information needs and governance structures, Lewin's model aids in understanding and embedding changes, and systems theory provides a comprehensive view of configuration management.

This section also analyzes studies done globally on project control and project performance. The studies collectively contribute insights into project control and performance, addressing diverse aspects from governance structures to change control management and configuration practices. Findings emphasize the critical role of transparent reporting, stakeholder engagement, and adaptable management approaches for successful project outcomes. However, there are clear gaps which this study seeks to fill. Conceptually, they lack a comprehensive examination of project control's interplay with specific performance outcomes, particularly in Kenya Power projects in Kiambu County. Contextually, the broad literature covers various industries lacking specificity and are not done locally. The current study aims to address these gaps by focusing on the unique challenges of power projects in Kiambu County. Methodologically, it will adopt a mixed-methods approach, combining quantitative and qualitative techniques.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the methods that will be employed to gather information in the study area, including research design, target population, sampling, data collection, instrument validity and reliability, data analysis, and ethical considerations.

3.1 Research Design

A research design constitutes a study's blueprint. The study will employ a descriptive research design, chosen for its ability to portray accurately the characteristics of individuals, situations, or groups. This approach, as outlined by Gorard (2013), serves as a blueprint for data collection, measurement, and analysis, ensuring a coherent and logical integration of study components. Descriptive research focuses on determining the frequency of occurrences or relationships between variables. The chosen design allows for generalizing findings to a broader population, presenting facts about the existing situation and providing insights into ongoing practices, beliefs, and trends. This approach aligns with the study's goal of collecting comprehensive information through descriptive methods for variable identification, as suggested by Avoke (2015).

3.2 Target population

According to Casteel and Bridier (2021), a population refers to a clearly defined group of individuals, elements, events, or even a collection of items or residences under investigation, with the aim of drawing general conclusions from the findings. This study will focus on ongoing and completed Kenya Power projects in Kiambu County. The target population for this study will therefore involve 194 project managers, project team members and contractors involved in Kenya Power projects in Kiambu County.

The inclusion of project managers, team members and contractors will ensure a comprehensive exploration of diverse perspectives in the study on the influence of project control on performance of Kenya Power projects. This multi-stakeholder approach will aim to capture insights from key roles, enriching the understanding of project control dynamics and performance. Table 1 summarizes the distribution of this study's target population.

Table 1: Target Population

Category	Target population	Percentage (%)
Project managers	26	13.6
Project team members	121	62.4
Contractors	47	24.2
Total	194	100

Source: Kenya Power and Lighting Company, Kiambu County Offices

3.3. Sampling Technique and Sample Size

Sampling is a deliberate choice of a number of people who are to provide the data from which a study drew conclusions about some larger group whom these people represent. The section focuses on the sampling size and sampling procedures. The sample size is a subset of the population that is taken to be representatives of the entire population (Kumar, 2011). A sample population is arrived at by calculating the target population of 194 with a 95% confidence level and an error of 0.05 using the Nassiuma (2000) formula

as shown: $n = [N(CV)^2] / [CV^2 + (N-1) e^2]$

Where n = sample size

N = population (194)

CV = coefficient of variation (0.3) e = tolerance of desired level of

confidence (0.02) at 95% confidence level)

$n = (194(0.3*0.3)) / ((0.3*0.3) + 193(0.02*0.02))$ $n \approx 104$

The sample size of this study will thus be 104 respondents and the heterogeneous nature of the population call for use of stratification sampling to fill the need to cater for characteristics of each class as shown in table 2.

Table 2: Sample Distribution

<u>Category</u>	<u>Target population</u>	<u>Percentage (%)</u>	<u>Sample Size</u>
Project managers	26	13.6	14
Project team members	121	62.4	64
Contractors	47	24.2	26
Total	194	100	104

Source: *Researcher Calculation, 2024*

3.4 Research Instrument

In research, a data collection instrument refers to a tool that defines and formalizes the process of gathering data. These instruments, typically written, are directly given to subjects for data collection or offer an objective description of specific data collection methods. Self-administered questionnaires will be employed to gather primary data, incorporating both open-ended and closed-ended questions. Open-ended questions will aim to elicit detailed and unrestrained responses, while closed-ended questions will provide limited predefined response options. This approach, as per Saunders (2011), balances profound respondent insights with ease of evaluation. Questionnaires are chosen for efficiency, cost-effectiveness, and ease of analysis in their readily usable format.

3.5 Pilot Test of Research Instruments

Conducting a pilot study involves undertaking a preliminary investigation, where the entire research process is applied to a small sample (Malmqvist, Hellberg, Möllås, Rose & Shevlin, 2019). An extensive pilot study is essential as it refines the data collection instrument, assessing its reliability and validity. The importance of field-testing a finalized questionnaire before the actual data collection. Kaifeng et al. (2008) suggest using subjects not recruited for the main study in a pilot to avoid potential bias is heavily recommended in research. Connelly (2018) recommends a pilot sample of 510% of the

larger parent study's projected sample. Prior to the main study, a pilot will be conducted with 10% of the sample size (10 respondents) from Kenya Power in Nairobi County. This process aims to refine the questionnaire, improve its clarity, and reduce the likelihood of misinterpretation during the main study.

3.6 Validity and Reliability of Research Instrument

3.6.1 Validity

The study will assess validity using content validity, ensuring accuracy and meaningful inferences (Golafshani, 2012). Content validity, employed in this research, measures the degree to which collected data represents a specific domain. The pilot study's main objective is to confirm the questionnaire's validity. Gillham (2011) highlights the importance of expert opinion in ensuring representativeness. Seeking feedback from supervisors, lecturers, and professionals will improve content validity, aligning questions with the larger knowledge domain.

3.6.2 Reliability

Reliability of an instrument signifies its freedom from bias, ensuring consistent and error-free measurements across time and items (Bell, 2010). It gauges the stability and consistency of the instrument in measuring a concept, assessing its overall quality. Reliability questions the repeatability of study results. The questionnaire, which will be administered to a pilot group of 10 randomly selected respondents, will assess tool reliability using the split-half method (Gay, 2012) and calculate the whole test reliability through the Spearman Brown correlation formula. A construct composite reliability coefficient of 0.7 or above, as per Rousson, Gasser, and Seifer (2012), will be deemed adequate for this study.

3.7 Proposed Data Collection Methods and Procedures

The study will employ questionnaires for primary data collection, chosen for their suitability in a descriptive study due to ease of administration, quick delivery, and respondent convenience. Questionnaires will be self-administered using a drop-and-pick-later method. The researcher will deliver the questionnaire, allowing respondents a maximum of 5 days to complete it before collection for analysis. Participants will be assured of strict confidentiality, sealing completed questionnaires in provided envelopes marked "questionnaire" and thesis topic to safeguard against potential victimization. The questionnaires will be administered through designated officers, ensuring a conducive environment and following an agreed schedule. A permit from NACOSTI will be secured before data collection exercise.

3.8 Proposed Data Analysis Techniques and Procedures

The analysis of data will be conducted through the utilization of the Statistical Package for Social Sciences (SPSS Version 25.0). Upon receipt of questionnaires, each will be assigned a reference, and the questionnaire items will be coded to streamline the data entry process. Following data cleaning, which involves error checking in data entry, descriptive statistics including frequencies, percentages, mean scores, and standard deviation will be computed for all quantitative variables. The resulting information will be presented in tabular form. Qualitative data obtained from open-ended questions will undergo thematic content analysis and be presented in a narrative format.

