IMPEDIMENTS OF PROJECT IMPLEMENTATION TO INFRASTRUCTURE DELIVERY IN KENYA'S PUBLIC SECTOR

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MASTER OF BUSINESS ADMINISTRATION

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DECLARATION

I declare that the work in this dissertation has not been previously published or submitted elsewhere for award of a degree. I also declare that this is my own original work and contains no material written or published by other people except where due reference is made and author duly acknowledged.

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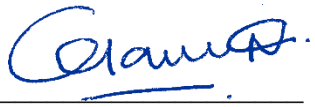
Sign:  Date: 7th October 2025

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ABSTRACT

Effective infrastructure delivery is a critical catalyst for socio-economic development, despite the fact that its realization within Kenya's public sector is continuously hindered by the impediment of implementation. This study analyzed the key impediments to project implementation: bureaucratic inefficiencies, inadequate technical capacity, poor stakeholder management and funding inconsistencies on the delivery infrastructure projects. Anchored in Institutional Theory, Resource-Based View, Principal-Agent Theory and Financial Constraint Theory, through a descriptive and mixed-methods design. Quantitative data was collected via structured questionnaires from a stratified random sample including: procurement officers, project managers, policy makers, engineers, quantity surveyors and monitoring and evaluation specialists across key infrastructure ministries, including the Ministry of Health, Energy, ICT, Education, Water and Sanitation and Roads and Transport. Qualitative insights were obtained through semi-structured interviews with senior officials and managers and the multiple regression analysis revealed a statistically significant model, explaining the variance in infrastructure delivery. The findings demonstrated a significant positive relationship between improved bureaucratic processes and technical capacity and project delivery, and a significant negative relationship between funding inconsistencies and delivery outcomes. Qualitative analysis enriched these results, revealing that bureaucratic inefficiencies are rooted in a culture of risk aversion and siloed inter-agency coordination, while technical capacity constraints are characterized by critical expertise gaps and outdated project management systems. Although stakeholder management was not statistically significant in the regression, qualitative data identified it as a critical risk factor, with community disputes and external interference frequently causing costly delays, the study therefore concludes that these impediments form a vicious, reinforcing cycle of underperformance. Consequently, isolated solutions are insufficient and therefore the research recommends a holistic reform agenda, including policy reforms such as establishing a digital one-stop shop for approvals and adopting the Most Advantageous Tender (MAT) criterion, institutional actions like executing a strategic technical capacity-building plan and institutionalizing a mandatory stakeholder engagement framework and an adoption of practitioner best practices. Ultimately, this research provides actionable insights for breaking the cycle of inefficiency, thereby enhancing governance and supporting the attainment of national socio-economic goals as outlined in Vision 2030.

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This research has been possible thanks to the invaluable guidance and insights and encouragement of my supervisors together with my lecturers and my colleagues. I extend exceptional praise to my family and friends who continuously fueled me with their steadfast backing and inspiration. This study became possible due to the relevant data and resources provided by institutions and individuals. I am thankful to God for providing me divine assurance and continuous resolve during every step of this experience.

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DEDICATION

I dedicate this research to my father Patrick Gichia, my mother Monica Njau and my siblings Godwin Gichia, Immaculate Wangeci and Joy Njunguini for their steadfast support and encouragement throughout my academic and professional development.

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ACRONYMS AND ABBREVIATIONS

AfDB : African Development Bank

CoG : Council of Governors

CRA : Commission on Revenue Allocation

EACC : Ethics and Anti-Corruption Commission

EBK : Engineers Board of Kenya

FCT : Financial Constraint Theory

GoK : Government of Kenya

IBP : International Budget Partnership

IFMIS : Integrated Financial Management Information System

KIPPRA : Kenya Institute for Public Policy Research and Analysis

KNBS : Kenya National Bureau of Statistics

MDAs : Ministries, Departments, and Agencies

NBI : National Building Inspectorate

NCA : National Construction Authority

NEMA : National Environment Management Authority

OAG : Office of the Auditor-General

OECD : Organization for Economic Co-operation and Development

PPADA : Public Procurement and Asset Disposal Act (2015)

POC : Proof Of Concept

ADR : Alternative Dispute Resolution

BIM : Building Information Modelling

EBK : Engineers Board of Kenya

AAK : Architectural Association of Kenya

MAT : Most Advantageous Tender

OPERATIONAL DEFINITION OF TERMS

Infrastructure Delivery: The complete process of planning, financing, implementing and evaluating infrastructure projects to ensure they are completed on time, within budget and according to quality standards (World Bank, 2020).

Impediments of Project Implementation: The barriers that occur during the execution of public infrastructure projects, such as bureaucratic inefficiencies, inadequate technical capacity, poor stakeholder management and financial constraints. (Flyvbjerg, 2007).

Bureaucratic Inefficiencies: Delays brought about by lengthy approval processes, complex regulatory requirements and poor coordination among government agencies, which hinder timely decision-making and project progress (Mwangi & Waiganjo, 2017).

Technical Capacity Constraints: Limitations in the availability of skilled personnel, modern tools and adequate supervision needed to plan, manage and execute infrastructure projects effectively (NCA, 2022).

Stakeholder Management: The processes of identifying, engaging and managing relationships with key project stakeholders such as communities, contractors, financiers and government agencies to minimize disputes, delays and conflicts (Omollo, 2018).

Funding Inconsistencies: Delays, shortfalls or unpredictability in the release of budgeted or external funds which disrupt project continuity (Kaplan & Zingales, 1997).

Project Timeliness: The extent to which an infrastructure project is completed within the planned schedule, without significant delays or overruns in time (Office of the Auditor-General, 2022).

Cost Adherence: The ability of a project to remain within its approved budget from initiation to completion, without major cost overruns (Office of the Auditor-General, 2022).

Project Quality: The degree to which completed infrastructure projects meet the required technical specifications, safety standards and functional performance as intended at design and planning stages (NCA, 2022).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The intricacies of implementing public infrastructure projects on a large scale are a persistent global concern in both developed and developing nations. Flyvbjerg (2007), in his work on megaprojects, identifies an iron law whereby such projects are generally completed over the set budget, behind schedule and with lower quality. Impediments such as the bureaucratic red tape, insufficient technical expertise, ineffective stakeholder engagement and funding inconsistencies are dominant, leading to inefficiencies and suboptimal outcomes (World Bank, 2020). For instance, the Organisation for Economic Co-operation and Development (OECD, 2017) highlights that weak governance and inadequate project planning, are major drivers of underprivileged public investment efficacies on its member countries. Equally, the World Bank (2020) emphasizes that weak institutional frameworks and lack of transparency in procurement processes are universal hurdles that derail even the best and most funded projects.

Within the East African region, these challenges are highly intensified by the regions shared history and similar socio-political dynamics. Neighbours like Uganda, Tanzania and Rwanda also grapple from similar implementation bottlenecks such as capacity constraints in public works departments, political prioritization of projects over technical feasibility and vulnerabilities in contract management (UNECA, 2021). A report by the African Development Bank (AfDB, 2022) noted that East Africa's infrastructure projects, suffer from misaligned regulatory frameworks and coordination failures between national governments, which leads to significant delays. Furthermore, the regions' over reliance on external financing often presents complexities related to aligning donor procedures with national systems therefore adding other layers of bureaucratic inaction (World Bank, 2023).

Kenya like many developing nations, faces a significant infrastructure deficit that impedes the realization of its ambitious national development blueprints, notably the Big Four Agenda and Vision 2030 (Kenya Vision 2030 Delivery Secretariat, 2020). This deficit is not merely about limited capital but also historical underinvestment, rapid urbanization and population growth, which widen the gap between supply and demand (Fay & Morrison, 2007). It remains a critical bottleneck, undermining productivity and social mobility, even though robust infrastructure is central to achieving national goals in manufacturing, food security, healthcare and housing (KIPPRA, 2019). Post-independence, the Kenyan government inherited an infrastructure network designed primarily for resource extraction and the mobility of a colonial administration, not meant for integrating the national economy or serving the indigenous populace (Ochieng' & Maxon, 1992). This resulted in a distinct spatial imbalance, with railways, roads and port facilities concentrated in areas serving settler agriculture and trade corridors, while vast regions particularly in the northern and eastern parts of the country were systematically marginalized (Ahluwalia, 2015). The post-independence governments, despite efforts to redress these imbalances through various development plans, often perpetuated this disparity by prioritizing projects in politically advantageous or already developed areas, a practice that continues to influence infrastructure planning (Mwangi & Kimenyi, 2018).

One of the highest rates of urbanization in the world has intensified the pressure on this inherently unequal system. Nairobi's population for instance, has exploded from approximately 350,000 at independence to over 4.5 million today, with projections indicating it will become a megacity within the next two decades (UN-Habitat, 2020). This rapid and unplanned urbanization has overwhelmed Nairobi's existing infrastructure. Traffic congestion in major cities like Nairobi and Mombasa is estimated to cost the economy billions of shillings annually in lost productivity and fuel wastage (Institute of Economic Affairs (IEA Kenya), 2022). The

demand for housing has far outstripped supply, leading to the proliferation of informal settlements lacking basic water, sanitation and electricity services. Consequently, the infrastructure gap is not a static target but a quick widening gap, where new projects struggle to keep pace with growing demand, let alone address the historical backlog.

The public sector, as the primary investor and regulator, is responsible for delivering projects across transport, energy, water and sanitation, telecommunications and social infrastructure. The multi-sectoral nature of these projects each with distinct technical demands, regulatory frameworks and stakeholders further complicates implementation (Gwilliam, 2011). A single infrastructure project such as a new bypass might require approvals and coordination between the National Treasury for funding and the Ministry of Roads for policy alignment. KeNHA or KURA for design and execution, the National Environment Management Authority (NEMA) for environmental impact assessment licenses, the National Land Commission (NLC), the county government for land acquisition and the Public Procurement Regulatory Authority (PPRA) for the oversight of the tendering process (GOK, 2018). The absence of a robust, integrated project management framework means that delays or bottlenecks in any one of these entities create cascading delays across the entire project value chain.

The implementation phase is often undermined by systemic impediments, leading to delays, cost overruns and substandard quality (World Bank, 2020). These reflect institutional weaknesses such as fragmented planning, weak contract management and inadequate monitoring systems (Office of the Auditor General, 2022). Poor governance and weak accountability in procurement processes further erode public trust and wastes scarce resources (Transparency International, 2015).

Infrastructure remains central to Kenya's economic strategy, driving competitiveness, trade, investment and access to essential services (AfDB, 2020). However, a wide gap persists between project initiation and completion often due to politically driven projects, limited

feasibility analysis and predictable but unmitigated hurdles like land disputes and technical capacity shortages (Mkandawire, 2014). The Nairobi Expressway, a Public-Private Partnership (PPP) hailed as a solution to the city's chronic traffic woes, was delivered but not without significant controversies. It faced substantial cost escalations from initial estimates, protracted land acquisition disputes that required costly last-minute compensations and design alterations that impacted adjacent businesses, leading to public outcry (Kenyatta, 2022). The Itare Dam project in Nakuru County, intended to supply water to over 800,000 residents, became a symbol of implementation failure after construction stalled in 2018 due to financial disputes between the contractor and the government, after billions of shillings had already been invested. The project remains abandoned, a concrete testament of poor contractor vetting, weak financial oversight and the devastating cost of delayed infrastructure projects (Water Resources Authority, 2021).

Similarly, the Galana-Kulalu Irrigation Scheme, a flagship project of the Jubilee government aimed at enhancing national food security, failed spectacularly to achieve its objectives. Through audits, it was revealed that inadequate feasibility studies, poor soil and water assessments and mismanagement allegations led to the project utilizing barely a fraction of its acreage, this portraying an enormous loss of public funds with minimal returns (Office of the Auditor General, 2021). To address these impediments, holistic reforms that strengthen public investment, build institutional capacity and foster transparency and accountability need to align project outcomes with strategic objectives that ensure value for money (Dabla-Norris et al., 2011).

1.1.1 Infrastructure Delivery in Kenya's public sector

Infrastructure delivery refers to the entire cycle of a project from planning, funding, implementation and monitoring & evaluation to ensure that projects remains within the approved budget are delivered on time and meet quality standards (World Bank, 2020). The

planning phase is often compromised by political suitability rather than technical and economic basis. Most projects are often initiated to satisfy a political need therefore bypassing the rigorous technical and economic appraisal systems mandated by the Public Investment Management (PIM) guidelines. A study by the International Budget Partnership (IBP, 2019) found that in several county governments, over 40% of projects incorporated into the budgets during the approval stages had not undergone any prior feasibility study, resulting to misallocation of scarce resources towards unrealistic initiatives.

The funding process is majorly characterized by discrepancies between budgetary allocations and actual cash disbursements. The National Treasury's (2023) own reports consistently showed a significant gap between appropriated development funds and the actual cash released to different government ministries and agencies. This was due to revenue shortfalls, pressure on competing expenditure and measures on fiscal consolidation. This funding inconsistency make it impossible for project managers to plan effectively, leading to delays and inflated project costs. Furthermore, over reliance of external loans from partners like China, the World Bank and the African Development Bank comes with its own complexities and procurement conditionalities that may not always align with national systems like the Integrated Financial Management Information System (IFMIS), resulting to bureaucratic discord and delays.

During the implementation phase is where core impediments such as bureaucracy, technical capacity, financial constraints and stakeholder management acutely manifest. Grand corruption scandals, such as the Arror and Kimwarer dams' saga, where billions were lost through projects that barely commenced, demonstrate how funds can be siphoned through inflated contracts and fabricated deliveries (EACC, 2019).

The evaluation and monitoring phase is arguably the weakest link in Kenya's infrastructure cycle due to the lack of mandatory, post project audit or benefit realization

process. Projects are basically considered successful upon physical completion, with little to no regard of whether they are operational, efficient or achieve their intended socio-economic outcomes e.g., reduced traffic, increased agricultural output, improved water access. The lack of a feedback mechanism means that failures are barely identified and therefore the same mistakes are repeated over and over. (Transparency International Kenya, 2021).

Effective infrastructure delivery is essential for economic growth, social development and competitiveness (OECD, 2018). In Kenya, it serves as a key performance indicator for public sector projects reflecting the efficiency and effectiveness of procurement processes in delivering roads, energy systems, telecommunications, water facilities and social infrastructure. When well executed, infrastructure delivery can be a catalyst for socio-economic transformation which can stimulate investment, job creation, enhance market accessibility and promote service delivery in all sectors. On the contrary, delays and substandard output quality can undermine these by eroding investor confidence and enhancing perpetuate inequality between different regions (AfDB, 2020). An example of this is the timely completion of rural roads, which alternatively results to enhanced agricultural productivity and promotes market linkages, while stalled projects trap communities in vicious cycles of poverty.

Successful infrastructure delivery is closely tied to good governance, adequate institutional capacity and a prevailing project management environment in which projects are executed. Factors such as transparency in procurement systems, robust monitoring of project, adequate technical expertise and stakeholder involvement are critical in ensuring outcomes meet intended goals (Transparency International, 2019). In Kenya's public sector, discrepancies often seen in the performance of project delivery reflect the differences in these enabling conditions, therefore strengthening these pillars is very important in improving the country's infrastructure.

1.1.2 Impediments of Project Implementation

Impediments in Project implementation revolve around the countless obstacles that arise during the execution phase of a project hindering its progress and compromising its outcomes. In Kenya's public sector, these challenges are often interrelated and they include bureaucratic inefficiencies, which manifest as lengthy approval processes, cumbersome regulatory requirements and inter-agency coordination problems, which leads to significant project delays and increased overhead costs (Mwangi & Waiganjo, 2017). Another challenge is the inadequate technical and managerial capacity within implementing agencies, such as shortage of a skilled labor force, inadequatet expertise in managing complex projects and a lack of continuous training and development (National Construction Authority, 2022). This capacity gaps often results in poor project planning, weak contract management and inadequate oversight of contractors, leading to technical failures and quality deficiencies.

Furthermore, poor stakeholder management presents a significant hurdle; infrastructure projects typically involve a diverse array of stakeholders, including government agencies, local communities, contractors and financiers. Ineffective communication, failure to address community concerns and lack of inclusive planning can lead to conflicts, litigation and project strikes (Ong'olo, 2018). Managing these relationships effectively is crucial in maintaining social licenses to operate and ensure project continuity.

In addition, the cost of infrastructure projects is highly susceptible to macroeconomic fluctuations meaning that a significant depreciation of the Kenyan shilling against major currencies like the US Dollar and the Euro can dramatically increase the cost of servicing foreign loans and procuring imported goods and materials such as steel and bitumen. Similarly, domestic inflation escalates the costs of local materials and labor beyond the standard contingency allowances in project budgets (CBK, 2022). These external economic shocks are often beyond the control of project managers but highly impact cost adherence, resulting to

supplementary budgets and project abandonment. These challenges collectively contribute to the suboptimal performance of infrastructure projects in Kenya, as demonstrated by time overlaps, cost overruns and frequent quality shortfalls (Auditor General, 2022). Addressing them requires a systematic approach that targets institutional reforms, capacity building and enhanced governance mechanisms.

