STRATEGY IMPLEMENTATION, CORPORATE GOVERNANCE AND PERFORMANCE OF ROAD PROJECTS UNDER KENYA RURAL ROADS AUTHORITY IN KENYA

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION (STRATEGIC MANAGEMENT OPTION) OF KENYA METHODIST UNIVERSITY

SEPTEMBER, 2024

DECLARATION

I hereby declare that this thesis is my original work and has not been presented in any university for a degree.

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We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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DEDICATION

This thesis is dedicated to my wife Joan Birgen and my sons Rei Sakia and Nillan Seko.

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I thank God for His grace and strength that enabled me to finish this thesis. I appreciate my university for creating a favorable learning environment and providing useful resources and facilities. I am grateful to my lecturers and supervisors for their excellent coursework and guidance that helped me understand the research topic and acquire the necessary skills. In a special way I acknowledge my supervisors Prof. Peter Kihara, (Ph.D) and Dr. Vivian Cherono, (Ph.D) for their constant support and feedback that improved my thesis. Moreover, Dr. Wilson Muema, (Ph.D) whose constant guidance helped a great deal in developing this thesis. I also thank my classmates for their camaraderie and collaboration that enhanced my learning. Finally, I express my love and gratitude to my dear wife Joan Birgen for her prayers, encouragement and moral support throughout this journey. I also thank my sons Rei Sakia and Nillan Seko who understood the need to give me ample time to achieve this.

ABSTRACT

The performance of road projects is a critical measure of success, particularly in infrastructure development, and is influenced by factors such as strategy implementation and corporate governance practices. Despite the Kenya Rural Roads Authority (KeRRA)'s efforts to implement strategies, poor performance in road projects persists. This research seeks to explore the connection between strategy implementation, corporate governance practices, and the performance of road projects managed by KeRRA. The primary objectives are to evaluate the impact of leadership styles, technology integration, resource availability, and communication on the performance of these projects. Moreover, the research aims to determine if corporate governance plays a moderating role in the relationship between strategy implementation and project outcomes. The study is anchored on several theoretical frameworks, including Agency Theory, Resource-Based Theory, the Theory of Constraints, and Communication Theory. The study employs a mixed-methods approach. The study employs the philosophy of pragmatism under the research philosophy, utilizing a sequential explanatory design. The target population includes 140 development road projects managed by KeRRA, with a sample size of 208 respondents comprising Road Engineers from KeRRA and their Road Engineers; all hereby referred to as Strategy Implementation Officers (SIOs). The Director General at KeRRA who is the organization's CEO as well as the Secretary to the Board of Directors is also a respondent in this study. Data for the research were collected using questionnaires and interviews, utilizing cluster sampling, stratified sampling, and purposive sampling techniques for gathering both qualitative and quantitative data. The analysis was carried out with SPSS Version 27, employing Pearson correlation and regression analysis to explore the relationships within the data. Results indicated that leadership styles and effective corporate governance practices positively correlate with project performance. While technology adoption did not show a direct statistical impact, resource availability significantly influenced project success. Communication, though linked to better project outcomes, did not present a statistically significant direct influence. The findings emphasize the need to enhance governance structures, integrate technology more effectively, optimize resource allocation, and improve communication and stakeholder engagement for better project outcomes. Future studies are recommended to explore these relationships further, especially in different infrastructural contexts.

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ABBREVIATIONS AND ACRONYMS

BIM	Building Information Modeling
CAD	Computer-Aided Design
CADD	Computer-Aided Design and Drafting
CEO	Chief Executive Officer
COVID-19	Coronavirus Disease 2019
ERM	Enterprise Risk Management
GIS	Geographic Information Systems
GPS	Global Positioning System
ICT	Information and Communication Technology
IFMIS	Integrated Financial Management Software
IMF	International Monetary Fund
IoT	Internet of Things
KeRRA	Kenya Rural Roads Authority
MENA	Middle East and North Africa
M & E	Monitoring and Evaluation
MLQ	Multifactor Leadership Questionnaire
PU	Perceived Utility
RBT	Resource Based Theory
SEM	Structural Equation Modeling
SIOs	Strategy Implementation Officers
TAM	Technology Acceptance Model
UNECA	United Nations Economic Commission for Africa

UNECE United Nations Economic Commission for Europe

USA United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Both industrialized and developing nations have acknowledged the need of infrastructure development for achieving economic growth and development. Specifically, road infrastructure is critical to the flow of people, products, and services, all of which are necessary for trade, economic expansion, and regional integration. This serves as a helpful accelerator for the growth of commercial and residential sectors. It facilitates people's goal-achieving, links them to the outside world, and provides them with market accessibility and public services (such as police and ambulances) (Mashwama et al., 2018). The success of road projects is contingent upon their performance, which is affected by several aspects, including project design, finance, construction, and management. Infrastructure initiatives in underdeveloped nations have demonstrated considerable enhancements in project efficacy during the last ten years. The study discovered that the average cost overrun for road projects has dropped from 35% in the 1990s to 18% in the 2010s after analyzing data from over 600 projects across 97 nations (World Bank, 2020).

Effective strategy execution is crucial for the success of road projects, as it guarantees effective resource allocation, adherence to best practices, and the attainment of objectives. The United Nations Economic Commission for Europe (UNECE, 2020) identifies stakeholder engagement, risk management, and performance measurement as key strategy implementation for achieving road project goals. In a similar vein, the World Bank stresses the significance of efficient project management techniques including planning, involving stakeholders,

managing risks, and measuring performance to ensure that road projects are finished at a high enough degree of quality, on schedule, and under budget (World Bank, 2019).

As indicated by the International Monetary Fund (IMF, 2018), the sustainability of road projects also requires effective strategy implementation. According to the report, considering the project's social, economic, and environmental effects is essential for building roads in a sustainable manner and recommends using KPIs, evaluating risks, and involving stakeholders to guarantee that road developments are viable and satisfy the requirements of all parties involved (IMF, 2018). Through implementing these strategies, road project managers may guarantee the success and sustainability of their projects while addressing the demands of every stakeholder involved.

The African Union's Agenda 2063 underscores the importance of infrastructure in driving Africa's transformation, aiming for integrated transport networks across the continent (African Union [AU], 2022). At the national level, Kenya Vision 2030 identifies infrastructure as a foundation for achieving middle-income status by enhancing connectivity and reducing the cost of doing business (State Department for Economic Planning, 2021). The UDA five-point agenda further aligns with these frameworks, prioritizing infrastructure development as a means to foster socio-economic transformation by 2027 (United Democratic Alliance [UDA], 2022). These strategic frameworks underscore the need for effective implementation and governance in infrastructure projects, which this study on road projects under the Kenya Rural Roads Authority addresses. Effective strategy implementation and corporate governance in road infrastructure align with these broader goals of promoting sustainable development and improving regional connectivity. Therefore, this research contributes to the

realization of these frameworks by focusing on the performance of road projects as a critical component of Kenya's development agenda.

The success of road construction in African nations, notably in Ghana, Nigeria, and Kenya, depends on effective plan implementation. By enhancing commerce, access to markets and social services, and regional integration, these initiatives significantly contribute to economic growth. Investments in road infrastructure are necessary for Africa's economic development and the fight against poverty, according to the World Bank (2020).

1.1.1 Project Performance of Road Projects

The efficacy of road projects is a crucial factor in infrastructure development globally. Transportation infrastructure is essential for economic expansion and social mobility worldwide, since it enables trade, market access, and the movement of individuals. However, the performance of these projects often varies based on geographical, economic, and governance factors. Countries such as Kenya, Tanzania, and South Africa in Africa face challenges related to inadequate resources, delayed timelines, and cost overruns, which negatively impact road project outcomes (World Bank, 2019; Ogweno et al., 2016). In contrast, China and Singapore, due to their strong governance structures and financial capabilities, tend to experience more successful project performance (Li et al., 2019).

Road projects overseen by the KeRRA in Kenya have encountered challenges including delayed completions, substandard construction quality, and recurrent overruns in budget (Ngigi & Kwasira, 2024). These challenges are mirrored in other countries such as Pakistan and Ghana, where ineffective project management and resource shortages have led to similar outcomes (Adzimah et al., 2022; Raziq et al., 2018). Globally, poor governance practices, lack

of skilled labor, and misallocation of resources are recurring issues that impede the performance of road projects (World Bank, 2020).

The need for more effective strategies and governance structures has been emphasized by numerous studies across diverse regions, including Eastern Europe, where countries like Poland have struggled with balancing road project costs and timelines (Pacheco et al., 2019). Similar challenges have been observed in Latin America, particularly in Brazil and Mexico, where infrastructural inefficiencies are largely driven by corruption and bureaucratic delays (Ntiamoah et al., 2020). Addressing these challenges requires a deeper understanding of the critical factors that influence project performance, including leadership styles, technology adoption, resource availability, and communication practices.

1.1.2 Strategy Implementation and Performance of Road Projects

According to Shen et al. (2020), strategy implementation is critical in guaranteeing the smooth completion of building projects. Risk management, resource allocation, oversight of projects, and strategic planning were all deemed to be part of the process of putting a strategy into action. The process of establishing the project's goals, determining the resources needed to meet those goals, and creating a strategy to manage those resources successfully is known as strategic planning. The intricate and dynamic process of organizing, planning, and directing particular aims and objectives to get a particular result—all while making sure that all project operations are carried out within the limitations of time, money, and resources—is known as project management. To assure the proper completion of a project, it entails using a methodical approach to coordinate and manage numerous tasks, dependencies, and stakeholders.

Strong teamwork and communication abilities are necessary for good project management, as well as the capacity for resource allocation and prioritization. It also entails managing adjustments and problems, detecting and reducing risks, and keeping track of advancement in relation to predetermined deadlines and benchmarks. Resource allocation is the process of distributing vital resources to accomplish the project's goals. The process of locating, evaluating, and controlling the project's hazards is known as risk management.

For a country to flourish, road construction projects are essential. The adoption of an effective plan is necessary for the successful completion of road construction. Liu and Chen (2020) assert that strategic management encompasses planning, resource allocation, risk management, and stakeholder involvement. The effectiveness of these techniques determines the project's success or failure. Research demonstrates that the execution of strategies in the construction sector is frequently inadequate, resulting in project delays, budget overruns, and diminished performance.

Compliance with legal and ethical criteria and improved transparency within the organization and responsibility in decision-making, are hallmarks of good corporate governance (Brixi et al., 2018). The introduction of technology is crucial for enhancing the efficacy and efficiency of operations and service providers. Availability of resources such as funding, equipment, and materials is crucial in ensuring timely completion of projects (Makule & Ismail, 2020). Communication is vital in facilitating stakeholder engagement, project progress reporting, feedback mechanisms availability, issue resolution response time, and information accessibility. Previous studies have shown that these factors significantly influence project performance in various contexts (Delmas & Burbano, 2018; Njau & Omwenga, 2019).

However, Kenya Rural Roads Authority has only undertaken a little amount of study in relation to road construction.

Al-Fadhli et al. (2021) found that strategic planning and project management significantly influence project performance. According to their research, projects that used strategic planning techniques had far better performance in terms of quality, timeliness, and communication among all parties involved. Additionally, they found that project management practices significantly influenced project performance by improving resource management, enhancing project monitoring, and improving project communication.

Studies in Africa demonstrate a great association between strategy implementation and road development projects' performance. Asare et al. (2021), the execution of strategies is essential to the performance and successful completion of road projects in Ghana. The authors argue that the application of strategy implementation is essential to achieving project objectives and meeting stakeholder expectations. They identify several indicators of effective strategy implementation, such as the development of a clear project vision, effective project planning and monitoring, stakeholder engagement, risk management, and performance measurement. Still in Ghana, Adzimah et al. (2022) shows that effective project planning, resource allocation, and stakeholder engagement are important in managing project management and ensuring success. Project results may be enhanced by using the proper project management tools and procedures, such as risk analysis and performance monitoring (Adzimah et al. 2022).

Mbatia's (2015) study identified the indicators of strategy execution in road building projects as preparing the project, risk management, managing stakeholders, and the allocation of resources. A 2019 research by Olomolaiye et al. shown that successful strategy execution,

including explicit goal formulation, risk management, and stakeholder involvement, positively correlated with the success of road construction. In 2021, a research by Abdullahi et al. also identified strategic planning, monitoring and evaluation, and communication as essential elements of effective road project management.

The success of road development projects in Uganda is largely dependent on the strategy's implementation, according to research by Kavuma (2019). The study found that effective strategic planning, efficient resource allocation, and effective stakeholder engagement were the key indicators of strategy implementation that positively influence project performance. The research indicated that the quality, punctuality, and cost-efficiency of road construction projects in Uganda may be enhanced by the adoption of efficient strategy implementation.

1.1.3 Corporate Governance, Strategy implementation and Performance of Road Projects

The performance and results of corporations are greatly influenced by corporate governance, especially when it comes to infrastructure initiatives like construction of new roads (Guluma, 2021). As global trends increasingly emphasize transparency, accountability, and ethical conduct in business operations, the importance of effective corporate governance mechanisms has become more pronounced (Ali et al., 2021). To ensure that projects are implemented successfully throughout Africa, especially Kenya, where infrastructure development is a major engine of economic growth and social advancement, strong corporate governance procedures are necessary and the attainment of desired performance of road projects. The link between corporate governance, strategy execution, and project success is influenced by several key elements, such as stakeholder involvement, board supervision, risk management,

transparency, accountability, and ethical concerns (Kahoro, 2018). Effective corporate governance structures ensure that boards of directors offer strategic guidance and monitor project execution, while robust risk management processes mitigate potential risks associated with road projects. Transparency, accountability, and stakeholder engagement foster clear communication channels, align project strategies with stakeholders' interests, and uphold ethical standards, thereby enhancing the reputation and trustworthiness of road projects (Bernat et al., 2023).

Corporate governance is assessed through several core factors such as the independence of the board, accountability, board composition, the dual role of the CEO, and the independence of the audit committee. Research has shown a strong link between transparent reporting and financial performance, as well as a connection between governance practices and the size of organizations (Kim & Smith, 2024). This study investigates how corporate governance moderates the relationship between the implementation of strategies and the success of road projects, particularly in the context of the Kenya Rural Roads Authority (KeRRA). It also examines global patterns and sheds light on the specific challenges faced in Africa to understand how governance influences project outcomes and enhances strategy execution within the infrastructure sector.

1.1.4 Performance of Road Development Projects in Kenya

The road network is vital to Kenya's socio-economic development, serving as a foundation for trade, transportation, and access to important services. Recent data indicates that road transport constitutes over 80% of the total national transportation in Kenya, underscoring its significance in economic activities (Aduda, 2020). The expansion and maintenance of roads

are vital for improving access to markets, healthcare, and education, particularly in rural areas. For instance, the World Bank reports that the upgrading of rural roads in Kenya has contributed to a 10% increase in agricultural productivity by enhancing access to markets (World Bank, 2022). Additionally, road projects are essential for regional integration, with Kenya's Vision 2030 identifying infrastructure as key to achieving middle-income status (State Department for Economic Planning, 2021). The government allocated KSh 182 billion for road development in its 2023/2024 budget, underlining the sector's strategic importance (National Treasury and Economic Planning, 2023). These statistics underscore the need for efficient implementation and governance in road projects to ensure their socio-economic impact is maximized.

Several studies have underscored the ongoing issues plaguing Kenya's infrastructure sector, particularly in road development projects. For instance, Mwangi and Kamau (2020) examined the effects of project management techniques on the success of road projects in Kenya. Their findings indicated that insufficient project planning, poor resource distribution, and minimal stakeholder engagement were key drivers of delays and cost escalations. In a similar vein, Otieno and Kariuki (2022) analyzed the influence of governance in road construction and concluded that weak accountability and ineffective risk management were critical factors behind the underperformance of numerous road ventures.

In a related study, Njenga and Wachira (2019) examined the influence of financial management on infrastructure projects in Kenya. Their findings underscored that mismanagement of funds and irregular procurement practices led to substandard work and project delays. These conclusions were echoed in a report by the World Bank (2020), which highlighted systemic inefficiencies, corruption, and weak institutional frameworks as major

barriers to the successful execution of infrastructure projects in Kenya. The report emphasized the need for improved transparency, robust governance structures, and enhanced capacity building to address these issues.

Ochieng and Mwangi (2023) explored the link between stakeholder engagement and the success of road infrastructure projects, revealing that insufficient involvement of local communities and key stakeholders often resulted in project delays, social conflicts, and resistance, which negatively affected overall project performance. These insights highlight the urgent need for enhanced governance, better strategic planning, and more inclusive stakeholder participation to ensure the success and sustainability of road projects in Kenya.

The Kenya Rural Roads Authority (KeRRA), tasked with rural road development and maintenance, continues to grapple with issues such as resource limitations, poor project planning, and recurring delays in execution. While research suggests that improved strategy implementation and stronger corporate governance could lead to better project outcomes, there remains a significant lack of studies examining how leadership styles, project performance, and strategy execution intersect within KeRRA's operations (Mbugua, 2023).

1.2 Statement of the Problem

Road infrastructure is a critical component of sustainable development, directly linked to several Sustainable Development Goals (SDGs), including SDG 9, which emphasizes the need for resilient infrastructure and innovation. Globally, road project success is essential for economic growth and competitiveness, as evidenced by the World Economic Forum, which highlights that well-developed infrastructure enhances a nation's productivity and reduces business costs. For instance, countries that lead in road infrastructure, such as Singapore and

Switzerland, score highly in the GCI, while countries with lagging road systems face significant economic constraints. In Africa, the poor state of road networks has consistently hindered economic development. According to the World Bank, inadequate road infrastructure contributes to a 30-40% increase in logistics costs in sub-Saharan Africa compared to other regions. Nationally, Kenya has experienced rapid economic growth; however, this has outpaced the development of its road infrastructure, impeding the achievement of its Vision 2030 goals and other frameworks like the African Union's Agenda 2063. The Kenya Rural Roads Authority (KeRRA) is tasked with administering rural roads, but significant challenges remain, including funding shortages, lack of skilled personnel, poor project management, and ineffective strategy implementation. These issues compromise the performance of road projects, leading to delays, cost overruns, and substandard road quality. For example, the World Bank-financed Kakamega-Webuye road project was abandoned due to poor planning and execution, highlighting the recurring problem. Empirical studies reveal that road project success is influenced by effective strategy implementation and corporate governance. However, despite KeRRA's strategy implementation efforts, performance challenges persist, raising questions about the alignment of strategy implementation and road project performance. Poor road conditions, frequent repairs, and delays negatively impact road users, contributing to fatal accidents (Ngigi & Kwasira, 2024). Moreover, research indicates that project management inefficiencies often result in increased costs for taxpayers (Nyangoto & Nyang'au, 2022).

International studies conducted in the USA, Poland, and Pakistan have identified a connection between strategy execution and the performance of road projects. However, differences in geographic contexts and certain methodological limitations, such as incomplete datasets and

the use of case study methodologies, restrict the applicability of these findings to the Kenyan environment. There remains a gap in understanding how strategy implementation, coupled with corporate governance practices, impacts the performance of road projects under KeRRA. Moreover, the connection between strategy implementation and factors such as resource allocation, technology adoption, and leadership styles in Kenya's road projects remains underexplored. This study aimed to fill that research gap by examining how strategy execution and corporate governance practices impact the performance of KeRRA's road projects. Addressing these challenges is crucial for improving Kenya's infrastructure development, fostering national and county progress, and meeting global standards for successful road projects.

1.3 Purpose of the Study

The study aimed to investigate the influence of strategy implementation on the performance of road projects by Kenya Rural Roads Authority moderated by corporate governance.

1.4 Objectives of the Study

1.4.1 General Objective

The study aimed to investigate the relationship between strategy implementation, corporate governance practices, and the performance of road projects by the Kenya Rural Roads Authority.

1.4.2 The Specific Objectives

i. To establish the influence of leadership styles on performance of road projects by Kenya Rural Roads Authority.

ii. To determine the influence of technology adoption on performance of road projects by Kenya Rural Roads Authority.

iii. To determine the influence of availability of resources on performance of road projects by Kenya Rural Roads Authority.

iv. To determine the influence of communication on performance of road projects by Kenya Rural Roads Authority.

v. To establish the moderating effect of corporate governance on the relationship between strategy implementation and performance of road projects by Kenya Rural Roads Authority.

1.5 Research Hypothesis

i. **$H0_1$:** There is no significant relationship between leadership styles and performance of road projects by Kenya Rural Roads Authority.

ii. **$H0_2$:** There is no significant relationship between technology adoption and performance of road projects by Kenya Rural Roads Authority.

iii. **$H0_3$:** There is no significant relationship between availability of resources and performance of road projects by Kenya Rural Roads Authority.

iv. **$H0_4$:** There is no significant relationship between communication and performance of road projects by Kenya Rural Roads Authority.

v. **$H0_5$:** There is no significant moderating effect of corporate governance practices on the relationship between strategy implementation and performance of road projects by Kenya Rural Roads Authority.

1.6 Significance of the Study

The results will help the KeRRA in its efforts to make rural road projects more efficient. The insights from the study will assist KeRRA in refining its strategy implementation processes and governance practices, which are critical for enhancing road quality, reducing project delays, and optimizing resource utilization. This is essential for achieving Vision 2030 and aligning with global development goals such as the Sustainable Development Goals (SDG 9), which emphasize resilient infrastructure.

Additionally, the study will benefit policymakers at both national and county levels. By identifying gaps in the current strategy implementation frameworks, this research provides recommendations that can shape policies aimed at improving road infrastructure, thus fostering economic growth and improving social mobility. These recommendations will also be useful for integrating corporate governance practices into public infrastructure projects, ensuring transparency, accountability, and stakeholder engagement.

This research adds to the body of knowledge in strategic management theory by demonstrating the relationship between good corporate governance, successful strategy implementation, and the success of road building projects. It also enhances the understanding of how leadership styles, resource allocation, technology adoption, and communication influence project outcomes, particularly in the developing nations.

The study will of benefit to development partners and international organizations that support infrastructure projects in Kenya, such as the World Bank and African Development Bank. The findings will inform their interventions and strategies, ensuring that resources are utilized effectively for the long-term sustainability of road projects. The research adds to our

understanding of how leadership functions and how well infrastructure projects succeed. The findings of the study could also inform further research in this area.

1.7 Scope of the Study

The study aims to elucidate the influence of leadership styles, technology adoption, resource availability, and communication on the outcomes of these infrastructure projects. Also included is an analysis of how corporate governance acts as a moderator between strategy implementation and project outcomes. Geographically, the research is confined to rural road projects overseen by KeRRA, deliberately excluding urban initiatives administered by other entities such as the KeNHA. The focus is on projects initiated or completed within the past five years, a timeframe that provides a relevant context for evaluating current project performance and trends in implementation, as well as the effectiveness of KeRRA's governance structures.