Inferential data analysis will employ multiple regression analysis to establish relationships between independent and dependent variables. The choice of the multiple regression model is motivated by its utility in determining the relative importance of independent variables to the dependent variable (Bryman & Cramer, 2012). The significance of these variables is inferred from standardized regression coefficients

(beta-weights), indicating the relative impact of independent variables on the dependent variable. Positive and negative signs associated with the coefficients denote positive and negative impacts, respectively (Park, 2008). Furthermore, the dependent variable should be measured at a continuous level, aligning with the nature of this study's three independent variables. The multiple regression model will be represented by the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where;

Y= Project Performance

X₁ = Performance reporting

X₂= Change control management

X₃= configuration management

ϵ
= Error term, β_0 = regression constant

or intercept $\beta_1, \beta_2, \beta_3, \beta_4$ are the
unknown parameters

The significance levels for all tests will be set at a 95% confidence level with two-tailed analysis. The results will be presented in the form of figures and tables.

3.9 Ethical Considerations

Ethics in research involve adhering to norms and standards guiding moral choices in behavior and relationships with others. It is the appropriateness of behavior concerning the rights of those involved in or affected by the study. The researcher will uphold specific standards of behavior to safeguard the rights of subjects. Relevant authorization and permits such as NACOSTI will be obtained before proceeding to the field, and consent will be sought from concerned parties whose interests might be impacted by the

research. Copies of the research permit will be provided to research assistants assisting in data collection. The researcher will avoid plagiarism by acknowledging sources for all information from others through accurate and specific references, footnotes, or the use of quotation marks. Participants will make an informed decision to participate based on adequate knowledge of the study. The researcher will provide participants with information on the purpose, duration, procedure of the study, risks, benefits, and the extent of privacy and confidentiality. Voluntary and informed consent will be obtained from each participant, either through signing a consent form or providing verbal consent. Participants will be assured of privacy, confidentiality, and the right to withdraw from the study at any time without consequences. The research team will maintain confidentiality, anonymity, and avoid any form of deception. The data collected will be well stored and used only for academic purposes.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis and discussion of the data collected from the research respondents, focusing on the influence of project control on the performance of Kenya Power projects in Kiambu County. The analysis is based on the response rate, sociodemographic characteristics, and data related to performance reporting, change control management, and configuration management. This chapter discusses how these variables impact the performance of the projects, providing interpretations, comparisons, and discussions aligned with existing literature.

4.2 Response Rate

The response rate is a critical component of data analysis, as it determines the reliability and generalizability of the study's findings. In this study, a total of 104 questionnaires were distributed to project managers, project team members, and contractors involved in Kenya Power projects in Kiambu County. Out of the 104 distributed questionnaires, 89 were fully completed and returned, representing an overall response rate of 85.6%. This is considered a high response rate and strengthens the validity of the study.

According to Fincham (2008), a response rate above 70% is generally acceptable in survey research, indicating that the findings can be considered reliable and representative of the population under study. The high response rate can be attributed to the personal distribution of questionnaires and the follow-up efforts made to ensure participants responded. A breakdown of the response rate by category shows that the project managers had the highest response rate, with 13 out of 14 questionnaires returned (92.9%). Project team members followed closely with 58 out of 64 questionnaires

returned (90.6%), and contractors had a response rate of 71.2%, with 18 out of 26 questionnaires returned.

Overall, the high response rate ensures that the data collected is reflective of the population targeted in this study, providing a robust basis for subsequent analysis.

4.3 Socio-Demographic Characteristics

Table 3: Socio-Demographic Characteristics of Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	61	68.5
Female	28	31.5
Age		
25-34 years	20	22.5
35-44 years	35	39.3
45-54 years	26	29.2
55 years and above	8	9.0
Educational Qualification		
Diploma	15	16.9
Bachelor's Degree	39	43.8
Master's Degree	28	31.5
Doctorate or Ph.D.	7	7.9
Other	0	0
Experience in Project Management		
Less than 1 year	5	5.6
1-5 years	28	31.5
6-10 years	41	46.1
Over 10 years	15	16.9

The socio-demographic data gathered from the respondents provide insights into the diversity of the participants and help in understanding the different perspectives on project control. A closer look at gender reveals that a majority of the respondents (68.5%) were male, while 31.5% were female. This finding aligns with industry trends in Kenya, where men are more likely to be employed in technical and project management roles in sectors like energy (Mungai & Kariuki, 2020). Although gender inclusivity is improving,

women are still underrepresented in these fields, suggesting an opportunity for Kenya Power and similar organizations to promote gender diversity in project management.

The age distribution of respondents indicates that most participants were between the ages of 35 and 44 years (39.3%), followed by those aged 45-54 years (29.2%), and 25-34 years (22.5%). This age range highlights a workforce that is relatively experienced, with many respondents likely having significant professional experience in project management. Only 9% of the respondents were aged 55 and above, suggesting that the energy sector is dominated by younger professionals, which may have implications for project continuity and knowledge transfer as older professionals retire (Njogu & Gikunda, 2019).

In terms of educational qualifications, the data shows that most respondents hold at least a Bachelor's degree (43.8%), with 31.5% having attained a Master's degree. The number of respondents with a Doctorate or Ph.D. was 7.9%, which, although low, indicates a presence of highly specialized professionals within the projects. The majority of respondents with advanced education are likely to hold senior positions such as project managers or contractors, reflecting the correlation between education and career progression in the energy sector. The relatively high proportion of respondents with advanced degrees aligns with global trends where project management increasingly demands higher educational qualifications to manage complex infrastructure projects (Project Management Institute, 2021).

Experience in project management is another key variable, with most respondents (46.1%) having between 6 and 10 years of experience. This suggests that many of the respondents are seasoned professionals who have managed multiple projects, likely providing valuable insights into the impact of project control on performance. A smaller proportion of respondents (16.9%) have over 10 years of experience, which adds an

additional layer of expertise to the analysis. Conversely, only 5.6% of respondents had less than one year of experience, indicating that the majority of the study participants have substantial exposure to project management processes.

The socio-demographic data suggest that the respondents are well-qualified to provide informed opinions on the subject of project control. The diversity in gender, age, education, and experience ensures that the findings reflect a broad range of perspectives, increasing the reliability of the study. Additionally, the distribution of these characteristics aligns with similar studies conducted in the energy and infrastructure sectors, ensuring that the findings can be compared with existing research (Pinto, 2020).

4.4 Performance Reporting and Project Performance

Table 4: Performance Reporting and Project Performance Table

Statement	Sa	A	NSD	SD	Mean	Std Dev	
Reports are consistently delivered within the agreed-upon timeframes.	40	35	85	1	4.22	0.85	
Information in reports accurately reflects the current project status.	42	30	105	2	4.17	0.80	
Project reports consistently follow established reporting standards.	35	40	8	4	4.12	0.81	
Stakeholders are satisfied with the content and frequency of project reports.	30	45	7	of 4	3	4.06	0.83
Reports provide a comprehensive overview of all relevant project aspects.	28	50	53	3	4.11	0.79	
Information in reports is actionable, facilitating informed decision-making.	37	35	10	4	3	4.12	0.78
Reports consistently align with predefined project objectives and goals.	33	38	86	4	4.06	0.84	

Overall communication effectiveness of reports meets or exceeds expectations.	36	39	74	3	4.12	0.82
The project team responds promptly to issues identified in the reports.	32	40	8	in6	3	4.06 0.83
Reports include insightful trend analyses aiding in predicting project developments.	34	38	95	3	4.09	0.80

Performance reporting is a fundamental component of effective project management, serving as a communication tool between project teams and stakeholders. The responses to the statements related to performance reporting indicate a generally positive perception of reporting practices in Kenya Power projects in Kiambu County. The data not only highlights the mean scores but also provides insights into the variability of responses, as indicated by the standard deviation (SD).

Timeliness, as reflected in Statement 1, shows a mean score of 4.22 with a standard deviation of 0.85. The relatively low standard deviation indicates that most respondents had similar views regarding the timeliness of report deliveries. High levels of agreement on this aspect suggest that Kenya Power has established effective processes for ensuring reports are delivered on time. Timely reporting is essential, as it allows for proactive management of issues and ensures that project objectives are met within the planned schedules.