1.1.3 Infrastructure Projects in Kenya's Public Sector

Kenya's public sector plays a vital role in delivering both social and economic development projects such as roads, schools and hospitals (GOK, 2016). The procurement and implementation of these projects is governed by legal frameworks and procedures under the Public Procurement and Asset Disposal Act (2015) and the Public Finance Management Act (2012), designed to promote transparency, accountability and efficiency. Despite the robust legal framework, the public sector still grapples with significant implementation challenges such us overreliance on procurement processes for service delivery, meaning that weaknesses in project implementation directly turn into poor service delivery. Transparency International (2020) noted that over 30% of Kenya's annual budget is allocated to public procurement therefore making it a critical area for both economic development and potential inefficiency.

Recently, Kenya has taken significant strides toward the modernization of procurement systems, including the adoption of e-procurement systems, open contracting and promoting the involvement of its citizens in project planning. However, enforcement remains inconsistent and institutional capacity varies widely across agencies (World Bank, 2023). The National Construction Authority (NCA) highlighted concerns regarding the technical competence of both public supervisors and private contractors affecting project quality (NCA, 2022).

The devolution of functions to county governments has added another layer of complexity, with unpredictable levels of capacity and resource availability across the 47 counties often affecting the uniformity of project implementation outcomes (CoB, 2023). On

the positive side, devolution has localized innovation and responsiveness. Counties with robust governance structures have made significant strides with counties such as Makueni and Nyeri benefiting from effective delivery of rural roads, markets and water, which has greatly improved the local economy and livelihoods of its people (Commission on Revenue Allocation (CRA), 2022). However, the negative side of devolution is clearly evident where many county governments were handed major responsibilities without a parallel transfer of technical human capacity from the national government resulting to a wave of poorly supervised, substandard projects, roads that are washed away by first rains, collapsing buildings and unyielding water projects (NCA, 2022; NBI, 2023).

Additionally, the interface between the national and county governments is a significant source of friction and inefficiency for some infrastructure projects are often blurred. For instance, the maintenance of some feeder roads can bring about disputes between the national government's Kenya Rural Roads Authority (KeRRA) and the county government, leading to a vacuum where no one takes responsibility therefore resulting to deterioration of infrastructure (OECD, 2021). Strengthening institutional independence, enhancing accountability and fostering a culture of merit-based decision making is imperative in improving the public sector's capacity to deliver high-quality infrastructure equitably.

1.2 Statement of the Problem

Kenya's public sector continues to grapple with significant impediments in the implementation of infrastructure projects, leading to increased delays, significant cost overruns and recurrent low technical and quality standards. Despite a comprehensive legal and policy framework, including the Public Procurement and Asset Disposal Act (2015) and Vision 2030's strategic infrastructure goals, projects consistently underperform. Recent audit reports indicate that 68% of major public projects exceed their timelines by an average of two years, while cost overruns average 112% of initial budgets (PPRA, 2023). Critical national projects, such as the

Lamu Port-Southern Sudan-Ethiopia Transport (LAPSSET) corridor, operate significantly below capacity, raising concerns on value for money and economic return (KPA, 2023).

To fully grasp the gravity of this problem, one needs to understand that the billions lost through cost overruns and delays in mega projects could have been used to finance thousands of other critical projects. For example, the cost overruns of the Standard Gauge Railway (SGR) alone could have built over 100 modern secondary schools and equipped dozens of Level 5 hospitals with state-of-the-art medical equipment (KIPPRA, 2021). This misallocation and wastage of resources directly undermines the achievement of Vision 2030 in healthcare, education and food security.

This suggests that major implementation challenges that extend beyond project implementation and knowledge gaps hinder effective solutions. First, is the impact of bureaucratic inefficiencies, such as protracted approval processes and inter-agency coordination failures on project timelines and costs has not been sufficiently isolated and quantified within the Kenyan context. Second, inadequate technical capacity within implementing agencies, such as deficits in skilled personnel and project management experts, continuously remains underexplored despite its link towards quality deficiencies and engineering failures. Third, the consequences of poor stakeholder management such as community disputes and inadequate risk communication, often lead to project stalls and litigation issues, which require systematic analysis.

The relationship between some of these challenges at the different government levels that is the national and county government and across various infrastructure sectors such as transport, water and energy and therefore are not perfectly reliable. Despite audit reports highlighting signs of failure, they rarely provide a diagnostic analysis of the root cause of implementation challenges. A review of existing literature reveals specific knowledge gaps that this study seeks to fill. Existing studies often examine challenges in isolation focusing on either

procurement, technical capacity, or stakeholder issues without comprehensively analyzing their interconnectedness and collective impact on the triple constraints of cost, time and quality. Much of the empirical research has focused either on the national government or on specific counties, with less comparative analysis across different tiers of government and across infrastructure sectors.

While many studies identify challenges qualitatively, there is a scarcity of research that employs mixed methods to quantitatively measure the extent of these challenges and their correlation to project performance indicators. Furthermore, there is need for research that reflects the current framework of devolution, the updated Public Procurement and Asset Disposal Act (2015) and the persistent capacity gaps. This study seeks to address these gaps by thoroughly investigating how bureaucratic inefficiencies, technical capacity constraints, stakeholder management issues and funding inconsistencies collectively or individually, impair the delivery of infrastructure in Kenya's public sector. The findings will provide insights to enhance implementation and ensure that public investments yield their intended outcomes.

1.3 Objectives of the Study

1.3.1 General Objectives

To analyze the impediments of project implementation to infrastructure delivery in Kenya's public sector.

1.3.2 Specific Objectives

i. To determine how bureaucracy affects infrastructure delivery in Kenya's public sector.

ii. To examine the impact of technical capacity on infrastructure delivery in Kenya's public sector.

iii. To explore on how stakeholder management affects infrastructure delivery in Kenya's public sector.

iv. To find out the effect of funding on infrastructure delivery in Kenya's public sector.

1.4 Research Questions

i. How does bureaucracy affect infrastructure delivery in Kenya's public sector?

ii. To what extent does technical capacity affect infrastructure delivery in Kenya's public sector ?

iii. What is the impact of stakeholder management to infrastructure delivery in Kenya's public sector ?

iv. What is the effect of funding on infrastructure delivery in Kenya's public sector?

1.5. Significance of the Study

The research on Impediments of Project Implementation to Infrastructure Delivery in Kenya's Public Sector holds an enormous importance to different stakeholders because it explores critical operational and governance issues. The findings are expected to contribute significantly to optimizing project management practices and enhancing the efficacy of public sector infrastructure delivery.

1.5.1 Policy makers and government officials

Government officials and policymakers will get to a broader understanding of the specific implementation barriers that hinder infrastructure projects. This knowledge will bring about the development of more targeted policies, regulations and institutional reforms aimed at streamlining bureaucratic processes, enhancing technical capacity and formalizing stakeholder engagement. The study's recommendations will be instrumental in strengthening governance and improving oversight, which are crucial for achieving strategic goals and restoring public confidence in the government's capabilities.

1.5.2 Public Procurement Practitioners

Procurement officers, project managers, engineers and monitoring and evaluation specialists are at the forefront of project execution. This study will provide them with empirical

evidence on major implementation challenges they encounter. Understanding these impediments in depth will enable practitioners to develop more robust risk mitigation strategies, advocate for resources and training and implement best practices in project management. The findings could also inform on capacity-building programs and the adoption of innovative project, technologies and systems.

1.5.3 Academia and Researchers

The study will contribute to academic literature by filling a gap in empirical research on impediments of project implementation in Kenya's public sector, moving the focus beyond political corruption to operational and managerial inefficiencies. It will provide a solid foundation for future scholarly work in areas such as comparative public administration and project management applications in developing contexts and the impact of specific governance reforms on project outcomes. The conceptual framework and methodology can serve as a model for similar studies in other sectors and countries.

1.5.4 Development Partners and Donors.

International development partners, donor agencies and multilateral organizations that fund public infrastructure projects in Kenya have a stake in the efficient use of their resources. This study will offer the stakeholders a clear understanding of the implementation risks inherent in Kenya’s context. The insights gained will enable them to design effective funding modalities, strengthen conditionalities related to project management capacity and develop better systems for monitoring and evaluating the progress of implementation on funded projects, thereby protecting their investments and ensuring a sustainable development impact.

1.5.5 The Public and Taxpayers

The public and taxpayers being the ultimate beneficiaries and financiers of public infrastructure, stand to gain both directly and indirectly from this research. Through identifying ways to promote efficient project implementation, the study contributes by ensuring that

resources are effectively utilized to deliver standard infrastructure on time and within the set budget. Improved project outcomes lead to better public service delivery in health, education and transport, thereby promoting the overall quality of life and fostering economic opportunities among Kenyan communities.

1.6 Scope of the Study

This study will focus on investigating the impediments of project implementation on the delivery of infrastructure projects in Kenya. It will center on infrastructure projects undertaken by government ministries with a primary infrastructure mandate over the past ten years (2015–2025), which will allow for the analysis of recent trends. They include: The Ministry of Health, Ministry of Energy & Petroleum, Ministry of Information, Communications & Digital Economy (ICT), Ministry of Roads & Transport, Ministry of Education, and The Ministry of Water, Sanitation & Irrigation.

Geographically, the study will concentrate on projects managed by entities headquartered in Nairobi County, as these agencies are responsible for national projects across the country. The core implementation challenges to be investigated are bureaucratic inefficiencies, technical capacity constraints, stakeholder management issues and funding inconsistencies. The study will measure their impact on three key dimensions of project delivery including; adherence to project timelines, cost adherence and conformance to quality standards. The target respondents will include professionals directly involved in the project cycle, such as procurement officers, project managers, policy makers, engineers, quantity surveyors and monitoring and evaluation specialists.

1.7 Justification of the Study

The imperative to conduct this research on the impediments of project implementation in Kenya's public sector infrastructure delivery is grounded in its potential to address critical theoretical, methodological and practical gaps in existing literature and practice. While the

problem of project underperformance is widely acknowledged, this study is justified by its multifaceted approach to generating actionable insights that can catalyze systemic improvement.

First, the study is justified by the need for a comprehensive and integrated analysis of implementation challenges. Existing studies often examine impediments such as bureaucracy, funding and technical capacity in isolation (Omollo, 2018). This fragmented approach fails to capture the interconnected and reinforcing nature of these challenges, which this research posits forms a vicious cycle of underperformance. By simultaneously investigating bureaucratic inefficiencies, technical capacity constraints, stakeholder management issues and funding inconsistencies, this study provides a holistic diagnostic of the systems failure, moving beyond siloed explanations to a more realistic and useful model of how these factors interact to derail projects (Flyvbjerg, 2007). This integrated perspective is crucial for developing synergized solutions.

Second, the research is methodologically justified by its mixed-methods design, which bridges a significant gap in the current body of evidence. Much of the existing literature on this topic is either purely qualitative, relying on case studies or broadly descriptive without robust quantitative validation (Kipchumba & Maru, 2022). This study employs a rigorous quantitative approach to establish the statistical significance and relative weight of each impediment, complemented by in-depth qualitative interviews that explore the underlying questions. This triangulation provides both breadth to generalize findings and depth to understand the institutional cultures, personal experiences and operational mechanisms behind the statistics, thereby offering a more complete and credible evidence base for policy formulation.

Third, the study is practically justified by its direct policy and operational relevance. The persistent delays and cost overruns in flagship projects like the LAPSSET corridor and the Standard Gauge Railway (SGR) represent a massive misallocation of public resources, directly

undermining national development goals as outlined in Vision 2030 and the Big Four Agenda (National Treasury, 2023). This research moves from merely identifying problems to generating targeted, evidence based recommendations. For instance, by quantifying the impact of bureaucratic delays and funding inconsistencies, the study will provide a compelling economic argument for specific reforms. For practitioners, the findings on technical capacity gaps and stakeholder management failures will offer a clear agenda for institutional capacity building and the formalization of stakeholder engagement frameworks.

Finally, the research is timely and critical for enhancing public accountability and governance. The significant proportion of the national budget allocated to public procurement makes it a high-stakes area for both development and corruption (Transparency International Kenya, 2022). By systematically investigating the root causes of implementation failures, this study contributes to demystifying the reasons behind project stalls and wastage of taxpayer funds. It shifts the narrative from solely blaming corruption to understanding the operational and managerial inefficiencies that often enable it. The insights generated will empower oversight bodies, the civil society and the public to demand more effective and transparent project management, thereby strengthening the social contract between the government and the citizens.

In conclusion, this study is not merely an academic exercise but a necessary intervention. Its justification lies in its integrated framework, robust methodology and actionable outputs, which collectively address a pressing national development challenge. The findings are expected to provide a definitive, evidence-based roadmap for breaking the cycle of infrastructure project underperformance in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will present a comprehensive literature and theoretical review applicable to the study of impediments of project implementation to infrastructure delivery within Kenya's public sector. The chapter is structured into three main sections namely a theoretical review citing the foundational theories guiding this research, an empirical review integrating existing studies with the key variables and an identification of the research gaps this study aims to fill. The chapter finally concludes with the presentation of a conceptual framework and the operationalization of variables.

2.2 Theoretical Review

This section outlines the theories that provide a better understanding of the impediments of project implementation. The selected theories offer insights into institutional behavior, relational dynamics and utilization of resources within projects in Kenya's public sector.

2.2.1. Institutional Theory

Institutional Theory by DiMaggio and Powell (1983), provides a framework of understanding how the external environment deeply influences organizational functions comprising of formal regulations, cultural norms and established cognitive structures. These elements come together to form institutional pressures that push organizations toward homogenization of structure and practice. These pressures are generally categorized as coercive, stemming from government regulations and legal mandates, arising from the limitation of supposed successful models in times of uncertainty and normalcy resulting from professional standards and education. Consequently, organizations often prioritize legitimacy and conformity within their institutional environment over internal operational efficiency or innovative practices (Scott, 2014).

This theory is profoundly relevant for identifying the root causes of bureaucratic inefficiencies within Kenya's public infrastructure sector. The multifaceted web of procurement regulations (PPADA, 2015), auditing requirements and oversight from bodies such as The National Treasury and PPRA brings in a strong resemblance. Implementing agencies may prioritize strict compliance to these procedures over rational and timely project executions. For instance, fear of audit queries and rigid adherence to procurement timelines can paralyze decision-making therefore delaying critical variation orders even when they are technically justified (World Bank, 2020). Furthermore, the theory explains how agencies uncritically adopt practices from peer organizations without adapting them to specific project contexts, while normative pressures from professional bodies cement a culture of risk-aversion. This theory thus helps to conceptualize bureaucratic inefficiencies not as mere individual error, but as deeply embedded systemic responses to a powerful institutional environment.

Public agencies in Kenya often decouple their formal structures from their actual work practices. They create elaborate project units and adopt modern project management methodologies on paper to gain legitimacy from donors and central agencies but continue to operate based on informal, bureaucratic norms in practice. This explains why the introduction of e-procurement systems may not always speed up processes for its merely transferring the bottlenecks online (Cheeseman, 2018).

A key critique is that Institutional Theory can overemphasize structural constraints, potentially underplaying the agency of individuals and organizations to enact change and innovate (Battilana, 2006). However, it provides an indispensable lens for explaining the persistence of inefficient practices despite repeated reforms. It is directly linked to the independent variable of bureaucratic inefficiencies, offering a theoretical explanation for their pervasive and resilient nature.

2.2.2. Resource-Based View (RBV)

The Resource-Based View (Barney, 1991) contends that an organization's unique internal resources and capabilities are the fundamental drivers of its performance and potential for advantage. For resources to confer a sustainable advantage, they must be Valuable, Rare, Inimitable and Non-substitutable (VRIN) where technical skills are valuable as they directly enable effective project supervision. The combination of deep technical expertise, public sector experience and integrity is rare, a culture of excellence and a strong organizational reputation, built over time, are difficult for other agencies to imitate quickly. While consultants can be hired, the core function to define requirements, manage consultants and hold them accountable is a non-substitutable internal capability. Most Kenyan agencies lack this, making them overly dependent on their consultants (Patanakul & Shenhar, 2012).In the context of public sector project management, these resources extend beyond the traditional concept of competitive advantage to encompass the core capabilities required for effective service delivery. This includes human capital e.g., skilled engineers and procurement specialists, technical assets e.g., project management softwares and organizational systems like knowledge management and quality assurance protocols (Grant, 1991).