Employing a mixed-methods research design, this study integrates both qualitative and quantitative data collection techniques. Data was gathered through surveys and interviews, facilitating a comprehensive analysis of the various factors impacting project outcomes. The target population encompassed 140 rural road projects under KeRRA's jurisdiction, from which a sample of 208 Strategy Implementation Officers (SIOs) and contracted project managers were selected as respondents. The research also included the Director General of KeRRA, who holds the positions of CEO and Board Secretary, providing critical insights from a leadership standpoint.

The theoretical framework for this research is anchored in several strategic management theories, including Resource-Based Theory (RBT), Agency Theory, and the Technology

Acceptance Model (TAM). These frameworks support a nuanced analysis of how leadership, resource management, technology adoption, and corporate governance practices collectively influence road project performance. RBT is particularly valuable for understanding the strategic significance of resource allocation, while Agency Theory elucidates the dynamics between KeRRA's leadership and its stakeholders. The TAM framework facilitates an assessment of how technology adoption impacts project success.

The study was conducted over a six-month period, from November 2023 to May 2024, following the approval of the research proposal. This timeline provided ample opportunity for data collection, thorough analysis, and comprehensive report preparation, ensuring that the findings are robust and well-founded. The anticipated results are expected to yield practical recommendations for enhancing the performance of road projects under KeRRA through improved governance practices, more effective resource allocation, and strategic technology utilization.

1.8 Limitations and Delimitations of the Study

1.8.1 Limitations of the Study

Although this study employed a comprehensive approach, several limitations affected the generalizability and depth of its conclusions. A primary limitation was its focus on road projects managed by KeRRA, which confined the research to a specific geographical and contextual scope. As a result, the findings may not fully apply to other sectors or regions, such as urban road projects or those managed by private contractors. Rural road projects often encounter distinct challenges, such as limited access to resources and infrastructure, which differ significantly from the issues faced in urban environments. This contextual disparity

restricts the broader application of the study's findings and narrows the range of its potential implications.

Another challenge involved data collection constraints. The study relied heavily on self-reported data gathered through surveys and interviews, which introduced the possibility of respondent bias. Participants might have overstated their efficiency or downplayed difficulties due to concerns about how their input would be perceived by others, particularly in a professional setting. While the study took measures to mitigate this bias by using multiple data sources and cross-referencing for validation, the inherent risk of inaccurate reporting could not be completely eliminated. This potential bias may have influenced the overall results, particularly in areas where project performance was self-assessed by those involved in project management.

Time and resource constraints also posed a significant limitation. The research focused on road projects completed or initiated within a five-year window. This timeframe may not have allowed for the full assessment of the long-term impacts of strategy implementation and corporate governance practices. Some of the projects included in the study were still ongoing at the time of data collection, making it difficult to evaluate their final outcomes. Additionally, the depth of qualitative data collection was likely influenced by budgetary and time limitations, potentially restricting the level of detail that could be explored during interviews and other forms of data gathering.

The research did not adequately account for external influences, like political instability, economic changes, and natural calamities. The uncontrolled factors may have substantially influenced the performance of road construction and caused variability in the results that the

research could not sufficiently address. For instance, political decisions could delay projects, while economic downturns might reduce the availability of funds, both of which would affect project outcomes independently of strategy implementation or corporate governance practices. The exclusion of these external variables may have limited the accuracy of the findings.

Additionally, the study's examination of technology adoption encountered regional disparities. The varying levels of technological infrastructure across different areas impacted the consistency of findings related to technology's influence on project performance. Rural regions often have less access to advanced technologies compared to urban areas, which likely contributed to performance variations that were difficult to quantify uniformly across the areas studied. These technological gaps may have resulted in inconsistent outcomes across KeRRA projects, affecting the reliability of conclusions drawn about the role of technology in strategy implementation.

Although these limitations were present, the study provided significant insights into the connections between strategy implementation, corporate governance, and project performance in public infrastructure projects. By highlighting essential factors such as leadership styles, resource availability, and communication, it lays the groundwork for future research focused on enhancing project performance within the public sector. Additionally, the findings on the moderating role of corporate governance have the potential to inform both policymakers and project managers about ways to enhance governance structures to achieve better outcomes in infrastructure development. Further research can build upon this study by addressing its limitations and expanding the scope to include other types of projects, external variables, and a more extensive evaluation of technological impacts across diverse regions.

1.8.2 Delimitations of the Study

The data for this study was primarily based on self-reported information from strategy implementation officers, which may introduce potential bias. This reliance on a narrow respondent group limited the inclusion of diverse perspectives from other stakeholders, such as project beneficiaries and contractors. As a result, the comprehensiveness of the findings may have been constrained. Furthermore, the study may have utilized a limited set of variables or measures to capture the complex constructs of strategy execution, corporate governance, and project performance, which could impact the validity and reliability of the results. Consequently, the findings may not be broadly generalizable to other organizations or countries that operate within varying political, cultural, or economic contexts.

1.9 Assumptions of the Study

The study assumes that the data collection tools, particularly the questionnaires and interview schedules, are reliable and will consistently capture the necessary information. Pre-testing and piloting of the tools have been conducted to ensure that they yield consistent results across different respondents. The tools are assumed to measure the intended variables (strategy implementation, corporate governance, and project performance) with precision, and any variations in responses are reflective of actual differences in experiences rather than flaws in the instruments. It is assumed that the measurement scales used in the questionnaires and interviews are valid, meaning they accurately measure the constructs they are intended to assess. For instance, the scales used to assess leadership styles, technology adoption, resource availability, communication, and corporate governance are expected to have construct validity. This assumption is supported by the use of previously validated scales from related

studies, with adjustments made to suit the context of KeRRA's road projects. It is also assumed that the theoretical constructs align with the observed data. The study assumes that participants, who are Strategy Implementation Officers (SIOs) both from KeRRA and from the Contractors, and KeRRA's key official, will provide accurate and truthful information. It is assumed that respondents are well-informed about the strategy implementation processes and project performance, and that their responses reflect their genuine perspectives and experiences without significant bias or misinformation. Generalizability of the Sample: It is assumed that the sample size and composition (208 respondents who are SIOs from KeRRA and Contractors) are representative of the population involved in the management and execution of road projects under KeRRA. Therefore, the findings from this sample can be reasonably generalized to the broader context of road project performance in Kenya's rural road sector. The study assumes that external variables, such as political, economic, and environmental factors, are either constant or have minimal impact on the outcomes measured in this research.

1.10 Operational Definitions of Terms

Alignment of Business and IT Strategy. This refers to the process of making sure a company's technical activities are secure closely match its overarching business objectives and aims. (Henderson & Venkatraman, 2019).

Availability of resources. This refers to the presence or accessibility of the necessary materials, equipment, and personnel required to complete a project successfully. In the context of road projects, availability of resources includes the availability of materials such as concrete, asphalt, and aggregates, the availability of heavy equipment such as bulldozers and

graders, and the availability of personnel such as strategy implementation officers (Haque et al., 2020).

Board Independence. This refers to the ability of the project board to make independent decisions regarding the road development project without undue influence from external factors. This includes ensuring that the project board is free from conflicts of interest and operates in an objective and impartial manner (World Bank, 2019).

Board Diversity. This refers to the composition of the project board, which should include individuals from diverse backgrounds, skills, and expertise. This includes ensuring that the board includes representatives from the public, private, and civil society sectors to provide a range of perspectives and ensure accountability (UNECE, 2020).

Communication Practices. This refers to the methods and strategies used to convey information among project stakeholders, including regular updates, progress reports, stakeholder feedback, and issue resolution mechanisms. Effective communication enhances collaboration, project transparency, and timely completion, significantly impacting project outcomes (Bekefi et al. 2023; Ngigi & Kwasira, 2024).

Corporate Governance. This refers to the set of guidelines, customs, and procedures that govern and manage an organization. In the context of road development projects, this refers to the decision-making processes and accountability structures in place for ensuring effective and efficient use of resources (International Federation of Consulting Engineers [FIDIC], 2019).

Corporate Governance Practices. This refers to the processes and structures that organizations put in place to ensure that they are managed in a responsible and accountable manner. This includes establishing policies and procedures, setting performance targets, ensuring compliance with regulations and ethical standards, and monitoring performance to ensure that objectives are being met (Mutia & K'Obonyo, 2018).

Leadership Styles. This refers to the various approaches that leaders can take to managing a team and achieving project goals. This can include autocratic, democratic, transformational, and situational leadership styles, among others (Serrano-Montes et al., 2020).

Performance of Road Projects. This refers to the extent to which a road construction or maintenance project meets its intended goals and objectives within the specified timeframe, budgetary allocation, and quality standards. Timely completion is a crucial attribute of road project performance, as delays in project completion can lead to cost overruns, traffic disruptions, and reduced public satisfaction (Pacheco et al., 2019).

Stakeholder Engagement. This pertains to the engagement of stakeholders in the road development project, encompassing neighborhoods, government entities, non-governmental organizations, and other interested parties. This involves including stakeholders in the planning, design, and execution of the project to guarantee that their opinions and worries are considered (International Finance Corporation, 2012)..

Strategic Technology Adoption. This refers to the deliberate and purposeful process by which organizations identify, evaluate, and adopt new technologies that support their strategic objectives. The process entails identifying technologies poised to significantly influence the organization's operations, evaluating their possible advantages and hazards, and ascertaining

the optimal method for their integration into the organization's current systems and processes. In the context of a strategic technology adoption would involve identifying and adopting technologies that can improve the efficiency and effectiveness of road projects.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive review of existing literature concerning the relationship between plan implementation, leadership styles, and the performance of road projects. It synthesizes empirical studies from various scholars to highlight key findings and identify knowledge gaps in the current research landscape. The chapter also explores concepts that illustrate the connection between management techniques and road project performance, aiming to enhance understanding of the factors that contribute to effective project execution.

2.2 Theoretical Review

Theories are defined as reasoned statements or collections that elucidate occurrences and are grounded in empirical facts, according to Kombo and Tromp (2009). Theories give a broad explanation of phenomena in order to explain events. It provides a methodical connection between things that happen or phenomena. Kombo and Tromp (2009) assert that academics need to be familiar with pertinent ideas in their field of study. A theory establishes the parameters to be assessed, the significant statistical correlations to be observed when investigating a specific issue statement, and it gives directions for ongoing research. The researcher will examine several theories relating independent and dependent variables.

2.2.1 Resource-Based Theory (RBT)

The Resource-Based Theory (RBT), first articulated by Barney (1991), posits that an organization's competitive advantage arises from its unique, valuable, and non-replicable

resources. According to this theory, the distinctiveness of an organization's resources plays a critical role in determining its performance and strategic success. In the context of the Kenya Rural Roads Authority (KeRRA), these resources include skilled personnel, advanced technology, and essential financial assets, all of which are crucial for the effective execution of road projects.

RBT emphasizes that the unique combination of resources and capabilities an organization possesses is fundamental to achieving competitive advantage. For road projects, this theory highlights the importance of leveraging both tangible resources—such as machinery and financial capital—and intangible resources such as skilled labor and effective leadership. By effectively managing and utilizing these resources, organizations can achieve superior project outcomes compared to their competitors.

This study employs RBT as a framework to investigate how resource allocation and management influence the execution and performance of road projects under KeRRA. Specifically, the research evaluates the impact of resource availability on road construction performance. Key variables such as technology adoption and human resources are analyzed to determine whether their effective utilization contributes to improved project efficiency and completion rates. Through this examination, the study seeks to underscore the critical role that resource allocation plays in the success of road infrastructure projects managed by KeRRA, illustrating how strategic resource management can drive enhanced project performance and outcomes.

2.2.2 The Agency Theory

Agency Theory, proposed by Jensen and Meckling (1976), asserts that conflicts of interest emerge between principals (owners) and agents (managers) as a result of the division between ownership and control. In public infrastructure initiatives, such as those overseen by KeRRA, the principals are the public and government, whilst the agents are the project managers and contractors. The idea posits that corporate governance methods, including openness and accountability, may alleviate these conflicts and harmonize the interests of both parties.

Agency Theory focuses on the relationship between principals (stakeholders) and agents (project managers or leaders) within an organization. It highlights the potential conflicts of interest that may arise due to differing objectives between these two parties. In the context of road projects, effective governance practices are crucial for aligning the interests of project managers with those of stakeholders, ensuring accountability, and minimizing risks. This theory argues that establishing strong governance frameworks can mitigate agency problems and enhance project outcomes. It offers insights into how leadership styles and corporate governance practices influence the success of road projects.

This theory is pertinent to the research since it links corporate governance with the performance of road projects. The research examines if corporate governance influences the correlation between strategy execution and project results, emphasizing leadership styles and accountability. The study investigates the impact of governance systems on project success, specifically how enhanced alignment of interests enhances road project performance.

2.2.3 Theory of Constraints (TOC)

The Theory of Constraints (TOC) is a management philosophy developed by Eliyahu M. Goldratt that focuses on the identification and elimination of constraints within an organization to improve overall performance. In the context of road projects, constraints can arise from various sources, including inadequate resources, poor planning, bureaucratic delays, and ineffective communication. TOC posits that every complex system, such as a road project, is limited in achieving its goals by a small number of constraints, and thus the key to enhancing performance lies in systematically identifying and managing these constraints.

In the realm of road projects managed by the Kenya Rural Roads Authority (KeRRA), TOC is particularly pertinent as it provides a framework for diagnosing issues that hinder project execution. For instance, leadership challenges may create a lack of direction and motivation among project teams, while resource scarcity can lead to delays in construction and maintenance activities. Additionally, bureaucratic delays can impede decision-making processes, resulting in time and cost overruns. By recognizing these constraints, project managers can prioritize their efforts to address them effectively.

Goldratt's TOC emphasizes a critical path approach, suggesting that organizations should focus on the single most significant constraint that is limiting their output, often referred to as the "bottleneck." Once this bottleneck is identified, organizations can take steps to alleviate it, whether through resource allocation, process re-engineering, or improved communication strategies. In the case of KeRRA, addressing bottlenecks such as leadership shortcomings or resource limitations can lead to more efficient project execution and improved overall performance.

The core argument of TOC rests on the idea that optimizing individual components or processes without addressing systemic constraints may yield limited results. For example, enhancing the efficiency of a construction team does little to improve project timelines if resource availability remains a significant constraint. Therefore, the application of TOC within the context of road projects allows for a more holistic view of project management, emphasizing the interconnectedness of various elements and the need for coordinated efforts to overcome constraints.

The relevance of TOC to this study is profound as it explores specific constraints affecting KeRRA's road projects, particularly in terms of leadership, resource availability, and communication. The study aims to test whether addressing these bottlenecks leads to improved project outcomes, thereby contributing to a more effective management approach in road construction and maintenance. By analyzing these constraints, the research provides recommendations on how to enhance project management practices, ultimately leading to improved efficiency and performance in road projects managed by KeRRA.

2.2.4 Communication Theory

Effective communication in project management ensures that all stakeholders are aligned with project goals, timelines, and resource needs, which is critical for project success. Communication Theory posits that effective information exchange between a sender and a receiver is crucial for successful project management. It emphasizes the processes of encoding and decoding messages, highlighting that miscommunication can occur if these processes are flawed. The theory also identifies barriers, such as noise, that can disrupt communication, advocating for strategies to mitigate these challenges. Feedback mechanisms are essential for

ensuring messages are understood, promoting two-way communication that fosters adaptability.

Furthermore, the theory argues that stakeholder engagement through clear communication builds trust and collaboration, directly impacting project performance. This study investigated the impact of communication techniques on the execution of road projects. The influence of variables like communication clarity, feedback systems, and stakeholder participation on project success will be evaluated. This study will examine the impact of communication methods on project results, offering insights into the significance of good communication in the management of infrastructure projects.

2.3 Empirical Review

Examining published materials from journals and publications that offer empirical findings closely and studying the theoretical ideas in-depth serve as the foundation for the approach of conducting an empirical review. In the study, Empirical review focused on management practices on under study; governance policy, strategic technology adoption, strategic planning, strategic resource allocation, transformational leadership and performance of roads.

2.3.1 Leadership Styles on the Performance of Road Projects

Li et al. (2019) undertook a study in China demonstrating that transformational leadership enhances project outcomes by promoting team creativity and facilitating learning. The study also found that transactional leadership might restrict these factors, negatively impacting performance. The researchers concluded that transformational leadership styles are vital for encouraging an innovative team culture, which significantly boosts project success. In

contrast, traditional transactional approaches might dampen creativity, suggesting a shift towards leadership styles that inspire team collaboration and growth.

Zahra et al. (2019) in the United Arab Emirates explored the relationship between leadership styles and project success in construction projects. Using a sample of 145 project managers, the research revealed that transformational leadership significantly improved project performance by fostering innovation and stakeholder engagement. In contrast, transactional leadership was linked to short-term project gains but failed to address long-term challenges.

In another study, Hassan and Memon (2020) examined the influence of leadership styles on the execution of infrastructure projects in Pakistan. Their findings indicated that participative leadership enhanced communication and collaboration, leading to improved project outcomes, whereas authoritarian leadership styles were associated with delays and poor stakeholder satisfaction.

Meanwhile, Opoku and Fortune (2021) studied the impact of leadership on strategy execution in Ghana's road projects. They found that transformational leadership, characterized by clear communication and vision, significantly improved project delivery. The study emphasized the importance of empowering team members and creating a shared vision for project success.

In a study conducted by Ahsan et al. (2020) in Bangladesh, the researchers assessed the role of leadership styles in the performance of road infrastructure projects. They found that democratic leadership, which encourages team input and collaborative decision-making, led to better project outcomes compared to autocratic leadership. The study also highlighted that democratic leadership enhanced employee motivation and reduced project delays.

Al-Qahtani and Al-Fawzan (2019) examined the effect of leadership on strategy implementation in Saudi Arabia's construction sector. Their research, which surveyed 89 project managers, revealed that transformational leadership was more effective in overcoming bureaucratic challenges and improving resource allocation, ultimately leading to better project performance compared to transactional leadership.

Similarly, a Nigerian study by Olayinka and Ojo (2020) investigated the relationship between leadership styles and the execution of government road projects. The research, based on 112 survey responses from project managers, found that participative leadership was positively correlated with the timely delivery of projects. The study also noted that leadership styles emphasizing communication and stakeholder involvement contributed to more efficient strategy execution.

Li and Zhang (2021) in China analyzed the impact of leadership on the execution of large-scale infrastructure projects. Using structural equation modeling (SEM), the study concluded that transformational leadership significantly enhanced project outcomes by promoting innovation and proactive problem-solving, whereas transactional leadership was less effective in managing complex road project challenges. The study underscored the role of vision and empowerment in successful strategy implementation.

According to the results, which were based on the opinions of 211 experts, the three most important leadership factors that strongly indicate project success are vision, communication, and delegating. It further shown how leadership style significantly affects strategy execution in areas including risk management, performance appraisal, and goal setting.

Tajuddin and Fadzli (2019) compared the results of road projects in Malaysia that were led by various styles of management in terms of the correlation between strategy implementation and project performance. Their poll examined views on leadership tenets, project performance measures, and the execution of strategy from more than three hundred and eighty engineers and project managers. They used structural equation modeling to evaluate the data and found that, compared to transactional and laissez-faire leadership styles, transformational leadership strengthens the connection between strategy implementation and project completion. Quality of the project, timeliness of completion, cost-effectiveness, and client pleasure were all measures of success.

Kazi and Rahman (2019) looked at the success of road projects in Bangladesh and how it was correlated with the execution of strategies. The study used a quantitative research technique to gather data from 120 road improvement projects in Bangladesh. A standardized questionnaire was used to collect .data on the four leadership styles. A transformational leadership style significantly improved the correlation between strategy implementation and project performance, in contrast to autocratic and transactional approaches, according to the results. The lack of interference from the leader had little effect on the link. Implementing a plan substantially enhanced project performance, according to the study.

How different types of leadership affect the connection between strategy execution and the success of road projects in Ghana was studied by Owusu-Frimpong et al. (2019). A quantitative survey was administered to 127 directors, engineers, and contractors who were involved in road construction projects as part of the methodology. Researchers collected data from participants on their opinions on leadership philosophies, strategy implementation, and project performance. According to the findings, transformational leadership had a positive

correlation with strategy adoption and project success, but transactional leadership had no significant relationship with either measure. Strategic implementation and project outcomes were both shown to be substantially affected by transformational leadership, according to the study. The authors concluded that leaders with transformational leadership qualities can improve the effectiveness of strategy implementation and the final product of road construction projects.

In their 2019 study, Kwame et al. found that transformational leadership has a substantial and beneficial effect on the connection between the implementation of strategies and the success of road projects. On the other hand, this connection was shown to be negatively impacted by a leader with an authoritarian style. Effective communication, participatory decision-making, and a shared vision are essential indications of transformational leadership, according to the study. These traits create a collaborative environment that is good for executing projects. On the other side, innovation and team involvement are impeded by the authoritarian leadership style's control, rigidity, and centralization. The study's overarching finding was that, to improve the efficiency of road construction in Ghana, a transformational leadership style was necessary.

Oduro et al. (2021) continued to build on these findings by broadening the research to include leadership ideologies and how they influenced the execution of road projects in Kenya, Ghana, and Nigeria. The research gathered information from 230 road construction workers in the three nations using a cross-sectional survey method. The results showed that effective leadership strategies significantly improved road project performance, as determined by hierarchical regression analysis. Confirming the results of Kwame et al. and highlighting the wider application of transformational leadership across multiple national settings, the results

revealed that transformational leadership significantly enhanced the connection between strategy implementation and project performance.

Using methodology, strategy, and project results as its foci, Adeboye et al. (2021) studied the relationship between leadership styles and road project success in Nigeria. A thorough comprehension of the phenomenon was achieved via the use of both quantitative and qualitative data gathering approaches in this mixed-methods study. The results showed that road project performance was positively affected by transactional and transformational leadership styles, and negatively affected by a laissez-faire leadership style. Consistent with earlier research, key indications of transformational leadership include inspiring followers to achieve a common goal and maintaining open lines of communication. Transactional leadership, in contrast, relied on monitoring, delegation, and reward and punishment. According to the research, a combination of transformational and transactional leadership styles is necessary to successfully execute plans in order to improve the performance of road projects in Nigeria.

Research from Ghana, Nigeria, and Kenya shows that different types of leadership have a major impact on how well road projects turn out. The importance of cooperation and shared goals in transformational leadership makes it a key factor in project success throughout execution. Given the drawbacks of authoritarian and laissez-faire management styles, it is critical for businesses to foster a culture that values open dialogue and team input. In sum, the study's findings stress the significance of leadership in determining project results and call for the regional road infrastructure projects to strategically implement good leadership techniques in order to boost their performance.

Researchers Owusu-Frimpong et al. (2019) looked at how different types of leadership impacted the connection between strategy execution and the success or failure of road construction projects in Ghana. A quantitative survey was administered to 127 individuals involved in the management, engineering, and building of roads. Researchers collected data from participants on their opinions on leadership philosophies, strategy implementation, and project performance. According to the findings, transformational leadership had a positive correlation with strategy adoption and project success, but transactional leadership had no significant relationship with either measure. Strategic implementation and project outcomes were both shown to be substantially affected by transformational leadership, according to the study. inspirational motivation, personalized attention, intellectual stimulation, idealized influence (both ascribed and behavioral), and inspirational leadership were the leadership style indicators used in the study. The authors concluded that leaders who have transformational leadership qualities may boost the efficiency with which road projects are completed and strategies are put into action.