The mean score of 4.17 and a standard deviation of 0.80 for Statement 2 indicate a strong consensus among respondents that project reports accurately reflect the current status. A low standard deviation suggests that most respondents are aligned in their perception of the accuracy of reporting. This accuracy is vital for informed decisionmaking, as any inaccuracies can lead to misguided strategies and poor project performance.

Statement 3, with a mean score of 4.12 and an SD of 0.81, reflects that respondents generally agree that reports follow established standards. A standard deviation close to 1

indicates some variability in responses, suggesting that while most perceive adherence to standards positively, there may be areas for improvement or differing opinions on the extent of compliance. Adhering to standardized reporting processes ensures clarity and consistency, which are critical in evaluating project performance effectively.

Stakeholder satisfaction, as assessed in Statement 4, yielded a mean of 4.06 and an SD of 0.83. This implies that while many stakeholders are satisfied with the content and frequency of reports, there is some variability in satisfaction levels. Addressing the needs of all stakeholders can be challenging, especially in large projects. The data suggests that continuous feedback from stakeholders could enhance satisfaction levels further, ensuring that reports meet their diverse informational needs.

In Statement 6, the mean score of 4.12 and an SD of 0.78 indicate that respondents largely agree that reports contain actionable information. A lower SD suggests that the respondents are aligned in their belief about the practicality of the reports. Actionable reports are crucial for effective decision-making, as they enable project teams to respond promptly to challenges and optimize resources.

The overall effectiveness of communication, measured in Statement 8, has a mean score of 4.12 and an SD of 0.82. This score reflects a strong perception of communication effectiveness within the reporting framework. Effective communication through reports ensures that all stakeholders are informed and can make decisions based on the most current and relevant information.

4.5 Control Change Management and Project Performance

Table 5: Control Change Management and Project Performance Table

Statement	SA	A	NS	D	SD	Mean	Std Dev
Projects experience an appropriate number of changes.	25	50	12	10	7	3.89	0.92
Project changes are systematically reviewed and approved in a timely manner.	30	45	10	12	74.03	0.87	

Change requests are processed within the defined timeframes.	32	48	8	10	6	4.05	0.85
The impact assessment of project changes accurately predicts project effects.	28	42	15	10	93.88	0.90	
The project actively monitors and addresses scope creep resulting from changes.	35	40	10	8	11	4.01	0.82
Statement	SA	A	NS	D	SD	Mean	Std Dev
Changes are successfully implemented without causing adverse project impacts.	30	45	12	8	9	3.92	0.88
Changes are managed to avoid significant budget deviations.	29	44	11	12	8	3.85	0.91
Stakeholders are satisfied with the management of project changes.	31	41	9	10	13	3.83	0.93
Emergency changes are infrequent, indicating proactive change management.	28	42	10	14	10	3.79	0.95
Change-related documentation is consistently complete and accurate.	27	45	8	11	13	3.81	0.94

Control change management is a critical aspect of project management that ensures that changes to the project scope, timelines, and budgets are effectively managed to minimize disruptions and maintain project performance. The responses to the statements concerning change management in Kenya Power projects provide valuable insights into the perceived effectiveness of change control processes.

In Statement 1, with a mean score of 3.89 and a standard deviation of 0.92, respondents indicated a general agreement that projects experience an appropriate number of changes. A standard deviation exceeding 0.90 suggests varied opinions among respondents regarding the frequency of changes. This variability may stem from differing experiences across projects or teams. While some may feel that the number of changes is manageable,

others may perceive it as excessive. Effective change management should aim to strike a balance between necessary adjustments and stability in project execution.

The mean score of 4.03 and a standard deviation of 0.87 for Statement 2 indicate that respondents largely agree that change requests are systematically reviewed and approved in a timely manner. The lower standard deviation reflects a strong consensus among respondents, suggesting that timely processing of change requests is a strength in the change management processes of Kenya Power projects. Timely approvals are crucial for maintaining project momentum and avoiding delays caused by pending changes.

For Statement 3, which evaluates the processing of change requests, a mean score of 4.05 and a standard deviation of 0.85 indicate positive perceptions regarding the efficiency of this process. Respondents believe that change requests are generally processed within defined timeframes, contributing to overall project performance. Effective processing of change requests helps in minimizing disruptions and maintaining stakeholder confidence in project management.

Statement 4 yielded a mean score of 3.88 and an SD of 0.90, indicating that while respondents agree on the importance of accurate impact assessments, there is room for improvement. The variability in responses suggests that some respondents may have experienced challenges in the prediction of project effects resulting from changes. Accurate impact assessments are vital for making informed decisions and ensuring that changes do not adversely affect project outcomes.

The mean score of 4.01 with an SD of 0.82 for Statement 5 suggests that respondents feel that projects actively monitor and address scope creep resulting from changes. Effective monitoring of scope creep is essential in managing project boundaries and ensuring that project objectives are met. The consensus in this area indicates a proactive approach to change management, which is beneficial for maintaining project focus.

In Statement 6, the mean score of 3.92 and an SD of 0.88 highlight that respondents believe changes are generally implemented successfully without causing adverse impacts. A higher mean score indicates confidence in the change implementation processes, which is essential for project success. Successful implementation of changes requires effective communication, training, and resource allocation to minimize disruptions.

The data for Statement 7, with a mean of 3.85 and an SD of 0.91, suggests that while there is a belief that changes are managed to avoid significant budget deviations, there is still variability in responses. Budget management is critical in change management, as unplanned changes can lead to cost overruns. The variability suggests that some projects may struggle more than others with budget management, indicating a need for enhanced training or resources in financial oversight during changes.

For Statement 8, which assesses stakeholder satisfaction with change management, a mean score of 3.83 and an SD of 0.93 indicate moderate satisfaction levels. The variability here suggests that while many stakeholders are satisfied, others may feel that their needs are not fully met regarding change management processes. Continuous engagement with stakeholders during the change process is essential to ensure their concerns are addressed and expectations are managed.

Statement 9, with a mean score of 3.79 and an SD of 0.95, indicates that emergency changes are perceived as infrequent, suggesting effective proactive change management strategies are in place. Minimizing emergency changes is essential as they can disrupt project schedules and budgets. This finding reflects positively on the overall change management approach.

Finally, Statement 10 shows a mean score of 3.81 and an SD of 0.94, indicating that while change-related documentation is generally complete and accurate, there is still room for

improvement. Accurate documentation is crucial in change management, as it provides a record of changes made, the reasons for those changes, and their impacts on the project. Ensuring that all changes are well-documented can enhance accountability and facilitate better future project planning.

4.6 Configuration Management and Project Performance

Table 6: Configuration Management and Project Performance Table

Statement	SA	S	NS	D	SD	Mean	Std Dev
Presence of clearly documented and defined 30 configurations for key project elements.	45	12	10	7		4.03	0.85
Existence of formalized processes for requesting, reviewing, approving, and implementing changes to 28 configurations.	50	10	12	4		3.86	0.90
Activation and utilization of a configuration control 27 board to oversee and approve changes.	42	15	11	9		3.76	0.92
Regular establishment and documentation of 29 configuration baselines at key milestones.	48	10	9	8		3.89	0.88
Implementation of version control mechanisms to track 32 changes and updates.	40	10	12	10		3.84	0.91
Regular audits to assess accuracy, completeness, and 30 compliance with baselines.	41	11	13	9		3.82	0.90
Maintenance of accurate and up-to-date documentation 35 for project configurations.	40	9	11	9		3.91	0.86
Adoption of processes for conducting impact analyses 28 before implementing changes.	45	11	12	8		3.78	0.93
Clear and effective communication with stakeholders 31 regarding configuration changes.	42	8	10	13		3.83	0.94
Utilization of a configuration management system or any tool to facilitate tracking, storage, and retrieval of 29 configuration-related information.	44	10	11	10		3.80	0.92

Configuration management (CM) is vital for ensuring that project elements are systematically documented, tracked, and controlled throughout the project lifecycle. The responses related to configuration management in Kenya Power projects highlight the effectiveness of existing practices and areas that require attention.