RBV offers a critical lens for examining technical capacity constraints as a primary impediment to project quality and timeliness. The chronic underperformance of infrastructure projects in Kenya can be directly attributed to a deficit in VRIN resources. Many public agencies lack a critical mass of highly skilled and experienced technical staff due to brain drain, inadequate training and non-competitive remuneration (NCA, 2022). The capacity to manage complex contracts, conduct rigorous feasibility studies and provide effective supervision is often rare and difficult to imitate quickly. This resource gap results in poor project planning, inadequate risk assessment and weak oversight of contractors, leading directly to quality

deficiencies, cost overruns and delays. RBV shifts the analytical focus from external factors to the internal capacity endowments or lack thereof of the implementing agencies.

A limitation of applying RBV to the public sector is that the primary goal is not competitive advantage but effective and equitable service delivery. Nonetheless, the core premise that performance is intrinsically linked to the quality of internal capabilities remains powerfully valid. The theory is directly linked to the independent variable of technical capacity constraints, providing a framework for analyzing how the absence of valuable and rare skills and systems is a primary constraint on project performance.

2.2.3. Principal-Agent Theory

Principal-Agent Theory (Jensen & Meckling, 1976) explores the inherent conflicts that arise in a relationship where one party (the principal) delegates work to another (the agent), who is tasked to perform it. The theory highlights two core problems: Goal incongruence, where the agent's interests e.g., profit maximization and minimized effort diverge from those of the principal e.g., project quality and timely completion. Information asymmetry, where the agent typically possesses more information about their actions and the task than the principal does. These problems lead to agency costs, which include the costs of monitoring the agent's behavior and the costs incurred due to the agent's sub-optimal decisions (Eisenhardt, 1989).

This theory is exceptionally relevant for understanding the variable of stakeholder management and its impact on cost adherence. In public infrastructure, a chain of principal - agent relationships exists: citizens being the principal and the government the agent; government being the principal and implementing agency (e.g., MDAs) the agent: implementing agency being the principal and the contractor the agent. Information asymmetry is common at each level. For instance, contractors (agents) possess superior information about actual costs, construction methods and site conditions. This can lead to moral hazard such as using substandard materials and adverse selection i.e. bidding low with plans to claim

variations, directly affecting project cost and quality. A county engineer (the agent) may face demands from multiple principals: the county governor who may demand political favors, the county assembly that controls the budget, professional bodies demanding ethical standards, and the community demanding quality. These conflicting demands create role ambiguity and can lead to actions that satisfy the most powerful principal at the expense of project goals (Waterman & Meier, 1998).Furthermore, local communities act as indirect principals and poor communication (information asymmetry) about a project's impacts can lead to conflicts, work stoppages and costly redesigns. The theory explains why robust monitoring, transparent communication and incentive alignment e.g., performance-based contracts are crucial for mitigating these agency problems.

A common critique is that the theory can oversimplify complex, multi-faceted relationships into binary terms. However, it provides a robust economic rationale for the inefficiencies and conflicts that arise from misaligned incentives. It is intrinsically linked to the challenges of managing key stakeholders particularly contractors and communities and directly explains how these relationships, if poorly governed, lead to escalated costs and disputes.

2.2.4 Financial Constraint Theory (FCT)

The Financial Constraint Theory suggests that access to finance is one of the vital constraints on organizational growth, investment and performance. The theory well visualized in financial literature, where scholars such as Kaplan and Zingales (1997) argued that even firms with profitable investment opportunities may be unable to implement them if they face restrictions in accessing either external or internal funds. The basic premise is that the availability, predictability and need for financing are all prerequisites for the successful execution of planning. When financial resources are inconsistent, projects stall, efficiency declines and the overall benefits never materialize.

In Kenya's public sector, the theory provides a framework for understanding the effect of funding inconsistencies on infrastructure delivery. Timely disbursement is directly explained by FCT when there is a delayed in exchequer releases, the ministries and county governments experience a liquidity crisis, forcing contractors to halt projects midway. Where budgetary allocations are made, the absence of consistent cash flow imposes a rigid constraint that undermines the overall implementation capacity. Budgetary allocation, reflects the theory's emphasis on the planned allocations versus the actual financial resources. Kenya has consistently set aside significant funds for infrastructure in its national budgets, but the actual releases often fall short of the allocated amounts due to revenue shortfalls and competing pressures in expenditure (National Treasury, 2023). FCT interprets this disparity as a financial constraint that reduces the absorption capacity of the public sector and explains continuous underutilization of the development budget.

External financing bring in another dimension to the theory's application. While external financing from both the bilateral and multilateral partners can expand the fiscal space, FCT highlights that those funds come with their own friction such as strict conditions, procurement rules and disbursement schedules that may not align with our domestic priorities. This therefore constrains project managers, as financing is available on paper but very restricted in practice. The Nairobi Mau Summit Highway is a good illustration of how reliance on external financing can bring about delays through prolonged negotiations and conditional disbursements, underscoring the financial constraint mechanism (AfDB, 2022).

Despite its utility, FCT has faced criticism. Kaplan and Zingales (1997) argued that investment and cash flow sensitivity is not always a reliable measure of financial constraints, as managerial choices and institutional inefficiencies can sometimes contribute to funding shortfalls more often than liquidity constraints. Similarly, in the public sector, some critics argue that inadequacy, corruption and poor planning unlike financial scarcity are the main

causes of stalled projects. However, while these critiques highlight important complementary factors, they fail to negate the fundamental perception of FCT that without consistent and adequate financing, even the best plans and technically feasible projects cannot be adopted.

Therefore, funding inconsistencies signify a binding constraint that directly undermines project timeliness, cost efficiency and quality outcomes. Where timely disbursement ensures continuity of projects, adequate budgetary allocations provide the financial base for planning, and well-managed external financing complements domestic resources. When these elements fail, infrastructure delivery is paralyzed leading to the proliferation of stalled projects therefore escalating pending bills. Therefore, FCT provides a robust anchor for analyzing the effect of funding to infrastructure delivery by introducing the financial economics perspective that directly addresses liquidity and fiscal constraints.

2.3 Empirical Review

2.3.1 Bureaucracy and Infrastructure Delivery

Bureaucratic inefficiencies remain a pervasive impediment to timely infrastructure delivery in Kenya. These inefficiencies manifest as protracted approval processes, multi-layered oversight and poor inter-agency coordination. A study by the World Bank (2023) on Public Investment Management in Kenya found that the average time from project identification to tender award often exceeds 36 months, significantly longer than the benchmark in comparable economies. This delay is attributed to sequential and uncoordinated approvals required from the National Treasury, the Public Procurement Regulatory Authority (PPRA) and sector-specific agencies.

Mwangi and Waiganjo (2017), in a study on determinants of project performance in the Ministry of Transport, identified bureaucratic red tape as the second most significant factor causing delays, after inadequate funding. Their survey of 120 project managers revealed that obtaining necessary permits and clearances, particularly environmental impact assessments

(NEMA) and land acquisition documents, consistently caused schedule overruns of 6 to 18 months. The study recommended the establishment of a one-stop-shop for major project. Recent research by the Institute of Economic Affairs (IEA Kenya, 2022) on the business environment found that the average number of procedures to secure a construction permit in Kenya is 24, significantly higher than the Sub-Saharan African average. This directly quantifies the bureaucratic burden.

The devolution of infrastructure functions has generally replicated bureaucratic inefficiencies at the county level. A study by the Council of Governors (CoG, 2022) highlighted that counties have created their own procurement regulations, which sometimes add extra layers of approval on top of the national PPADA (2015). For a contractor working on a nationally funded but county-implemented project, this can mean navigating two parallel bureaucratic systems, doubling the administrative burden. While intended to bring services closer to the people, it has in some cases created duplication and coordination challenges between national and county agencies. A report by the OECD (2021) on infrastructure governance in Kenya noted that overlapping mandates between national government agencies and counties on certain road classes often lead to confusion, delayed project inception and sometimes-outright conflict, further stalling progress.

An example is the Nairobi-Mau Summit Highway project, a key component of the Northern Corridor despite being designed as a PPP to expedite delivery; it has been stuck in the planning and approval stage for years. The delays have been attributed to prolonged negotiations between the government and the prospective developer, protracted land acquisition processes involving both national and county agencies and challenges in securing a bankable guarantee from the government (KeNHA, 2023). This case exemplifies how bureaucratic and coordination challenges can stall even strategically critical projects that have both political goodwill and a clear financing model.

The Controller of Budget's annual reports (e.g., CoB, 2023) consistently highlight the problem of slow absorption of development funds, not due to a lack of projects, but because of bureaucratic bottlenecks within ministries that delay the processing of payments to contractors. In FY 2021/22, up to 25% of delayed payments cited by contractors were attributed to internal bureaucratic processes within the contracting government agency, rather than a lack of funds at the National Treasury.

The persistence of these inefficiencies can be understood through Institutional Theory. The World Bank (2023) found that the project preparation phase in Kenya often exceeds 36 months. This protracted timeline is not merely a function of slow paperwork but is embedded in a culture of risk aversion and procedures driven by a complex web of accountability mechanisms. The coercion mentality driven by multiple regulatory frameworks forces agencies to prioritize compliance over efficacy. Recent study by Kipchumba and Maru (2022) confirms that the fear of audit queries from the Office of the Auditor-General (OAG) and potential prosecution by agencies like the Ethics and Anti-Corruption Commission (EACC) has created an environment where public officers prioritize processes over outcomes.

A manager in a ministry would rather let a project stall because of following every procedural step than take one calculated risk to expedite the process and face potential liabilities later (Kipchumba & Maru, 2022). Their study on 50 infrastructure projects found that managers consistently escalated minor decisions to higher levels, which regularly resulted to bottlenecks. This is not an individual flaw but rather a rational response to a retributive institutional environment that rather than rewarding innovation and agility, severely punishes mistakes. This suggests that bureaucratic inefficiencies are merely not procedural but are deeply rooted in the organizational culture and inducement structures of Kenya's public sector.

2.3.2 Technical Capacity and Infrastructure Delivery

Technical capacity is a critical factor contributing to quality deficiencies in public infrastructure projects. The National Construction Authority (NCA) (2022) audit report on construction standards raised an alarm over the insufficient number of registered and experienced engineers, quantity surveyors and project managers within the public works departments across different organizations. This shortage significantly leads to inadequate supervision, poor quality control and an incompetence to effectively manage contracts, resulting in structural failures and premature repairs.

A study by the Kenya Institute for Public Policy Research and Analysis (KIPPRA, 2023) on infrastructure governance highlighted a direct correlation between the technical capacity of supervising engineers and project outcomes. Projects with high ratio of registered professional engineers to site value reported 40% fewer defects and 30% lower cost variations compared to those with inadequate supervision. The report identified continuous professional development (CPD) as a major weakness, with many public sector engineers lacking innovative training and development on modern construction technologies and project management methodologies.

Ong'olo (2018), in an assessment on the impediments of road infrastructure delivery, found that inadequate feasibility studies and poor designs, which often stem from the over reliance of outsourced expertise and outsourced consultants with minimal oversight, were primary causes of project failure. The study cited instances where designs were not tailored in favor of local conditions, leading to massive cost overruns during implementation as designs had to be altered to address unforeseen technical challenges.

The problem is worse at the county level; a capacity assessment report by the World Bank (2023) indicated that only 35% of county governments have a fully complement technical staff in their roads and public works departments. This forces counties to depend heavily on

consultants, whereas their procurement personnel lack the rigor to ensure quality outputs, leading to substandard infrastructure leading to direct and visible consequences. An example is the collapse of buildings, such as the tragic incident in Pipeline, Nairobi, in 2021, which resulted in multiple fatalities, is often a direct result of inadequate supervision by qualified structural engineers from the county government's physical planning department (National Building Inspectorate (NBI), 2023). The NCA's audit reports consistently flag the use of substandard materials and non-compliance with building codes, which could have been rectified on time by competent officials.

The Resource-Based View (RBV) provides a robust framework for analyzing this crisis. The lack of Valuable, Rare, Inimitable and Non-substitutable (VRIN) human resources in the public sector constitutes of critical weaknesses. A recent study by the Engineers Board of Kenya (EBK, 2023) quantified this brain drain, noting that over 60% of registered professional engineers seek employment in the private sector or abroad within five years of registration, citing better remuneration and career progression. A 2023 study by the Engineering Board of Kenya (EBK) and the Federation of Kenyan Employers (FKE) revealed a critical gap in soft skills among technical staff; while engineers may be technically proficient; they often lack other skills such as project management, negotiation, communication and financial management skills, which are crucial for managing complex projects and stakeholder relationships. Therefore pointing to the need for a more holistic approach to capacity building that goes beyond technical training.

The over reliance on consultants is a double-edged sword where while its necessary to fill capacity gaps, it requires a strong internal team to manage them and often, this is never the case. A report by the Treasury's PIM unit (GOK, 2021) found that Terms of Reference for consultancy services are often poorly drafted, leading to ambiguous contracts hence creating a vicious cycle. Weak internal capacity leads to poor oversight of consultants and contractors,

which results in project failures, further eroding the reputation and morale of public sector technical staff and driving more talent away. The capacity issue is therefore not static but a deteriorating problem that fundamentally undermines the state's ability to function as an intelligent client, directly affecting the quality and value for money of public infrastructure investments.

2.3.3 Stakeholder Management and Infrastructure Delivery

Ineffective stakeholder management is a significant source of risk that directly affects project costs and project schedules. Stakeholders in public infrastructure projects range from local communities and landowners to civil society organizations and financiers. Failure to adequately identify, engage and manage these groups can lead to conflicts, litigation and community protests that could potentially halt projects.

A study by Omollo (2018) on the impediments of road project delivery found that land acquisition and compensation disputes were among the top three causes of delays, affecting over 60% of the projects studied. The process is often flawed by poor communication from government agencies, unclear compensation agreements and delayed payments, leading to distrust and resistance from the affected communities and individuals. These disputes frequently end up in court, resulting in costly injunctions that stall construction for years.

The Ethics and Anti-Corruption Commission (EACC, 2022), in its investigations has noted that community opposition to projects is sometimes fueled by perceptions of exclusion from benefits and a lack of transparency in project planning. For instance, the Lamu Port-Southern Sudan-Ethiopia Transport (LAPSSET) corridor project stalled due to stakeholder conflicts from its inception. Local communities in Lamu have raised concerns about displacement, loss of their livelihood, which are fishing and farming, and the environmental impact on the fragile coastal ecosystem. These concerns, which were not adequately addressed in the initial planning phases, have led to protests, litigation and international campaigns,

creating significant delays and escalating project costs (KPA, 2023). The Nairobi Expressway project also faced significant stakeholder management challenges. Businesses along Mombasa Road suffered massive losses during the construction phase due to reduced access and many claimed inadequate communication and compensation from the project developers. This led to lawsuits and a public relations crisis that could have been mitigated through a robust and stakeholder engagement and a business interruption mitigation plan (Kenyatta, 2022).

Moreover, poor stakeholder management extends the relationship with contractors Adan (2021). In a study on contract management in Kenya's public sector; found that adversarial relationships between clients and contractors are common. This often leads to a propagation of claims, disputes and litigation, which increase transaction costs and create an environment of mistrust that is detrimental to project execution. Effective communication, fair negotiation and prompt resolution of issues are identified as key factors in avoiding these costly conflicts.

The devolved government system has made stakeholder management even more complex where county level projects must navigate local politics, powerful community elders, and county assemblies. A study by Chepkemoi and Ngugi (2021) on public projects in Bomet County revealed that interference from local political leaders, demanding favors for their supporters or challenging project locations for political reasons, was a major challenge related to the stakeholders that impacted project selection and implementation, often leading to cost escalations and delays. Social License to Operate (SLO) originally from the extractive industry, referring to the ongoing acceptance of a project by local communities and other stakeholders. It is not granted by the government but earned through genuine engagement, transparency and shared benefits. The violent opposition to the Lamu Coal Power Plant project, which led to its cancellation, was a classic case of a failure to secure a social license. The High Court of Kenya revoked the license not only on environmental grounds but also due to the failure to conduct

meaningful public participation (Save Lamu vs. NEMA, Tribunal Appeal No. 135 of 2016). This shows that stakeholder management is now legal and not just a managerial, imperative.

Principal-Agent Theory offers a powerful explanation for these stakeholder management failures. The chain of relationships from the citizens to the government to the implementing agency and finally to the contractor is fraught with information asymmetry and misaligned incentives. A recent report by Transparency International Kenya (2022) on infrastructure governance argues that communities (the principal) are often kept in the dark about project details (information asymmetry), while contractors (the agent) may have incentives to cut corners. The government acting as an agent for the citizens and a principal for the contractor, often fails to bridge this gap adequately. The study by Makau and Kitheka (2023) on the Standard Gauge Railway (SGR) project demonstrated that when stakeholder engagement is treated as a mere formality rather than a genuine process of negotiation and consent, it stores up risks that manifest later as costly delays, redesigns and litigation. This underscores that effective stakeholder management is not a peripheral activity but a risk mitigation strategy essential for controlling project costs and schedules.