In a study by Ahmed and Hassan (2020) in Egypt, the researchers explored the influence of leadership on infrastructure project success. Their survey of 150 project managers in the road sector found that transformational leadership positively affected project performance by fostering creativity, teamwork, and better communication. Conversely, transactional leadership was associated with short-term achievements but less effective in addressing complex project challenges.

Muriithi et al. (2020) in Kenya examined how leadership styles impacted road project outcomes in the public sector. Their research indicated that participatory leadership, where team members were involved in decision-making, resulted in better project timelines and

reduced budget overruns compared to autocratic leadership. The study also emphasized the role of stakeholder involvement in project success.

A study by Rajput and Shrestha (2021) in Nepal investigated the relationship between leadership styles and the successful completion of road infrastructure projects. Using multiple regression analysis, they found that transformational leadership, characterized by clear vision and motivation, significantly improved project outcomes. In contrast, laissez-faire leadership led to project delays and miscommunication.

In Tanzania, a study by Mgendi and Nyang'oro (2022) explored the effect of leadership styles on the performance of road projects. The research concluded that collaborative leadership approaches that encouraged stakeholder participation and transparent communication led to higher project success rates, while top-down authoritarian leadership resulted in delays and ineffective resource management. This highlighted the need for leaders to adapt inclusive strategies for better execution.

In 2019, Kiama et al. conducted a significant study focusing on the performance of road projects in Kenya, emphasizing the roles of strategy implementation and leadership styles. Employing a stratified random selection technique, the researchers identified a total of 163 road development projects for a cross-sectional survey design. This methodological approach allowed for a comprehensive analysis of the relationship between leadership styles, strategy execution, and the success of road projects.

Data analysis and hypothesis testing were carried out by use of structural equation modeling in the study. The results showed that the connection between strategy execution and the performance of road projects was modulated in a favorable way by a transformational

leadership style. On the other hand, this partnership suffered under the transactional leadership style. This discrepancy shows that leadership matters for project results, implying that leaders' interactions with teams and strategy implementation have a major impact on performance.

Karanja and Waweru (2021) in Kenya, the researchers examined how leadership styles influenced the performance of road construction projects. Their survey of 95 project managers revealed that transformational leadership, which encourages innovation and motivates teams, had a significant positive impact on the completion rates and quality of road projects. The study also highlighted that transactional leadership, while effective for short-term objectives, was less impactful on long-term project sustainability.

Another study by Ibrahim and Adebayo (2021) in Nigeria analyzed the role of leadership in managing road infrastructure projects. Using a sample of 120 project leaders, they found that leadership styles emphasizing accountability, communication, and empowerment—characteristics of transformational leadership—resulted in better adherence to project timelines and budget controls. The study also pointed out that authoritarian leadership created bottlenecks in decision-making and slowed project progress.

A study by Singh and Gupta (2022) in India investigated the correlation between leadership and road project performance in both urban and rural settings. Their findings showed that servant leadership, a style focused on serving and empowering the team, improved stakeholder satisfaction and project efficiency. The study emphasized the importance of fostering collaboration and trust between project teams and contractors, ultimately leading to higher project success rates compared to hierarchical leadership styles.

2.3.2 Technology Adoption and Performance of Road Projects

The impact of technical alignment on project performance in US road projects was examined by Ntiamoah et al. (2020). Technology readiness, technical infrastructure, technology strategy, and technology investments were among the examined markers of technological alignment. 182 project managers working on road projects in the USA were surveyed To assess the data, structural equation modeling (SEM) was performed. The study found that technological alignment positively impacts project performance in road projects in the USA. Specifically, technological readiness, technological infrastructure, technology strategy, and investments in technology were shown to improve project performance. The study by Ntiamoah et al. (2020) found that technological alignment, including readiness, infrastructure, strategy, and investment, positively impacts project performance in US road projects, highlighting the importance of strategy implementation officers as project managers who must ensure that technology is effectively aligned with project goals. the impact of outside variables, such as the market and regulatory environment, on the link between technology alignment and project success, however, was not taken into account by the study.

Akintoye et al. (2019) investigated how technology alignment affected the effectiveness of road construction in the UK. Technology readiness, technology infrastructure, technology strategy, and technology investments were among the examined markers of technological alignment. Data was collected from project managers using interview schedules and questionnaires. To examine the survey data, structural equation modeling (SEM) was employed. In UK road projects, the study discovered a favorable correlation between technology alignment and project performance. Particularly, it was discovered that the use of technology, its infrastructure, strategy, and investments all benefited project performance. The

nexus of technology alignment and project performance, however, was not taken into account by the study. According to Akintoye et al. (2019), technological alignment, which includes infrastructure, strategy, and investments as well as technology readiness, positively impacts project performance in UK road projects. This finding emphasizes the significance of strategy implementation officers as project managers who must ensure technological alignment to enhance project outcomes

Research by Liu et al. (2021) found that road project' perfromance in China was improved by the use of technology. The study also demonstrated how the use of technology may enhance data sharing, foster improved communication among project stakeholders, and provide real-time project progress tracking. Overall, the results suggest that technology has become an essential tool for improving the performance of road construction projects in China. In a study by Osei et al. (2020), the role of technology integration in enhancing road project outcomes in Ghana was explored. The research focused on the use of mobile technologies, geographic information systems (GIS), and project management software to improve project execution. Surveying 150 project managers, the study found that the integration of technology improved communication among stakeholders, enhanced monitoring and evaluation, and reduced project delays. However, the study noted that challenges related to the cost of technology implementation and inadequate training limited the full potential of these tools in road projects.

Adeyemi and Oladapo (2019) assessed the impact of innovative construction technologies on road project performance in Nigeria. The study examined the application of advanced construction machinery, GPS tracking systems, and drone technology in project delivery. Data was collected through structured interviews with 100 engineers and project managers. The

findings revealed that these technologies significantly reduced project completion times and improved construction accuracy. However, the lack of skilled personnel to operate advanced machinery posed a challenge to maximizing these benefits.

In South Africa, Mthembu et al. (2021) evaluated the impact of digital technologies on road infrastructure projects. Their research analyzed the implementation of smart technologies such as automated traffic management systems (ATMS) and digital twin modeling in highway projects. The study, which involved interviews with 80 project engineers and managers, found that these technologies enhanced traffic flow management during construction and improved project forecasting accuracy. However, high implementation costs and data security concerns were cited as barriers to widespread adoption.

A study by Tan et al. (2020) in Malaysia investigated the effectiveness of cloud-based project management systems in improving the performance of road construction projects. The research highlighted the role of real-time data sharing, remote project monitoring, and document management in enhancing efficiency. The study, which surveyed 120 project supervisors and managers, found that cloud-based systems facilitated faster decision-making and reduced errors related to miscommunication. However, the reliance on internet connectivity and concerns over data privacy were highlighted as challenges.

The effect of technology alignment on project performance in Pakistan's road building sector was examined by Mir et al. in 2020. Technology strategy, technology infrastructure, technology investments, and technology readiness were among the markers of technological alignment that were examined. A survey questionnaire was utilized in the study to gather information from 250 project managers working on Pakistani road projects. To assess the data,

structural equation modeling (SEM) was employed. The study discovered that technical alignment significantly improves project performance in Pakistani road construction. Particularly, it was discovered that technological strategy, infrastructure, investments, and preparation all had a favorable impact on project success. The study by Mir et al. (2020) found that technological alignment, including technology strategy, infrastructure, investments, and readiness, positively impacts project performance in road construction projects in Pakistan, which highlights the importance of strategy implementation officers as project managers in implementing and utilizing technology effectively to improve project outcomes. The effect of external factors, such as the regulatory environment and market conditions, on the link between technology alignment and project success was not taken into account by the study.

Wong et al. (2021) discovered a favorable correlation between technology alignment and project success in Malaysian road construction. Particularly, it was discovered that the use of technology, its infrastructure, strategy, and investments all benefited project performance. The influence of external factors, such as the regulatory environment and market conditions, on the link between technology alignment and project success, however, was not taken into account by the study. In Australia, Buys et al. (2021) investigated the connection between technology alignment and road project performance. Technology strategy, technology investments, infrastructure, and readiness were the technological alignment indicators. A survey questionnaire was utilized in the study to gather information from 87 project managers working on road projects in Australia. To assess the data, structural equation modeling (SEM) was employed. The study discovered a favorable correlation between technology alignment and project success in Australian road construction. Particularly, it was discovered that the use of technology, its infrastructure, strategy, and investments all benefited project

performance. The study did not account for the impact of outside variables on the relationship between technological alignment and project performance, such as the market and regulatory environment. Furthermore, the sample size was a little bit tiny, which would limit the applicability of the findings.

Brodbeck et al. (2019) studied aligning business and IT Strategy to improve performance of road infrastructure projects in Brazil. This study used a case study approach, which involved interviews with 10 road infrastructure project managers in Brazil and a review of project documents. The study found that the alignment of business and IT strategy significantly influenced road projects' performance in Brazil. Specifically, the alignment of business and IT strategy improved project planning and control, communication, and stakeholder management. The study by Brodbeck et al. (2019) revealed that aligning business and IT strategy can significantly improve the performance of road infrastructure projects in Brazil, which includes enhancing project planning and control, communication, stakeholder management, and ultimately the function of strategy implementation officers as project managers.

Adoghe et al. (2021) studied technological alignment and project performance in Nigerian road construction projects. The indicators of technological alignment: Technology infrastructure, technology readiness, technology investments, and technology strategy. A systematic questionnaire was employed in the study to gather information from 150 project managers working on Nigerian road building projects. To assess the data, structural equation modeling (SEM) was employed. According to the study, technology alignment significantly improves project performance in Nigerian road building projects. Particularly, it was

discovered that technology infrastructure, technology readiness, technology investments, and technology strategy all benefited project performance.

The effect of technology alignment on project performance of road building projects in Nigeria was examined by Adama et al. in 2024. Infrastructure, preparation, strategy, and investments in technology were all considered to be markers of technological alignment. 170 project managers working on Nigerian road building projects participated in the study, which employed a survey questionnaire to gather data. To assess the data, structural equation modeling (SEM) was employed. According to the study, technology alignment significantly improves project performance in Nigerian road building projects. It was discovered that project performance was positively impacted by technical infrastructure, technological preparedness, technological strategy, and technological investments.

Ameyaw et al. (2019) looked at technological alignment and project performance of road projects in Ghana. The indicators of technological alignment studied were technological infrastructure, technological readiness, technology strategy, and technology investments. A survey questionnaire was utilized in the study to gather information from 90 project managers working on road projects in Ghana. To assess the data, structural equation modeling (SEM) was employed. The study discovered that technical alignment significantly improves project performance in Ghanaian road construction. It was discovered that project performance was positively impacted by technical infrastructure, technological preparedness, technological strategy, and technological investments.

The impact of information systems integration on the effectiveness of initiatives for building roads in Ghana was examined by Boateng in 2021. A mixed-method approach was employed

in this study, which included interviews with 12 Ghanaian industry experts and a survey of 148 road construction professionals. The efficiency of road building projects was shown to be significantly positively correlated with the incorporation of information systems. There was a significant influence of integration of the design, construction, and project management systems on the performance of the project.

Mutale's (2019) study in Zambia found that information and communication technology (ICT) adoption has resulted in better project planning, shorter project durations, more accurate cost estimates, and higher project quality. The adoption of GIS technologies, has improved project efficiency in Malawi and decreased construction costs while also enhancing road durability and safety (Muhammad et al., 2024). Similarly, Mporananayo (2024) indicated that Rwanda has actively embraced technology in its road construction projects, using digital tools like Geographic Information System (GIS) and remote sensing technologies, which have improved project planning, decreased construction time and costs, and raised overall project quality. These findings emphasize the potential of technology adoption to positively influence road project performance in these countries.

Kibicho et al. (2021) studied technological alignment and performance of road projects in Kenya. The indicators of technological alignment included technology readiness, technology infrastructure, technology strategy, and technology investments. A survey questionnaire was utilized in the study to gather information from 150 project managers working on Kenyan road projects. To assess the data, structural equation modeling (SEM) was employed. According to the study, technology alignment improves project performance in Kenyan road construction projects. Particularly, it was discovered that the use of technology, its infrastructure, strategy, and investments all benefited project performance.

Ntiamoah et al. (2020) investigated the influence of technology alignment on the performance of road projects in the United States. The research evaluated many indicators of technological alignment, encompassing technology readiness, technical infrastructure, technology strategy, and technology investments, via a poll of 182 project managers. The application of structural equation modeling (SEM) for data analysis revealed a favorable correlation between technical alignment and project success in U.S. road construction. This underscores the essential function of strategy implementation officers as project managers in aligning technology with project objectives, notwithstanding the omission of external elements such as market and regulatory conditions.

In a similar vein, Akintoye et al. (2019) examined the impact of technology alignment on the efficacy of road building in the UK. Data obtained from project managers via interviews and questionnaires indicated a positive association between technology alignment and project performance, highlighting the significance of technology readiness, infrastructure, strategy, and investments in improving project outcomes. Nevertheless, the study did not investigate the relationship between technological alignment and project performance.

Liu et al. (2021) discovered that technology utilization in China markedly enhanced the performance of road projects by facilitating data exchange, improving stakeholder engagement, and enabling real-time progress monitoring. Osei et al. (2020) examined the impact of technology integration in Ghana, emphasizing mobile technologies, GIS, and project management software, which enhanced communication and minimized project delays. Nonetheless, issues associated with expenses and insufficient training constrained the complete efficacy of these technologies.

Adeyemi and Oladapo (2019) evaluated novel construction technologies in Nigeria, demonstrating that modern machinery, GPS, and drone technology diminished project completion durations and enhanced precision. However, the dearth of trained workers impeded the optimization of these advantages. Mthembu et al. (2021) assessed the influence of digital technologies, including automated traffic management systems, on road infrastructure projects in South Africa, observing that although these technologies enhanced traffic flow and forecasting precision, substantial implementation costs and data security issues hindered extensive adoption.

Tan et al. (2020) conducted a study in Malaysia, demonstrating the efficacy of cloud-based project management systems in improving road construction project performance via real-time data sharing and remote monitoring. Nonetheless, dependence on internet access and apprehensions around data privacy were seen as substantial obstacles.

Mir et al. (2020) examined technological alignment across Pakistan's road building industry using a survey of 250 project managers. The research indicated that technical alignment, which includes technology strategy, infrastructure, investments, and preparedness, markedly improves project performance. Nonetheless, external issues, like the regulatory environment, were not taken into account.

Wong et al. (2021) identified a comparable positive association between technology alignment and project performance in Malaysian road development. Buys et al. (2021) investigated the relationship between technology alignment and project performance in Australia, demonstrating that effective alignment positively affected project outcomes; however, the

influence of external variables was not considered, and the sample size restricted the generalizability of the results.

Brodbeck et al. (2019) examined the synchronization of business and IT strategies in road development projects in Brazil, discovering that this alignment markedly enhanced project planning, control, and stakeholder management. Adoghe et al. (2021) examined technical alignment in Nigerian road building, used SEM to demonstrate that technology infrastructure, preparedness, investments, and strategy favorably impacted project performance.

Adama et al. (2024) investigated the influence of technology alignment on project performance in Nigerian road construction, affirming the beneficial benefits of technological infrastructure, preparedness, strategy, and investments. Ameyaw et al. (2019) showed notable enhancements in project performance associated with technology alignment in Ghana, whereas Boateng (2021) underscored the significance of information systems integration for improving road project efficiency in the country.

Mutale (2019) discovered that ICT adoption in Zambia enhanced project planning and quality, whereas Muhammad et al. (2024) emphasized the advantages of GIS technology in Malawi for improving project efficiency and minimizing costs. Mporananayo (2024) said that Rwanda's implementation of digital technologies in road building has resulted in enhanced planning and quality.

Kibicho et al. (2021) examined the relationship between technical alignment and project success in Kenya, demonstrating that technology readiness, infrastructure, strategy, and investments positively influenced project outcomes. Kariuki et al. (2021) validated these

findings, highlighting that technological alignment improves performance in Kenyan road building.

In Kenyan road building projects, Kariuki et al. (2021) investigated the impact of technology alignment on project performance. The following technological alignment metrics, namely, technology strategy, infrastructure, investments, and preparedness, were investigated. A survey questionnaire was utilized in the study to gather information from 60 project managers working on Kenyan road projects. According to the study, technology alignment enhances project performance in Kenyan road construction. Particularly, it was discovered that the use of technology in project strategy, infrastructure, investments, and preparedness was beneficial.

2.3.3 Availability of Resources and Performance of Road Projects

Bekisz and Kruszynski (2021) looked into how Poland's road development projects performed in relation to resource allocation. Data were gathered for this study from 50 road building projects in Poland using a mixed-methods methodology. Analysis of quantitative data and qualitative interviews were used to look at the connection between project performance and resource allocation. The study used six indicators of resource allocation, including financial resources, material resources, equipment resources, labor resources, time resources, and project management resources. The study by Bekisz and Kruszynski (2021) highlights the importance of resource allocation, including project management resources, in the performance of road construction projects, emphasizing that the availability of resources is crucial for strategy implementation officers, who also function as project managers, to effectively manage such projects.

Taufik (2022) analyzed the resource allocation and project performance of Road Projects in Malaysia. This study conducted a quantitative analysis of 20 road projects in Malaysia. The authors used regression analysis to examine the impact of various resource factors such as budget, manpower, and equipment on project cost, schedule, and quality. The findings revealed that adequate resource allocation positively influenced project performance, particularly in terms of timely completion and customer satisfaction. Effective resource management techniques like risk assessment and backup planning, according to the report, may also improve project success. According to Taufik's (2022) study, project performance for road projects in Malaysia was positively impacted by the allocation of sufficient resources, including funds, labor, and equipment. This highlights the significance of resource availability for strategy implementation officers in their role as project managers. Effective resource management practices such as risk assessment and contingency planning were also suggested to enhance project success.

Zhang et al. (2020), the role of resource allocation in enhancing the performance of road construction projects in China was examined. The study used data from 35 road projects and employed a regression analysis to assess the impact of financial, human, and material resources on project timelines and quality. The findings demonstrated that optimal resource allocation, particularly in the early planning stages, significantly contributed to improved project outcomes. The study also stressed the importance of continuous resource monitoring and adaptation to address unforeseen challenges during the project lifecycle.

Owusu and Agyeman (2021) explored the effect of resource management on road project success in Ghana. They surveyed 200 project managers and contractors using a mixed-methods approach, combining surveys with in-depth interviews. Their study revealed that

inadequate resource allocation, especially in terms of financial and human capital, led to delays and reduced quality in road projects. The authors recommended the use of resource planning software and stronger budget oversight to improve project performance.

In Nigeria, Adewale et al. (2020) investigated the impact of resource planning on the success of road infrastructure projects. Their research utilized questionnaires distributed to 150 road project managers across different regions. Using correlation analysis, the study found that effective planning and allocation of resources, including manpower, machinery, and time, positively affected project outcomes. The authors highlighted that the availability and management of these resources were critical in ensuring timely project completion and adherence to budgetary constraints.

In another study, Komba and Mkoma (2019) analyzed resource utilization and its effect on the performance of road construction projects in Tanzania. Using data from 25 completed road projects, the study employed structural equation modeling (SEM) to assess how various resource types—financial, material, and labor—impacted project success. The results indicated that inadequate labor resources and poor financial management were major causes of delays and cost overruns. The study recommended enhanced resource allocation strategies and real-time monitoring systems to improve project performance.

Hassan and Mohammad (2021) conducted an analysis of resource allocation in road projects in Malaysia. This involved identifying the important variables that have an influence on project performance and resource allocation in Malaysian road building projects. 100 project managers were surveyed by the researchers, who then performed descriptive and correlation analysis to determine the data's significance. The findings revealed that the key resource

factors that influence project performance are budget, skilled labor, construction equipment, and material availability. The study also found that effective resource allocation positively affects project cost, schedule, and quality, leading to improved project success. The authors recommended that project managers should prioritize resource allocation planning and control to enhance project performance.

In a study of road projects in North America, Soliz et al. (2023) found that consistent availability to high-quality raw materials had a beneficial impact on project performance by ensuring continuous construction operations. Resources that aren't enough might cause delays, cost overruns, and poor project quality. Making ensuring project funds are sufficient is crucial since inadequate resources can lead to delays, decreased quality, and weakened safety precautions (Larsen et al., 2016). For road building projects, the availability of raw materials like aggregates, cement, and asphalt is crucial. Raw material shortages or erratic availability might result in delays and increase costs (Zhang et al., 2019). In their analysis of road construction projects in South American nations, Fernandez (2018) found that projects with greater resource utilization rates performed better in terms of on-time completion and cost containment. Effective utilization guarantees the best resource allocation and management over the course of the project.

According to Li et al. (2020), for a project to be successful, adequate human resource capability, including qualified engineers and construction workers, is required. Often, it is difficult for nations with little human resource capabilities to complete projects on schedule and within budget. To guarantee the accessibility of building supplies and machinery, effective supply chain management, which includes logistics, shipping, and inventory management, is essential (Chen et al., 2023). Improving the productivity and cost-

effectiveness of a project requires utilizing resources like manpower, machinery, and equipment to the fullest extent possible. Project results are improved in nations with higher effective utilization rates (Liu and Chen, 2020). To guarantee that road projects are completed on schedule and efficiently, governments and project partners should emphasize resource planning and management.

Nawaz et al. (2019) used a quantitative research approach to study how resource allocation affects the success of road construction in Pakistan. We used inferential statistics to look at information from one hundred different road projects around the nation. Based on this research, road improvements in Pakistan benefit greatly from proper allocation of funds. Budget allocation, timely cash release, and availability of trained personnel were the areas where the effects on project performance were most noticeable. Nawaz et al. (2019) discovered that resources, such as allocated funds, timely delivery of funds, and skilled personnel, greatly affect the success of road projects in Pakistan. Findings like this show how important it is for strategy implementation officers to act as project managers and ensure there are enough resources to complete a project successfully.

Ali et al. (2019) focused on the influence of resource allocation on Pakistani road project effectiveness. This study employed a quantitative research approach and gathered information from 100 Pakistani road-building projects. To investigate the connection between resource allocation and project performance, multiple regression analysis was utilized. Budget allocation, material sourcing, equipment usage, and human resource allocation were the four indicators of resource allocation employed in the study. According to the study, each of the four characteristics had a beneficial effect on how well Pakistan's road projects performed. The study by Ali et al. (2019) emphasizes the critical role that sufficient resource availability

plays in the function of strategy implementation officers as effective project managers and highlights the positive effects of resource allocation, including budget, materials, equipment, and human resources, on the performance of road projects in Pakistan.