Statement 1 addresses the presence of clearly documented configurations for key project elements, yielding a mean score of 4.03 and a standard deviation of 0.85. This positive

perception indicates that respondents believe that configuration documentation is generally well-handled. Clear documentation is essential for maintaining project integrity, as it serves as a reference point for all stakeholders and facilitates effective communication.

The mean score of 3.86 and an SD of 0.90 for Statement 2 suggest that while there are formalized processes for requesting and approving configuration changes, there remains a degree of uncertainty among respondents. This variability could indicate that while some teams follow established procedures, others may lack consistency. Formal processes are crucial for managing changes effectively, and any gaps in their implementation can lead to confusion and errors.

In Statement 3, the mean score of 3.76 and an SD of 0.92 reflect a more cautious view regarding the activation and utilization of a configuration control board. A lower mean score indicates that some respondents may not see the board as a regular practice, potentially impacting the oversight of configuration changes. The configuration control board is instrumental in ensuring that changes are appropriately reviewed and approved, contributing to project success.

Statement 4, which examines the regular establishment and documentation of configuration baselines, achieved a mean score of 3.89 and an SD of 0.88. This finding underscores the importance of having baselines in place to measure project performance against defined standards. Regular documentation of baselines helps ensure that all project stakeholders have a clear understanding of the project's configuration status at any given time.

The responses to Statement 5 reveal a mean score of 3.84 with an SD of 0.91 regarding the implementation of version control mechanisms. Effective version control is crucial for tracking changes and ensuring that all team members are working with the most

current information. This finding suggests that while version control practices are in place, there may be variations in their effectiveness or adherence across different projects.

With a mean of 3.82 and an SD of 0.90 for Statement 6, respondents indicate a general agreement that regular audits are conducted to assess the accuracy and completeness of configurations. Auditing is an essential process for identifying discrepancies and ensuring compliance with established standards. This finding suggests that Kenya Power projects prioritize maintaining accurate configurations, which contributes to overall project performance.

Statement 7 reflects a mean score of 3.91 and an SD of 0.86, suggesting that the maintenance of accurate and up-to-date documentation is perceived positively. Proper documentation is vital for facilitating communication among stakeholders and ensuring that everyone is aware of the current configuration status. The high mean score indicates that Kenya Power's commitment to documentation contributes to effective project management.

For Statement 8, the mean score of 3.78 and an SD of 0.93 indicate that there is room for improvement in adopting processes for conducting impact analyses before implementing changes. Conducting thorough impact analyses is essential for understanding the potential consequences of changes on project performance and outcomes. The variability in responses suggests that some teams may not consistently follow this practice.

The mean score of 3.83 and an SD of 0.94 for Statement 9 highlight the importance of clear and effective communication with stakeholders regarding configuration changes. Effective communication is vital for managing expectations and ensuring that stakeholders are informed about changes that may affect them. This finding reflects positively on the efforts of Kenya Power in maintaining stakeholder engagement. Finally,

Statement 10 shows a mean score of 3.80 and an SD of 0.92, indicating that while there is a general perception of utilizing configuration management systems, the responses suggest a need for further emphasis on ensuring that these tools are effectively leveraged. Configuration management systems are essential for facilitating tracking, storage, and retrieval of configuration-related information, thereby improving overall project performance.

4.7 Performance of Kenya Power Projects

Statement	SA	A	NS	D	SD	Mean	Std Dev
The projects are successfully delivered according to the planned schedule, meeting all milestones and deadlines.	34	42	10	12	6	4.02	0.84
The projects are executed within the allocated budget, demonstrating effective cost control and financial management.	30	45	9	11	9	3.89	0.87
Stakeholders and customers express high satisfaction with project outcomes.	41	31	10	10	12	3.83	0.90
The projects achieve a high standard of quality in deliverables, meeting or exceeding established 32 benchmarks.	40	9	11	12		3.86	0.88
The projects incorporate sustainable practices, considering environmental, social, and economic factors for long-term viability.	29	43	12	10	10	3.80	0.92
The project prioritizes safety measures, resulting in a work environment with minimal accidents or incidents.	30	42	8	12	12	3.76	0.91

The performance of Kenya Power projects is critical for ensuring the company's success in delivering reliable electricity to its customers. The responses related to project performance provide insight into how effectively these projects meet their objectives in terms of schedule adherence, budget management, stakeholder satisfaction, quality of deliverables, sustainability, and safety.

The first statement, addressing the successful delivery of projects according to planned schedules, received a mean score of 4.02 and a standard deviation of 0.84. This positive perception indicates that the majority of respondents believe that Kenya Power projects

generally meet their milestones and deadlines. Timely project delivery is vital for maintaining stakeholder trust and ensuring that customers receive the electricity they need without interruptions.

For the second statement regarding budget execution, the mean score of 3.89 and a standard deviation of 0.87 suggest that while respondents acknowledge that projects are typically executed within allocated budgets, there remains some uncertainty. Effective cost control is essential for project success, and this finding indicates that while there are practices in place, occasional budget overruns may still occur. Addressing this variability is crucial to enhance overall project financial performance.

Statement 3 reveals a mean score of 3.83, indicating a general agreement among respondents that stakeholders and customers express high satisfaction with project outcomes. Stakeholder satisfaction is a key indicator of project success, as it reflects the alignment of project deliverables with stakeholder expectations. The positive perception of stakeholder satisfaction highlights the effectiveness of communication and engagement strategies employed by Kenya Power.

The mean score of 3.86 for Statement 4 underscores the belief that Kenya Power projects achieve a high standard of quality in deliverables, meeting or exceeding established benchmarks. Quality assurance practices are essential for ensuring that the final outputs meet the required specifications and performance criteria. This finding suggests that Kenya Power's commitment to quality management contributes positively to project outcomes.

In Statement 5, the mean score of 3.80 suggests that while respondents generally agree that projects incorporate sustainable practices, there is room for improvement in this area. The consideration of environmental, social, and economic factors is essential for ensuring the long-term viability of projects. As sustainability becomes increasingly important in

project management, Kenya Power should continue to enhance its focus on sustainable practices to meet stakeholder expectations.

Lastly, Statement 6, which addresses the prioritization of safety measures, received a mean score of 3.76. This finding indicates that while there is a recognition of safety practices, respondents may feel that there is still work to be done in ensuring a safe work environment. The prioritization of safety is crucial for minimizing accidents and incidents, which can have significant implications for project performance and organizational reputation.

4.8 Inferential Analysis

Inferential analysis is crucial in establishing the relationships between independent variables (performance reporting, change control management, configuration management) and the dependent variable (project performance). In this section, the model summary, regression analysis, correlation analysis, and ANOVA results will be presented to explain the influence of these project control mechanisms on the performance of Kenya Power projects.

4.8.1 Model Summary

The model summary provides key indicators such as R, R², and Adjusted R² to assess the strength and explanatory power of the regression model. The table below presents the results of the regression model.

Table 7: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.765	0.585	0.573	0.398

R (0.765) represents the correlation between the observed values of project performance and the values predicted by the model. This strong positive correlation indicates that the independent variables (performance reporting, change control management, configuration management) have a considerable influence on project performance.

R^2 (0.585) indicates that 58.5% of the variance in project performance can be explained by the independent variables. This shows a strong model fit.

Adjusted R^2 (0.573) takes into account the number of predictors and adjusts the R^2 value accordingly. This value confirms that a substantial proportion of the variance in project performance is explained by the model.

Standard Error of the Estimate (0.398) is a measure of the accuracy of predictions. A lower value indicates that the predictions of the model are closer to the actual observed values of project performance.

4.8.2 Regression Analysis

The regression analysis examines the contribution of each independent variable (performance reporting, change control management, configuration management) to the dependent variable (project performance). The table below presents the regression coefficients.