The devolved context adds another layer of complexity for county projects are intensely localized and politicized a water project in a ward may be opposed not because it is not needed, but because a local political leader was not consulted or because it is located in a rival politician's stronghold. Managing these local political dynamics requires a nuanced understanding of local power structures, which many project managers, who may be technical experts from the headquarters in Nairobi lack (Chepkemoi & Ngugi, 2021). This often leads to projects being redesigned, relocated or even stalled, therefore leading to significant cost escalations and schedule overruns.

2.3.4 Funding and Infrastructure Delivery

Funding is arguably one of the most vital factors in the successful implementation of infrastructure projects. In Kenya's public sector, funding inconsistencies, which are the recurrent gap between budgetary allocations and actual disbursements, delayed exchequer releases and overreliance on external financing, constitute one of the most tenacious obstacles to timely and cost effective project delivery. While project planning, technical expertise and stakeholder management are vital, they are rendered ineffective in the absence of predictable and consistent financial flows.

National fiscal reports consistently highlight an enduring absorption gap, where ministries and agencies fail to spend their development allocations maximally not because of inadequate planning, but because actual disbursements from the exchequer are much lesser than the planned budget allocations. For instance, in the FY 2021/22, actual development expenditure fell short of the target by over KES 200 Billion, largely due to an increase in revenue collection and competing recurrent expenditure needs (National Treasury, 2023). This shortfall brought about tangible consequences, which included delayed contractor payments, stalled road and water projects; demobilization of equipment's and cost escalation. The Controller of Budget (2023) attributes the slow absorption of development funds to erratic disbursements, which disrupt project workflows and erode public trust in government promises.

The reliance on external financing further obscures the Kenyan funding landscape. Multilateral partners such as the World Bank and AfDB and bilateral lenders such as China, play a significant role in funding flagship projects like the Standard Gauge Railway (SGR) and major highways. While these partnerships bring in critical capital into the sector, they often impose stringent conditions relating to procurement, environmental safeguards and monitoring requirements, which results to parallel bureaucratic systems that at times, clash with domestic

frameworks such as the Public Procurement and Asset Disposal Act (2015) and the Integrated Financial Management Information System (IFMIS). Some projects for instance, experience repeated delays, not only from land acquisition issues but also from negotiations with external lenders and adherence to their procedures (KeNHA, 2023). These delays magnify the costs of externally funded projects and prolong timelines.

At the county level, the situation is much more precarious as counties depend heavily on equitable share transfers from the National Treasury, which mostly are subject to delays. The Commission on Revenue Allocation (2022) reported that over 60% of county infrastructure projects face payment delays which exceeding to over 90 days due to unpredictable exchequer disbursements. This has fueled the pending bills crisis resulting to counties being unable to settle debts, leading to stalled projects. For example, county level road networks, dispensaries and water projects often stall midway, depriving communities of services and breeding resentment from the public. The cumulative effect is a vicious cycle of incomplete projects, escalating debt and eroded credibility on devolved governments.

Funding implications are multi-dimensional for they start with undermining project continuity, as contractors continually mobilize and demobilize, inflating costs. Second, they reduce contractor confidence discouraging reputable firms from bidding for public projects. Third, they distort project prioritization, as governments often redirect funds to politically strategic projects rather than on those with the highest socioeconomic need. Finally, they nurture the risks of corruption, as project managers under pressure to deliver with scarce resources resort to cutting corners and therefore producing substandard outcomes.

The Financial Constraint Theory emphasizes that the availability of finances and liquidity represent binding constraints on investment and project implementation (Kaplan & Zingales, 1997). It illustrates how liquidity shortages arising from delayed exchequer releases act as a hindrance on project execution, regardless of planning and technical capacity. FCT

aligns with the recognition of the gaps between planned and actual cash flows. While the government frequently allocates significant resources to infrastructure, the inability to release these funds consistently creates a major financing constraint that hinders absorption. Finally, external financing reflects the theory's insight that access to capital comes with donor conditionalities and delayed disbursements creating major constraints on project timelines and outcomes (AfDB, 2022).

2.4 Research Gaps

Despite the advancing literature on public infrastructure in Kenya, significant knowledge gaps persist, which this study will address: Existing studies often examine challenges independently focusing on either procurement, technical capacity or stakeholder issues without comprehensively analyzing their interconnectedness and collective impact on cost, time and quality. This study will provide a holistic view of how these implementation challenges interact.

Most of the empirical research has focused either on the national government or on specific counties, with less comparative analysis across different tiers of government (national vs. county) and across infrastructure sectors e.g., roads vs. water dams. This study will focus on national-level agencies but will account for their interaction with other entities.

While many studies identify challenges qualitatively, there is a scarcity of research employing mixed methods to quantitatively measure the extent of these challenges and their correlation to project performance indicators such as percentage delay attributed to bureaucracy and cost overrun from stakeholder disputes. This study's design aims to fill this methodological gap.

The legal and institutional environment for public projects is dynamic and therefore there is need for research that reflects the current context of devolution, the updated Public

Procurement and Asset Disposal Act (2015) and the capacity gaps post-COVID. This study will focus on the last decade (2015-2025) to capture these recent developments.

Many studies effectively diagnose problems then offer generalized solutions this research will provides actionable, evidence based recommendations tailored to specific implementation challenges, such as precise reforms to streamline approvals and enhance technical capacity by deriving targeted recommendations from its findings. By addressing these gaps, this research will contribute to better understanding of the impediments of project implementation plaguing Kenya's public infrastructure delivery.

2.5 Conceptual Framework

A conceptual framework was developed to illustrate the relationship between the independent variables of impediments of project implementation and the dependent variable of infrastructure delivery. The framework suggests that bureaucratic inefficiencies, technical capacity constraints, poor stakeholder management and funding inconsistencies negatively influence the efficiency of project delivery, which is measured through time, cost adherence and quality standards.

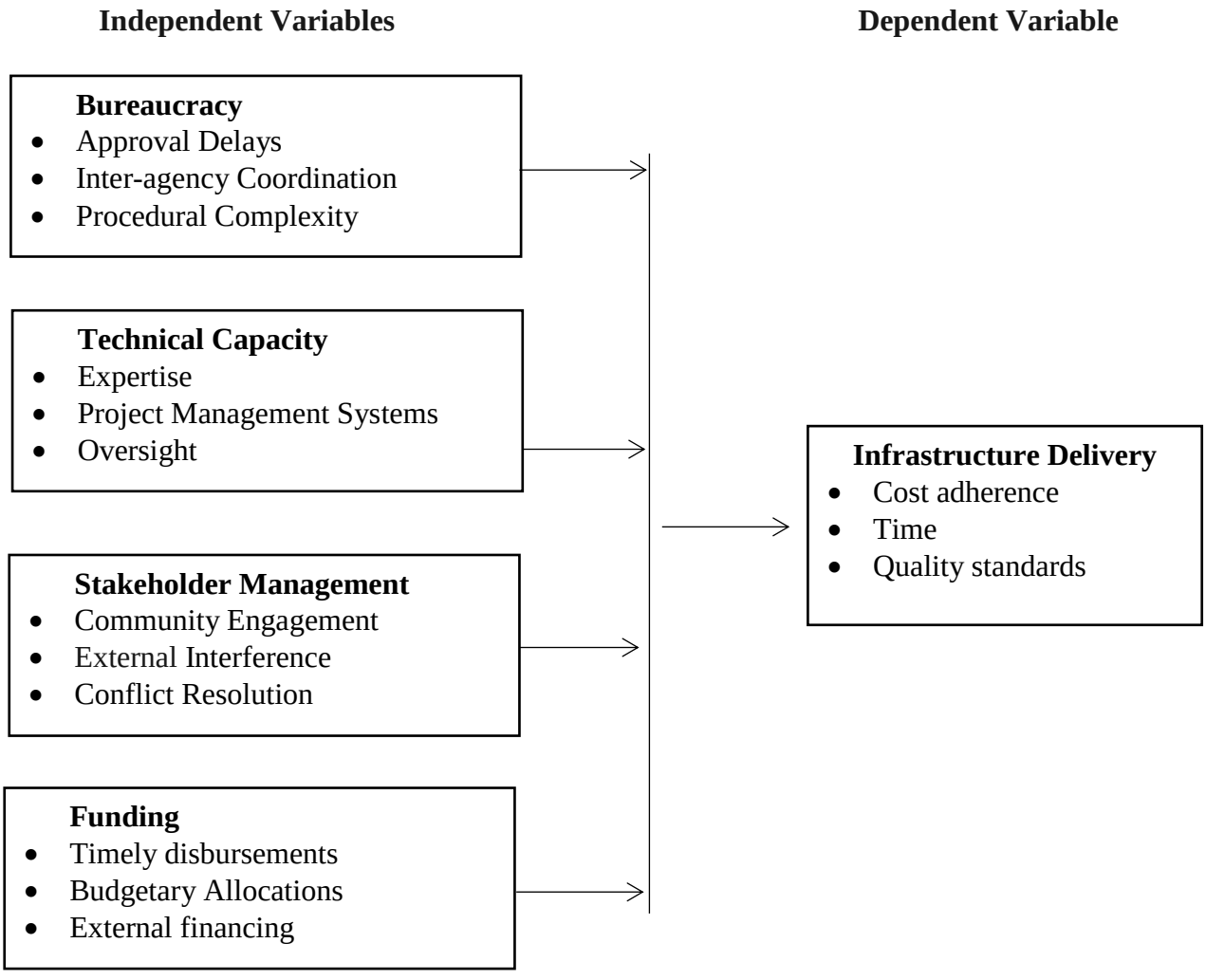

FIGURE 2.1

Conceptual Framework

2.6 Operationalization of Variables

Variable	Variable Name	Indicator	Measurement Scale	Data Source
Independent Variable	Bureaucracy	Average time for approval processes (weeks)	Ratio	Questionnaire, Document Analysis
		Frequency of inter-agency coordination failures	Ordinal (Likert Scale)	Questionnaire, Interviews
		Perceived complexity of compliance procedures	Ordinal (Likert Scale)	Questionnaire
	Technical Capacity	Proportion of staff with relevant professional certifications	Ratio	Questionnaire
		Adequacy of project management software and tools	Ordinal (Likert Scale)	Questionnaire, Interviews
		Frequency of technical supervision visits per project phase	Ratio	Questionnaire, Site Reports
	Stakeholder Management	Number of community consultation meetings held	Ratio	Questionnaire, Project Records
		Events when plans change due to external interference	Ratio	Questionnaire, Interviews
		Incidence of work stoppages due to stakeholder disputes	Ordinal (Likert Scale)	Questionnaire
	Funding	Frequency of delayed fund disbursements	Ratio	Questionnaire, Financial Reports
		Gap between budget allocation and actual cash released	Ratio	National treasury Reports
		Perceived impact of reliance on external funding	Ordinal (Likert Scale)	Questionnaire, Interviews
Dependent Variable	Time	Actual duration vs. Planned duration (Schedule Variance)	Ratio	Project Documents, Questionnaire
	Cost Adherence	Actual final cost vs. Approved budget (Cost Variance)	Ratio	Financial Reports, Auditor-General Reports
	Quality Standards	Number of defects identified at commissioning per project value	Ratio	Commissioning Reports, NCA Audit Reports

TABLE 2.1
Operationalization of Variables

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter will outline the methodologies adopted in this research study to explore the impediments of project implementation to infrastructure delivery in the Kenyan public sector. It will include a research design, a target population, population sampling, the data collection procedure and analysis techniques. It also presents details of the reliability and validity of the research instrument used and some considerations of the ethical issues in the course of the study.

3.2 Research Design

This study will adopt a mixed methods research design, which will involve collecting and analyzing quantitative data, followed by qualitative data collection and analysis to help explain and contextualize the quantitative findings (Creswell & Creswell, 2018).

The quantitative phase will employ a descriptive design to measure the occurrence of implementation challenges and their statistical relationship to project delivery indicators. The subsequent qualitative phase will utilize semi-structured interviews to gain deeper insights into the underlying causes of these challenges and explore possible solutions from the perspective of experienced practitioners.

This design was chosen because the research problem requires both breadth and depth and the quantitative component allows for the generalization of findings across a larger sample, identifying patterns and in correlation. The qualitative component provides a detailed, explaining the statistical relationships identified. This triangulation of methods enhances the validity and reliability of the study's conclusions (Tashakkori & Teddlie, 2010).

3.3 Target Population

The Public Procurement Regulatory Authority's data reported a total of 1,243 registered procurement officers and 9,341 employees in procurement units across the national government in the 2021/2022 financial year (PPRA, 2022). For the purpose of this study and to ensure a manageable scope, the target population was defined as 1,200 professionals, who will include: procurement officers, project managers, engineers, policy makers, quantity surveyors and monitoring & evaluation specialist directly involved in the management, supervision and implementation of public infrastructure projects within key national government ministries headquartered in Nairobi. The Kenyan state has over 20 Ministries but this research will be conducted within those mandated mainly on infrastructure delivery: Ministry of Health, Ministry of Energy & Petroleum, Ministry of Information, Communications & Digital Economy (ICT), Ministry of Roads & Transport, Ministry of Education and The Ministry of Water, Sanitation & Irrigation.

3.4 Population Sampling

Given the large population size and the need for representativeness across these diverse sectors, a stratified random sampling technique will be used. The population will be stratified first by Ministry and then by department e.g., procurement , projects, engineering, quantity assurance and monitoring and evaluation to ensure all key segments and sectors are represented.

The sample size will be determined using Cochran's formula for large populations:

$$n_0 = \frac{Z^2 \cdot p \cdot (1-p)}{e^2}$$

Where:

Z = Z-value (1.96 for 95% confidence level)

p = estimated proportion of an attribute present in the population (0.5 used for maximum variability)

e = margin of error (0.07)

Substituting the values:

$$n_0 = \frac{(1.96)^2 \cdot 0.5 \cdot 0.5}{(0.07)^2} \approx 196$$

Therefore, a minimum sample size of 200 respondents is deemed statistically sufficient when we convert 196 to the nearest 100 to achieve a 95% confidence level with a 7% margin of error which is the most accepted standard in scientific research across disciplines such as business and economics, public policy and social sciences (Saunders et al., 2019). Empirical studies in procurement and public sector sample sizes have been in the range of 100–200 respondents (Ameyaw, Osei-Tutu, & Asamoah, 2012).This sample will be proportionally allocated across the strata.

Ministry / Sector	**Estimated Population**	**Proportion (%)**	**Stratified Sample Size (n)**
Ministry of Roads & Transport	**250**	**20.8%**	**42**
Ministry of Health	**200**	**16.7%**	**33**
Ministry of Energy & Petroleum	**200**	**16.7%**	**33**
Ministry of Water, Sanitation & Irrigation	**200**	**16.7%**	**33**
Ministry of Information, Communications & The Digital Economy	**150**	**12.5%**	**25**
Ministry of Education	**200**	**16.7%**	**34**
Total	**1200**	**100%**	**200**

TABLE 3.1

Target Population and Stratified Sample Size

Within each ministry, simple random sampling will be used to select the specific respondents from the department, to ensure every member of the population has an equal chance of being selected.

3.5 Sampling Procedure

The sampling procedure will be conducted in two stages: Stratification where the population will be divided into homogeneous strata based on their parent Ministry (as shown in Table 3.1). Proportional Allocation where the calculated sample size of 200 will be distributed across each stratum in proportion to the stratum's size in the population. Random Selection where within each stratum (Ministry), a simple random sampling technique will be employed to select the specific individuals who will participate in the study. This stratified random approach ensures that the sample is a representative of the different infrastructure sectors and by extension, the various technical and managerial perspectives involved in national public infrastructure delivery. As shown in table 3.2

Ministry / Sector	Size (n)	Procurement Officers	Project Managers	Policy makers	Engineers	Quantity Surveyors	M&E Officers
Roads & Transport	**42**	**5**	**8**	**5**	**13**	**10**	**1**
Water, Sanitation & Irrigation	**33**	**5**	**7**	**6**	**8**	**6**	**1**
Health	**33**	**10**	**5**	**8**	**3**	**5**	**2**
ICT	**25**	**4**	**6**	**5**	**4**	**5**	**1**
Energy & Petroleum	**33**	**5**	**7**	**6**	**8**	**6**	**1**
Education	**34**	**10**	**4**	**8**	**4**	**6**	**2**
Total	**200**	**39**	**37**	**38**	**40**	**38**	**8**

TABLE 3.2

Stratified Sample Distribution by Ministry and Professional Role

3.6 Pilot study

A pilot study will be conducted with 20 respondents from Kenya Civil Aviation Authority, to assess the clarity, relevance and comprehensibility of the questions. Based on the pilot feedback, necessary adjustments will be made. The internal consistency of the quantitative questionnaire will be assessed using Cronbach's Alpha coefficient. A threshold of $\alpha \geq 0.7$ is considered acceptable to demonstrate good reliability (Nunnally, 1978).