Rana and Singh (2019) demonstrated that the availability of adequate human and material resources is crucial for road projects. Their study in India highlighted that resource constraints often delay projects and affect quality. Moreover, effective resource allocation helps maintain timelines and budgets, ensuring project success. This underscores the importance of strategic planning in resource management to avoid setbacks in road construction and other infrastructure projects.

Resources were allocated and the effectiveness of road improvements in Ghana were examined by Tetteh et al. in 2019. The study used a mixed-methods approach and comprised 10 in-depth interviews with prominent players in Ghana's road building industry in addition to a survey of 150 road construction specialists. The study discovered a favorable and substantial influence of resource allocation on the success of Ghanaian road construction. It was discovered that the availability of sufficient funds, qualified labor, and cutting-edge equipment was crucial for the accomplishment of road projects. The study also identified challenges such as corruption, inadequate supervision, and poor planning that negatively affect resource allocation and project performance.

In Southwest Nigeria, road project performance and resource allocation were examined by Adeboye et al. in 2021. One hundred road building professionals in the southwest of Nigeria were surveyed as part of the study, which employed a quantitative research technique. Regression analysis and descriptive statistics were utilized in the data analysis process. The

study revealed a positive correlation between performance of road projects in Nigeria and allocation of resources, money, skilled personnel, and state-of-the-art gear acting as the most significant indicators of resource distribution. The study also identified challenges such as political interference, inadequate funding, and lack of technical expertise as factors that negatively affect resource allocation and project performance.

With a focus on the Nairobi-Thika Highway, Mugo et al. (2019) investigated resource allocation and project performance for road projects in Kenya. Case study methodology was adapted and this included interviews with significant parties engaged in the building of the Nairobi-Thika Highway in Kenya. The analysis discovered that the performance of the Nairobi-Thika Highway project was significantly influenced by resource allocation. The effective completion of the project was attributed to the allocation of sufficient finance, knowledgeable labor, and cutting-edge machinery. The study also found issues that have a detrimental impact on stakeholder coordination, resource allocation, and project performance, such as delays in project approval. The study by Mugo et al. (2019) on the resource allocation and road projects' performance of specifically the Nairobi-Thika Highway, found that the availability of sufficient funding, skilled labor, and modern equipment played a critical role in the project's successful completion, emphasizing the significance of resource availability in the role of strategy implementation officers in project management. However, the study was carried on a specific case, that is Nairobi-Thika Highway and this limits generalization to other studies.

In a road project, resource allocation helps with project management. Chepng'eno and Kimutai (2021) argue that financial resource estimation is done throughout the project's lifespan. But since the project depends on funding, materials, machinery, equipment, and

human resources to be completed, resource planning, control, and allocation have a bearing on the entire project. Consequently, resource allocation is a component of a system for project management. According to Chepng'eno and Kimutai (2021) time scheduling, financial and human resource allocation to various project tasks is all included in the resource allocation process. As a result, resources for the project include people, materials, finances, and time.

A key component of planning that enables time and human resource allocation is project scheduling. Budgeting, scope definition, resource estimation, and project goal are all aspects of the planning process. Costs must be predicted as part of the cost planning process during the project's design and construction phases. It has a significant role in the building budget. As a result, the planning stage of project management includes scheduling, resource or inventory controls, and financial or budgetary planning According to Chepng'eno and Kimutai (2021) the design, timing, and feasibility analysis of major development are all impacted by planning. The planning process is linked to the construction of sustainable roads in Kenya.

2.3.4 Communication and Performance of Road Projects

There is a growing amount of research that shows how communication affects how well road projects function in various parts of the world. According to research conducted in Europe by Bekefi et al. (2023) on road infrastructure projects in Hungary, stakeholder involvement is essential to the success of a project because it guarantees that relevant parties are informed and participate in the decision-making process. A study by Gorsevski et al. (2021) conducted in Macedonia found that effective communication, measured by stakeholder engagement level, project progress reporting frequency, feedback mechanism availability, issue resolution

response time, and information accessibility, significantly improved the performance of road construction projects.

The literature review of studies by Bekefi et al. and Gorsevski et al. shows that effective communication, measured by various factors such as stakeholder engagement and feedback mechanisms, significantly contributed to road projects' performance. This highlights the importance of Strategy Implementation Officers (SIOs) in charge of road projects to have strong communication skills in order to facilitate effective stakeholder engagement and communication, ultimately leading to better project outcomes.

Zhang et al. (2019) observed that clear and regular communication channels have a good effect on stakeholder participation levels, claim. They discovered that regular meetings and open communication encouraged more stakeholder engagement and support for the projects in their study on road infrastructure projects in China. Additionally, Tang et al. (2019) underlined that open communication fosters stakeholder trust and collaboration, improving project outcomes. These results emphasize the value of communication in including stakeholders in Chinese road development. Engagement of stakeholders, such as governmental organizations, local communities, and project contractors, is essential for road construction as it assures their involvement and cooperation. Stakeholder participation is facilitated through effective communication, which improves project performance.

In South Africa, Nthabiseng et al. (2020) investigated the impact of communication on stakeholder engagement in public road construction projects. The study found that frequent updates and transparent communication channels improved stakeholder trust and reduced conflicts, which significantly enhanced project performance. The research emphasized the

importance of clear communication from project managers to facilitate efficient project execution. Similarly, Alotaibi and Dulaimi (2021) conducted a study on road construction projects in Saudi Arabia. They identified that communication frequency and clarity were key determinants of project success. The study revealed that road projects with regular reporting and well-structured feedback systems experienced fewer delays and higher project quality. They recommended that project managers establish clear communication strategies to ensure stakeholder alignment.

Bello et al. (2019) examined the influence of corporate governance on the success of road projects in the USA, examining data from 57 projects executed by state transportation agencies. Their research highlighted five essential governance factors: board independence, CEO duality, tenure, board size, and audit committee independence. Research indicated that increased board independence, CEO tenure, and audit committee independence were positively associated with enhanced project results in terms of cost, timing, and quality. Conversely, CEO duality and board size had no substantial effect. The authors determined that the enhancement of corporate governance procedures might increase project performance, underscoring the imperative for state transportation authorities to adopt these enhancements.

Gonzalez-Navarro and Simpson (2021) examined the relationship between corporate governance and investments in road infrastructure in Mexico. Their findings indicated that improved governance procedures promote more investment, corroborated by Baez-Camargo et al. (2021), who identified a correlation between corporate governance and the success of road building projects in the nation. These studies jointly demonstrate the essential function of governance in project implementation and investment.

Chou and Chiu (2022) underscored the significance of corporate governance, demonstrating a positive correlation between enhanced governance procedures and project performance, with board diversity identified as a particularly impactful element. Wang et al. (2020) examined 45 road building projects in China, investigating factors like board makeup, CEO remuneration, and stakeholder involvement. Their quantitative analysis demonstrated that projects with well-organized boards and transparent governance methods had superior performance regarding cost management and punctual delivery.

Sharma and Mehta (2021) analyzed governance structures in 30 state-managed road projects in India and determined that more robust governance frameworks, especially those including strong internal controls and independent audit committees, resulted in improved efficiency and quality. Their findings emphasized that well-defined governance structures reduce risks, enabling the efficient execution of project goals.

Mensah and Boateng (2022) assessed the Ghanaian setting by assessing 40 road infrastructure projects. Research indicated that board independence and management accountability were essential for project success, as projects overseen by more independent boards exhibited superior financial performance and compliance with timetables. This study emphasized the necessity of improving governance processes to reduce corruption and inefficiency commonly linked to infrastructure projects in poor countries.

Harrison et al. (2019) examined public-private partnership (PPP) road projects in the UK and determined that well-defined governance structures, particularly formal risk management frameworks, mitigated delays and cost overruns. Their research highlighted that proficient

governance methods empower project managers to maneuver intricate arrangements, resulting in enhanced project outcomes.

Bekefi et al. (2023) did a study in Europe, particularly in Hungary, highlighting that stakeholder engagement is essential for project success, as it guarantees that pertinent parties are informed and involved in the decision-making process. A study by Gorsevski et al. (2021) in Macedonia demonstrated that effective communication—assessed through stakeholder engagement, project progress reporting frequency, feedback mechanism availability, issue resolution response time, and information accessibility—substantially enhanced the performance of road construction projects. Collectively, these studies underscore the significance of robust communication skills among Strategy Implementation Officers (SIOs) to enhance stakeholder involvement and communication, hence resulting in improved project outcomes.

Zhang et al. (2019) noted that transparent and consistent communication channels enhance stakeholder engagement levels. Their research on road infrastructure projects in China shown that frequent meetings and transparent communication fostered increased stakeholder participation and support. Tang et al. (2019) emphasized that transparent communication cultivates stakeholder trust and collaboration, hence improving project outcomes, especially in Chinese road construction.

Nthabiseng et al. (2020) examined the influence of communication on stakeholder involvement in public road construction projects in South Africa. Frequent updates and transparent communication channels enhanced stakeholder confidence and mitigated disputes, hence considerably improving project performance. Alotaibi and Dulaimi (2021) highlighted

communication frequency and clarity as critical factors influencing project performance in Saudi Arabia. Their research indicated that road projects with consistent reporting and organized feedback mechanisms had less delays and superior project quality, advising project managers to use clear communication techniques to achieve stakeholder alignment.

Muriuki et al. (2021) employed a mixed-methods approach to investigate road projects in Kenya, revealing that good governance practices, including accountability and stakeholder engagement, significantly influenced project performance. Their findings underscored the importance of stakeholder interaction in attaining effective project outcomes.

In Ghana, research by Gyamfi et al. (2019) examined the relationship between communication practices and the performance of road infrastructure projects. The study found that the availability of communication tools and timely information dissemination to stakeholders were associated with better project outcomes. Specifically, the use of digital communication platforms improved collaboration and information flow among team members.

In Australia, Nguyen et al. (2022) analyzed the role of communication in public road projects and found that the inclusion of digital platforms, such as project management software, significantly enhanced stakeholder engagement. Their findings indicated that the use of digital tools improved project tracking, feedback mechanisms, and overall coordination, leading to the timely completion of road construction projects. The authors concluded that communication technology plays a vital role in the success of modern infrastructure projects.

In America, a study by Zhai et al. (2019) on transportation infrastructure projects in the United States found that frequent project progress reporting and the availability of feedback mechanisms were positively correlated with project success. a study by Kramberger (2015)

on road projects in Slovenia found that communication with stakeholders was a crucial aspect of project success. The study identified stakeholder engagement level, project progress reporting frequency, and feedback mechanism availability as important factors influencing project performance. Additionally, a study by Sage and Casavant (2021) on the US 395 North Spokane Corridor project in the United States found that effective communication and information accessibility were critical for project success. The study emphasized the value of consistent, open communication with stakeholders and the accessibility of information for project success. The studies cited demonstrate the importance of effective communication, stakeholder engagement, feedback mechanisms, and information accessibility for the success of road projects. These findings are relevant to the effectiveness of strategy implementation officers in achieving project success by emphasizing the need for clear communication, engagement with stakeholders, and accessibility of information to ensure effective implementation of strategies towards project success.

Park et al. (2019) study, communication is essential to enhancing the success of transportation projects in the United States, especially when it comes to stakeholder engagement and the availability of feedback mechanisms. The study underlined how crucial it is to have efficient communication plans in order to guarantee project success. The Park et al. (2019) study emphasizes the importance of employing successful communication techniques to accomplish transportation project success. The results indicate that better communication might have a significant effect on how well strategy implementation officers execute in relation to Kenyan road projects, especially when it comes to stakeholder participation and feedback mechanisms.

Stakeholders must be informed and involved at all stages of the project's lifetime in order for effective communication to take place. According to Liu and Chen (2020), effective stakeholder involvement was considerably enhanced through open and honest communication between project managers, governmental organizations, local populations, and other pertinent stakeholders. Regular gatherings, open forums, and transparent communication of project details increased stakeholder satisfaction and reduced disagreements. Wang et al. (2021) emphasized the significance of routine progress reporting in Chinese road construction. They discovered that more frequent communication improved project collaboration, decision-making, and project performance. In order to ensure accurate and timely information transmission, the research also highlighted the necessity for standardized reporting formats and effective communication channels.

In Asia, Bao et al. (2020) study on urban road construction projects in China discovered that information accessibility and issue resolution reaction time were important project performance determinants. According to the study, quick decision-making and improved project performance were made possible by swift issue resolution and simple access to project information. Zhang et al. (2019) looked into how communication affected the accessibility of information in Chinese road construction. According to the study, increased information accessibility is a result of effective communication among project stakeholders, and quick issue resolution and decision-making depend on it. The research conducted by Bao et al. and Zhang et al. has yielded data that emphasize the importance of issue resolution response time, information accessibility, and effective communication in improving road project performance. These factors are also relevant to the effectiveness of strategy implementation

officers, as they need to ensure efficient communication and timely issue resolution to achieve project goals.

Li et al. (2018) looked at how Chinese road project performance was impacted by feedback systems. Their research showed that feedback mechanisms that were successful considerably raised stakeholder satisfaction and project results. Successful road projects were found to depend on the establishment of precise feedback procedures and the rapid consideration of recommendations and complaints from stakeholders. Therefore, having a clear feedback channel available is essential for stakeholders to voice their ideas, worries, and suggestions. The relationship between project performance and issue resolution response time was studied by Chen et al. in 2023. According to their findings, effective issue resolution and rapid communication considerably enhanced project results. The study stressed how crucial it is to set up efficient lines of communication and receptive project management teams in order to discuss and resolve difficulties quickly. To ensure the efficient implementation of road projects in China, challenges and disagreements must be promptly resolved.

Shi et al. (2018) study done in China, road construction project performance was greatly enhanced by good stakeholder communication. In order to improve project performance, the study underlined how crucial it is to provide accurate and timely communication, including feedback systems and issue resolution response times. Shi et al.'s (2018) study is pertinent to the efficacy of strategy implementation officers in transportation projects because it emphasizes how important it is for stakeholders—including officers—to communicate effectively in order to improve project performance. The study highlights that in order to guarantee successful strategy execution and eventually improve the performance of road

projects, fast and accurate communication, feedback systems, and issue resolution response times are essential.

Memon et al. (2020) observes that in Asian nations, successful communication is essential to the completion of road construction. Better project outcomes result from increased stakeholder participation that is attained via transparent and effective communication, which also fosters trust and collaboration. Regular progress reporting guarantees that stakeholders are aware of the state of the project, enabling them to evaluate performance, spot problems, and offer insightful commentary (Chen et al., 2023). The success of a project is positively impacted by the availability of feedback channels, such as helplines and websites, which stimulate stakeholder engagement (Luo et al., 2019). Quick issue resolution, attained by prompt communication, indicates a dedication to the project, fosters confidence, and enhances project results (Rajkumar, 2020). Accessible project information through digital platforms and regular communication materials enhances transparency, stakeholder engagement, and informed decision-making (Kujala et al., 2022). Enhancing communication strategies in these areas is crucial for improved project outcomes, stakeholder satisfaction, and overall success in road projects across Asia.

According to research by Zhu et al. (2020) on the effect of communication on construction project performance, good communication has a beneficial impact on project performance. The study stressed the value of feedback systems, regular communication, and clear communication routes. Similar findings were discovered in research by Hwang and Lim (2021) on the influence of communication on the accomplishment of infrastructure projects in South Korea, which concluded that good communication is essential for stakeholder participation and a project's successful execution. The study recommended the use of diverse

communication channels and the involvement of stakeholders in the communication process to ensure successful project implementation. The studies by Zhu et al. and Hwang and Lim. highlight the crucial role of effective communication in the success of construction and infrastructure projects. The findings suggest that clear communication channels, frequent communication, and feedback mechanisms are essential for stakeholder engagement and successful project implementation, which in turn can contribute to the effectiveness of strategy implementation officers towards the performance of road projects.

A study by Ahsan et al. (2019) in Bangladesh found that effective communication positively influences road project performance, and emphasized the importance of frequent communication, feedback mechanisms, and information accessibility for successful project implementation. a study by Ahmed (2019) on road projects in Bangladesh found that stakeholder engagement level, project progress reporting frequency, and issue resolution response time were significant predictors of project success. The study emphasized the importance of regular communication and timely issue resolution for project performance. Similarly, a study by Naeem and Akbar (2021) on road projects in Pakistan found that communication with stakeholders positively influenced project performance, particularly in terms of information accessibility and feedback mechanism availability.

Kurniawan et al. (2022) on road projects in Indonesia found that effective communication with stakeholders positively influenced project performance, specifically in issue resolution response time and information accessibility. The study by Kurniawan et al. (2022) highlights the importance of effective communication with stakeholders in achieving better project performance, which is relevant to the effectiveness of strategy implementation officers in ensuring successful implementation of strategies in road projects. Specifically, the findings

emphasize the need for effective communication in addressing project issues and ensuring information accessibility, which are critical components of successful strategy implementation.

Kamarudin et al. (2018) analyzed the effects of communication on stakeholder engagement in road projects in Malaysia. The study found that effective communication with stakeholders positively influences their engagement level and leads to a better understanding of project goals and objectives. Similarly, Mahamid (2016) looked at communication and project progress reporting frequency in Saudi Arabia. The study found that frequent communication with project stakeholders leads to timely progress reporting and helps in identifying issues that may affect project performance. Javed et al. (2018) studied communication and feedback mechanisms in road projects in Pakistan. The study found that the availability of feedback mechanisms is positively associated with improved project performance and helps in identifying issues and addressing them promptly. Research by Kamarudin et al. (2018), Mahamid (2016), and Javed et al. (2018) highlight the crucial role of effective communication in improving stakeholder engagement, project progress reporting frequency, and feedback mechanisms in road projects. These findings suggest that communication is useful in steering the effectiveness of strategy implementation officers towards the performance of road projects, as they rely on stakeholder engagement, progress reporting, and feedback to ensure successful project outcomes.

In Africa, Oke et al. (2018) on road infrastructure projects in Nigeria found that effective stakeholder engagement, regular project progress reporting, and feedback mechanisms availability were critical to project success. The study showed that these communication factors ensured that stakeholders were informed, involved, and their concerns addressed,

which enhanced project performance. In research by Adeboye et al. (2021) in Nigeria, it was discovered that communication affected how road improvements performed. According to the research, when stakeholders were actively involved in road improvements, their performance increased.

According to Amoah et al. (2021), consistent reporting facilitates prompt issue detection and permits appropriate corrections. Effective reporting is facilitated by communication channels like progress meetings, progress reports, and internet platforms. Increased reporting frequency encourages accountability while keeping stakeholders informed. In the same vein, Tiwari et al. (2020) came to the conclusion that a strong feedback system improves communication and encourages ongoing development. Stakeholders should have easy access to channels where they may express their opinions, voice their worries, and recommend changes. Online portals, suggestion boxes, and designated contact locations are some examples of feedback tools. The project team can quickly fix problems thanks to efficient feedback mechanisms, which increases stakeholder satisfaction.

Sanya et al. (2018) on the effects of communication on project performance in Nigeria found that effective communication is key to successful project implementation, and highlighted the importance of issue resolution response time and stakeholder engagement for effective communication. The study is relevant to the role of strategy implementation officers in the performance of road projects as it emphasizes the importance of effective communication, particularly in issue resolution response time and stakeholder engagement. This highlights the need for SIOs to prioritize effective communication in their strategies to ensure successful project implementation and performance.

Active stakeholder engagement is essential for successful road projects. According to a study by Bourne (2016), effective communication positively influences stakeholder engagement, leading to better project outcomes. Their research conducted in Egypt found that projects with higher stakeholder engagement levels achieved greater satisfaction among stakeholders and improved project performance. Similarly, Aziz and Abdel-Hakam (2016) emphasized the importance of stakeholder engagement in the Egyptian road sector, suggesting that regular communication channels and stakeholder involvement contribute to successful project implementation.

Ali et al.'s (2024) study looked into how communication affected project reporting in the Egyptian road building industry. They discovered that initiatives with more frequent reporting and communication had increased performance. In order to keep stakeholders informed and involved, the study underlined the need of timely and thorough reporting. Awaad et al. (2022) also made note of the fact that regular project status reporting increases stakeholder confidence and lowers uncertainty, which improves project results in the Egyptian road sector. This means that regular reporting on the status of a project contributes to maintaining accountability and transparency.

Abou-ElFetouh et al.'s (2024) study explored the impact of communication on feedback mechanisms in Egyptian road projects. The study showed that stakeholder participation and satisfaction were increased in initiatives with easily accessible feedback channels. They also stressed the value of two-way communication, which enables stakeholders to offer comments and receive quick replies. The availability of such tools makes cooperation and problem-solving more efficient over the course of a project. Therefore, creating efficient feedback systems enables participants to voice their worries, recommendations, and complaints.

According to Annang's (2019) research in Ghana, effective stakeholder communication is crucial to the project's success. The study found that the degree of stakeholder participation, the frequency of project status reports, and the availability of feedback channels greatly influenced the success of road projects. The findings of Annang's (2019) study on the importance of effective stakeholder communication for the success of Ghanaian road projects are relevant to the role of strategy implementation officers in road project success. The study emphasizes how important it is for strategy implementation officers to successfully manage areas like stakeholder participation, project status reporting frequency, and feedback mechanism availability in order to forecast the success of road projects.

Aziz (2021) on the impact of communication on the performance of road projects, good project outcomes are largely dependent on effective communication. According to the study, ineffective communication may cause miscommunication, hold ups, and mistakes, which can eventually lead to project failures. On the other hand, effective communication was found to improve project performance by promoting collaboration, trust, and stakeholder engagement. The study highlighted that communication strategies such as regular meetings, clear task assignments, and open feedback mechanisms were essential for ensuring that all project stakeholders, including contractors, engineers, and local authorities, were informed and aligned throughout the project lifecycle. Furthermore, the study suggested that effective communication can also mitigate risks and reduce conflicts by addressing issues promptly and resolving disputes amicably.

Ibrahim and Shaker (2019) investigated how communication affected the settlement of problems in Egyptian road construction. The study discovered that enhanced project performance and stakeholder satisfaction are directly related to timely stakeholder

communication and efficient problem resolution response times. According to Ugandan research by Abong et al. (2019), stakeholder participation and excellent communication greatly enhanced road project performance. In order to enhance project performance, the study underlined how crucial it is to provide accurate and timely project progress reporting and to provide information accessible to stakeholders. The study's findings are relevant to the role of SIOs in the performance of road projects as they highlight the importance of effective communication with stakeholders, which is a key responsibility of SIOs. The study's identified predictors of project performance, such as stakeholder engagement level and progress reporting frequency, can guide strategy implementation officers in developing communication strategies that enhance project success.

According to a study by Minois (2023) on the dynamics of communication in road projects, successful communication is essential to the project's outcome. The researchers found that poor communication can result in miscommunication, delays, and cost overruns, all of which can negatively impact the project's performance as a whole. Conversely, it has been discovered that good communication increases team trust, fosters a collaborative atmosphere, and improves project productivity. The study emphasized how crucial it is for stakeholders, such as project managers, contractors, and community members, to communicate with one another in a timely and straightforward manner. In order to make sure that everyone is informed and on the same page throughout the project lifetime, it also underlined the necessity of frequent updates, progress reports, and issue resolution procedures.