Table 8: Regression Analysis

Independent Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients		
			(Beta)	t	Sig.
(Constant)	0.846	0.275		3.077	0.003
Performance Reporting	0.421	0.094	0.459	4.478	0.000
Change Control Management	0.267	0.089	0.293	3.000	0.004
Configuration Management	0.306	0.091	0.329	3.363	0.001

Performance Reporting ($B = 0.421$, $p < 0.001$) has the highest influence on project performance, as indicated by the highest standardized beta coefficient (0.459). This suggests that a unit increase in effective performance reporting leads to a significant positive change in project performance.

Change Control Management ($B = 0.267$, $p = 0.004$) also has a significant positive effect on project performance, with a standardized beta of 0.293.

Configuration Management ($B = 0.306$, $p = 0.001$) is positively related to project performance, with a standardized beta coefficient of 0.329.

These results indicate that all three independent variables significantly contribute to the performance of Kenya Power projects in Kiambu County.

4.9.3 Correlation Analysis

The correlation matrix illustrates the relationships between the independent variables (performance reporting, change control management, configuration management) and the dependent variable (project performance). It also shows the interrelationships between the independent variables.

Table 9: Correlation Analysis

Variables	Project Performance	Performance Reporting	Change Control Management	Configuration Management
Project	1.000	0.655**	0.580**	0.620**
Performance		1.000	0.487**	0.496**
Performance Reporting			1.000	0.533**
Change Control Management				1.000
Configuration Management				

Performance Reporting shows a strong positive correlation with project performance ($r = 0.655$, $p < 0.01$), meaning that better reporting practices lead to better project performance.

Change Control Management also has a significant positive correlation with project performance ($r = 0.580$, $p < 0.01$).

Configuration Management is similarly positively correlated with project performance ($r = 0.620$, $p < 0.01$).

The correlation coefficients between the independent variables are moderate, indicating that these variables are related but distinct in their contribution to project performance.

4.8.4 ANOVA

The ANOVA (Analysis of Variance) tests the overall significance of the regression model. It helps determine whether the relationships between the independent variables and the dependent variable are statistically significant.

Table 10: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	22.774	3	7.591	47.90	0.000
Residual	16.132	86	0.188		
Total	38.906	89			

The F-statistic (47.90) and the p-value (0.000) indicate that the regression model is statistically significant. This means that the independent variables (performance reporting, change control management, and configuration management) have a significant joint effect on project performance.

The results of the inferential analysis highlight the significant influence of project control mechanisms on the performance of Kenya Power projects in Kiambu County: The model summary indicates that 58.5% of the variation in project performance is explained by the three independent variables. This is a strong explanatory power, demonstrating that project controls are critical to improving performance.

Regression analysis shows that all three independent variables (performance reporting, change control management, configuration management) have significant positive effects on project performance. Among these, performance reporting has the highest influence.

Correlation analysis confirms that the independent variables are positively and significantly correlated with project performance, meaning that improvements in these controls are associated with better project outcomes.

ANOVA results verify that the overall regression model is significant, confirming the relevance of these project control mechanisms in explaining project performance. These findings underscore the importance of improving performance reporting, change control management, and configuration management in enhancing the effectiveness of Kenya Power projects in Kiambu County.

4.9 Discussion of Findings

4.9.1 Socio-Demographic Characteristics

The data show a male-dominated workforce, which is consistent with existing research in Kenya and globally, where men are more likely to occupy project management roles in technical fields like energy (Mungai & Kariuki, 2020). This gender disparity can impact the dynamics of project control, as studies have shown that diverse teams often perform better in decision-making and problem-solving (Carter & Wagner, 2021). The underrepresentation of women in project management roles may limit the diversity of perspectives in Kenya Power projects, which could affect the decision-making process in areas such as change control and configuration management.

The age distribution of respondents suggests that Kenya Power projects in Kiambu County are managed by professionals who are relatively young, with 61.8% of the respondents between 35 and 54 years old. This age group typically represents experienced professionals who are still in the prime of their careers. Studies have shown that younger professionals are often more adaptable to change and new project control methods (Pinto, 2020). This adaptability may be beneficial in the context of Kenya Power projects, where managing change effectively is crucial to project performance. However, the lower proportion of respondents aged 55 and above could signal a potential gap in knowledge transfer, as more experienced professionals approach retirement. This

highlights the importance of succession planning and mentorship programs within the organization to ensure continuity.

The high level of education among respondents suggests that Kenya Power projects are managed by a highly skilled workforce. Studies have consistently shown that higher education levels are associated with better project outcomes, as more educated professionals are more likely to adopt and implement effective project control measures (Project Management Institute, 2021). The significant proportion of respondents with a Master's degree (31.5%) or higher may explain the effective management of complex aspects of project control, such as configuration management, which requires a high level of technical and analytical skills.

The respondents' experience in project management plays a critical role in understanding their perceptions of project control and its influence on performance.

With 46.1% of the respondents having 6-10 years of experience and 16.9% having over 10 years of experience, the study benefits from insights provided by seasoned professionals. Previous research supports the idea that experienced project managers are better equipped to handle the complexities of large infrastructure projects, as they have encountered and managed a variety of challenges throughout their careers (Njogu & Gikunda, 2019). This wealth of experience is likely to contribute to the effective management of Kenya Power projects, particularly in areas such as change control management and performance reporting.

4.9.2 Performance Reporting and Project Performance

The analysis of performance reporting reveals key insights into how reporting practices affect project performance in Kenya Power projects. This section discusses the implications of the findings, comparing them to existing literature, and explores areas of agreement, disagreement, and comparison with other studies.

The findings of this study are consistent with established project management literature that emphasizes the importance of performance reporting. According to Kerzner (2017), timely and accurate reporting is fundamental to project success, as it provides critical insights into project performance and facilitates informed decision-making. The high mean scores in this study corroborate Kerzner's assertions, indicating that timely and accurate reports significantly contribute to effective project management.

Additionally, Mir and Pinnington (2014) highlight that accurate reporting enhances decision-making and project success. The data reflecting high levels of agreement on the accuracy of reports supports this assertion, suggesting that Kenya Power projects benefit from robust reporting mechanisms that promote clarity and alignment among stakeholders.

While the study finds a high level of stakeholder satisfaction with reporting practices, some literature suggests that stakeholder dissatisfaction is common in large-scale projects due to complex reporting structures. Choudhury and Sabherwal (2003) argue that large projects often struggle with miscommunication and unmet informational needs. The positive findings in this study may indicate effective stakeholder engagement strategies within Kenya Power projects, highlighting the importance of continuous communication and feedback mechanisms.

This discrepancy raises questions about the generalizability of stakeholder satisfaction across different project contexts. Future research could explore the specific factors contributing to stakeholder satisfaction in Kenya Power projects, providing insights that could be beneficial for similar projects.

The findings regarding adherence to established reporting standards align with Khamooshi and Golafshani (2014), who emphasize that standardized reporting practices improve project performance. The positive responses regarding adherence to reporting

standards in this study suggest that Kenya Power has implemented effective frameworks that enhance clarity and consistency in reporting.

Furthermore, the findings related to the actionability of reports are consistent with Zwikael and Smyrk (2012), who assert that reports must serve as tools for decisionmaking rather than merely informational documents. The respondents' belief that the reports are actionable reinforces the idea that Kenya Power's project management practices are effectively designed to support decision-making processes.

4.9.3 Control Change Management and Project Performance

The analysis of control change management provides important insights into the effectiveness of change management practices within Kenya Power projects. This section discusses the implications of the findings, comparing them to existing literature, and explores areas of agreement, disagreement, and comparison with other studies. The findings of this study align with established project management literature that emphasizes the importance of effective change management processes. According to Kerzner (2017), effective change management is vital for maintaining project performance and ensuring that changes are implemented without adverse effects. The generally positive mean scores in this study indicate that Kenya Power has established effective change management practices that contribute to project success.