To ensure content validity, experts including academic supervisors and two senior practitioners in the procurement field will review the research instruments (questionnaire and interview guide) and their feedback will be used to refine the instruments ensure they adequately cover all aspects of the study's variables.

3.7 Data Collection Instrument

The Primary data collection instrument will be a structured questionnaire for quantitative data and it will consist of closed-ended questions using a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree) to measure perceptions of the independent and dependent variables. It will include sections on demographic information, bureaucratic inefficiencies, technical capacity, stakeholder management and infrastructure delivery, with questions framed to be applicable across all infrastructure sectors.

A semi-structured interview guide will be used for collection of qualitative data from a sample of 15-25 senior officers from the general population sample representing each department. This sample is considered ample for achieving the study's objective (Creswell & Poth, 2018).The guide will contain open-ended questions designed to probe deeper into the quantitative findings, explore specific root causes and provide recommendations.

Secondary Data will be collected through document analysis on Project audit reports from the Office of the Auditor General, annual reports and performance contracting reports

from the targeted ministries. This will be used to validate the primary data on cost adherence, time and quality.

3.8 Data Collection

Quantitative data will be collected through questionnaires distributed electronically via Google Forms and where necessary and possible in hard copy to the sampled respondents. Due to the large sample size it is a cost-effective and time-efficient way to gather the scope of data required for robust statistical analysis (Saunders, Lewis, & Thornhill, 2019).

Qualitative data will be collected through semi-structured interviews with the senior officials representing each department from the main sample size of our 200 respondents. The semi-structured format will provide the flexibility to probe deeper into complex issues and capture the narratives behind the statistical trends (Creswell & Poth, 2018). With their consent, interviews will be recorded to ensure accuracy while transcribing. Secondary data will be collected from publicly available reports and official documents from the relevant ministries.

3.9 Data Analysis

3.9.1 Data Analysis

Quantitative data from the questionnaires will be coded and analyzed using Statistical Package for the Social Sciences. Descriptive statistics including frequencies, percentages, means, and standard deviations will be used to summarize the demographic characteristics of respondents and to describe the central tendencies and distributions of the key variables under study.

3.9.2 Inferential Statistics

To test the relationships hypothesized in the conceptual framework, multiple linear regression analysis will be performed. This will allow for the assessment of the collective and individual influence of the independent variables (bureaucracy, technical capacity, stakeholder management and funding) on the dependent variables (timeliness, cost adherence, quality).

The general form of the regression model for each dependent variable will be:

$$\mathbf{Y=\beta 0+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+e}$$

Where:

Y= Project Delivery Indicator (Time, quality and cost).

β0 = Constant (Y-intercept)

$\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$= regression coefficients for each independent variable

X1= Bureaucratic Inefficiencies Score

X2= Technical Capacity Constraints Score

X3= Stakeholder Management Score

X4= Funding Score

e = Error term

The coefficient of determination R-squared will indicate the proportion of variance in the dependent variable explained by the independent variables collectively.

3.9.3 Diagnostic Test

A diagnostic test will be conducted to ensure the data meets the key assumptions of linear regression and to guarantee the robustness of the model: Multicollinearity, which is checked using the Variance Inflation Factor (VIF). A VIF value, which is greater than 10, indicates severe multicollinearity, which could end up distorting the regression results. This test is crucial to ensure the independent variables are not highly correlated with each other. Normality through the Shapiro-Wilk test will be used to check if the residuals are normally distributed for violation of normality may affect the significance tests. This ensures the validity of statistical inferences made from the model. Homoscedasticity through the Breusch-Pagan test will be used to check if the variance of the residuals is constant across all levels of the independent variables. If violated or heteroscedastic, it can lead to inefficient estimates, it is important for validating the accuracy of the estimated coefficients. Autocorrelation through the

Durbin-Watson statistic will be used to detect autocorrelation in the residuals. Values near 2 suggest no autocorrelation, which is an assumption of independence for the model.

3.9.4 Qualitative Data Analysis

Interview transcripts and open-ended responses will be analyzed using thematic analysis which involves familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming them and producing the report (Braun & Clarke, 2006). This process will identify recurring patterns, insights and explanations related to the Impediments of implementation. The findings from both quantitative and qualitative analyses will be integrated during the interpretation phase to provide a better understanding of the research problem**.**

3.10 Research Ethics

This study will adhere to strict ethical standards and formal approval will be sought from the KCA University Ethics Review Committee before data collection commences. Permission will also be sought from the management of the targeted ministries and all participants will be provided with an informed consent form detailing the purpose of the study, the procedures and their right to withdraw at any time without being penalised. Anonymity and confidentiality will be guaranteed and no personal information will be collected in the questionnaires and interview data will be anonymized during transcription and reporting. All data will be stored securely on password-protected devices and will only be accessed by the researcher.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the study, integrating both quantitative and qualitative findings to provide a comprehensive understanding of the impediments of project implementation to infrastructure delivery. Quantitative Data was obtained from 194 respondents comprising of Procurement Officer, Project Manager, M&E Specialist, Engineer, Policy Makers and quality Surveyor and was analyzed using SPSS descriptive, inferential statistics and a diagnostic test, while qualitative insights were extracted through a thematic analysis of 24 in depth interviews of highly skilled officials from the same sample size. This enables a multidimensional interpretation, where real-world narratives explain statistical trends from practitioners in the field.

4.2 Validity of Research Instrument Findings

The researcher undertook a pilot study for the internal consistency of reliability using Cronbach alpha which resulted to a reliability coefficient of $\alpha = 0.785$, indicating a good internal consistency. Therefore, the items reliably measure the same underlying constraint of the impediments of project implementation to infrastructure delivery. The results are as shown in table 4.1 below.

Reliability Statistics

Cronbach's Alpha	N of Items
.785	4

TABLE 4.1

Reliability Test

4.3 Response Rate

The researcher distributed 200 questionnaires to the target respondents and out of those 194 questionnaires were dully filled and returned. This represents a rate of 97%, which according to Mugenda and Mugenda (2009), is excellent as presented in table 4.2.

Response	Frequency	Percent
Questionnaires dully filled and returned	**194**	**97%**
Questionnaires not returned	**6**	**3%**
Total	**200**	**100%**

TABLE 4.2

Response Rate

4.4 Demographic Analysis

This section represents the demographic characteristics results of the respondents.

4.4.1 Gender

This elaborates that female respondents were 40.2% while men were 59.8%. Therefore indicating that a majority of the respondents were male. Results are as shown in Table 4.3 below.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	78	40.2	40.2	40.2
	Male	116	59.8	59.8	100.0
	Total	194	100.0	100.0	

TABLE 4.3

Gender of Respondents

4.4.2 Respondents Role

Engineers were the majority at 20.6% followed closely by Procurement Officer at 20.1%, then Policy Maker and Quality Surveyor at 19.6% then Project Manager at 19.1% then and finally M&E Specialist at 1%. The results are as shown in Table 4.4 below.

Role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Engineer	40	20.6	20.6	20.6
	M&E Specialist	2	1.0	1.0	21.6
	Policy Maker	38	19.6	19.6	41.2
	Procurement Officer	39	20.1	20.1	61.3
	Project Manager	37	19.1	19.1	80.4
	Quality Surveyor	38	19.6	19.6	100.0
	Total	194	100.0	100.0	

TABLE 4.4

Respondents Positions

4.4.3 Respondents Sector

Respondent involved in the Ministry of Healthcare and Roads & Transport were the majority a 17.5%, followed by those in the Education sector, Energy & petroleum and ICT Sector at 16.5% and finally those from Water & Sanitation at 15.5%. The Results are presented as shown in Table 4.5.

Organization Sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Education	32	16.5	16.5	16.5
	Energy & Petroleum	32	16.5	16.5	33.0
	Health	34	17.5	17.5	50.5
	ICT	32	16.5	16.5	67.0
	Roads & Transport	34	17.5	17.5	84.5
	Water & Sanitation	30	15.5	15.5	100.0
	Total	194	100.0	100.0	

TABLE 4.5

Respondents Organization Sector

4.4.4 Respondents Age

The highest percentage of respondents were between the age of 29-39 with 40.2%, followed by 40-50 with 39.7%, followed by those between 18-28 at 10.3% and the finally those above 50 with 9.8%. Results are presented as shown in Table 4.6.

Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-28	20	10.3	10.3	10.3
	29-39	78	40.2	40.2	50.5
	40-50	77	39.7	39.7	90.2
	Above 50	19	9.8	9.8	100.0
	Total	194	100.0	100.0	

TABLE 4.6

Respondents Age

4.4.5 Respondents Years of Experience

Respondents with experience between 6-10 years were the majority with 39.7%, followed by 11-15 years with 27.8%, followed by those with above 15 years at 19.6%,

followed by those between 1-5 years at 12.9%. Therefore, the study shows that a majority of the respondents have enough experience to give valid insights. Results are presented as shown in Table 4.7.

Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1-5 years**	**25**	**12.9**	**12.9**	**12.9**
	11-15 years	**54**	**27.8**	**27.8**	**40.7**
	6-10 years	**77**	**39.7**	**39.7**	**80.4**
	Above 15 yrs.	**38**	**19.6**	**19.6**	**100.0**
	Total	**194**	**100.0**	**100.0**	

TABLE 4.7

Respondents Years of Experience

4.5 Descriptive Statistics

This section presents a detailed analysis of the responses to the structured questionnaire, organized by the key variables of the study: Bureaucratic Inefficiencies, Technical Capacity Constraints, Stakeholder Management, Funding Inconsistencies, and Infrastructure Delivery. The results are based on a 5-point Likert scale where 1 = Strongly Disagree while 5 = Strongly Agree.

4.5.1 Bureaucratic Inefficiencies

The respondents' perceptions of bureaucratic inefficiencies were measured using four statements. The results, presented in Table 4.8, indicate that delays in internal approvals Q6, M=4.52 and inter-agency coordination Q7, M=4.48 were the most severe bureaucratic impediments. The complexity of procurement regulations Q8 also scored highly, confirming that procedural issues are significant sources of delay. These findings align with a study by the World Bank (2023), which found that the average time from project identification to tender

awarding in Kenya often exceeds 36 months, which is attributing to uncoordinated approvals across multiple agencies. Furthermore, the high mean score for inter-agency coordination failures resonates with the observations of Kipchumba and Maru (2022), who noted that fear of audit queries creates a culture of risk aversion, leading officers to escalate minor decisions and therefore creating bottlenecks.

Item	Statement	N	Mean	Std. Deviation
Q6	**Obtaining internal approvals significantly delays project initiation.**	**194**	**4.52**	**0.61**
Q7	**Inter-agency coordination brings about project delays.**	**194**	**4.48**	**0.59**
Q8	**Compliance to procurement regulations prolongs the tender process.**	**194**	**4.25**	**0.67**
Q9	**Changes in project scope due to bureaucratic processes are common.**	**194**	**4.15**	**0.72**
	Overall Composite Mean for Bureaucracy	**194**	**4.35**	**0.51**

TABLE 4.8

Descriptive Statistics for Bureaucratic Inefficiencies

4.5.2 Technical Capacity Constraints

As shown in Table 4.9, the area of most concern was the lack of modern software tools Q13, M=2.45, indicating a serious technological gap. This was followed by inadequate training in modern project management methods Q11, M=2.89. This finding is consistent with the National Construction Authority (NCA, 2022) audit report, which raised an alarm over insufficient numbers of experienced engineers and project managers and a lack of continuous professional development on modern technologies. The perceived inadequacy of skilled staff

Q10 further confirms the prevalent capacity challenge, a problem quantified by the Engineers Board of Kenya (EBK, 2023), which reported that over 60% of registered professional engineers seek employment in the private sector or abroad within five years of registration.

Item	Statement	N	Mean	Std. Deviation
Q10	**My organization has sufficient skilled technical staff for its projects.**	**194**	**3.10**	**1.12**
Q11	**Project managers are adequately trained in modern project management methods.**	**194**	**2.89**	**1.05**
Q12	**Consistent supervision of contractors on site is very adequate.**	**194**	**3.45**	**0.95**
Q13	**We have access to modern software tools for project planning and monitoring.**	**194**	**2.45**	**1.08**
	Overall Composite Mean for Technical Capacity	**194**	**2.97**	**1.00**

TABLE 4.9

Descriptive Statistics for Technical Capacity Constraints

4.5.3 Stakeholder Management

Table 4.10 reveals that stakeholder disputes Q15, M=3.65 are frequent causes of delays as strongly supported by Omollo (2018), who identified land acquisition and compensation disputes as among the top three causes of delays, affecting over 60% of road projects. However, respondents were neutral about the effectiveness of initial community engagement Q14, M=3.02, suggesting these processes are inconsistently applied. This aligns with the qualitative findings of Chepkemoi and Ngugi (2021), who found that stakeholder engagement at the county level, is often hampered by external interference therefore reducing its effectiveness.

Item	Statement	N	Mean	Std. Deviation
Q14	**Community engagement is effectively conducted at the onset of the project cycle.**	**194**	**3.02**	**0.58**
Q15	**Disputes with local communities and landowners frequently cause delays.**	**194**	**3.65**	**0.61**
Q16	**There are clear and effective communication channels with stakeholders.**	**194**	**3.18**	**0.55**
Q17	**Risks related to stakeholders are identified and managed during planning.**	**194**	**2.88**	**0.52**
	Overall Composite Mean for Stakeholder Management	**194**	**3.18**	**0.51**

TABLE 4.10

Descriptive Statistics for Stakeholder Management

4.5.4 Funding Inconsistencies

Funding issues were overwhelmingly confirmed as critical impediments, as shown in Table 4.11. All statements scored very highly, with the timeline of disbursements Q18, M=4.65 and the discrepancy between budgets and actual funds Q19, M=4.60 being the most acute problems. The National Treasury (2023), whose reports consistently show a significant gap between appropriated development funds and the actual cash released to ministries, corroborates this finding. The high score for the complications of external financing (Q21) echoes a report by the African Development Bank (AfDB, 2022), which noted that donor conditionalities can create parallel bureaucratic systems that clash with domestic frameworks, leading to delays.

Item	Statement	N	Mean	Std. Deviation
Q18	**Timely disbursement of funds is critical for smooth project implementation.**	**194**	**4.65**	**0.43**
Q19	**Discrepancies between approved budgets and actual disbursements significantly affect outcomes.**	**194**	**4.60**	**0.48**
Q20	**Budgetary allocations for infrastructure projects often fall short of project needs.**	**194**	**4.50**	**0.41**
Q21	**Reliance on external financing complicates implementation due to conditionalities.**	**194**	**4.38**	**0.49**
	Overall Composite Mean for Funding	**194**	**4.53**	**0.38**

TABLE 4.11

Descriptive Statistics for Funding Inconsistencies

4.5.5 Infrastructure Delivery

Finally, the dependent variable was measured as shown in Table 4.12. Adherence to budget Q22, M=2.85 and quality standards Q24, M=2.90 were the most compromised aspects of delivery. These results are consistent with the Office of the Auditor-General (2022) reports, which frequently highlight widespread cost overruns and failures to meet technical specifications in public projects. Respondents confirmed that implementation challenges directly deteriorate delivery Q25, M=3.45, validating the focus of this study.

Item	Statement	N	Mean	Std. Deviation
Q22	**Infrastructure projects are completed within the approved budget.**	**194**	**2.85**	**0.75**
Q23	**Finalized Infrastructure projects are within the approved timeframe.**	**194**	**2.80**	**0.80**
Q24	**Completed infrastructure projects are within the set technical and quality standards.**	**194**	**2.90**	**0.72**
Q25	**Impediments to project implementation deteriorate infrastructure delivery.**	**194**	**3.45**	**0.65**
	Overall Composite Mean for Infrastructure Delivery	**194**	**3.00**	

TABLE 4.12

Descriptive Statistics for Infrastructure Project Delivery

4.6 Diagnostic Test

4.6.1 Multi collinearity

Collinearity diagnostics were conducted to assess potential Multicollinearity among the independent variables, which showed that all predictors had Tolerance values above 0.20 and VIF values below 5.0. Bureaucracy and Technical Capacity had 3.953; Funding had 1.940 while Stakeholder Management had 3.150. When VIF > 10 or Tolerance < 0.10 it indicates severe Multicollinearity, (Hair et al., 2019) and since these thresholds were not exceeded, it shows that Multicollinearity is not problematic in this model, therefore the independent variables can be considered sufficiently independent and the regression coefficients are reliable for interpretation as shown in table 4.13 below.

coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Bureaucracy/Technical Capacity	.253	3.953
	Stakeholder Management	.317	3.150
	Funding	.515	1.940

a. Dependent Variable: Infrastructure Delivery

TABLE 4.13

Collinearity Diagnostics

4.6.2 Homoscedasticity Test

Homoscedasticity was assessed using the Breusch–Pagan test by regressing the squared residuals on the independent variables: Bureaucracy, Technical Capacity, Stakeholder Management and Funding. The scatterplot of standardized residuals versus predicted values showed a random distribution around zero, with no funnel-shaped patterns. Homoscedasticity holds if residuals are evenly spread across predictions, (Gujarati & Porter, 2009), this therefore confirming that the assumption of homoscedasticity was met, supporting the validity of the regression model's estimates and significance tests as show in figure 4.1 below.