A study by Matu et al. (2020) on road projects in Kenya found that effective communication with stakeholders was a critical factor in project success. The study identified stakeholder engagement level, project progress reporting frequency, and feedback mechanism availability

as significant predictors of project performance. The study emphasized the need for regular and transparent communication with stakeholders and the availability of feedback mechanisms for project performance. The results of Matu et al. (2020) highlight how crucial good communication is to the success of road developments in Kenya. According to the research, SIOs are crucial for projects to succeed because they provide stakeholder participation, regular reporting of project progress, and easy access to feedback channels.

Chumba (2020) studied communication and the performance of the Nairobi-Nakuru Highway. Data from road building specialists was captured using a standardized questionnaire. According to the study, communication, as determined by stakeholder involvement level, frequency of project progress reports, accessibility of feedback mechanisms, speed of issue resolution, and information availability, significantly impacted how well road construction turned out. To improve the effectiveness of road projects in Kenya, the research advised project managers to set up efficient communication channels, encourage stakeholder involvement, offer frequent progress updates, set up feedback systems, and assure prompt issue resolution. The report emphasizes how crucial communication is to the efficient completion of road projects.

It is crucial to remember that these studies were carried out in various nations and areas with various levels of infrastructural development and cultural diversity. Nonetheless, they provide valuable insights into the importance of communication in road projects and emphasize the need for effective communication for stakeholder engagement, project progress reporting, feedback mechanisms availability, issue resolution response time, and information accessibility.

2.3.5 Corporate Governance Practices and Performance of Road Projects

Bello et al. (2019) looked into how corporate governance affected how well road projects performed in the USA. The research collected and analyzed data from 57 road projects carried out by state transportation authorities in the USA using a quantitative technique. Five factors were utilized by the researchers to create a composite measure of corporate governance: board independence, CEO duality, tenure, board size, and audit committee independence. Road projects were evaluated based on their performance in terms of cost, timeliness, and quality. The research discovered that better project outcomes were specifically connected with higher degrees of board independence, CEO tenure, and audit committee independence. On the other side, it was discovered that neither CEO duality nor board size had a substantial impact on project performance. It was concluded that by improving their corporate governance procedures, state transportation departments might enhance the performance of road projects. The research of Bello et al. (2019), which emphasizes the significance of corporate governance in project results, is pertinent to the function of strategy implementation officers for the successful outcomes of road projects. Project success may be enhanced by assuring higher degrees of board independence, CEO tenure, and audit committee independence. The study focuses on the necessity for state transportation agencies to improve corporate governance procedures in order to provide better project results. In contrast to the current study, the research was carried out in a distinct location with a more developed and encouraging environment.

Bello et al. (2019) did a study analyzing the influence of corporate governance on the success of road projects in the United States. Through the analysis of data from 57 projects conducted by state transportation authorities, the researchers discerned five critical governance factors:

board independence, CEO duality, tenure, board size, and audit committee independence. Their findings demonstrated that increased board independence, CEO tenure, and audit committee independence were associated with enhanced project outcomes for cost, timing, and quality. In contrast, CEO duality and board size were determined to have no meaningful effect. The authors determined that augmenting corporate governance standards might enhance project performance, underscoring the imperative for state transportation authorities to adopt these enhancements.

Gonzalez-Navarro and Simpson (2021) examined the link between corporate governance and investments in road infrastructure in Mexico, discovering a positive association that indicates improved governance standards promote increased investment levels. Baez-Camargo et al. (2021) corroborated these findings by demonstrating a correlation between corporate governance and the performance of road building projects in Mexico, highlighting the essential role governance plays in project implementation and investment.

Chou and Chiu (2022) underscored the significance of corporate governance, demonstrating a positive correlation between enhanced governance procedures and project performance, with board diversity identified as a particularly impactful element. This trend of associating strong corporate governance with improved project performance is corroborated by other studies, underscoring the necessity for strategy implementation officers to emphasize good governance in their operations.

Wang et al. (2020) examined 45 road building projects in China, evaluating variables like board composition, CEO remuneration, and stakeholder involvement. Their quantitative analysis demonstrated that projects with well-organized boards and transparent governance

methods had superior performance in cost management and punctual delivery. They discovered that correlating executive remuneration with project milestones enhanced responsibility, leading to more favorable results.

Sharma and Mehta (2021) evaluated governance structures in 30 state-managed road projects in India and determined that more effective governance frameworks, especially those including stringent internal controls and independent audit committees, resulted in improved efficiency and quality. Their findings emphasized that well-defined governance structures reduce risks, hence enhancing the successful execution of project initiatives.

Mensah and Boateng (2022) examined the Ghanaian setting by assessing 40 road infrastructure projects. Research indicated that board independence and management accountability were essential for project success, as projects overseen by more independent boards exhibited superior financial performance and compliance with timetables. The research emphasized that improving governance procedures, particularly in the public sector, might reduce corruption and inefficiency commonly linked to infrastructure projects in poor countries.

Harrison et al. (2019) investigated public-private partnership (PPP) road projects in the UK and determined that well-defined governance structures, particularly formal risk management frameworks, mitigated delays and cost overruns. Their research highlighted that proficient governance procedures allow project managers to maneuver through intricate arrangements, resulting in enhanced project outcomes.

Further research elucidate the influence of corporate governance on the execution of road projects in various circumstances. Yeboah et al. (2019) investigated Ghanaian road projects,

demonstrating a substantial positive link between board independence and project effectiveness, but noting no significant relationships with board size or CEO duality. Babajide and Ogundana (2021) examined corporate governance practices in Nigeria, revealing deficiencies in governance frameworks that impeded project performance. They proposed that refining these approaches might augment project planning, execution, and sustainability.

Mbwana and Kibona (2019) discovered in Tanzania that board size and CEO duality had minimal impact on performance, however board independence and audit committee effectiveness were favorably associated with project outcomes. In the Kenyan context, Akwaa-Mensah et al. (2019) identified robust positive relationships between corporate governance and project success, emphasizing the significance of transparency and stakeholder participation in improving results.

Muriuki et al. (2021) employed a mixed-methods approach to investigate road projects in Kenya, revealing that good governance practices, including accountability and stakeholder engagement, significantly influenced project performance. In contrast, the study emphasized the adverse consequences of ineffective governance procedures, including corruption and insufficient stakeholder involvement.

Gonzalez-Navarro and Simpson's study from 2021 looked at how corporate governance affected investments in road infrastructure in Mexico and found that stronger corporate governance is positively correlated with greater levels of investment in roads. Similar to this, When Baez-Camargo et al. (2021) examined how corporate governance was influencing the accomplishment of road construction projects in Mexico, they found that the two were inextricably linked. According to their research on the influence of corporate governance on

the effectiveness of highway projects in the US. Chou and Chiu (2022) discovered a beneficial relationship between better corporate governance and project success, with board diversity having a particularly strong positive impact. Overall, the findings show how crucial these policies are for assuring higher levels of investment in roads as well as improved performance of highway and road building projects. In order to improve project outcomes, it is crucial for strategy implementation officers to think about and put excellent corporate governance procedures into practice. These officers are responsible for ensuring that strategies are implemented effectively.

A study by Wang et al. (2020) examined the impact of corporate governance on the performance of road projects in China. The research focused on 45 road construction projects across various provinces, analyzing factors such as board composition, executive compensation, and stakeholder engagement. Using a quantitative approach, the study found that projects with well-structured boards and transparent governance practices demonstrated better performance in terms of cost control and timely delivery. The study also highlighted that executive compensation tied to project milestones improved accountability, leading to more successful project outcomes.

In India, Sharma and Mehta (2021) analyzed the effect of governance structures on the success of public road projects. Their study assessed governance indicators such as board expertise, internal controls, and audit practices across 30 state-managed road projects. The researchers concluded that projects with stronger governance frameworks—particularly those that included robust internal controls and independent audit committees—achieved higher levels of efficiency and quality. The study emphasized that a clear governance structure helped

minimize risks and ensured that project managers could implement strategies more effectively.

A study conducted by Mensah and Boateng (2022) in Ghana explored the connection between corporate governance and road project performance in the context of developing countries. The authors analyzed 40 road infrastructure projects and found that board independence and management accountability were key factors contributing to project success. Projects that were governed by boards with higher levels of independence showed better financial performance and greater adherence to project timelines. The study suggested that improved governance practices, especially in the public sector, could help mitigate corruption and inefficiencies that often plague infrastructure projects in developing nations.

In the UK, a study by Harrison et al. (2019) focused on the influence of corporate governance on the performance of public-private partnership (PPP) road projects. The research evaluated governance practices such as risk management, stakeholder communication, and transparency in 25 road projects. The findings revealed that projects with clear governance structures, particularly those with formal risk management frameworks, experienced fewer delays and cost overruns. The study highlighted that good governance practices helped project managers navigate complex PPP arrangements more effectively, leading to better overall project outcomes.

According to research by Nguyen et al. (2019), independent boards emphasize the public interest and make fair choices, which increases openness, reduces corruption, and produces better results for road projects. Similar to how increased monitoring, efficient risk reduction, and the accomplishment of project goals are all benefits of board responsibility for road

project performance (Zhang et al., 2019). The ideal board size for road projects varies depending on the country context, with larger boards benefiting in complex environments by providing a variety of perspectives and expertise while smaller boards encourage effective decision-making in secure institutional frameworks (Gifford, 2019). By minimizing power concentration, boosting board monitoring, and improving results, CEO duality, also known as CEO dual responsibilities, has a favorable influence on road project performance (Chen et al., 2023; Li et al., 2019). Furthermore, independent audit committees help road projects be more transparent and accountable, which improves financial reporting procedures, lowers fraud, and improves project performance (Wang et al., 2021). In conclusion, encouraging independent and accountable governance frameworks is crucial for open decision-making, successful risk management, and enhanced performance in road projects across the world.

Kaszubowski & Kaszubowski (2019) looked at how well Polish road projects performed in relation to corporate governance. An examination of a case study was conducted together with the use of a questionnaire survey as the tool for gathering data. The study's conclusions demonstrated that corporate governance significantly affects how well Polish road projects perform. The study identified four key indicators of corporate governance that influence project performance, which are: board independence, board diversity, stakeholder engagement, and risk management. However, the research was done in a distinct location with more advanced infrastructure compared to the current study. The study by Kaszubowski and Kaszubowski (2019) is relevant to the function of strategy implementation officers as it shows that corporate governance, particularly board independence, diversity, stakeholder engagement were crucial for road projects perfromance in Poland, which may have implications for the road engineering industry in other countries.

Wang et al. (2021) looked into how corporate governance affected the success of road projects in Malaysia and China. Data collection was accomplished using questionnaires. Questions on the project's performance, corporate governance procedures, and project features were included in the survey questionnaire. The data were examined using regression analysis as well as other descriptive and inferential statistics. According to the study, corporate governance significantly improves the effectiveness of road projects in both China and Malaysia. The indicators of corporate governance that had the most significant effect on project performance were transparency, accountability, and stakeholder engagement. Significant determinants of project performance were the scope and complexity of the project as well as the amount of industry rivalry. According to the study's findings, corporate governance is crucial for the effective completion of road projects in Malaysia and China.

The impact of corporate governance on the success of road projects was investigated by Mohamed and Azman (2019) in Malaysia. Key stakeholders were interviewed for the study, and pertinent documents were reviewed as part of its qualitative research technique. Transparency, accountability, and moral conduct were among the metrics used in the study to gauge how successful corporate governance is. The results show a positive association between the two variables by ensuring that resources are allocated efficiently, risks are managed effectively, and stakeholder interests are protected. The findings of Kaszubowski and Kaszubowski's (2019) study on corporate governance's impact on road project performance in Poland suggest that the function of strategy implementation officers as project managers can be influenced by indicators of corporate governance such as stakeholder engagement and risk management. However, the study's applicability to countries with less advanced infrastructure, such as the current study's focus, may be limited.

Yeboah et al. (2019) investigated the performance of Ghanaian road projects and corporate governance. Regression analysis was used in conjunction with a survey of project stakeholders. The study's results revealed no significant associations with board size or CEO duality, but a substantial favorable link between board independence and project performance. The authors suggest that improving board independence can lead to better decision-making and accountability in road projects in Ghana. The study by Yeboah et al. (2019) on corporate governance and road project performance in Ghana is relevant to the function of strategy implementation officers as project managers because it shows how board independence is crucial for decision-making and accountability, which could influence the success of road projects.

Babajide and Ogundana (2021) looked at corporate governance and road infrastructure performance in Nigeria. This took into account a review of corporate governance practices in road infrastructure agencies in Nigeria, as well as interviews with key stakeholders. The study used four indicators of corporate governance: board composition, board effectiveness, risk management, and stakeholder engagement. Even though there were some good corporate governance processes, the study's results demonstrated that, in Nigerian road infrastructure agencies, there were also significant gaps and weaknesses. The authors suggest that improving corporate governance in these agencies can lead to better project planning, execution, and sustainability. Improving corporate governance in road infrastructure agencies can lead to better project planning, execution, and sustainability, which is relevant to the function of strategy implementation officers as project managers

Mbwana and Kibona (2019) looked on the effectiveness of Tanzanian road projects in terms of corporate governance. A nexus of corporate governance and project performance was

investigated using regression analysis along with a survey of project stakeholders. The results disclosed that neither board size nor CEO duality were significantly related to project performance, but that board independence, audit committee effectiveness, and openness were. The authors suggest that improving these indicators of corporate governance can lead to better project outcomes in Tanzania's road sector.

In their study, Akwaa-Mensah et al. (2019) explored the connection between Kenyan road project success and corporate governance. Information from 80 road construction projects in Kenya was gathered for the study using a cross-sectional survey technique. The questionnaire measured various dimensions of corporate governance, including transparency, accountability, fairness, and stakeholder engagement. The study used several indicators of corporate governance, including board effectiveness, audit committee effectiveness, management transparency, internal control, risk management, and ethical standards. The findings indicated a strong positive correlation between project performance and corporate governance. More precisely, the study found a correlation between higher degrees of transparency, accountability, and stakeholder engagement and better project performance. Road building projects can perform better if strategy implementation officers use corporate governance norms that promote transparency, accountability, and stakeholder participation. The study, however, did not discover a substantial link between fairness and project success

A mixed-methods technique was used to undertake Muriuki et al. (2021)'s investigation of the effectiveness of Kenyan road developments. The researchers used surveys, interviews, and document analysis as well as quantitative and qualitative data gathering techniques. According to the study, corporate governance significantly influences whether road developments in Kenya are successful. It has been discovered that good governance techniques including

accountability, openness, and stakeholder involvement have a favorable effect on project performance. In contrast, poor governance practices, such as corruption, lack of accountability, and inadequate stakeholder engagement, were found to have a negative impact on project performance.

2.3.6 Performance of Road Projects

In a study by Mwangi et al. (2020), the performance of road projects under the Kenya National Highways Authority (KeNHA) was assessed, focusing on both urban and rural road networks. The research highlighted key performance indicators such as completion timelines, quality of construction, and stakeholder satisfaction. Although improvements in project delivery were noted, the study emphasized persistent challenges with project delays, corruption, and cost overruns.

Suleiman and Ahmed (2019) investigated the performance of rural road projects in Tanzania using a longitudinal case study approach. The research examined road conditions, maintenance schedules, and community involvement in project execution. Results indicated that while road accessibility had improved significantly, frequent flooding and poor maintenance diminished long-term functionality, calling for enhanced local government oversight.

Nyaga et al. (2022) explored the performance of county-level road projects in Kenya, assessing the influence of devolved governance on project outcomes. Through survey data from 15 counties, the study found that decentralization improved decision-making speed and community involvement, but challenges in resource allocation and transparency hindered optimal project execution, leading to incomplete or poorly maintained roads.

Ali and Sule (2020) analyzed road project performance in Ethiopia, specifically focusing on the Addis Ababa–Djibouti corridor. The study evaluated project effectiveness based on transport efficiency, safety, and economic impact. While the project improved regional trade logistics, delays and cost escalations due to land acquisition issues were significant impediments to achieving project goals.

Oluwajana et al. (2022) examined the determinants influencing project expenses and the punctual completion of road building in Nigeria's Ondo and Ekiti states. Their investigation revealed crucial factors, including insufficient equipment, weak planning, and inefficient management methods, as major drivers to project delays. Further obstacles encompassed project intricacy, equipment failures, and supply deficiencies. The study indicated that inflation, erroneous budgeting, unethical behaviors, and the absence of skilled contractors substantially affected road building expenses.

Customers and contractors alike want projects finished quickly since postponements may reduce income and increase costs. Construction projects all across the world face this issue, but it's particularly common in developing countries when money and time go over budget (Oluwajana et al., 2022). According to the findings, persistent problems have resulted from chronic delays in Nigeria's construction sector.

In construction project management, the interplay between budget, schedule, and quality is crucial (Oluwajana et al., 2022). In addition to meeting time and cost constraints, success is defined by meeting quality standards. The authors argued that these three factors often need to be compromised when the scope of a project is altered, which poses significant challenges

to the project's success. They noted that the government is investing more and more money to fix and improve outdated infrastructure, which needs fixing immediately.

In addition, government agencies have started using new contracting tactics to achieve goals like reducing costs and time while increasing quality and ensuring a big return on public investment. Therefore, finding the best ways to allocate resources so that construction projects may stay on schedule and under budget without sacrificing quality is becoming more important.

Abdalla et al. (2021) conducted a study on the factors influencing the performance of road construction projects in Sudan. They evaluated road projects across different regions, focusing on factors such as project funding, workforce availability, and weather conditions. The study used both qualitative and quantitative methods, gathering data from project managers and contractors. The findings showed that inadequate funding and poor planning were the leading causes of project delays. Furthermore, seasonal weather conditions, particularly in flood-prone areas, significantly impacted road quality and long-term maintenance.

Khalid and Hassan (2020) explored the performance of urban road projects in Pakistan, particularly in Lahore and Karachi. The study assessed the impact of political interference, bureaucratic inefficiencies, and corruption on road project timelines and cost escalations. Through interviews with government officials and contractors, the researchers found that political pressure often led to hurried projects that sacrificed quality for speed. Additionally, bribery and corrupt practices in the tendering process were significant contributors to inflated project costs, highlighting the need for reforms in governance and accountability mechanisms.

Kim and Lee (2019) focused on the influence of technological integration in road projects in South Korea. Their study evaluated how the use of advanced project management software, digital modeling, and automated construction techniques impacted project efficiency. Data was collected from 50 road projects implemented over five years. The study concluded that projects that adopted modern technology showed improved timelines, cost control, and quality of road construction. The authors also emphasized the importance of training engineers and project managers in using these new technologies to optimize project success.

Musonda et al. (2021) investigated the performance of road projects in Zambia, analyzing the role of foreign contractors and local subcontractors. The study assessed the collaboration between international firms leading large infrastructure projects and local firms tasked with smaller sections of road construction. The researchers found that lack of coordination and communication between foreign and local contractors often led to delays and increased costs. In addition, the absence of skills transfer programs limited the capacity of local firms to manage future projects independently.

Mensah et al. (2020) analyzed road infrastructure projects in Ghana, focusing on the influence of public-private partnerships (PPP) on project outcomes. The study used case studies of three major road projects implemented through PPPs and evaluated their performance in terms of cost, timeline, and quality. The researchers found that while PPPs helped in mobilizing the necessary funding for large-scale road projects, they also introduced challenges related to risk-sharing and contract enforcement. Misaligned incentives between public and private entities were identified as a key challenge that affected project completion rates.

Chege et al. (2022) assessed the impact of environmental factors on road construction in Kenya. Their research specifically examined projects affected by landslides, floods, and extreme weather conditions in the Mount Kenya region. The study found that despite advancements in engineering design, environmental factors continued to pose significant risks to the long-term sustainability of road projects. The authors recommended integrating more resilient construction materials and designs into projects to mitigate these risks.

Moyo and Jere (2021) studied the performance of road projects in Zimbabwe, with a focus on community involvement in project implementation. The research utilized a participatory approach, involving community leaders, local government officials, and road contractors. The findings revealed that when communities were actively involved in the planning and monitoring stages of road projects, the projects were more likely to be completed on time and within budget. The authors stressed that community ownership and involvement are critical to ensuring the sustainability and proper maintenance of road infrastructure.

2.4 Summary and Gaps

The studies reveal a connection between the success of road projects, leadership philosophies, and strategy implementation. Nevertheless, the majority of research is done in a different part of the world. Bello et al. (2019) from the United States, Kaszubowski and Kaszubowski (2019) from Poland, and Alaloul et al. (2021) from Pakistan are a few examples. The studies may not be representative of the general population of project managers and project teams, as they are based on specific samples from different countries and contexts. Therefore, the findings may not be generalizable to other settings and situations

The review also reveals a methodological weakness in some studies, where data was collected from past studies from online search engines. Examples of such studies included Lopez and Hernandez (2021) in Mexico, and Iqbal et al. (2019) projects in Pakistan. Online engines may not have access to all the data available, especially when it comes to niche topics or industries. This can result in incomplete or inaccurate information. Online engines may provide biased information based on their algorithms or partnerships with certain companies or organizations. Online engines may provide data without proper context or background information, making it difficult to understand the meaning and relevance of the information.

Some of the research approaches used limit generalization. For instance, Nxumalo and Mayekiso (2020) in KwaZulu-Natal, South Africa study used a case study approach. Because case studies are typically conducted on a small sample size or a single subject, the findings may not be applicable to a broader population. According to the reviewed literature, strategy implementation and corporate governance are crucial in determining the success of any project, including road projects. However, not much study has been done on the connection between these variables and the success of road projects in the context of the Kenya Rural Roads Authority. In order to better understand this relationship and the efficacy of the authority's present corporate governance and strategy implementation, more research is therefore required.