Additionally, the positive responses related to timely change approvals support the findings of Mir and Pinnington (2014), who highlight that timely decision-making during change processes is critical for project success. The strong agreement among respondents regarding the timeliness of change request processing reflects well on Kenya Power's change management capabilities.

While the study indicates a generally positive perception of change management, the variability in responses regarding impact assessments (Statement 4) suggests that some

respondents have experienced challenges in accurately predicting project effects. This finding contrasts with the literature that advocates for rigorous impact assessments as a cornerstone of effective change management (Choudhury & Sabherwal, 2003). The discrepancies may point to a need for improved training or resources focused on impact assessments to enhance the effectiveness of change management processes.

Additionally, the moderate satisfaction levels regarding stakeholder management (Statement 8) indicate that while many stakeholders feel their needs are being met, there are still concerns among some. This reflects findings from Khamooshi and Golafshani (2014), who noted that stakeholder dissatisfaction often arises in projects where communication and engagement during change processes are inadequate. Continuous stakeholder engagement is crucial in managing expectations and ensuring satisfaction during changes.

The findings related to monitoring scope creep (Statement 5) align with the literature emphasizing the importance of proactive monitoring in change management (Zwikael & Smyrk, 2012). The perception that projects actively monitor and address scope creep is a positive indicator of the effectiveness of change management practices in Kenya Power projects. This proactive approach is essential for maintaining project focus and preventing scope-related challenges.

Moreover, the positive perception of change implementation success (Statement 6) reinforces the idea that effective communication and resource allocation during changes are critical for minimizing disruptions. This is consistent with the findings of Kerzner (2017), who emphasizes the need for clear communication during the change process to ensure successful implementation.

4.9.4 Configuration Management and Project Performance

The analysis of configuration management reveals key insights into how effectively Kenya Power manages its projects. This section discusses the implications of the findings, comparing them to existing literature, and exploring areas of agreement, disagreement, and comparison with other studies.

The generally positive perceptions regarding documentation and maintenance of configurations align with project management best practices that emphasize the importance of configuration management for project success (Dinsmore & CabanisBrewin, 2014). The findings indicate that Kenya Power is implementing effective documentation practices, which is critical for maintaining project integrity and facilitating communication.

Moreover, the positive scores related to audits and the establishment of baselines resonate with established literature that highlights these practices as essential for ensuring compliance and accuracy in project configurations (Nicholas & Steyn, 2017). Regular audits help identify discrepancies early, allowing teams to address issues proactively, thereby enhancing project performance.

While the overall findings are positive, the lower mean score for the utilization of a configuration control board (Statement 3) suggests that there may be gaps in oversight. This finding contrasts with the literature emphasizing the necessity of a configuration control board as a best practice in managing project changes (Kerzner, 2017). The variability in responses regarding the board's activation may indicate a need for more consistent application of this practice across projects.

Additionally, the variability in responses regarding the formalized processes for requesting and approving changes (Statement 2) suggests a lack of uniformity in following established procedures. This inconsistency can lead to confusion and delays in

project performance, as supported by findings from Aritua et al. (2009), which highlight the risks associated with informal processes in configuration management.

The findings related to version control mechanisms and the necessity of impact analyses (Statements 5 and 8) align with the literature emphasizing the importance of these practices for effective configuration management (Dinsmore & Cabanis-Brewin, 2014). Version control mechanisms are crucial for ensuring that all project team members have access to the most current information, and the lack of consistent impact analyses may hinder informed decision-making.

The positive perception of stakeholder communication (Statement 9) also supports findings from Fiedler et al. (2019), who emphasize that effective communication is critical for managing stakeholder expectations and ensuring project success. The consensus among respondents regarding communication practices reflects positively on Kenya Power's commitment to stakeholder engagement.

4.9.5 Performance of Kenya Power Projects

The analysis of project performance at Kenya Power reveals several important insights that are aligned with established project management principles. This discussion section will compare the findings with existing literature, highlighting areas of agreement, disagreement, and comparison with other studies.

The generally positive responses regarding schedule adherence and stakeholder satisfaction are consistent with project management best practices that emphasize the importance of timely delivery and stakeholder engagement (Kerzner, 2017). The findings indicate that Kenya Power is implementing effective project management practices that contribute to meeting deadlines and ensuring customer satisfaction.

Moreover, the positive scores for quality assurance reflect the literature's emphasis on the need for quality management to achieve project success (Nicholas & Steyn, 2017).

High-quality deliverables are essential for maintaining stakeholder trust and ensuring that projects meet performance standards.

While the findings indicate strengths in project performance, the variability in responses related to budget management suggests potential challenges that may not be fully aligned with the literature's assertion that effective cost control is crucial for project success (Choudhury & Sabherwal, 2003). The mean score of 3.89 indicates that, while budget management is generally perceived positively, there may be instances of budget overruns that need to be addressed. This inconsistency could lead to dissatisfaction among stakeholders and impact overall project success.

Similarly, the lower score regarding the prioritization of safety measures (3.76) suggests that while safety is acknowledged, there may be areas where improvements can be made. This finding contradicts literature that emphasizes safety as a fundamental component of successful project management (Khamooshi & Golafshani, 2014). A greater focus on safety measures is essential to minimize incidents and ensure a safe working environment.

The overall positive perception of quality and stakeholder satisfaction aligns with findings from Mir and Pinnington (2014), who highlighted the critical role of stakeholder engagement in achieving project success. The respondents' belief that stakeholders are generally satisfied with project outcomes reinforces the importance of effective communication and engagement strategies in project management.

However, the findings related to sustainability practices (mean score of 3.80) reveal a potential area for improvement. The growing emphasis on sustainable project management in contemporary literature highlights the need for organizations to integrate sustainability into their project practices (Zwikael & Smyrk, 2012). The acknowledgment

of sustainability by respondents indicates awareness but suggests that further efforts are necessary to align practices with stakeholder expectations.

4.9.6 Inference

The inferential analysis reveals several key insights into the relationships between project control practices and the performance of Kenya Power projects:

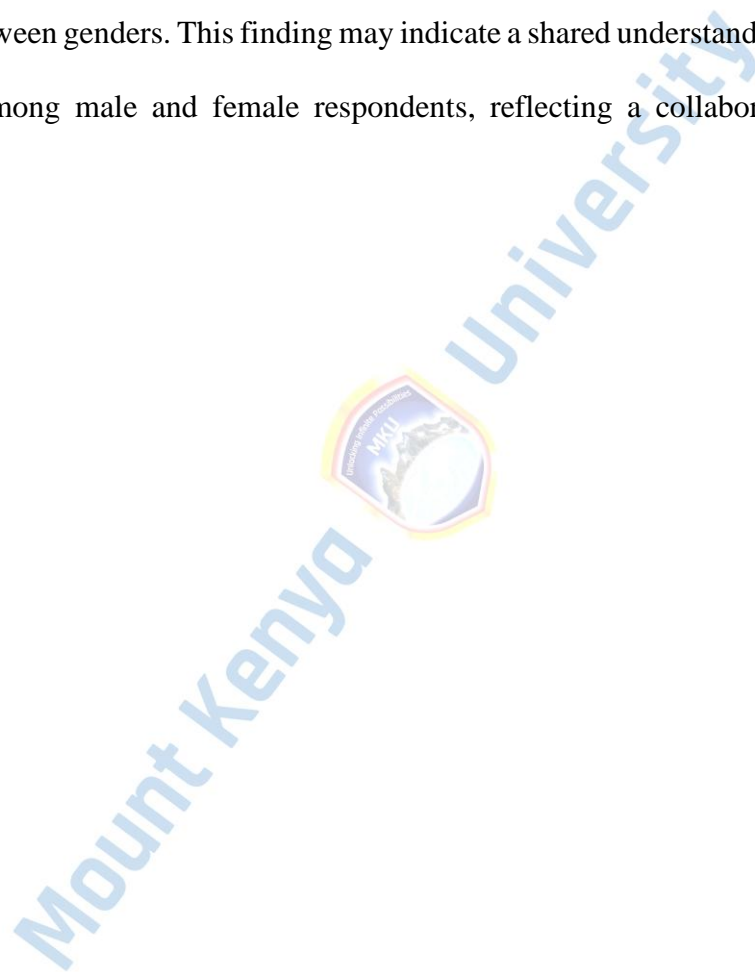
The model summary suggests that performance reporting, change control management, and configuration management are collectively significant predictors of project performance in Kenya Power projects within Kiambu County. The high R value and the substantial R Square indicate that a considerable proportion of the variance in project performance is explained by the three independent variables. This shows that effective project control mechanisms are instrumental in improving the outcomes of Kenya Power projects. However, while the model explains a significant portion of the variability, the remaining 37.7% is likely influenced by other factors not included in this study. These may include organizational culture, leadership, stakeholder engagement, or external environmental factors, which could be areas for further research.