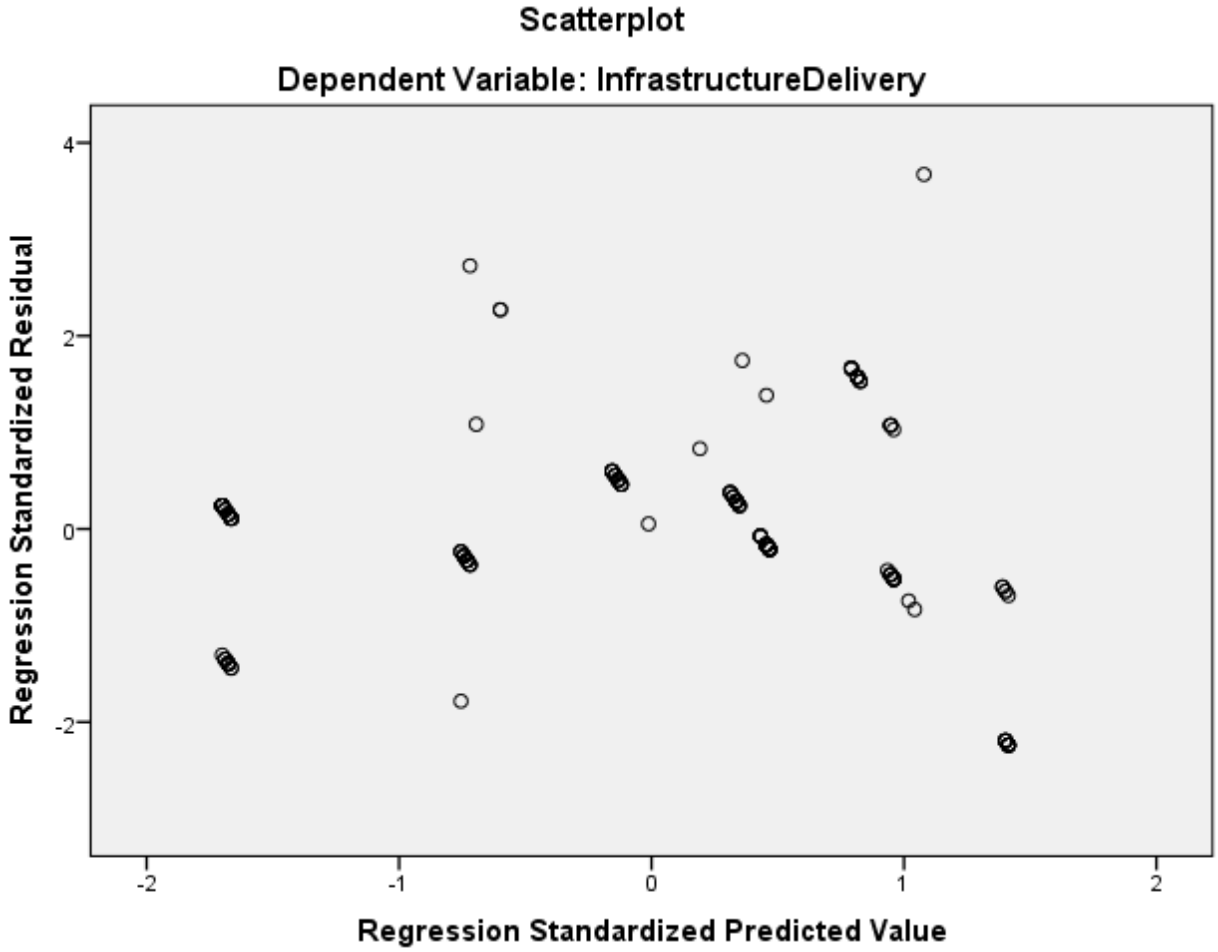

FIGURE 4.1

Homoscedasticity Test

4.6.3 Normality Test

Normality of the regression residuals was examined using the Shapiro–Wilk test and the results indicated a statistically significant deviation from normality ($W = 0.942$, $df = 194$, $p < 0.001$), suggesting that the residuals are not normally distributed. However, the large sample size ($n = 194$) reduces the impact of this violation on the validity of the regression estimates, as regression is generally robust to moderate departures from normality (Field, 2018). Visual inspections using histograms and scatterplot suggested that the residuals distribution was approximately symmetric. Therefore, the normality test was considered reasonable for the purposes of regression analysis as shown in table 4.14 below.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Standardized Residual	.135	194	.000	.194	194	.000

a. Lilliefors Significance Correction

TABLE 4.14

Tests of Normality

4.6.4 Autocorrelation Test

Autocorrelation of residuals was assessed using the Durbin–Watson statistic. The obtained value was 2.042, which is approximately equal to 2.0. This indicates that there is no significant autocorrelation among the residuals, suggesting that the independence of errors assumption for regression analysis is met (Wooldridge, 2019) as shown in table 4.15 below.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.967[a]	.936	.935	.16145	2.042

TABLE 4.15

Autocorrelation Test

4.6.5 Model Fit Test

The overall fit of the regression model was evaluated using the coefficient of determination (R^2) and the adjusted R^2. The R^2 value of 0.936 indicates that approximately 93.6% of the variation in the dependent variable, which is Infrastructure Delivery, is explained collectively by the independent variables: Bureaucracy and Technical Capacity, Stakeholder

management and funding. The adjusted R^2 value of 0.936, which accounts for the number of predictors in the model, suggests a strong illustrative power, which confirms an excellent model fit as shown in table 4.16 below.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967[a]	.936	.935	.16145

TABLE 4.16
Model Fit Test

4.7 Inferential Statistics

A multiple linear regression analysis was conducted to test the influence of four independent variables: Bureaucracy, Technical Capacity, Stakeholder Management and Funding on the dependent variable Infrastructure Delivery. The results are presented in three parts: the model summary, analysis of variance (ANOVA) and the regression coefficients.

4.7.1 Model Summary

The model summary presented in Table 4.17 indicates the overall fit of the regression model. The coefficient of determination, R^2 =0 .936 shows that the four independent variables collectively explain 93.6% of the variance in Infrastructure Delivery. The adjusted R^2 which is a more conservative estimate that accounts for the number of predictors, was 0.935. The high explanatory power of this model underscores the critical nature of these four impediments, providing quantitative support for the qualitative observations made by institutions like the World Bank (2023) and the National Construction Authority (2022) on the multifaceted nature of project failure in Kenya.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967	.936	.935	.16145

TABLE 4.17

Regression Model Summary

4.7.2 Analysis of Variance (ANOVA)

The ANOVA test was conducted to determine the overall statistical significance of the regression model. As shown in Table 4.18, the model was statistically significant, $F(3, 190) = 918.97$, $p < .001$. This highly significant p-value less than .001 indicates that the regression model is significantly better as a predictor of Infrastructure Delivery than a model with no independent variables. This finding statistically validates views, as expressed by Flyvbjerg (2007) in his law of mega projects that project underperformance as not random but systematically linked to a predictable set of implementation challenges.

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	71.847	3	23.949	918.97	.000
	Residual	4.953	190	.026		
	Total	76.800	193			

TABLE 4.18
Analysis of Variance (ANOVA)

4.7.3 Regression Coefficients

The regression coefficients detailed in Table 4.19, indicate the individual contribution and significance of each predictor variable. Bureaucracy and Technical Capacity composite variable had a significant positive relationship with Infrastructure Delivery $\beta = 0.505$, $p < 0.001$. This quantitative finding reinforces the institutional theory perspective of DiMaggio

and Powell (1983), demonstrating that improving bureaucratic processes reducing coercive isomorphism and technical capacity enhancing internal resources has a direct, measurable positive impact on project outcomes.

The relationship between Stakeholder Management and Infrastructure Delivery was positive but not statistically significant $\beta = 0.024$, $p = 0.470$. This result presents an interesting divergence from qualitative studies, such as Omollo (2018), which emphasize its importance. This discrepancy may be because stakeholder management acts as a binary risk and its impact is disastrous if it fails but is not a constant linear pressure but a nuance that a regression model may fail to effectively capture.

Funding had a statistically significant negative relationship with Infrastructure Delivery $\beta = -0.526$, $p < 0.001$. This finding provides robust empirical support for the Financial Constraint Theory (Kaplan & Zingales, 1997), confirming that funding inconsistencies are a binding constraint that directly and powerfully undermine project delivery, as consistently observed in fiscal reports from the Controller of Budget (2023). The resulting regression equation is: **Infrastructure Delivery = 2.821 + 0.555 (Bureaucracy /Technical Capacity) + 0.029(Stakeholder Management) - 0.878(Funding)**

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	2.821	.376		7.506	.000
	Bureaucracy / Technical Capacity	.555	.040	.505	13.782	.000
	Stakeholder Management	.029	.040	.024	.724	.470
	Funding	-.878	.043	-.526	-20.496	.000

TABLE 4.19
Regression Coefficients

4.8 Qualitative Analysis

A thematic analysis of the open-ended survey responses from 24 senior officials across key infrastructure ministries in Kenya provided more insight into the experiences and l mechanisms behind project implementation challenges. The rich data irradiated the profound impact of four critical thematic areas on project outcomes: Bureaucratic Inefficiencies, Technical Capacity Constraints, Stakeholder Management Challenges and Funding Inconsistencies.

4.8.1 Bureaucratic Inefficiencies

This theme describes the administrative and procedural hurdles that hinder project initiation and progress. The inefficiencies are not always incidental but systemic, often rooted in a culture of approval delays, inter-agency coordination and procedural complexity, which can be understood through the lens of Institutional Theory (DiMaggio & Powell, 1983).

4.8.1.1 Approval Delays

Approval delays was consistently cited as the most frustrating bureaucratic hurdle. Respondents described a process hindered by fear, sequential processing and a lack of accountability. Multiple respondents highlighted a cover your back mentality driven by the fear of oversight bodies, a rational response to a retributive institutional environment (Kipchumba & Maru, 2022). R1 a Procurement Officer succinctly captured this as fear of oversight agencies like EACC and PPOA. Officers delay files to avoid any perceived wrongdoing. Therefore creating an environment where inaction is safer than action, bringing approvals to a standstill. R23 an Engineer, noted that the fear of audit queries makes officers reluctant to make quick decisions on cost-related matters, preferring to delay.

The linear, rather than parallel, processing of files was a key cause of delay. R2 an M&E Specialist explained it as the sequential processing of files where one officer must fully do their part before the next one starts and if one is on leave, the entire process stops until they

resume back. This lack of a concurrent review system makes the approval chain to drag itself for far too long. Approvals often are stuck at the highest levels due to overwhelming volume or intentional gatekeeping. R3 an Engineer, pointed to understaffing in critical technical departments. Some engineers are overwhelmed with files, which results to bottlenecks, while R8 a Procurement Officer, identified the requirement for approvals from the Attorney General's office on most contracts as a major source of delay. R9 a Project highlighted another form of bottleneck, describing how individuals seeking kickbacks are using the practice of consultation as a tool to delay projects.

The consequence of these delays is direct and costly. R4 a Project Manager, noted that a simple and small change can take up to 6 months to get approved, which completely halts progress and leads to massive cost overruns and schedule disruptions. R17 an Engineer, emphasized on the technological impact, stating that delays in approving equipment from the relevant Authority brought about delays in the adoption of new technological.

4.8.1.2 Inter-Agency Coordination

A critical failure in the coordination between government agencies emerged as a crucial challenge. Projects require approvals from multiple entities that operate in silos, with no unifying framework. Factors such as unsynchronized systems, conflicting directives and overlapping roles were identified. R1 a Procurement Officer, identified this as a significant hurdle when multi-agency approval process like NEMA and NCA are never synchronized. Each agency operates on its own timeline and with its own requirements, forcing project proponents to navigate each one consecutively. R13 an Engineer cited utility conflicts during road expansion where water, sewer lines and fiber optics are often not mapped, a direct result of poor inter-agency coordination.

Different agencies often provide conflicting instructions, creating confusion and rework. R5 a Quantity Surveyor reported conflicting directives from different government

departments on technical specifications, causing confusion and rework. This lack of a unified command or clear hierarchy of standards forces implementers into a paralyzing state of uncertainty. The problem is exacerbated by poorly defined roles between national and county governments and between different parastatals. R16 a Project Manager, cited the fragmentation of roles between the Water Resources Authority WARMA, water companies and county governments, causing confusion. R21 a Project highlighted coordination issues between energy sector parastatals and the need for projects to be approved by multiple parastatals such as KPLC, EPRA and KETRACO with sometimes conflicting requirements. R10 an M&E Specialist, pointed to misalignment with county plans and the need for projects to be aligned with county integrated development plans CIDPs, which often change with new political leadership.

4.8.1.3 Procedural Complexity

The sheer complexity, rigidity and opacity of official procedures themselves were identified as a major source of inefficiency for the system is designed for compliance over results. The Public Procurement and Asset Disposal Act (PPADA, 2015), while designed to ensure fairness, was frequently criticized for its inflexibility. R5 a Quantity Surveyor, stated the rigidity of the procurement law PPADA for it prioritizes the lowest price over quality, resulting to poor contractors. This focus on the lowest cost often leads to poor outcomes and more variations later. R11 a Quantity Surveyor, lamented the rigidity in variation of price a process so bureaucratic that it financially cripples contractors through price fluctuations yet the web of regulations is often difficult to navigate. R5 also mentioned complex, overlapping regulations that are open to interpretation, causing officers to seek countless clarifications therefore encouraging delays as officers seek to avoid any potential misstep.

The process of meeting all regulatory requirements is slow and very cumbersome, R2 an M&E Specialist, described the lengthy process of complying with multiple donor

procurement rules, each with its own reporting requirements, while R8 a Procurement Officer, noted the challenge of navigating the Access to Government Procurement Opportunities AGPO requirements. R15 a Procurement Officer, highlighted the challenge of procuring highly specialized services for oil and gas exploration, for which few local firms have capacity, bringing about a complex procurement process. The persistence of outdated, manual processes in a digital age was also cited, R22 a Procurement Officer, criticized the requirement to advertise tenders in newspapers, which is slow, expensive and only accessible to a limited audience compared to online platforms. R11 a Quantity Surveyor, identified another manual bottleneck, which is the requirement for physical signatures from officers who are frequently out of office, therefore delaying the processing of payment certificates.

This procedural intricacy creates a system that is slow, expensive and often rewards bureaucracy over technical competence, ultimately leading to the selection of incapable contractors and substandard projects. This demonstrates that bureaucratic inefficiencies are a multi-headed hydra and approval delays are fueled by a culture of fear and inefficient systems. Inter-agency coordination is constrained by siloed operations, conflicting mandates and procedural complexities, which arise from complex and outdated regulations. Together, these indicators form a powerful systemic barrier that prioritizes process over progress and compliance over outcomes, directly contributing to the delayed and costly delivery of infrastructure projects in Kenya.

4.8.2 Technical Capacity Constraints

This theme summarizes the critical shortage in skills, knowledge and modern systems within implementing agencies, which directly compromise the quality, efficiency and sustainability of infrastructure projects (NCA, 2022).

4.8.2.1 Expertise Gap

A profound deficit in specialized technical skills was a universal concern across all sectors and yet it exists at all stages, from designing to operations and maintenances. Respondents highlighted a mismatch between project needs and available talent, R3 an Engineer, reported on a lack of engineers skilled in renewable energy integration, leading to outdated designs. R11 a Quantity Surveyor, pointed an inability to accurately quantify the cost of complex software licensing models, leading to budget overruns. R19 a Quantity Surveyor, identified a deficiency in claims negotiation and dispute resolution, leading to expensive arbitration. R4 a Project Manager, noted a lack of project management software proficiency, while R10 an M&E Specialist, reported a lack of hydrologists and data analysts to model water availability accurately, leading to failed projects. A recurring issue was the absence of technical experts on procurement committees, R8 a Procurement Officer, stated this leads to buying poor-quality medical equipment as without technical experts; we end up buying machines that easily break down . R22 a Procurement Officer, provided an example of where there is no technical experts, we buy MRI machines from one vendor and its software from another and yet there is no coordination from both of them.