Despite the growing body of literature on strategy implementation and project performance, significant gaps remain, particularly in the context of public sector infrastructure projects in developing countries. Previous studies have explored the influence of leadership styles, resource allocation, technology adoption, and communication practices on project success, but these have been mostly focused on developed countries or private sector projects. In

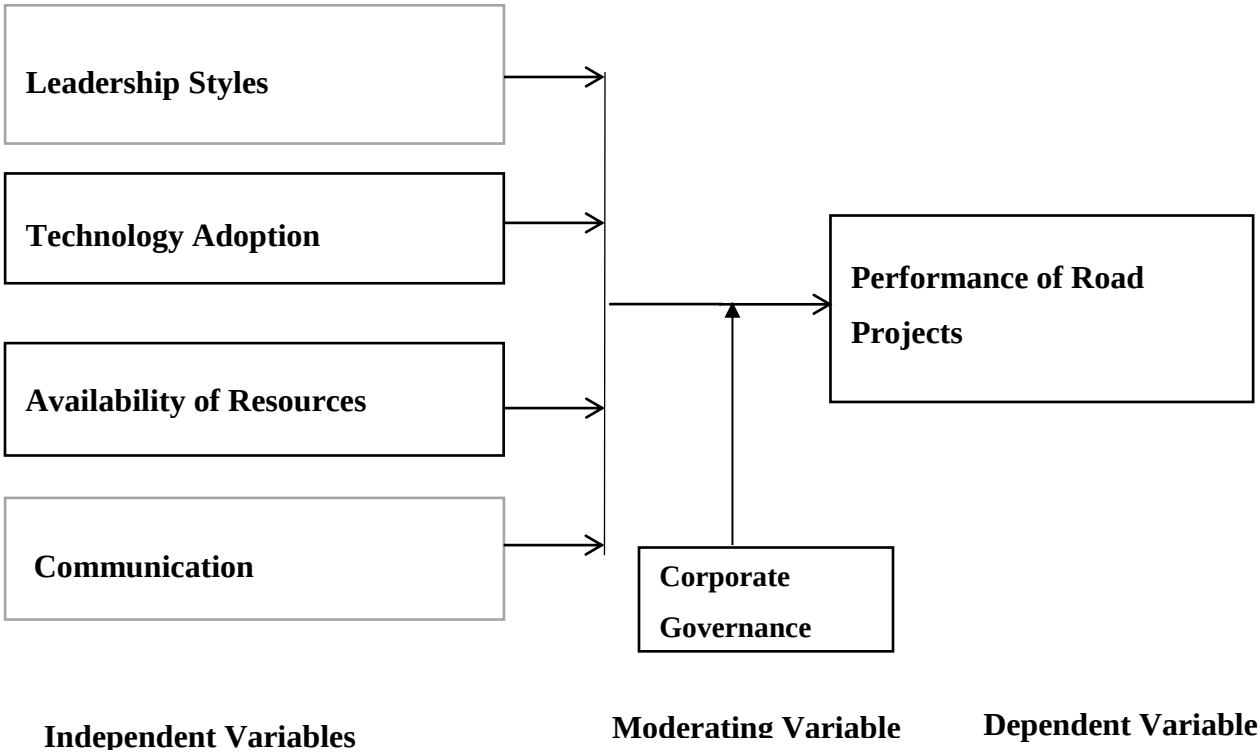
Kenya, studies in this field have been limited in their scope, often failing to consider the unique challenges faced by rural road projects under public administration, such as bureaucratic delays, political interference, and resource constraints. Additionally, while there is substantial evidence supporting the role of corporate governance in private sector project performance, its moderating effect in the public infrastructure context, particularly in Kenya, has not been adequately explored. Through examining the relationship between strategy implementation (through leadership styles, technology adoption, resource availability, and communication practices) and road project performance, the study aims to provide insights that are context-specific to public infrastructure projects in Kenya. Furthermore, the study introduces corporate governance as a moderating variable, investigating how governance structures affect the success of road projects in a public institution.

2.5 Conceptual Framework

A conceptual framework, in the opinion of Kombo and Tromp (2009), is a research instrument helpful in increasing knowledge and awareness of the issue being investigated as well as in communicating it to the study audience. According to the author, a conceptual framework is made up of fundamental principles and notions from the pertinent field of study that are used to organize subsequent presentations.

Figure 2.1

Conceptual Framework



The study's conceptual framework is based on theories of strategic management that establish a connection between project performance, corporate governance, and strategy implementation. It is organized according to important factors that affect how well road projects run under the Kenya Rural Roads Authority (KeRRA). The predictors (independent factors) identified by the study are communication techniques, resource availability, leadership styles, and technology adoption. The performance of the road project is the anticipated (dependent) variable. A moderating variable that affects the link between strategy implementation and road project outcomes is corporate governance.

Leadership styles, grounded in the Contingency Theory of Leadership, are critical to determining the effectiveness of project management in varied contexts. Transformational

leadership, in particular, has been shown to enhance project success by promoting innovation and collaboration (Raziq et al., 2018). The study tests whether leadership styles directly impact project performance in rural road projects.

TAM serves as a foundational framework for understanding how perceived usefulness and usability influence the acceptance of technology. This model is particularly relevant in the context of project management, where technology plays a pivotal role in enhancing efficiency and effectiveness. According to Ntiamoah et al. (2020), the anticipated benefits of technology adoption in road projects include improved project efficiency, especially in the areas of monitoring and execution. The integration of technology into project management practices can streamline processes, enhance communication, and provide real-time data, ultimately leading to more successful outcomes.

Resource availability is supported by Resource-Based Theory (RBT), which posits that an organization's success depends on its unique resources (Barney, 1991). Adequate financial, human, and material resources are essential for road projects to meet timelines, budget constraints, and quality standards. The study will examine how the availability of these resources influences project performance, especially in resource-constrained environments.

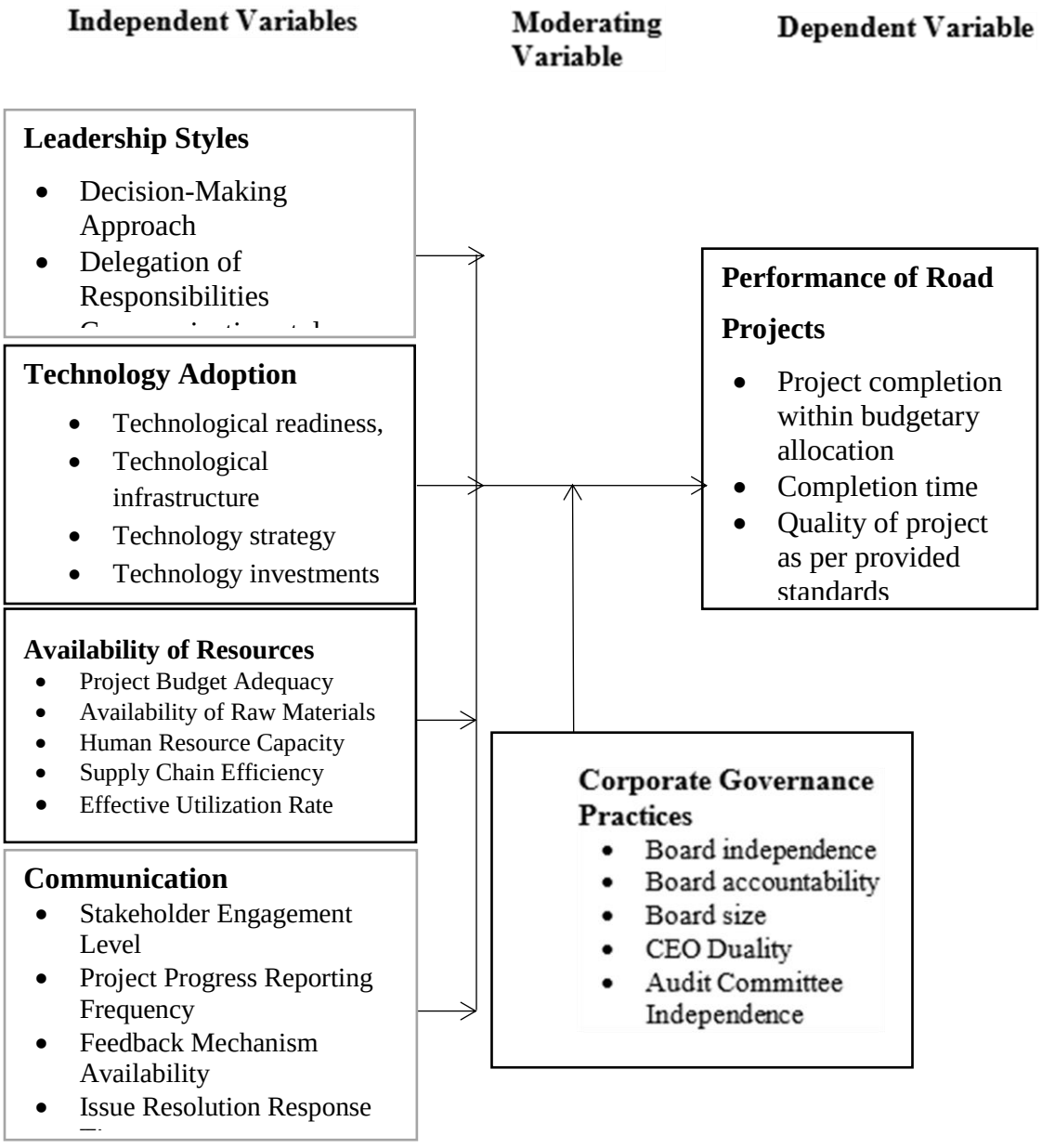
Communication practices, guided by Communication Theory (Shannon & Weaver, 1949), are integral to project success. By ensuring that all parties involved are in agreement with the project’s objectives and schedule, effective communication helps to avoid misunderstandings and delays. The study will test whether communication practices—such as regular updates, stakeholder engagement, and feedback mechanisms—directly impact the performance of road projects.

A corporate governance, rooted in Agency Theory (Jensen & Meckling, 1976), serves as a moderating variable. It ensures that accountability, transparency, and ethical decision-making are embedded in project execution, aligning the interests of managers (agents) with those of stakeholders (principals). The study will assess how corporate governance moderates the relationship between strategy implementation (through leadership, technology, resources, and communication) and road project outcomes.

2.6 Operational Framework

Figure 2.2

Operational Framework



The operational framework in Figure 2 translated the conceptual framework into measurable terms, defining the indicators and parameters for each variable to be tested. The framework outlined how the independent variables (leadership styles, technology adoption, resource availability, and communication practices), the moderating variable (corporate governance), and the dependent variable (road project performance) were operationalized for empirical investigation.

Leadership styles were operationalized by measuring the extent to which transformational and transactional leadership styles were practiced. This was assessed using validated scales such as the Multifactor Leadership Questionnaire (MLQ), focusing on indicators like vision sharing, motivational inspiration, and contingent rewards (Bass & Avolio, 1995). These were linked to project success factors such as timely completion, adherence to budget, and stakeholder satisfaction.

Technology adoption was measured through the extent to which technology was integrated into project management processes, such as project monitoring tools and communication software. Indicators included perceived ease of use and usefulness, in line with the Technology Acceptance Model (TAM) (Davis & Granić, 2024). The study tracked the use of digital tools in resource management, real-time tracking, and stakeholder communication.

Resource availability was measured by assessing the adequacy and timely allocation of financial, human, and material resources for each road project. Indicators included budget allocation per project, availability of skilled personnel, and access to necessary equipment (Makule & Ismail, 2020). The study used regression models to determine whether resource availability predicted project performance.

Communication practices were operationalized by measuring the frequency, clarity, and effectiveness of communication among stakeholders. These practices were assessed through survey questions focusing on the regularity of project updates, feedback mechanisms, and stakeholder involvement. Indicators included the number of communication touchpoints and the responsiveness of different parties involved in the project (Shannon & Weaver, 1949).

Corporate governance was measured by assessing the presence of structures that ensured accountability, transparency, and ethical practices. Indicators included the existence of oversight bodies, clear reporting mechanisms, and compliance with legal standards. Using moderated regression analysis, the study looked at how corporate governance moderated the relationship between strategy implementation (through the independent variables) and road project outcomes.

The dependent variable in this study was road project performance, which was determined by evaluating the projects' timely completion, adherence to budget, and output quality. These indicators were aligned with project success metrics widely used in infrastructure projects (Pacheco et al., 2019). Data on project timelines, cost overruns, and quality standards was collected through KeRRA's project reports and validated using interviews with key stakeholders.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The research methods and methodology that were chosen for the study were the main topics of discussion in this chapter. Before the project started, the target population, the sample selection process, and the research methodology were all specified. The techniques for obtaining the sample and the tools used to gather data—such as surveys and interviews were then covered in more detail. After a thorough description of the data collection processes, pre-study activities were conducted, including pilot testing to guarantee validity and reliability. The methods for data analysis and presentation were also discussed in this section; statistical models and estimating approaches were used to interpret the findings. To verify the study results, hypothesis testing was done.

3.2 Research Philosophy

The research is informed by a pragmatist philosophy, advocating the use of both qualitative and quantitative methods to explore complex research questions (Creswell, 2014). Pragmatism is particularly suitable for this study because it acknowledges the existence of multiple realities and allows for the exploration of practical solutions to real-world problems, such as the performance of road projects under KeRRA. Pragmatism is the preferred approach because of its flexibility and applicability to studies that seek actionable outcomes in specific contexts like infrastructure development.

3.3 Research Design

The research used a mixed-methods methodology, notably the sequential explanatory approach. This strategy is suitable since it allows the researcher to initially collect and analyze quantitative data, subsequently enhancing or elucidating the results using qualitative data. The quantitative phase involves a survey, while the qualitative phase uses interviews to gain deeper insights into the survey results (Creswell & Plano-Clark, 2017). Because it facilitates the exploration of the complex links among strategy implementation, governance practices, and road project performance, this approach is appropriate for the study.

3.4 Target Population

The totality of events being studied is termed a population, sometimes referred to as the universe in the field of research (Kothari, 2010). The population of this study includes all development road projects managed by the Kenya Rural Roads Authority (KeRRA), specifically those initiated in the last five years. The target population comprised of 208 participants. The Director General at KeRRA who is the organization's CEO as well as the Secretary to the Board of Directors was also a respondent in this study (See Table 3.1). This cadre was chosen because they can offer the most pertinent data regarding project performance since they are actively involved in the planning, directing, and monitoring of road projects.

Table 3. 1

Target Population

Cluster / Region	Target Population (Projects)	Accessible Population	
		KeRRA's SIOs	Contractors' SIOs
Central Region	14	14	14
Coast Region	17	17	17
Eastern	7	7	7
Nairobi Region	29	29	29

North Eastern Region	7	7	7
Nyanza Region	12	12	12
Rift Valley	36	36	36
Western Region	18	18	18
Grand Total	**140**	**140**	**140**

Source: KeRRA Website

The justification for including the Strategy Implementation Officers (SIOs) in Charge in the study was because of their critical role in road project implementation. Thus, they were responsible for ensuring that the strategic objectives of KeRRA were met through effective project management and delivery. A total of 140 SIOs at KeRRA and 140 CEOs/SIOs of contractors made up the sample of SIOs in Charge, who oversaw the day-to-day management of the road projects. They had direct responsibility for implementing the strategies developed by KeRRA to achieve the desired project outcomes. Additionally, the Director General at KeRRA was also included as part of the target population. The Director General was the highest-ranking officer at KeRRA and was responsible for overseeing the overall strategy development and implementation process. As such, the Director General played a crucial role in ensuring that the strategic objectives of KeRRA were met through effective project management and delivery. Through including the Director General and the SIOs in charge in the study, the researcher was able to gain a comprehensive understanding of the relationship between strategy implementation and the performance of road projects in Kenya. By include these people, important insights were gained into the opportunities and difficulties of applying strategies in the context of road projects, as well as the ways in which these strategies affected project performance.

3.5 Sampling Technique and Sample Size

The sampling frame comprised lists of KeRRA SIOs and Contractors' SIOs. Units taken from the universe and used to represent it were sometimes referred to as samples (Kombo & Tromp, 2009; Kothari, 2010). Due to the inadequately specified research lacking the authority to reject a false null hypothesis, resulting in a waste of time and resources, a sample became essential (Gerstman, 2013). Furthermore, it was a waste of time and money to undertake study with extensive data collection. Data collecting from a sample was more practical and wasteful of resources than data collection from the entire population, as demonstrated by Polit and Beck (2012).

The cluster sampling technique was utilized to aid in identifying the study sample. The 47 regions were grouped into 8 regions. The Director General was selected using a purposive sampling approach, as there was only one (1) at KeRRA. The study sample for SIOs was selected using a purposive sampling technique.

The study combined cluster sampling, purposive selection, and stratified random sample for a variety of reasons. Firstly, the use of cluster sampling enabled the researcher to divide the large population into smaller, manageable clusters, which eased the sampling process. This approach also helped to reduce costs, time, and effort required in data collection. Second, stratified random sampling was employed to make sure that the sample sufficiently represented the population's subgroups. This approach was suitable for situations where there were clear sub-groups with different characteristics within the population, such as in this study, where there were SIOs at KeRRA and SIOs employed by the contractors. The study used a purposive sampling technique to select the sample.

Following that, the sample was chosen by a purposive sampling approach. To choose participants with particular characteristics or experiences that were relevant to the study question, a non-probability sampling approach known as "purposeful sampling" was widely employed in qualitative research (Palinkas et al., 2015). The Kenya Rural Roads Authority's (Mbatia, 2015) study on the relationship between plan implementation and project performance used an appropriate methodology called purposeful sampling. In this case, the researchers may have used their judgment to select the SIOs who were most relevant to the study based on their roles, experience, and expertise. The SIOs in Charge and the Director General at KeRRA were selected as the target population because they played a crucial role in the implementation of road projects and ensuring that the strategic objectives of KeRRA were met through effective project management and delivery.

The sample size for road projects by KeRRA was determined by Slovin's formula, as additionally, it enables researchers to get a population sample that meets their expectations for accuracy and size. The formula was as follows;

$$n = \frac{N}{1 + Ne^2}$$

Sample size = n, population size = N, and tolerance error = e, Confidence level of 95% and at 0.05 significance level was used. Substituting with the values

$$n = \frac{140}{1 + 140(0.05)^2} =$$

$$\frac{140}{1 + 0.35} = 103.7037037$$

$\simeq$ **104**

Due to the duality of authority, two CEOs were appointed for each project, resulting in a total of 208 questions. The sample consisted of 104 SIOs from KeRRA and 104 Contractors' SIOs, resulting in a total target population of 208 SIOs. This was illustrated in Table 3.2.

Table 3. 2

Distribution Matrix of the Sample to Clusters

	SIOs at KeRRA			SIOs with Contractors		
Cluster / Region	**N**	**N % Pp**	**n (% x 104)**	**N**	**N % Pp**	**n (% x 104)**
Central Region	14	10%	**10**	14	10%	**10**
Coast Region	17	12%	**12**	17	12%	**12**
Eastern	7	5%	**5**	7	5%	**5**
Nairobi Region	29	21%	**22**	29	21%	**22**
North Eastern Region	7	5%	**5**	7	5%	**5**
Nyanza Region	12	8%	**8**	12	8%	**8**
Rift Valley	36	26%	**27**	36	26%	**27**
Western Region	18	13%	**14**	18	13%	**14**
Grand Total	140	100%	**104**	140	100%	**104**

3.6 Data Collection Instruments

An interview schedule and questionnaires were used to collect data. The SIOs' primary data was gathered using questionnaires with closed-ended questions. The questionnaire was broken down into the following six sections: Part A: General Information, Part B: Corporate Governance, Part C: Technology Adoption, Part D: Resource Availability, Part E: Communication, Part F: Leadership Styles, and Part G: The Performance of Road Development Projects.

Likert-style questions were used in the questionnaire to ask the respondents to indicate how much they agreed with the ideas presented in Parts B through G. There were five levels on the Likert scale questions, with 1 denoting "strongly disagree," 2 denoting "disagree," and so on.

Three represented neutrality, four represented agreement, and five represented strong agreement. Because they were very dependable, provided more data volume than other scales, and provided better approximations than the typical response curve, Likert scales were considered the most relevant scales (Cooper & Schindler, 2011).

An interview schedule was used to collect data from the Director General. Interviews allowed researchers to gather more detailed and nuanced information about a particular topic or issue. This was particularly important in road engineering, where many technical details and specific requirements needed to be considered. Interviews could provide personal perspectives on road engineering projects that might not be captured through other data collection methods. The Director General could share their experiences, opinions, and insights on the challenges and successes they encountered in their work. They could provide further explanations or examples to help clarify complex concepts.

3.7 Data Collection Procedure

The researcher, aided by four research assistants, personally distributed questionnaires to respondents to gather data efficiently. To improve the response rate and ensure engagement, follow-up phone calls were conducted, and recommendation letters from both the university and government agencies were provided to the respondents, reinforcing the credibility of the study. The researcher also maintained a detailed register of all questionnaires distributed, keeping track of each one to ensure timely return. This systematic approach not only enhanced data collection but also contributed to the accuracy and reliability of the responses obtained from participants.

3.8 Piloting

The instruments were pilot tested in Nairobi Region using 10% of the sample size. In this case, the study utilized 10 SIOs in Charge at KeRRA and 10 SIOs employed by the Contractors. The study was carefully monitored to make sure the participants did not skip any time. Pilot testing was a crucial component of the research since it enabled the discovery and resolution of any problems that could have emerged during the real study. According to Laeeq et al. (2019), pilot testing has the potential to uncover issues in the research design, recognize possible challenges to both internal and external validity, enhance methods for gathering data, and evaluate the practicality of the study. Additionally, pilot testing could also help researchers determine the appropriate sample size, refine study procedures, and ensure that data collection instruments were valid and reliable (Polit & Beck, 2012). The results of pilot testing would be used to inform researchers about the feasibility, validity, and reliability of their research design, ensuring that the study could produce accurate and meaningful data.

3.8.1 Reliability of Research Instrument

In line with Price et al. (2015) assertions, research tools were considered reliable when the same researcher or another researcher could obtain the same expected facts as initially anticipated by the original instrument within the same target population, signifying consistent results. Reliability study utilizing Cronbach's alpha was conducted on piloted data to assess the validity of questionnaires and the internal consistency of data items. Cronbach's alpha, ranging from 0 to 1, was employed to assess data reliability, as suggested by Kipkebut (2010). Kothari (2010) asserted that a threshold of 0.70 or above was considered appropriate.

3.8.2 Validity of Research Instrument

Cable & DeRue (2002), validity refers to the extent to which it accurately measures its intended construct, or the precision of the research equipment utilized. The questionnaires' validity was evaluated by a pre-test. The study considered the validity of the criteria and content standards (Golafshani, 2015). Criterion validity refers to the extent to which one variable predicts or correlates with another, as stated by Golafshani (2015). The criterion-related validity of the conceptual framework was believed to be established by assessing the various correlation coefficients between each independent variable and the dependent variable. Therefore, prior to disseminating the questionnaires for the primary research, a pre-test was performed to verify their validity.

3.9 Data Analysis and Presentation

To analyze data from various responder groups, the author used both qualitative and quantitative analysis methodologies. Data Preparation and Programming: Subsequent to data collection, the questionnaires were examined for completeness and precision. The data was subsequently coded and entered into SPSS Version 27 for analysis. All absent or inaccurate data was rectified during this phase. Exploratory Data Analysis (EDA): Before conducting formal analyses, exploratory data analysis was performed to check for patterns, outliers, and data distribution. The data were summarized using descriptive statistics including means, frequencies, and standard deviations. The general properties of the data were described using descriptive statistics. These measures helped to summarize the responses for each variable, offering insights into trends and variations in leadership styles, technology adoption, resource availability, communication practices, and governance.

Test of Regression Assumptions: A number of assumptions were evaluated before the regression analysis was performed, including multicollinearity, homoscedasticity, normality, and linearity. The Variance Inflation Factor (VIF) for multicollinearity and the Shapiro-Wilk test for normalcy were two examples of appropriate diagnostic procedures that were used. The significance of these tests was evaluated at a level of $p < 0.05$.