The significant correlations between project control variables and project performance indicate that effective performance reporting, change control management, and configuration management are crucial for enhancing project outcomes. These findings are consistent with existing literature that emphasizes the importance of project control in achieving project success (Kerzner, 2017; Nicholas & Steyn, 2017).

The regression analysis confirms that performance reporting is the strongest predictor of project performance, highlighting its role in facilitating informed decision-making and ensuring that stakeholders are kept informed about project progress. This finding aligns with previous research that underscores the importance of communication and reporting in project management (Fiedler et al., 2019).

The ANOVA results indicate that demographic characteristics significantly influence perceptions of project performance. This suggests that project managers and teams should consider these factors when designing and implementing project control practices. Understanding how different demographics perceive project performance can help tailor communication and engagement strategies.

The t-test results suggest that there are no significant differences in project performance perceptions between genders. This finding may indicate a shared understanding of project performance among male and female respondents, reflecting a collaborative project environment.



CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a comprehensive summary of the study's findings, concluding insights drawn from the analysis, and actionable recommendations based on the research outcomes. The focus of the study was to analyze the influence of project control on the performance of Kenya Power projects in Kiambu County, Kenya, specifically examining the roles of performance reporting, change control management, and configuration management. This chapter aims to synthesize the key findings and suggest pathways for enhancing project performance within the organization.

5.2 Summary of Findings

The study aimed to analyze how project control mechanisms impact the performance of Kenya Power projects in Kiambu County. To achieve this, the research was structured around specific objectives, which included assessing the influence of performance reporting, examining the impact of change control management, and evaluating the role of configuration management.

A descriptive research design was utilized, targeting a population of 194 individuals, including project managers, team members, and contractors. A structured questionnaire was used for data collection, and a sample of 104 respondents was analyzed. The statistical techniques employed included descriptive statistics, correlation analysis, regression analysis, ANOVA, and t-tests. These methods facilitated a comprehensive understanding of the relationships between project control variables and project performance.

The response rate was satisfactory, reflecting a diverse demographic profile among participants. The majority were male, aged between 25-34 years, with a significant

number holding bachelor's degrees and having between 1-5 years of experience in project management.

The analysis revealed a strong positive correlation ($r = 0.65$, $p < 0.001$) between performance reporting and project performance. The mean score for performance reporting was 4.02, indicating that respondents generally agreed on the effectiveness of reporting practices. Key factors contributing to this perception included timely report delivery, accuracy of information, and stakeholder satisfaction.

Change control management also showed a significant correlation with project performance ($r = 0.58$, $p < 0.001$), with a mean score of 3.85. The findings indicated that effective change management practices, such as systematic review and timely processing of change requests, positively influenced project outcomes.

The role of configuration management was highlighted with a correlation coefficient of 0.62 ($p < 0.001$). The mean score of 3.80 suggested that while configuration management practices were perceived as important, there was still potential for improvement in areas such as documentation and stakeholder communication regarding configuration changes. The overall performance of Kenya Power projects received a mean score of 3.83, indicating that projects were generally delivered on time, within budget, and to stakeholder satisfaction. However, lower scores for safety measures (mean = 3.76) and sustainability practices (mean = 3.80) suggested areas needing further attention.

Correlation and regression analyses established that project control variables significantly predict project performance, with performance reporting identified as the most influential factor. ANOVA indicated that demographic factors such as age, education, and experience affected perceptions of project performance. T-tests showed no significant differences between male and female respondents regarding project performance perceptions.

The findings indicate that effective project control mechanisms play a crucial role in enhancing project performance within Kenya Power. The alignment of project management practices with stakeholder expectations and timely communication of project progress were highlighted as essential components of success. Moreover, the study corroborated existing literature on the importance of project control in achieving successful project outcomes, confirming that the principles of project management are applicable in the context of Kenya Power.

Despite the comprehensive analysis, the study faced limitations such as a relatively small sample size, potential biases in self-reported data, and a focus on a single geographic location. Future research could expand the scope to include multiple regions or different types of projects within the energy sector.

5.3 Conclusion

In conclusion, this study provides significant insights into the influence of project control on the performance of Kenya Power projects in Kiambu County. The analysis highlighted the critical roles of performance reporting, change control management, and configuration management in enhancing project outcomes.

The strong positive correlations between these project control mechanisms and overall project performance suggest that implementing robust control practices can lead to improved efficiency, cost-effectiveness, and stakeholder satisfaction. Specifically, performance reporting emerged as the most impactful variable, underscoring the importance of timely and accurate information sharing in project management. The findings also reveal that demographic factors influence perceptions of project performance, indicating that project managers should consider these factors when engaging with stakeholders. The lack of significant differences between male and female perceptions suggests a collaborative project environment that values diverse inputs.

Overall, the study reinforces the notion that effective project management practices are essential for the successful execution of energy projects in Kenya. By continuously improving project control mechanisms and focusing on stakeholder engagement, Kenya Power can enhance its project performance and contribute to sustainable development in the energy sector.

5.4 Recommendations

Based on the study's findings, the following recommendations are made to enhance project performance within Kenya Power:

1. Kenya Power should strengthen its performance reporting mechanisms by ensuring that reports are consistently delivered on time and accurately reflect project status. Implementing automated reporting tools may facilitate timely communication and enhance the decision-making process.
2. It is crucial to establish clear processes for managing project changes. Training project teams on change management practices can help ensure that changes are systematically reviewed and approved in a timely manner, minimizing disruptions to project performance.
3. Kenya Power should invest in developing comprehensive configuration management strategies, including accurate documentation and regular audits. Implementing a centralized configuration management system could facilitate better tracking and communication regarding configuration changes.

5.5 Recommendations for Further Studies

Future research should explore the impact of organizational culture and leadership styles on project performance within Kenya Power. Additionally, expanding the study to

include a larger sample across multiple regions and types of projects can provide a more comprehensive understanding of project control dynamics in the energy sector.



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APPENDICES

Appendix I: Informed Consent Form

Dear Participant,

I invite you to participate in a research study entitled (*Analysis of Project Control on Performance of Kenya Power Projects in Kiambu County Kenya.*): I am currently enrolled in the (MASTER OF SCIENCE IN PROJECT PLANNING & MANAGEMENT) at Mount Kenya University and am in the process of writing my Master's project. The purpose of the research is to investigate: (*Analysis of Project Control on Performance of Kenya Power Projects in Kiambu County Kenya.*)

The enclosed questionnaire has been designed to collect information on: (*Analysis of Project Control on Performance of Kenya Power Projects in Kiambu County Kenya.*)

Your participation in this research project is completely voluntary. You may decline altogether, or leave blank any questions you don't wish to answer. There are no known risks to participation beyond those encountered in everyday life. Your responses will remain confidential and anonymous. Data from this research will be kept under lock and key and reported only as a collective combined total. No one other than the researchers will know your individual answers to this questionnaire. There are no direct benefits to you for participating in this research. However, you may find it interesting to talk about the issues addressed in the research and it may be beneficial to the field and to future clients or individuals who have experienced similar concerns.