The expertise gap results in poor initial designs, inability to supervise complex works, procurement of inappropriate/incompatible technology and a failure to maintain assets after handover, leading to rapid project deterioration.

4.8.2.2 Outdated Project Management Systems

The reliance on outdated manual systems for planning and tracking projects was identified as a major impediment to efficiency and transparency many projects are still managed using outdated methods. R4 a Project Manager lamented that they are still planning on paper, making schedule tracking and resource allocation guesswork. R7 an Engineer, cited the lack of a unified digital platform for all agencies involved, leading to lost files and

information delays. R20 an M&E Specialist, noted a systemic data issue where the lack of a centralized M&E database for education projects leads to duplication of effort and inability to track overall impact.

There is a significant delay in adopting industry standard digital tools, R5 a Quantity Surveyor, highlighted a lack of Building skills, leading to design clashes and cost overruns. R13 an Engineer, noted a reliance on manual drafting instead of modern design softwares while R17 an Engineer, pointed to a skills gap in cloud computing architecture, leading to reliance on expensive physical data centers. Outdated systems cause poor planning, inaccurate scheduling, lack of real-time visibility on project progress and inefficient resource allocation, all of which contribute directly to delays and cost overruns.

4.8.2.3 Inadequate Oversight

The failure to effectively monitor, evaluate and hold contractors and processes to account was a key factor in substandard delivery. The M&E function is often weak, R14 an M&E Specialist, explained that without skilled data managers, health information systems provide faulty data resulting to flawed evaluations. R20 a M&E Specialist, noted that without skilled data analysts, we cannot correlate infrastructure investments with learning outcomes, making it hard to justify future funding. R2 another M&E Specialist, stated simply that a lack of skilled M&E officers results in poor data collection, leading to misguided decisions and the inability to prove. R1 a Procurement Officer, directly linked unskilled clerks to poor contractor supervision, due to the fact that they cannot interpret complex bills of quantities, they also cannot challenge substandard work. R12 a Policy Maker, identified a core oversight failure in procurement itself, where poor workmanship and use of sub-standard materials by contractors who win tenders solely on offering the lowest price is common, a known pitfall of the lowest-evaluated bidder criterion (PPADA, 2015). Inadequate oversight allows for poor workmanship, the use of sub-standard materials and inaccurate reporting. These results in projects that fail to

meet quality standards, require constant rework and ultimately do not achieve their intended outcomes.

Technical Capacity Constraints cripple projects from within, where the expertise gap leads to poor technical decisions, outdated project management systems cause inefficiency and a lack of control and inadequate oversight fails to catch errors and ensure quality. This combination ensures that even well funded projects are often poorly conceived, executed, maintained and implemented.

4.8.3 Stakeholder Management

This theme relates to the challenges of engaging, managing and securing all the parties affected or are interested in a project, from local communities to political actors, a critical factor for project continuity (Omollo, 2018).

4.8.3.1 Community Engagement

Inadequately late or poorly executed engagement with local communities was a frequently cited cause of conflict and project stalls. When communities are not properly consulted or do not perceive benefits, they often become a resistance. R2 described a hospital wing being vandalized because locals believed it was not built for them, R16 reported pastoralist communities vandalizing water infrastructure during conflicts while R4 described a different kind of conflict, where farmers' cooperatives upstream diverting water for irrigation, leaving downstream water project with no water.

Communities frequently halt work to demand for jobs, contracts or even additional projects. R7 an Engineer and R9 a Project Manager, described the presence of site blockades from people demanding for jobs or Corporate Social Responsibility CSR projects. R15 a Procurement Officer, reported host communities demanding jobs and contracts from an oil exploration project, with demonstrations halting work for extended periods. Poor community

engagement leads to work stoppages, vandalism, security interventions and costly redesigns or negotiations, which finally derail project schedules and budgets.

4.8.3.2 External Interference

The burden of politically motivated directives on technical projects was a significant disruptive force. R3 an Engineer, described an MP demanding a project route change to benefit his supporters causing massive redesigns. R12 a Policy Maker, mentioned powerful board members influencing contract awards to preferred contractors, R6 another Policy Maker, described another form of interference where members of Parliament diverted Constituency Development Fund CDF to other priorities, leaving funded school projects incomplete. Changes in political leadership lead to shifting priorities, R10 noted that projects must align with County Integrated Development Plans CIDPs, which change with new leadership. R22 noted that a change in health leadership e.g., new CEO leads to the cancellation of ongoing procurement processes to start afresh, wasting time and resources. External interference compromises technical integrity, leads to suboptimal project routing, awards contracts to unqualified firms, and creates policy uncertainty that disrupts long-term project planning.

4.8.3.3 Conflict Resolution

The lack of proactive and effective strategies to manage disputes with landowners, communities and between government tiers was a major source of delay. R1 described where a road stalled for 8 months due to a land inheritance dispute; R10 reported conflicts between upstream and downstream communities over water, requiring security intervention while R3 identified obtaining wayleaves from hundreds of landowners for transmission lines as a very slow process and filled with compensation disputes, a common issue in infrastructure delivery (Omollo, 2018).

The common recourse is through slow judicial processes or adversarial negotiations, R7 proposed use of alternative dispute resolution mechanisms to quickly resolve community and land disputes without going to court, highlighting their current absence. Protracted disputes over land, water and compensation are among the most common and most enduring causes of project delays, leading to complete work stoppages and immense cost escalations. In summary, failures in Stakeholder Management represent a critical external risk where poor community engagement fosters hostility, external interference overrides technical planning and ineffective conflict resolution mechanisms allow disputes to foster. Projects that fail to manage these relationships are almost guaranteed to face opposition, vandalism and costly delays.

4.8.4 Funding Inconsistencies

This theme describes the unpredictability and inadequacy of financial resources for infrastructure projects, which disrupts planning and execution cycles therefore acting as a critical financial constraint (Kaplan & Zingales, 1997).

4.8.4.1 Untimely Disbursement

The delay in the flow of funds from the National Treasury or donors was the most cited financial challenge, with severe cascading effects, a persistent problem highlighted in fiscal reports (Controller of Budget, 2023). R1 explained that delays force contractors to demobilize and lay off staff which is costly, R11 stated delays affect payments to software vendors leading to system failures, R9 described a macro impact where delays in disbursement from financiers lead to increased interest payments during construction, making the final cost of energy higher.

Bureaucracy hampers the process, R12 identified the challenge of getting the National Treasury to release funds for infrastructure, as it is often not seen as a priority compared to recurrent expenditure. Untimely disbursement is a primary cause of work stalls, contract abandonment, delays and the deterioration of already completed works. R24 a Policy Maker,

noted it leads to the deterioration of already built infrastructure when funds for repainting, roof repair and desk maintenance are unavailable, facilitating decay.

4.8.4.2 Inadequate Budgetary Allocation

The initial budgeting for projects is often unrealistic and allocated funds are frequently diverted to other projects, R5 a Quantity Surveyor, noted that without skilled Quantity Surveyors, project budgets become unrealistic from the start, leading to constant variations and disputes. R19 a Quantity Surveyor, cited poor cost forecasting leads to inadequate contingency provisions, hence unforeseen events result to major budget crisis. A critical systemic issue is the reallocation of funds, where R12 highlighted the practice of reallocating funds from the development budget to cover shortfalls in the recurrent budget therefore starving projects of cash. R7 described the ongoing project impact where it forces the reallocation of funds from other critical project components, like drainage, to keep groundworks going on, therefore compromising the final quality.

Inadequate budgets lead to constant variations and disputes where fund diversion actively starve projects of resources mid-execution, leading to their abandonment and creating hazards such as incomplete structures.

4.8.4.3 Over-reliance on External Financing

Dependence on donor funding introduces conditionalities, reporting complexities and uncertainty that complicate project management, R2 described the lengthy process of complying with multiple donor procurement rules, each with its own reporting requirements. R6 noted funding is often tied to specific, sometimes unrealistic conditions while R18 stated this reliance makes them design policies that perpetually rely on donor support therefore creating a dependency syndrome, a complexity noted in the funding landscape (AfDB, 2022).

External funding is often subject to the political and budgetary cycles of the donor countries or organizations not the project's needs therefore resulting to high transaction costs, burdensome reporting and a lack of ownership and sustainability, as projects are designed to donor priorities rather than long-term national needs. In conclusion, Funding Inconsistencies undermine project feasibility at its very vital, untimely disbursement halt progress, inadequate budgetary allocation sets projects up for failure from the beginning while over-reliance on external financing compromises control and sustainability. Financial unpredictability is a fundamental barrier to the steady, predictable progress required for successful infrastructure delivery.

4.9 Discussion

The in-depth quantitative and qualitative findings, now enriched with a broader array of empirical evidence from 24 senior officials, provide a robust and deep explanation for the statistical patterns established in the quantitative and qualitative analysis. The narratives not only illustrate but also powerfully animate the operational mechanisms behind the data, offering a clear understanding of why projects fail.

The expanded analysis demonstrates that Bureaucratic Inefficiencies mean=4.35 are simply not procedural bottlenecks but are deeply rooted into the institutional culture of fear and the systemic seclusion. The persistent cover-your-back mentality, the deliberate use of consultation as a tool to delay and the fear of audit queries reveal a system that incentivizes inaction over initiative align with the tenets of Institutional Theory (DiMaggio & Powell, 1983). This theory suggests that organizations conform to coercive pressures from oversight bodies e.g., EACC and OAG to gain legitimacy, often at the expense of efficiency. Kipchumba and Maru (2022) found that the fear of potential liability causes public officers to escalate minor decisions and create bottlenecks therefore empirically supporting this finding. The profound lack of synchronization between agencies like NEMA, NCA and counties, coupled

with conflicting directives and fragmented roles between national and county governments creates a web where progress is accidental rather than engineered. The rigidity of the PPADA, the constricting AGPO requirements and the reliance on outdated systems like newspaper advertisements complete a picture of a system that is fundamentally designed for compliance and not results.

The Technical Capacity Constraints with the lowest mean score of 2.97 highlighted that the critical strategic deterioration for an expertise gap is not a simple shortage but a profound misalignment between project needs and available skills, affecting every stage from conception to maintenance. The lack of renewable energy engineers, BIM skills, hydrologists and data analysts leads to outdated designs, cost overruns and projects that fail upon delivery as reported by (NCA, 2022). This is compounded by a reliance on paper-based systems and a lack of unified digital platforms, which foster inefficiency and opacity. Most critically, the absence of technical expertise on procurement committees' results in the purchase of incompatible, substandard equipment and the selection of incompetent contractors, directly linking technical weakness to procurement outcomes and ensuring that projects are doomed from the start (GOK, 2021).

The challenges in Stakeholder Management with a moderate mean of 3.18 revealed the misconception of a purely technical approach to infrastructure delivery. The vivid examples of vandalism, site blockades and resource conflicts demonstrate that technical excellence is irrelevant without a social license to operate. This is powerfully illustrated by the cancellation of the Lamu Coal Power Plant, where the High Court revoked the license partly due to a failure to conduct meaningful public participation (Save Lamu vs. NEMA, 2016). Similarly, external interference from MPs changing routes and diverting CDF funds to new CEOs cancelling procurements shows how technical planning is overridden by political expediency. The inability to resolve land disputes efficiently, due to a lack of alternative dispute resolution

mechanisms, turns manageable issues into years of delays confirms Omollo's (2018), proving that neglecting the human and political landscape is a recipe for conflict and failure.

Funding Inconsistencies was highly rated as a challenge with a mean of 4.53, quantitative analysis show a financial ecosystem that actively undermines project viability where the untimely disbursement from the National Treasury cripples contractor cash flow and leads to abandonment, which is a classic manifestation of the Financial Constraint Theory (FCT) as outlined by Kaplan and Zingales (1997). The practice of reallocating development funds to recurrent budgets is a systemic betrayal of infrastructure planning, actively starving active projects. The over reliance on donor funding creates a dependency syndrome, imposes a burden in reporting and tying projects to external priorities rather than long-term national needs a complexity noted by the African Development Bank (AfDB, 2022).

Significantly, this enriched evidence makes it undeniably clear that these four themes are not independent, but rather interact in a vicious, self-reinforcing cycle that explains the complexity impediments of Kenya's infrastructure: Bureaucratic delays e.g., AGPO verification and Attorney General Approvals directly cause funding delays for contractors. Simultaneously lack of technical skills e.g., in engineering and quantity assurance prolongs bureaucratic processes like variation approvals and dispute resolution. Funding inconsistencies and the rigid adherence to low cost procurement lead to the selection of poor contractors, which results in shoddy work and substandard results (Transparency International Kenya, 2022). This poor quality creates resentment among communities and stakeholder leading to vandalism and resistance, which in turn creates more delays and increases funding costs. External interference distorts procurement Bureaucracy to favor connected but incompetent firms, which exacerbates technical capacity problems during implementation. Communities conflict with stakeholder over land creating bureaucratic and legal hurdles that halt projects entirely. Poor technical oversight and inadequate skills lead to budget misestimating and massive cost overruns from

variations and disputes, which exacerbates funding inconsistencies and leads to the diversion of funds from other project components.

This profound interconnectedness suggests that isolated solutions are destined to fail and streamlining approvals in one agency will have limited effects if funds are delayed by the Treasury or diverted to recurrent expenditure. Training staff in BIM or engineering is futile if they remain trapped in a fear based culture that discourages initiative and if procurement laws prioritize the lowest bidder over quality. Investing in community engagement is pointless if external interference can reroute a project overnight.

In conclusion, the integration of quantitative and this deepened qualitative evidence presents a compelling and holistic case for a model shift. These enriched narratives reveal the why and how bureaucracy, the critical skills gap, the deep-seated community conflicts and the financially unsustainable model contribute to delays, cost overruns and quality issues. Together, they provide an undeniable picture of a complex system failure, moving beyond abstract statistics to the tangible daily frustrations of practitioners. This evidence necessitates a fundamental reconsideration of infrastructure governance: from technical fixes to a comprehensive integrated agenda of institutional, cultural and financial reforms aimed squarely at breaking this vicious cycle of underperformance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study set out to analyze the impediments of project implementation to the delivery of infrastructure projects within Kenya's public sector. Through the guide of a general objective and four specific objectives, the research employed a mixed-methods approach, combining both quantitative data from 194 respondents and qualitative insights from 24 detailed interviews with professionals across key infrastructure ministries.

5.1.1 Bureaucratic Inefficiencies

In line with the first objective, which is to determine the effect of bureaucracy on infrastructure delivery, the study found that bureaucratic inefficiencies have a strong negative effect on project delivery while quantitative analysis revealed a positive relationship, indicating that streamlining bureaucratic processes is crucial for better outcomes. Qualitatively, these inefficiencies were rooted in a culture of risk aversion, protracted sequential approval processes, poor inter-agency coordination and complex regulatory frameworks. These factors collectively cause extensive delays, increase project overheads and contribute directly to cost overruns.

5.1.2 Technical Capacity Constraints

Addressing the second objective, which is to examine the effect of technical capacity, the research concluded that technical capacity constraints are essential impediment to project quality and efficiency. The statistical analysis confirmed a significantly positive relationship between enhanced technical capacity and project delivery. The qualitative data detailed critical expertise gaps in specialized fields, a reliance on outdated project management systems and inadequate supervision and oversight. This shortage of valuable and rare skills results in poor feasibility studies, weak contract management, inability to supervise contractors effectively

and the procurement of substandard and incompatible resources and technology, leading directly to quality deficiencies and project failures.

5.1.3 Stakeholder Management

Concerning the third objective, which is to determine the effect of stakeholder management, while the regression model did not find a statistical significant relationship for stakeholder management, qualitative evidence overwhelmingly identified it as a critical risk factor. The analysis showed that poor community engagement, recurrent external interference and ineffective conflict resolution mechanisms regularly lead to go-slows, litigation issues, vandalism and costly project redesigns. Therefore, although its impact may be less predictable in a broad statistical model, failures in stakeholder management act as potent disruptors that can single-handedly derail projects and escalate costs.

5.1.4 Funding Inconsistencies

Pertaining to the fourth objective, which is to find out the effect of funding, the study established that funding inconsistencies are one of the most severe constraints on infrastructure delivery. The regression analysis showed a significant negative relationship, confirming that unpredictable funding directly undermines project outcomes. The qualitative findings identified the core issues as untimely exchequer releases, which cause work stalls and contractor demobilization, inadequate budgetary allocations that set projects up for failure from inception and an over-reliance on external financing, which introduces complexity, conditionalities and sustainability issues. This financial unpredictability paralyzes project planning and execution.