Inferential Analysis: To examine the connections between strategy implementation and road project performance, the study used multiple regression analysis. The moderating influence of corporate governance on these associations was investigated using moderated regression analysis. The statistical significance of the results was assessed using a 5% significance level. The moderating impacts of governance practices were evaluated by means of the Kenny and Baron Model.

Model 1

$$Y = \beta_0 + \beta_i X_i + \varepsilon, \ (i = 1, 2, 3, 4, 5) \quad \text{..... (1a)}$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \quad \text{.....(1b)}$$

(Without Moderator)

Where;

Yi	Performance of road projects
β_0	Y intercept / Constant
β_i	Coefficient of independent variable X_i, where i = 1,2,3, 4, 5
X_1	Leadership Styles

X_2 Technology Adoption

X_3 Availability of Resources

X_4 Communication

X_5 Corporate Governance Practices

ε Stochastic term (error)

Model I is a straightforward multiple regression model that investigates how the independent factors affect the dependent variable without taking any moderating effects into account. Each independent variable's direct impact on the dependent variable will be estimated by the model. By calculating the beta coefficients (β) for each independent variable, the researcher was able to calculate the direct influence. The model assumes that the dependent variable (road project performance) and the independent factors (technology, planning, leadership styles, and resource allocation) have a linear relationship. The stochastic component (error term) was used to describe the variation in the dependent variable that cannot be accounted for by the independent variables.

Model 2

$Y = \beta_0 + \beta_i X_i + \beta_j Z_j + \varepsilon,\ (i = 1, 2, 3, 4, 5, j = 1, 2)$ .... (2a)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_j Z_j + \varepsilon$..... (2b)

(With a moderator as a variable)

Where:

Z_j is the moderating variable (dichotomized age/size)

B_j is the coefficient of the moderator as a predictor

Model 3

$Y = \beta_0 + \beta_i X_i + \beta_j Z_j + \beta ij XiZj + \varepsilon,\ (i = 1, 2, 3, 4, 5, j = 1, 2)$ .... (3a)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_j Z_j + \beta ij XiZj + \varepsilon$..... (3b)

Where:

XiZj is the interaction term between variable Xi (i = 1, 2, 3, 4, 5) and moderating variable Z (j = 1)

Bij is the coefficient of the interaction term

Decision Making Criteria:

Strategy implementation influence performance of road projects ($p < 0.05$)

Strategy implementation does not influence performance of roads ($p > 0.05$)

For the qualitative data collected through interviews to Senior managers, the data will be analyzed thematically to find themes, patterns, and linkages. The researcher will read transcriptions of the interviews, identify recurring themes, and group similar responses together. The researcher will then code the data into categories and subcategories based on these themes, and analyze the frequency and content of the responses within each category. This will offer a more thorough comprehension of the SIOs' experiences, viewpoints, and views about the connection between strategy execution and road project performance.

3.10 Ethical Consideration

Ethics is the capacity to distinguish between morally appropriate and inappropriate actions (Kerridge et al., 2005). Furthermore, Minja (2009) emphasized that ethics could also be thought of as rules that directed conduct in people. Confidentiality was crucial since

information that was pertinent to the study was critical from a strategic standpoint. Names of responders were covered up as a result. The researcher avoided asking improper or unpleasant questions (Mugenda & Mugenda, 2003). KeRRA provided the go-ahead to gather data from respondents within its constituency. Additionally, participants actively chose to take part in the study after doing their research. The safeguards improved the respondents' participation willingness and objectivity.

3.11 Diagnostic Tests

This section discusses the diagnostic tests carried out to ascertain that the data fits the regression models in this study.

3.11.1 Normality Test

An important premise for many regression models is that the data follows a normal distribution pattern. The Normality Test is a statistical evaluation used to ascertain whether the data meets this requirement. To assess the residuals' distribution in this study, the researcher used tests such the Shapiro-Wilk and Kolmogorov-Smirnov tests. In order to evaluate the distribution's shape visually, Q-Q plots and histograms were also used. A non-normal distribution of the data may have an impact on the validity of the regression coefficients and the ensuing predictions. The study improves the validity and robustness of the regression analysis conducted by making sure the data conforms to the normalcy assumptions.

3.11.2 Autocorrelation Test

The Autocorrelation Test is essential for detecting the presence of patterns in the residuals over time, particularly in time series data. In the present research, the Durbin-Watson statistic was likely utilized to assess the autocorrelation of residuals. An autocorrelation implies that the current value of the dependent variable is correlated with its past values, which could indicate model specification errors. If significant autocorrelation is detected, it might impair the accuracy of the model's predictions. By conducting this test, the researcher ensures that the regression models are adequately specified and that the error terms are independent, hence upholding one of the key assumptions of regression analysis.

3.11.3 Multi-Collinearity Test

The Multi-Collinearity Test examines the degree of correlation among the independent variables in the regression model. High multicollinearity may complicate the assessment of the individual impacts of predictor variables, since it might inflate standard errors. This research assessed multicollinearity using the Variance Inflation Factor (VIF), with values beyond 10 often signaling a potential issue. The researcher evaluates the stability and interpretability of the regression coefficient estimates by examining the collinearity among the independent variables. Addressing multicollinearity issues enhances the model's predictive capability and preserves the correctness of the results.

3.11.4 Heteroscedasticity Test

The Heteroscedasticity Test is crucial for verifying that the variance of the residuals is consistent across all levels of the independent variables. If heteroscedasticity is present, it

indicates that the variability of the errors changes as a function of the predictors, leading to inefficient estimates and invalid inference in regression analysis. In this research, tests such as the Breusch-Pagan or White test may have been utilized to detect heteroscedasticity. Visual assessments through scatterplots of the residuals can also provide insights into potential violations of this assumption. By confirming that the residuals are homoscedastic, the researcher can ensure that the regression model produces reliable results, thereby enhancing the overall credibility of the study's findings.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents, discusses, and interprets the findings. The chapter commences with a comprehensive examination of the instrument return rate response rate, emphasizing the quantity of intended participants and the factual response rate. The findings are organized thematically in alignment with the research objectives.

4.1.1 Response Rate

Afolayan and Oniyinde (2019) define an instrument return rate as the number of respondents who returned useable research instruments issued out of the total number of respondents contacted during the study. Table 4.1 presents the response rate observed among SIOs at KeRRA, SIOs with Contractors and Director General at KeRRA. The sample size comprised 209 persons, as indicated in Table 4.1.

Table 4. 1

Response Rate

Respondent Category	Instruments	Issued	Received	Return Rate%
SIOs at KeRRA	Questionnaire	104	90	86.5%
SIOs with Contractors	Questionnaire	104	99	95.2%
Director General at KeRRA	Interview Guide	1	1	100.0%
Total / Average		**209**	**190**	**90.9%**

Source: Field Data, 2023

Table 4.1 displays the results obtained from a sample of 104 SIOs at KeRRA, indicating that 90 individuals provided responses. Consequently, the response rate achieved was 86.5%. Likewise, among the total of 104 SIOs with Contractors who were specifically targeted for the study, a notable 99 provided responses, yielding a response rate of 95.20%. One Director

General at KeRRA was targeted and achieved. On average, the return rate was 90.9%. The response rates for all the three categories of respondents in this study exceed the recommended threshold of 75% for paper-based surveys, as shown by a previous study conducted by Rothman and Greenland (2018). The observed high response rates suggest that the selected sample is likely to be representative of the larger community, hence enhancing the overall reliability and validity of the study.

The response rate is an important indicator of the reliability and generalizability of the study's findings. For this study, the response rate is presented by region to offer a clearer understanding of how responses were distributed geographically. A total of 140 Strategy Implementation Officers (SIOs) from KeRRA and 140 SIOs working with contractors were targeted, making up a total sample size of 280 respondents. Out of this sample, 208 questionnaires were distributed across the eight clusters/regions, while 104 interview guides were administered to KeRRA officials and contractors. Table 4.2 presents the proportion of responses received from each region.

Table 4. 2

Response Rate by Region

Region	Distributed Questionnaires	Returned Questionnaires	Response Rate (%)
Central Region	20	18	90%
Coast Region	24	21	87.5%
Eastern Region	10	9	90%
Nairobi Region	44	41	93.2%
North Eastern Region	10	9	90%
Nyanza Region	16	15	93.75%
Rift Valley Region	54	50	92.6%
Western Region	28	26	92.85%

Total	**208**	**189**	**90.9%**

The overall response rate was 90.9%, which is considered excellent for a study of this nature. High response rates were recorded in Nairobi, Rift Valley, and Western regions, ensuring a geographically representative sample. The robust response rate from various regions strengthens the validity of the findings and ensures that insights derived from the study are broadly applicable across the different regions where KeRRA operates.

4.2 Demographic Characteristics

Table 4.3 presents an overview of the demographic characteristics of participants in a study on road development initiatives with the Kenya Rural Roads Authority (KeRRA). This demographic information is vital as respondents' years of experience correlate with their understanding of strategy implementation and project performance evaluation. More experienced participants are likely to provide valuable insights, crucial for assessing the effectiveness of strategy implementation and governance in road projects. Additionally, the age and gender of respondents can influence leadership styles and decision-making, impacting technology adoption and team dynamics within the road construction sector.

Table 4. 3

Demographic Characteristics

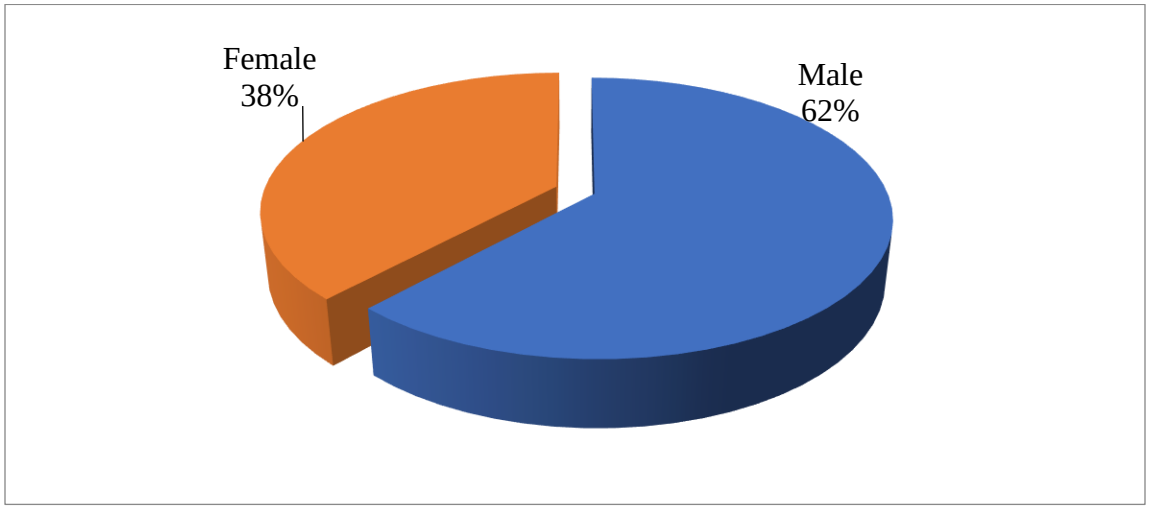
Question		Frequency	Percentage
Gender	Male	117	61.9%
	Female	72	38.1%
Age	18 years - 27 years	4	2.1%
	28 years - 37 years	96	50.8%
	38 years - 47 years	70	37.0%
	48 years or above	19	10.1%

Highest attained level of educational qualification	Primary school	0	0.0%
	Secondary school	0	0.0%
	College	125	66.1%
	Undergraduate degree	63	33.3%
	Postgraduate Degree	1	0.5%
Length of service in current organization	4-8 years	98	51.9%
	9-13 years	74	39.2%
	14-18 years	8	4.2%
	19 years and above	9	4.8%
Involvement in road development projects with KeRRA	Yes	189	100.0%
	No	0	0.0%
Position at your organization	Road Engineer	90	47.6%
	Chief Executive Officer	99	52.4%

According to Table 4.3, the distribution of gender among the respondents is as follows: 61.9% identified as Male, while 38.1% identified as Female. In terms of age, the respondents were categorized into different ranges. By including gender distribution, the study accounts for potential gender-based bias in the results. Balanced inclusion of both male and female participants aids in encompassing a wide array of viewpoints and experiences.

Figure 4.1

Respondents' Gender



The majority of respondents, 50.8%, fell within the age range of 28 to 37 years. This is followed by 37% in the age range of 38 to 47 years, and 10.1% were aged 48 years or above. The smaller percentages were within the age range of 18 to 27 years (2.1%). Age distribution addresses age-related bias. By including respondents across various age groups, the research becomes more comprehensive and avoids potential age-specific biases.

Regarding educational qualifications, the majority of respondents (66.1%) reported having a College-level qualification, while 33.3% held an Undergraduate degree. A very small percentage, 0.5%, had a Postgraduate Degree. Interestingly, no respondents indicated having qualifications below the Secondary school level. Educational qualification distribution helps to minimize educational bias. The wide range of educational backgrounds ensures that the study includes perspectives from different educational levels, reducing the risk of skewed results based on educational bias.

In terms of tenure with the current organization, the largest portion of respondents (51.9%) reported being with their organization for 4 to 8 years, followed by 39.2% who had been there for 9 to 13 years. A smaller percentage of respondents reported longer tenures of 14-18 years (4.2%) and 19 years and above (4.8%). Tenure with the organization is crucial for addressing experience-based bias. Including respondents with varied years of experience ensures that the study considers insights from both newer and more seasoned professionals, thus reducing bias stemming from limited experience ranges.

Every respondent indicated their involvement in road development projects with KeRRA, with 100% answering 'Yes', while none responded 'No'. In relation to their positions within their organizations, the respondents were divided between Road Engineers (47.6%) and Chief Executive Officers (52.4%). Involvement in road development projects and job positions address bias related to expertise and roles. By including individuals from both roles of Road Engineers and Chief Executive Officers, the study incorporates viewpoints from various levels of responsibility and expertise, reducing potential bias from a single perspective.

4.3 Descriptive Statistics for Strategy Implementation Variables

4.3.1 Descriptive Statistics for Leadership Styles

The Kenya Rural Roads Authority project managers' leadership styles are depicted in Table 4.4, which provides descriptive statistics about each.

Table 4. 4

Descriptive Statistics for Leadership Styles

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
I am a pleasant person to be around.	2 (1.1%)	8 (4.2%)	69 (36.5%)	83 (43.9%)	27 (14.3%)	3.66	0.81
I sum up what we could and ought to accomplish in a few lines.	1 (0.5%)	10 (5.3%)	87 (46.0%)	67 (35.4%)	24 (12.7%)	3.55	0.80
I help people come up with fresh solutions to long-standing issues. I assist others in growing.	4 (2.1%)	9 (4.8%)	77 (40.7%)	77 (40.7%)	22 (11.6%)	3.55	0.84
I assist others in growing.	4 (2.1%)	8 (4.2%)	78 (41.3%)	75 (39.7%)	24 (12.7%)	3.57	0.85
I advise others on compensation for their labor.	3 (1.6%)	8 (4.2%)	77 (40.7%)	78 (41.3%)	23 (12.2%)	3.58	0.82
When people adhere to norms, I am satisfied.	3 (1.6%)	8 (4.2%)	73 (38.6%)	82 (43.4%)	23 (12.2%)	3.60	0.82

I'm happy to let people carry on doing things the same way.	0 (0.0%)	11 (5.8%)	78 (41.3%)	77 (40.7%)	23 (12.2%)	3.59	0.78
Others have full confidence in me.	3 (1.6%)	8 (4.2%)	82 (43.4%)	75 (39.7%)	21 (11.1%)	3.55	0.81
I show enticing illustrations of what we can do.	2 (1.1%)	5 (2.6%)	89 (47.1%)	73 (38.6%)	20 (10.6%)	3.55	0.76
I provide fresh perspectives on perplexing issues.	1 (0.5%)	5 (2.6%)	76 (40.2%)	78 (41.3%)	29 (15.3%)	3.68	0.78
I express my opinion of others' performance.	1 (0.5%)	8 (4.2%)	73 (38.6%)	83 (43.9%)	24 (12.7%)	3.64	0.78
When people accomplish their goals, I praise them.	1 (0.5%)	8 (4.2%)	77 (40.7%)	73 (38.6%)	30 (15.9%)	3.65	0.82
I don't modify anything as long as it's working.	6 (3.2%)	6 (3.2%)	63 (33.3%)	91 (48.1%)	23 (12.2%)	3.63	0.86
I am okay with anything others want to do.	4 (2.1%)	4 (2.1%)	74 (39.2%)	82 (43.4%)	25 (13.2%)	3.63	0.82
People are pleased to associate with me.	3 (1.6%)	5 (2.6%)	83 (43.9%)	77 (40.7%)	21 (11.1%)	3.57	0.79
I support people in finding purpose in their job.	4 (2.1%)	8 (4.2%)	77 (40.7%)	71 (37.6%)	29 (15.3%)	3.60	0.87
I cause people to reconsider things they hadn't thought of before.	1 (0.5%)	7 (3.7%)	73 (38.6%)	78 (41.3%)	30 (15.9%)	3.68	0.80

I pay close attention to people who seem ignored.	2 (1.1%)	4 (2.1%)	79 (41.8%)	77 (40.7%)	27 (14.3%)	3.65	0.79
I draw emphasis to rewards others might receive for efforts.	2 (1.1%)	7 (3.7%)	70 (37.0%)	80 (42.3%)	30 (15.9%)	3.68	0.82
I inform people of standards to adhere to for duties.	3 (1.6%)	5 (2.6%)	78 (41.3%)	77 (40.7%)	26 (13.8%)	3.62	0.81
I don't expect more than what is necessary.	2 (1.1%)	9 (4.8%)	79 (41.8%)	78 (41.3%)	21 (11.1%)	3.57	0.79

The findings in Table 4.4 show that the statement, "I am a pleasant person to be around," received the highest level of agreement among respondents, with 83 respondents (43.9%) agreeing and 27 (14.3%) strongly agreeing. The average score of 3.66 indicates that most participants view themselves as approachable and friendly. This suggests that project managers are perceived as affable and relatable, an important trait in transformational leadership, which emphasizes strong interpersonal relationships. As noted by Owusu-Frimpong et al. (2019), transformational leaders cultivate environments of trust and motivation, fostering collaboration and enhancing project performance.

Similarly, the statement "I help people come up with fresh solutions to long-standing issues" garnered high agreement, with 77 respondents (40.7%) agreeing and 22 (11.6%) strongly agreeing, resulting in a mean score of 3.55. This reflects a key aspect of transformational leadership—intellectual stimulation—where leaders encourage innovation and problem-

solving. Kwame et al. (2019) also found that transformational leadership significantly boosts project performance through strategic execution by promoting creativity and innovation.

The statement "I support people in finding purpose in their job" had a mean score of 3.60, with 71 respondents (37.6%) agreeing and 29 (15.3%) strongly agreeing. This indicates that most project managers focus on helping their team members find meaning in their work, a core component of transformational leadership. Oduro et al. (2021) demonstrated that leaders who instill a sense of purpose in their teams improve morale and contribute to the success of projects in Kenya, Nigeria, and Ghana. These findings underscore the importance of meaningful engagement in enhancing project performance.

Conversely, the statement "I don't modify anything as long as it's working" had a mean score of 3.63, with minimal disagreement (6 respondents, 3.2% strongly disagreeing). This reflects a tendency toward maintaining established practices, which aligns with transactional leadership, where stability and compliance are prioritized. Adeboye et al. (2021) observed that while transactional leadership can sometimes limit project performance, especially in complex projects, it remains useful when consistency is required.

Lastly, the statement "I draw emphasis to rewards others might receive for efforts" received a mean score of 3.68, with 80 respondents (42.3%) agreeing and 30 (15.9%) strongly agreeing. This highlights the use of contingent rewards, a hallmark of transactional leadership. As Pretorius et al. (2018) noted, contingent rewards are effective in certain project phases but work best when paired with transformational leadership traits like vision-sharing and motivation.

Overall, the research suggests that project managers at the Kenya Rural Roads Authority employ a blend of transactional and transformational leadership styles. Consistent with prior studies, the findings confirm that transformational leadership is a powerful tool for enhancing strategy implementation and project success (Kiama et al., 2019). There was a strong correlation between transformational leadership traits—such as intellectual stimulation, motivational inspiration, and individualized consideration—and successful project outcomes. On the other hand, transactional leadership characteristics, including maintaining the status quo and offering contingent rewards, were shown to have less impact when used independently.

4.3.2 Descriptive Statistics for Technology Adoption

The accompanying Table displays the findings of a survey that was carried out to evaluate the level of technology adoption by KeRRA (Kenya Rural Roads Authority) and its contractors.

Table 4. 5

Descriptive Statistics for Technology Adoption

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
KeRRA and its contractors have the necessary technological readiness to execute road projects efficiently.	7 (3.7%)	11 (5.8%)	54 (28.6%)	81 (42.9%)	36 (19.0%)	3.68	0.971
The technological infrastructure in place within KeRRA and its	0 (0.0%)	7 (3.7%)	77 (40.7%)	60 (31.7%)	45 (23.8%)	3.76	0.859

contractors is adequate to support road project execution.							
The technology strategy employed by KeRRA and its contractors is well-defined and aligned with business objectives.	5 (2.6%)	8 (4.2%)	74 (39.2%)	53 (28.0%)	49 (25.9%)	3.70	0.988
KeRRA and its contractors make sufficient investments in technology to support road project execution.	3 (1.6%)	5 (2.6%)	79 (41.8%)	63 (33.3%)	39 (20.6%)	3.67	0.883
There is alignment between the business and IT strategy within KeRRA and its contractors.	4 (2.1%)	3 (1.6%)	83 (43.9%)	74 (39.2%)	25 (13.2%)	3.60	0.817
Technological advancements have been effectively integrated into road project execution by KeRRA and its contractors.	5 (2.6%)	6 (3.2%)	65 (34.4%)	72 (38.1%)	41 (21.7%)	3.73	0.926
KeRRA and its contractors are able to adapt quickly to	3 (1.6%)	8 (4.2%)	73 (38.6%)	61 (32.3%)	44 (23.3%)	3.71	0.924

changes in technology that affect road project execution.							
The use of technology has improved the efficiency and effectiveness of road project execution by KeRRA and its contractors.	5 (2.6%)	9 (4.8%)	57 (30.2%)	78 (41.3%)	40 (21.2%)	3.73	0.936
KeRRA and its contractors have the necessary skills and expertise to effectively utilize technology for road project execution.	3 (1.6%)	8 (4.2%)	69 (36.5%)	63 (33.3%)	46 (24.3%)	3.75	0.928
KeRRA and its contractors have a clear understanding of the benefits of technology adoption for road project execution.	3 (1.6%)	6 (3.2%)	69 (36.5%)	76 (40.2%)	35 (18.5%)	3.71	0.859

Valid N (listwise): 189

The analysis of leadership styles among project managers at the Kenya Rural Roads Authority (KeRRA) revealed several key insights. Beginning with the statement, "I am a pleasant person to be around," a significant portion of respondents provided positive feedback, with 83 (43.9%) agreeing and 27 (14.3%) strongly agreeing, resulting in an average score of 3.66. This suggests that project managers view their interpersonal skills favorably, aligning with

effective leadership practices that emphasize the importance of strong interpersonal relationships for enhancing team dynamics and communication (Brodbeck et al., 2019). Similar findings were noted by Maina (2022), who highlighted the need for government agencies to improve their technological capabilities to boost project delivery effectiveness.