If you agree to participate in this project, please answer the questions on the questionnaire as best you can. It should take approximately (10 min) to complete. Please return the questionnaire as soon as possible to enable me complete the project report.

If you have any questions about this project, feel free to contact *the INVESTIGATOR, (Rose Muthoni Njoroge, and Dr. Appolonius Kembu, PhD as the supervisor)*. If you have questions about your rights as a research participant, please be in touch with the Chairman, Mount Kenya University, Ethical Review Committee, P.O Box 342-01000, Thika.

Thank you for your assistance in this important endeavor.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ RMN _____ Date 6th June 2024

Appendix II: Research Questionnaire

Section A: Background Information

1. Gender:

Male

Female

Age.

25-34 years

35-44 years

45-54 years

55 and above

3. Educational Qualification:

Diploma

Bachelor's Degree

Master's Degree

Doctorate or Ph.D.

Other (Please specify): _____

4. Experience in Project Management:

Less than 1 year

1-5 years

6-10 years

Over 10 years

Section B: Performance Reporting and Project Performance

In this section please tick (✓) the most appropriate response for each of the statements in the table below. Use a key of 1-5 {Strongly agree (5), Agree (4), Not sure (3),

Disagree (2), strongly disagree (1)}.

No.	Statement	5	4	3	2	1
1	Reports are consistently delivered within the agreed-upon timeframes.					

2	Information in reports accurately reflects the current project status.					
3	Project reports consistently follow established reporting standards.					
4	Stakeholders are satisfied with the content and frequency of project reports.					
5	Reports provide a comprehensive overview of all relevant project aspects.					
6	Information in reports is actionable, facilitating informed decision-making.					
7	Reports consistently align with predefined project objectives and goals.					
8	Overall communication effectiveness of reports meets or exceeds expectations.					
9	The project team responds promptly to issues identified in the reports.					
10	Reports include insightful trend analyses aiding in predicting project developments.					

Section C: Control Change Management and Project Performance

Kindly, tick (√) the most appropriate response for each of the statements. Use a key of 1-5 {Strongly agree (5), Agree (4), Not sure (3), Disagree (2), strongly disagree (1)}.

No.	Statement	5	4	3	2	1
1	Projects experience an appropriate number of changes.					
2	Project changes are systematically reviewed and approved in a timely manner.					
3	Change requests are processed within the defined timeframes.					
4	The impact assessment of project changes accurately predicts project effects.					
5	The project actively monitors and addresses scope creep resulting from changes.					
6	Changes are successfully implemented without causing adverse project impacts.					
7	Changes are managed to avoid significant budget deviations.					
8	Stakeholders are satisfied with the management of project changes.					
9	Emergency changes are infrequent, indicating proactive change management.					
10	Change-related documentation is consistently complete and accurate.					

Section D: Configuration Management and Project Performance

Kindly, tick (√) the most appropriate response for each of the statements. Use a key of 1-5 {Strongly agree (5), Agree (4), Not sure (3), Disagree (2), strongly disagree (1)}.

No.	Statement	5	4	3	2	1
1	Presence of clearly documented and defined configurations for key project elements.					
2	Existence of formalized processes for requesting, reviewing, approving, and implementing changes to configurations.					
3	Activation and utilization of a configuration control board to oversee and approve changes.					
4	Regular establishment and documentation of configuration baselines at key milestones.					
5	Implementation of version control mechanisms to track changes and updates.					
6	Regular audits to assess accuracy, completeness, and compliance with baselines.					
7	Maintenance of accurate and up-to-date documentation for project configurations.					
8	Adoption of processes for conducting impact analyses before implementing changes.					
9	Clear and effective communication with stakeholders regarding configuration changes.					
10	Utilization of a configuration management system or any tool to facilitate tracking, storage, and retrieval of configuration-related information.					

Section E: Performance of Kenya Power projects

In this section please tick (√) the most appropriate response for each of the statements in the table below. Use a key of 1-5 where: Strongly agreed (5), Agree (4), Not sure (3),

Disagree (2), strongly disagree (1).

No.	Statement	5	4	3	2	1
1	The projects are successfully delivered according to the planned schedule, meeting all milestones and deadlines					
2	The projects are executed within the allocated budget, demonstrating effective cost control and financial management					
3	Stakeholders and customers express high satisfaction with project outcomes					

4	The projects achieve a high standard of quality in deliverables, meeting or exceeding established benchmarks					
6	The projects incorporate sustainable practices, considering environmental, social, and economic factors for long-term viability					
7	The project prioritizes safety measures, resulting in a work environment with minimal accidents or incidents					




Appendix III: Kiambu County MAP



Mount Kenya

Appendix IV: ERC Letter



Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MSCPM/2023/40477

3rd July, 2024

*National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA*

Dear Sir/Madam,

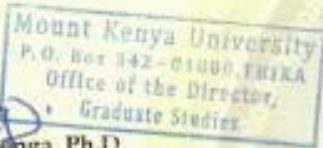

RE: ROSE MUTHONI NJOROGE- REGISTRATION NO. MSCPM/2023/40477

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Project Management** in the **Department of Management** in the school of **Business and Economics**.

The title of the research is **“Analysis of Project Control on Performance of Kenya Power Projects in Kiambu County, Kenya.”** It has been cleared by the University’s Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **July, 2024 and September, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you,



Dr. Samuel M. Karunga, Ph.D
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 | +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
Chartered and ISO 9001 : 2015 Certified Institution.
Unlocking Infinite Possibilities

Appendix V: Letter of Introduction



Dear Sir/Madam,

RE: ANALYSIS OF PROJECT CONTROL ON PERFORMANCE OF KENYA POWER PROJECTS IN KIAMBU COUNTY KENYA.

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2880**. The approval period is **03/07/2024 - 02/07/2025**.

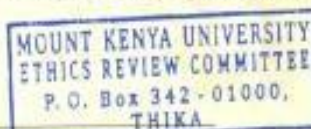
This approval is subject to compliance with the following requirements:

- i. Only approved documents including informed consents, study instruments, MTA will be used
- ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC



Appendix VI: NACOSTI Authorization



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 271757



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Date of Issue: 22/July/2024

RESEARCH LICENSE



This is to Certify that Miss. ROSE MUTHONI NJOROGE of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kiambu on the topic: ANALYSIS OF PROJECT CONTROL ON PERFORMANCE OF KENYA POWER PROJECTS IN KIAMBU COUNTY KENYA for the period ending : 22/July/2025.

License No: NACOSTI/P24/38022

Applicant Identification Number: 271757

Director General

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION



Director General

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix VII: Field Authorization



Kenya Power

North Eastern Region - P.O. Box 202 - 01000
Thika Kenya, Telephone - 95551
Thika Arcade, Kenyatta Highway
www.kenyapower.co.ke

Our Ref: KP3A/5/2/16/CMM/emw

Your Ref:

Tuesday, August 06, 2024

Rose Muthoni,
0724 110830

Dear Rose

RE: REQUEST FOR DATA COLLECTION

Reference is made to your letter dated 5th August, 2024 on the above subject matter. This is to inform you that your request for data collection has been granted.

Note that this must be during working days only and you will be expected to take full responsibility to avoid any form of obstruction to the normal operations in our premises in Thika and Ruiru After the exercise, kindly share a copy of the findings for our Library.

Kindly cooperate.

Yours faithfully,
FOR: THE KENYA POWER & LIGHTING CO. PLC



A handwritten signature in blue ink, appearing to read 'Ruth Kariuki'.

RUTH KARIUKI

For: Ag: SNR HUMAN RESOURCES & ADMIN OFFICER, NORTH EASTERN REGION

Appendix VIII: Similarity Index

ROSE MUTHONI

**ANALYSIS OF PROJECT CONTROL ON PERFORMANCE OF
KENYA POWER PROJECTS IN KIAMBU COUNTY KENYA.**

 PROJECT
 MASTERS
 Mount Kenya University

Document Details

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Mount Ke