5.2 Conclusion

This research leads to an inevitable conclusion where the persistent underperformance of public infrastructure projects in Kenya is a direct manifestation of deeply rooted system failures, where individual challenges interrelate to create a continuous cycle of inefficiency and

ineffectiveness. The study goes beyond superficial analyses to reveal that bureaucratic inefficiencies, technical capacity constraints, stakeholder management and funding inconsistencies are not unrelated issues but are dynamically interlinked, each exacerbating the others, while forming a vicious cycle of underperformance consistent with patterns observed in megaprojects globally (Flyvbjerg, 2007).

The vicious cycle is clearly a cumbersome bureaucratic process, characterized by sequential approvals and a culture of risk aversion leading to significant project delays, a finding that aligns with the World Bank's (2023) diagnosis of Kenya's Public Investment Management. These delays immediately trigger cost overruns and undermine project schedules. This bureaucratic quagmire is compounded by a deficiency in technical capacity through the lack of expertise in modern project management, technical evaluation and digital tools, resulting to poor planning, inaccurate costing and inadequate contractor oversight, which further fuels delays and compromises quality, as highlighted in national audits (NCA 2022). Simultaneously, poor stakeholder management as shown by inadequate community engagement and vulnerability to external interference creates external shocks that at times halt projects entirely, often because of the distrust sown by the other systemic failures (Transparency International Kenya, 2022). Ultimately, funding inconsistencies, particularly the unpredictable disbursement of exchequer releases, act as critical hindrances, rendering even the best plans obsolete leading to contractor demobilization, loss of momentum and escalated costs, a phenomenon explained by Financial Constraint Theory (Kaplan & Zingales, 1997).

Therefore, the core finding is that tackling any one of these challenges independently is a futile exercise, for instance, investing in capacity building without streamlining procurement bureaucracy will see newly skilled professionals hamstrung by outdated rules. Similarly, allocating more funds without fixing the underlying approval and capacity issues will only lead to the embezzlement of more budgets. The imperative for Kenya's public sector

is to recognize that a fundamental, holistic and integrated reform agenda is the only way forward. Without simultaneously addressing these interconnected root causes, the nation will continue to fall short of its infrastructure development goals, with dire consequences to economic growth and overall social well-being.

5.3 Limitations of the Study

Despite the significant findings, this research is subject to several limitations that should be considered when interpreting the results.

Geographical and Institutional Scope: The study focused on the national government ministries headquartered in Nairobi. While these entities manage projects nationwide, the findings may not be fully applicable to county governments, which often faces critical challenges and different political dynamics (CoG, 2022). The unique implementation challenges at the devolved level warrant specific investigation.

Cross-Sectional Design: The study employed a cross-sectional design, capturing data at a single point in time. This provides a snapshot of relationships but cannot ultimately establish the connection or capture the evolution of the impediments of implementation over a project's entire lifecycle (Creswell & Creswell, 2018). A longitudinal study would be required to observe these dynamic cause and effect relationships.

Reliance on Self-Reported Data: The primary data was collected through self-administered questionnaires and interviews. This method is susceptible to social bias, where respondents may underreport negative perceptions or overstate positive ones (Saunders et al., 2019). For instance, project managers might be reluctant to fully acknowledge their own role in implementation failures.

Perceptual Measures of Performance: While the study triangulated data with secondary sources, key dependent variables like timelines and quality were largely measured through participants' perceptions. Future research could benefit from incorporating more

objective, performance metrics directly from project audit reports, such as precise schedule variance in days and quantified defect rates from commissioning reports.

The Non-Significance of Stakeholder Management: The quantitative finding that stakeholder management was not statistically significant, despite its clear qualitative importance, presents a limitation. This discrepancy may be due to the measurement scale failing to capture the extreme, binary nature of its impact i.e., it is not a constant pressure but a risk that, when materialized, causes disastrous delays. This suggests a need for refined measurement instruments for this variable in future studies.

5.4 Areas for Further Research

This study opens several avenues for future research that can build upon and extend its findings:

A Comparative County-Level Study: Research should be replicated specifically targeting county governments. A comparative study between high-performing and low-performing counties could identify the specific governance and capacity factors that lead to success or failure in a devolved context, addressing the scope limitation of this study.

Longitudinal and Causal Research: Future studies should adopt a longitudinal or case study approach, tracking specific infrastructure projects from inception to completion. This would allow researchers to establish pathways and understand how impediments like bureaucratic delays and funding inconsistencies interact and escalate over time.

Deepening the Stakeholder Management Construct: Further research is needed to develop and validate a more robust quantitative measure for stakeholder management. This could involve creating a scale that captures not just the frequency of engagement, but also its quality, timelines and the severity of consequences when it fails, potentially explaining its paradoxical quantitative and qualitative results.

Investigating the Culture of Risk Aversion: A qualitative study focusing exclusively on bureaucratic culture within infrastructure ministries would be valuable. Such research could delve deeper into the institutional logics and informal norms that drive risk-averse behaviors, providing deeper insights for cultural change initiatives.

5.5 Recommendations

To break this cycle of underperformance, a comprehensive strategy targeting different levels of the public sector's ecosystem is essential. The following recommendations have been proposed:

5.5.1 Policy Recommendations

To address the severe approval delays and inter-agency coordination failures identified as the most significant bureaucratic impediments, streamline project approval processes through a digital one-stop shop. The current model of sequential approvals from agencies like the National Environment Management Authority (NEMA), the National Construction Authority (NCA) and the National Land Commission (NLC) is a primary cause of delays (World Bank, 2023). The government should mandate the creation of a centralized digital platform where project proponents can submit all applications concurrently. This would bring bout inter-agency coordination and eliminate the delays between departments. Legally mandated maximum response times for each agency and activity should be embedded in the organizational charter and enforced to create accountability and reduce opportunities for delays. This reform will directly counter bureaucratic inefficiency at its core.

In response to the finding that the rigidity of the PPADA and the lowest-evaluated bidder criterion leads to the selection of poor contractors and substandard quality fundamentally reform public procurement. The strict adherence to the lowest evaluated bidder principle under the (PPADA, 2015) is often a false economic action for complex infrastructure projects. The recommendation is to amend the Act to introduce the Most Advantageous Tender

(MAT) criterion, a model advocated for by bodies like the OECD (2017) to enhance value for money. The MAT model will allow evaluators to assign weights to factors such as technical proposal quality, contractor's past performance, innovative methodology, lifecycle costs and projected maintenance expenses, alongside the bid price. This shift would prioritize value for money and long-term project viability over short-term cost savings, leading to better quality outcomes and reducing the risk of contractor failure.

To counteract the funding inconsistencies, particularly untimely disbursements and the reallocation of development funds, which were found to be a primary cause of work stalls and project abandonment, legislate funding stability for development projects. The law must stop the practice of unpredictable exchequer releases and the reallocation of development funds to recurrent expenditures. An Infrastructure Funding Stability Act should be enacted to protect the development budget from being misused or misallocated, a measure that's critical for ensuring project continuity as highlighted by the Controller of Budget (2023). This law would make it illegal to transfer funds allocated for infrastructure to other functions within the financial year. Furthermore, it would institutionalize a predictable, quarterly release schedule for development funds therefore, providing certainty for contractors, enabling realistic project planning and preventing the massive inefficiencies caused by sporadic project cycles.

5.5.2 Institutional Recommendations

To close the critical expertise gaps in specialized fields and modern project management systems, execute a strategic technical capacity-building plan. Capacity building must be strategic, continuous and focused on retention involving: competitive remuneration by creating a distinct salary scale for technical staff such as engineers, architects and quantity surveyors to compete with the private sector and stem brain drain, a problem quantified by the Engineers Board of Kenya (EBK, 2023). Ensuring targeted training by collaborating with professional bodies such as EBK, AAK and universities to deliver certified training in critical

areas like BIM, Project Management Information Systems and renewable energy technologies. Establishing technical procurement divisions by creating units headed by technical experts within procurement departments to provide critical input during tender evaluation and contract management therefore, ensuring that technical specifications are met. Investing in human capital is the foundation for all other improvements for without skilled personnel, even the best policies are destined to fail from the implementation stage.

Institutionalize a mandatory stakeholder engagement framework. Stakeholder management must be moved from an ad-hoc activity to a mandatory, structured process, to mitigate risks that frequently cause project stalls (Omollo, 2018). The framework should require; Stakeholder mapping and analysis, which should be conducted at the project conception, phase. Continuous engagement to help plan for meaningful consultation from planning to commissioning, not just as a box-ticking exercise.

Alternative Dispute Resolution (ADR) to embed mediation and arbitration clauses in contracts to help resolve land compensation and community disputes quickly and cost effectively, avoiding prolonged litigation. Proactive and genuine engagement, secures the social license to operate mitigating the risk of project strike and building public trust, which is a critical asset for successful implementation.

Accelerate a complete digital transformation. Beyond the One-Stop Shop policy, institutions must fully transition from paper-based systems to integrated digital systems. This includes the complete rollout of e-procurement platforms and the adoption of cloud-based project management software for real-time monitoring of schedules, budgets and site progress. Digital systems enhance transparency, reduce opportunities for corruption, improve decision-making with real-time data and create permanent, accessible records for accountability and learning, as evidenced in the rollout of systems like IFMIS (World Bank, 2020).

5.2.3 Practitioner Recommendations

Become agents of change and advocacy. Practitioners on the forefront possess firsthand evidence of systemic failures and therefore should formally document challenges and use findings from studies like this to advocate persuasively for the adoption of new technologies and streamlined processes within their institutions. Sustainable change requires bottom-up pressure from professionals who understand the operational realities therefore complementing top-down policy directives.

Proactively adopt and demonstrate best practices. Even within existing constraints, project leaders should implement robust practices such as comprehensive risk management registers, structured communication plans and lean construction principles on their projects. By demonstrating success and efficiency on individual projects, practitioners can create excellence that serve as powerful proof of concept (POC), building a compelling case for broader institutional reform.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

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BOARD OF POSTGRADUATE STUDIES

KCAU/BPS/2025 *Date: Thursday, September 18, 2025*

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: GLADWIN NJERI NJAU- REG NO. 24/01122

It is my distinct pleasure to introduce Gladwin Njeri Njau, a student at our institution pursuing a Master of Business Administration- Procurement and Supplies Management degree in the School of Business. Gladwin is conducting research on the topic: ***"Project implementation challenges on infrastructure delivery in Kenya's public sector"*** which is part of the requirements of the program she is pursuing. The research as well as the data procured thereof shall be used for academic purposes only.

Any assistance accorded to her is highly appreciated.

In case of further inquiry, do not hesitate to contact the undersigned.

Yours faithfully,

DR. JACKSON NDOLO
DIRECTOR, BOARD OF POST GRADUATE STUDIES

APPENDIX II: ETHICS CLEARANCE CERTIFICATE

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KCA UNIVERSITY SCIENTIFIC & ETHICS REVIEW COMMITTEE

REF: **KCAU/SERC/ SOB0177** **Date: 21ST JULY 2025**

TO: **GLADWIN NJERI NJAU (24/01122)**

Dear Sir/Madam,

RE: POLITICAL INTERFERENCE AND DELIVERY OF INFRASTRUCTURE PROJECTS IN KENYA'S PUBLIC SECTOR

This is to inform you that KCA University Scientific Ethics Review Committee (KCAUSERC) has reviewed and approved your above research proposal. Your application approval number is ***KCAUSERC/SOB0177***. The approval period is ***21st July 2025 – 21st July, 2026.***
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 ***KCAUSERC.***
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 **KCAU*SERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***KCAUSERC*** 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 ***KCAUSERC.***

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. Caroline Ntara
Chairperson
KCA University Scientific & Ethics Review Committee

APPENDIX III: NACOSTI LICENSE

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **583769**

Date of Issue: **06/October/2025**

RESEARCH LICENSE

This is to Certify that Miss.. Gladwin Njeri Njau of KCA University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Project Implementation Challenges on Infrastructure Delivery In Kenya's Public Sector. for the period ending : 06/October/2026.

License No: **NACOSTI/P/25/4180319**

583769

Applicant Identification Number

Ag. 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

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)

Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to.
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. Neither the license nor any rights thereunder are transferable.
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

APPENDIX IV: DATA COLLECTION INSTRUMENT

Guidelines: Kindly read and answer the following statements to the best of your knowledge. Your inputs are essential and your responses will be confidential, please tick (✓) the box that has your response.

SECTION A: BACKGROUND INFORMATION

Gender:

Male ☐

Female ☐

Position/ Designation:

Procurement Officer ☐ Project Manager ☐

M&E Specialist ☐ Engineer ☐

Policy Maker ☐ Quality Surveyor ☐

Age:

18-28 years. ☐

29-39 years. ☐

40-50 years. ☐

Above 50 years. ☐

Years of experience:

1-5 years ☐

6-10 years ☐

11-15 years ☐

Above 15 years ☐

Ministry Involved In:

Roads & Transport ☐ Energy & Petroleum ☐

Water, Sanitation & Irrigation ☐ Health ☐

Education ☐ ICT ☐

Section B: Bureaucracy

Rate the extent to which you agree with the following statements bureaucratic processes on a scale of 1-5 where:

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

No	Statement	1	2	3	4	5
6	Obtaining internal approvals significantly delays project initiation.					
7	Inter-agency coordination brings about project delays.					
8	Compliance to procurement regulations prolongs the tender process.					
9	Changes in project scope due to bureaucratic processes are common.					

Section C: Technical Capacity

Rate the extent to which you agree with the following statements concerning technical capacity on a scale of 1-5 where:

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

No	Statement	1	2	3	4	5
10	My organization has sufficient skilled technical staff for its projects.					
11	Project managers are adequately trained in modern project management methods.					
12	Consistent supervision of contractors on site is very adequate.					
13	We have access to modern software tools for project planning, monitoring and evaluation.					

Section D: Stakeholder Management

Rate the extent to which you agree with the following statements concerning stakeholder management on a scale of 1-5 where:

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

No	Statement	1	2	3	4	5
14	Community engagement is effectively conducted on the onset of the project cycle.					
15	Disputes with the local communities and landowners frequently cause delays.					

16	There are clear and effective communication channels with and among the stakeholders					
17	Risks related to stakeholder are quickly identified and managed during project planning.					

Section E: Funding

Rate the extent to which you agree with the following statements concerning Funding on a scale of 1-5 where:

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

No	Statement	1	2	3	4	5
18	Timely disbursement of funds is critical for smooth project implementation.					
19	Discrepancies between approved budgets and actual disbursements significantly affect project outcomes					
20	Budgetary allocations for infrastructure projects often fall short of project needs					
21	Reliance on external financing (donor/loans) complicates project implementation due to conditionalities.					

Section F: Delivery of Infrastructure Projects

Rate the extent to which you agree with the following statements concerning Infrastructure Delivery on a scale of 1-5 where:

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

No	Statement	1	2	3	4	5
22	Infrastructure projects are completed within the approved budget					
23	Finalized Infrastructure projects are within the approved timeframe.					
24	Completed infrastructure projects are within the set technical and quality standards					
25	Impediments of project implementation deteriorate Infrastructure Delivery					

Section G: Semi-Structured Interview Guides

1. What is the most significant bureaucratic hurdle you face in project implementation?

2. How does technical capacity affect the quality of project output?

3. Describe a challenge related to the stakeholder, which significantly affected project performance.

4. Which are some of the challenges affecting Infrastructure Delivery?

5. Which are some of the most effective strategies that can be adopted to overcome implementation challenges?

6. In your experience, what are the reasons behind bureaucratic delays?

7. Which technical skills are deficient in your organization and how does this affect project quality?

8. Give an example of a successful stakeholder management on complex project and the reason behind the success.

9. Which policy changes would improve project implementation outcomes?

10. Which strategies can be adopted to ensure a consistent and predictable funding of infrastructure projects?

11. How do delays in fund disbursement affect infrastructure delivery?

THANK YOU FOR PARTICIPATING.

APPENDIX V: PROJECT TIMELINE

Activity/ Date	Jan	Feb/ March	April /May	June	July	Aug	Sep	Oct
Concept Paper								
Chapter 1								
Chapter 2								
Chapter 3								
Proposal Defense								
Questionnaire Distribution/ Data Collection/								
Chapter 4 Data Analysis & Interpretation								
Chapter 5 Recommendations/ Conclusion								
Dissertation Presentation								

APPENDIX VI: BUDGET

Item	Amount (KES)
1. Transport And Logistics	30,000
2. Printing And Photocopying	20,000
3. Stationaries	5,000
4. Research Assistant	10,000
5. Internet & Airtime Cost	10,000
6. Thesis Production	10,000
Total	**85,000**