In response to the statement about summarizing goals succinctly, 87 (46.0%) of respondents agreed, and 24 (12.7%) strongly agreed, yielding a mean score of 3.55. This indicates that clarity in communication is a common trait among these project managers, which echoes Brodbeck et al. (2019), who found that improved communication positively influences project planning and stakeholder management. The ability to convey information concisely is critical for keeping teams focused and ensuring that project objectives are well understood, thereby contributing to overall project success.

A trend toward collaborative leadership is also evident, particularly in response to the statement, "I help people come up with fresh solutions to long-standing issues." Here, 77 respondents (40.7%) agreed, and 22 (11.6%) strongly agreed, resulting in a mean score of 3.55. This supports the notion that effective leadership involves fostering innovation and encouraging problem-solving among team members (Buys et al., 2021). Project managers who promote creative solutions play a pivotal role in addressing the complexities inherent in road construction projects.

Additionally, the survey responses indicate that KeRRA project managers are highly supportive of team growth, as reflected in the statement, "I assist others in their growth," where 78 (41.3%) agreed and 75 (39.7%) strongly agreed, with a mean score of 3.57. This finding aligns with literature emphasizing the role of supportive leadership in road

management, which includes nurturing talent and promoting professional development within teams (Kibicho et al., 2021). Such leadership approaches are vital for boosting team morale and enhancing project outcomes.

Regarding recognition of team accomplishments, responses to the statement, "I praise others when they accomplish their goals," showed that 77 (40.7%) agreed, and 73 (38.6%) strongly agreed, resulting in a mean score of 3.65. This reflects a leadership style that values acknowledgment of achievements, which is essential for motivating teams (Ameyaw et al., 2019). Recognizing success not only improves morale but also contributes to a more productive work environment, as highlighted in numerous studies emphasizing the role of appreciation in project success.

The leadership styles exhibited by KeRRA project managers reflect a blend of collaborative, supportive, and communicative traits. These findings are consistent with studies conducted in other regions, which show that effective leadership significantly improves project performance by enhancing team dynamics and fostering stronger stakeholder engagement. Promoting these leadership qualities is therefore essential for ensuring successful outcomes in road construction projects.

4.3.3 Descriptive Statistics for Availability of Resources

The presented Table 4.6 provides descriptive statistics on the respondents' ratings for various statements related to the availability of resources at the Kenya Rural Roads Authority (KeRRA).

Table 4. 6

Descriptive Statistics for Availability of Resources

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
The project budget is always adequate for the completion of work.	3 (1.6%)	12 (6.3%)	68 (36.0%)	67 (35.4%)	39 (20.6%)	3.672	0.927
The availability of raw materials is always sufficient.	3 (1.6%)	8 (4.2%)	74 (39.2%)	67 (35.4%)	37 (19.6%)	3.672	0.892
There are always enough human resources to complete the project.	5 (2.6%)	9 (4.8%)	69 (36.5%)	58 (30.7%)	48 (25.4%)	3.714	0.985
The supply chain is always efficient in delivering materials.	1 (0.5%)	9 (4.8%)	77 (40.7%)	66 (34.9%)	36 (19.0%)	3.672	0.856
The project resources are always effectively utilized.	0 (0.0%)	8 (4.2%)	67 (35.4%)	81 (42.9%)	33 (17.5%)	3.735	0.795
The lack of project budget has always affected project performance.	2 (1.1%)	12 (6.3%)	65 (34.4%)	66 (34.9%)	44 (23.3%)	3.730	0.926
Insufficient raw materials have always led to delays in completion.	2 (1.1%)	10 (5.3%)	68 (36.0%)	73 (38.6%)	36 (19.0%)	3.693	0.876
Inadequate human resources is always a	3 (1.6%)	7 (3.7%)	68 (36.0%)	72 (38.1%)	39 (20.6%)	3.725	0.886

key cause of project delays.							
Poor supply chain always affects project completion timelines.	0 (0.0%)	5 (2.6%)	71 (37.6%)	75 (39.7%)	38 (20.1%)	3.773	0.796
Inefficient utilization of resources always affects project outcome	2 (1.1%)	3 (1.6%)	68 (36.0%)	75 (39.7%)	41 (21.7%)	3.794	0.835

The first statement examines whether the project budget is consistently adequate for completing tasks. The results show that 1.6% strongly disagreed, 6.3% disagreed, 36.0% were neutral, 35.4% agreed, and 20.6% strongly agreed, with a mean of 3.672 and a standard deviation of 0.927. While most respondents lean towards agreeing that the budget is sufficient, a notable portion remains neutral, reflecting mixed perceptions. This finding aligns with Nawaz et al. (2019), who emphasized that budget allocation plays a crucial role in project success. Adequate funding is essential to prevent delays and inefficiencies, highlighting the importance of strategic resource planning to ensure budget sufficiency in project management.

Regarding the availability of raw materials, the responses showed that 1.6% strongly disagreed, 4.2% disagreed, 39.2% were neutral, 35.4% agreed, and 19.6% strongly agreed, with a mean of 3.672 and a standard deviation of 0.892. While many respondents agree or remain neutral on the sufficiency of raw materials, a significant number remain uncertain. This mirrors Ali et al. (2019), who highlighted that material sourcing is crucial to project performance. Insufficient raw materials can disrupt timelines and impact project success. These findings suggest the need for improved resource allocation strategies to ensure adequate material availability.

The third statement addresses whether there are enough human resources to complete projects. The results reveal that 2.6% strongly disagreed, 4.8% disagreed, 36.5% were neutral, 30.7% agreed, and 25.4% strongly agreed, with a mean of 3.714 and a standard deviation of 0.985. The responses show a relatively balanced opinion, with many agreeing that human resources are sufficient, though a large portion remains neutral. Rana and Singh (2019) highlighted the importance of labor resources for project success, noting that adequate staffing is vital for timely completion and quality outcomes. This suggests a need for better workforce planning to address any uncertainty regarding human resource availability.

The fourth statement assesses the efficiency of the supply chain in delivering materials. The results show that 0.5% strongly disagreed, 4.8% disagreed, 40.7% were neutral, 34.9% agreed, and 19.0% strongly agreed, with a mean of 3.672 and a standard deviation of 0.856. Many respondents remained neutral, suggesting occasional supply chain inefficiencies, although a significant portion agreed on its overall efficiency. These findings are consistent with Tetteh et al. (2019), who stressed the importance of an efficient supply chain for project success. Timely delivery of materials is critical for maintaining project schedules, and addressing supply chain issues can improve overall project efficiency and performance.

The statement on resource utilization reveals that 0.0% strongly disagreed, 4.2% disagreed, 35.4% were neutral, 42.9% agreed, and 17.5% strongly agreed, with a mean of 3.735 and a standard deviation of 0.795. Most respondents believe resources are effectively used, though some remain neutral. Adeboye et al. (2021) found that efficient use of resources such as finances, labor, and equipment is closely tied to project performance. While resource utilization is generally well-managed, further improvements could optimize the use of available resources.

Finally, the statement on whether budget limitations have affected project performance shows that 1.1% strongly disagreed, 6.3% disagreed, 34.4% were neutral, 34.9% agreed, and 23.3% strongly agreed, with a mean of 3.730 and a standard deviation of 0.926. The results suggest that budget limitations have indeed impacted project performance, as nearly half of the respondents either agreed or strongly agreed with the statement. Mugo et al. (2019) similarly noted that budget constraints can cause project delays and inefficiencies. This highlights the importance of securing sufficient financial resources to avoid performance challenges related to budget shortages.

4.3.4 Descriptive Statistics for Communication

The Table presents the descriptive statistics for communication-related statements concerning the Kenya Rural Roads Authority (KeRRA).

Table 4. 7

Descriptive Statistics for Communication

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
KeRRA involves all stakeholders in project planning	1 (0.5%)	10 (5.3%)	76 (40.2%)	60 (31.7%)	42 (22.2%)	3.698	0.893
Project progress is regularly communicated	4 (2.1%)	9 (4.8%)	70 (37.0%)	74 (39.2%)	32 (16.9%)	3.640	0.892
Feedback mechanisms are easily accessible	5 (2.6%)	5 (2.6%)	69 (36.5%)	66 (34.9%)	44 (23.3%)	3.735	0.936

Issues are resolved promptly by KeRRA	0 (0.0%)	16 (8.5%)	58 (30.7%)	74 (39.2%)	41 (21.7%)	3.741	0.894
Information on road projects is readily available	2 (1.1%)	7 (3.7%)	81 (42.9%)	69 (36.5%)	30 (15.9%)	3.624	0.833
Contractors involve KeRRA in project planning	6 (3.2%)	8 (4.2%)	63 (33.3%)	67 (35.4%)	45 (23.8%)	3.725	0.978
Contractors provide regular progress updates	3 (1.6%)	14 (7.4%)	75 (39.7%)	60 (31.7%)	37 (19.6%)	3.603	0.938
Contractors respond to issues in a timely manner	1 (0.5%)	6 (3.2%)	63 (33.3%)	73 (38.6%)	46 (24.3%)	3.831	0.852
KeRRA provides adequate information to contractors	2 (1.1%)	4 (2.1%)	70 (37.0%)	78 (41.3%)	35 (18.5%)	3.741	0.820
KeRRA and contractors work collaboratively	1 (0.5%)	9 (4.8%)	69 (36.5%)	75 (39.7%)	35 (18.5%)	3.709	0.841

The results reveal that only a small percentage of respondents, 0.5% (1 person) strongly disagreed, and 5.3% (10 people) disagreed with the assertion that KeRRA involves all stakeholders in project planning. Meanwhile, 40.2% (76 people) remained neutral, 31.7% (60 people) agreed, and 22.2% (42 people) strongly agreed. The mean score of 3.698 suggests a general tendency towards agreement, though a significant portion of respondents were neutral. These findings align with Ali et al. (2024), who emphasized the importance of stakeholder involvement for successful projects. The neutrality suggests that perceptions or experiences

with stakeholder engagement vary, highlighting the need for KeRRA to improve transparency and stakeholder involvement in project planning.

For the statement regarding regular communication of project progress, 2.1% (4 people) strongly disagreed, 4.8% (9 people) disagreed, 37.0% (70 people) remained neutral, 39.2% (74 people) agreed, and 16.9% (32 people) strongly agreed. With a mean score of 3.640, the responses indicate a general agreement, but a considerable level of neutrality was observed. This is consistent with Aziz (2021), who found that regular progress updates are crucial for effective communication. The high number of neutral responses suggests that while updates are communicated, their frequency or clarity may vary, which affects stakeholder satisfaction.

Regarding the accessibility of feedback mechanisms, 2.6% (5 people) strongly disagreed, another 2.6% (5 people) disagreed, 36.5% (69 people) were neutral, 34.9% (66 people) agreed, and 23.3% (44 people) strongly agreed. The mean score of 3.735 reflects a generally positive view of feedback accessibility. These findings support Kujala et al. (2022), who stressed the significance of accessible feedback channels for improved stakeholder satisfaction. The neutrality may indicate areas where feedback mechanisms could be made more user-friendly and effective.

In terms of prompt issue resolution, no respondents strongly disagreed, but 8.5% (16 people) disagreed. Meanwhile, 30.7% (58 people) were neutral, 39.2% (74 people) agreed, and 21.7% (41 people) strongly agreed. The mean score of 3.741 suggests a positive perception of issue resolution. These findings align with Ibrahim and Shaker (2019), who found that prompt issue resolution improves both stakeholder satisfaction and project performance. Neutral responses may indicate that while issue resolution is generally timely, there may be occasional delays.

For the statement on the availability of information regarding road projects, 1.1% (2 people) strongly disagreed, 3.7% (7 people) disagreed, 42.9% (81 people) were neutral, 36.5% (69 people) agreed, and 15.9% (30 people) strongly agreed. With a mean score of 3.624, there is a general positive perception of information availability, though many respondents were neutral. This finding aligns with Annang (2019), who highlighted the importance of accessible information for project success. The neutrality here may suggest that access to information is inconsistent, calling for better communication strategies.

Regarding contractor involvement in project planning, 3.2% (6 people) strongly disagreed, 4.2% (8 people) disagreed, 33.3% (63 people) were neutral, 35.4% (67 people) agreed, and 23.8% (45 people) strongly agreed. The mean score of 3.725 reflects a generally positive view of contractor involvement. This finding is consistent with Matu et al. (2020), who emphasized that effective communication between contractors and KeRRA is vital for project success. The neutral responses indicate a need for more consistent collaboration.

In response to the statement on regular progress updates provided by contractors, 1.6% (3 people) strongly disagreed, 7.4% (14 people) disagreed, 39.7% (75 people) remained neutral, 31.7% (60 people) agreed, and 19.6% (37 people) strongly agreed. The mean score of 3.603 reflects a general agreement, although the large neutral response suggests inconsistencies in the regularity or quality of updates from contractors. This finding supports Chumba (2020), who emphasized the importance of regular updates for effective project management.

The results for timely issue response show that 0.5% (1 person) strongly disagreed, 3.2% (6 people) disagreed, while 33.3% (63 people) were neutral, 38.6% (73 people) agreed, and 24.3% (46 people) strongly agreed. The mean score of 3.831 suggests a generally positive

view on timely issue response. This finding is consistent with Ibrahim and Shaker (2019), who found that timely issue resolution is key to stakeholder satisfaction. Neutral responses may indicate variability in the timeliness of contractor responses.

For the adequacy of information provided by KeRRA to contractors, 1.1% (2 people) strongly disagreed, 2.1% (4 people) disagreed, 37.0% (70 people) remained neutral, 41.3% (78 people) agreed, and 18.5% (35 people) strongly agreed. The mean score of 3.741 reflects a positive perception of information adequacy, consistent with Minois (2023), who emphasized the need for clear communication for effective project management. Neutral responses indicate areas where communication can be improved.

Finally, on the statement regarding collaboration between KeRRA and contractors, 0.5% (1 person) strongly disagreed, 4.8% (9 people) disagreed, 36.5% (69 people) were neutral, 39.7% (75 people) agreed, and 18.5% (35 people) strongly agreed. With a mean score of 3.709, the results suggest a positive view of collaboration, supporting Ali et al. (2024), who emphasized the role of collaboration in project success. The significant neutral responses may reflect mixed experiences with KeRRA-contractor collaboration.

4.3.5 Descriptive Statistics for Corporate Governance Practices

The study's findings, which evaluated respondents' opinions on several corporate governance procedures used by the Kenya Rural Roads Authority (KeRRA), are displayed in this table. Descriptive statistics for each statement are provided in the Table.

Table 4. 8

Descriptive Statistics for Corporate Governance Practices

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
The size of the board of directors at KeRRA is appropriate for effective decision-making.	8 (4.2%)	9 (4.8%)	62 (32.8%)	75 (39.7%)	35 (18.5%)	3.63	0.98
The CEO of KeRRA holds a separate position from the board of directors, allowing for checks and balances.	4 (2.1%)	9 (4.8%)	74 (39.2%)	70 (37.0%)	32 (16.9%)	3.62	0.89
The audit committee at KeRRA operates independently and effectively in its oversight of financial reporting and controls.	6 (3.2%)	8 (4.2%)	60 (31.7%)	75 (39.7%)	40 (21.2%)	3.71	0.95
Corporate governance practices at KeRRA have a positive impact on the performance of road projects.	3 (1.6%)	8 (4.2%)	68 (36.0%)	70 (37.0%)	40 (21.2%)	3.72	0.90
Corporate governance practices at the contractor level have a positive impact on the	2 (1.1%)	14 (7.4%)	70 (37.0%)	59 (31.2%)	44 (23.3%)	3.68	0.95

performance of road projects.							
There is transparency in the decision-making processes at KeRRA.	6 (3.2%)	6 (3.2%)	71 (37.6%)	81 (42.9%)	25 (13.2%)	3.60	0.87
Employees at KeRRA and contractors are held accountable for their actions and decisions.	3 (1.6%)	6 (3.2%)	63 (33.3%)	78 (41.3%)	39 (20.6%)	3.76	0.87
There are adequate mechanisms to detect and prevent fraud and corruption in road project management.	1 (0.5%)	7 (3.7%)	85 (45.0%)	62 (32.8%)	34 (18.0%)	3.64	0.84

The Size of the board of directors at KeRRA is appropriate for effective decision-making. The results indicate that 8 respondents (4.2%) strongly disagree, 9 (4.8%) disagree, 62 (32.8%) are neutral, 75 (39.7%) agree, and 35 (18.5%) strongly agree that the size of KeRRA's board is suitable for effective decision-making. With a mean score of 3.63 and a standard deviation of 0.98, most respondents are either neutral or positive about the board's size. This suggests that while a significant portion of respondents agrees on the board's appropriateness, there is considerable variation in opinion. This result is consistent with the study by Wang et al. (2021), which highlighted the importance of board size in enhancing decision-making and project effectiveness. The perception of board size's appropriateness is crucial as it impacts how well the board can make decisions, ultimately influencing project performance.

The CEO of KeRRA holds a separate position from the board of directors, allowing for checks and balances. According to the survey, 4 respondents (2.1%) strongly disagree, 9 (4.8%)

disagree, 74 (39.2%) are neutral, 70 (37.0%) agree, and 32 (16.9%) strongly agree that the separation of the CEO from the board allows for proper checks and balances. The mean score of 3.62 with a standard deviation of 0.89 indicates a balanced view, with a majority of respondents supporting this separation. This finding aligns with Mohamed and Azman's (2019) study, which emphasized that separation of roles enhances accountability and governance. The results imply that a clear distinction between the CEO and the board is seen as beneficial for ensuring effective oversight and reducing potential conflicts of interest.

The Audit Committee at KeRRA operates independently and effectively in its oversight of financial reporting and controls. The results show that 6 respondents (3.2%) strongly disagree, 8 (4.2%) disagree, 60 (31.7%) are neutral, 75 (39.7%) agree, and 40 (21.2%) strongly agree that the audit committee operates independently and effectively. With a mean score of 3.71 and a standard deviation of 0.95, there is a general agreement on the effectiveness of the audit committee. This is consistent with Mbwana and Kibona's (2019) findings, which highlighted the significance of audit committee effectiveness in improving project performance. The results suggest that the audit committee is perceived as an effective mechanism for overseeing financial controls, contributing to enhanced governance practices.

Corporate governance practices at KeRRA have a positive impact on the performance of road projects. For this statement, 3 respondents (1.6%) strongly disagree, 8 (4.2%) disagree, 68 (36.0%) are neutral, 70 (37.0%) agree, and 40 (21.2%) strongly agree. The mean score of 3.72 and a standard deviation of 0.90 indicate a favorable view towards the impact of corporate governance on project performance. This supports the findings of Akwaa-Mensah et al. (2019), who found a positive correlation between corporate governance and road project performance in Kenya. The results imply that respondents generally believe that effective

corporate governance practices contribute to better performance of road projects, reinforcing the need for robust governance frameworks.

Corporate governance practices at the contractor level have a positive impact on the performance of road projects. The survey results reveal that 2 respondents (1.1%) strongly disagree, 14 (7.4%) disagree, 70 (37.0%) are neutral, 59 (31.2%) agree, and 44 (23.3%) strongly agree that corporate governance practices at the contractor level positively affect road project performance. With a mean score of 3.68 and a standard deviation of 0.95, there is a tendency to view contractor-level governance practices positively. This aligns with Babajide and Ogundana's (2021) study, which pointed out that effective governance at various levels enhances project execution and sustainability. The results indicate that good governance practices among contractors are seen as vital for project success.

There is transparency in the decision-making processes at KeRRA. The findings show that 6 respondents (3.2%) strongly disagree, 6 (3.2%) disagree, 71 (37.6%) are neutral, 81 (42.9%) agree, and 25 (13.2%) strongly agree regarding transparency in KeRRA's decision-making processes. With a mean of 3.60 and a standard deviation of 0.87, the majority of respondents agree on the transparency of decision-making. This result is supported by Yeboah et al. (2019), who found that transparency is crucial for effective decision-making and project performance. The perception of transparency in decision-making processes is essential for fostering trust and ensuring effective governance within KeRRA.

Employees at KeRRA and contractors are held accountable for their actions and decisions. The results indicate that 3 respondents (1.6%) strongly disagree, 6 (3.2%) disagree, 63 (33.3%) are neutral, 78 (41.3%) agree, and 39 (20.6%) strongly agree that accountability

mechanisms are in place. With a mean score of 3.76 and a standard deviation of 0.87, there is a strong agreement on the presence of accountability practices. This is consistent with Muriuki et al. (2021), which highlighted that accountability is a key factor in improving project performance. The results suggest that accountability measures are seen as effective in ensuring responsible behavior among employees and contractors, contributing to better governance.

There are adequate mechanisms to detect and prevent fraud and corruption in road project management. According to the survey, 1 respondent (0.5%) strongly disagrees, 7 (3.7%) disagree, 85 (45.0%) are neutral, 62 (32.8%) agree, and 34 (18.0%) strongly agree about the mechanisms to detect and prevent fraud. The mean score of 3.64 with a standard deviation of 0.84 indicates a generally positive view on the effectiveness of anti-fraud mechanisms. This finding is supported by Kaszubowski and Kaszubowski (2019), who emphasized the importance of effective fraud detection systems in improving project outcomes. The results imply that while there is confidence in the mechanisms to prevent fraud, there remains a substantial proportion of respondents who are neutral, highlighting potential areas for improvement in anti-fraud strategies.

4.4 Descriptive Statistics related to the Performance of Road Projects

4.4.1 Descriptive Statistics for Project Completion within Budgetary Allocation

The table 4.9 presents the results of a survey conducted among Strategy Implementation Officers in Charge to gauge their perception of project completion within budgetary allocation, particularly in the context of road projects.

Table 4. 9

Descriptive Statistics for Project Completion within Budgetary Allocation

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
Projects are often completed over budget.	1 (0.5%)	11 (5.8%)	76 (40.2%)	84 (44.4%)	17 (9.0%)	3.56	0.76
Budgetary constraints are taken into consideration in projects.	2 (1.1%)	8 (4.2%)	82 (43.4%)	68 (36.0%)	29 (15.3%)	3.60	0.84
There is an adequate allocation of funds for project completion.	0 (0.0%)	12 (6.3%)	78 (41.3%)	79 (41.8%)	20 (10.6%)	3.57	0.77
The budgetary allocation is sufficient for project completion.	6 (3.2%)	8 (4.2%)	84 (44.4%)	71 (37.6%)	20 (10.6%)	3.48	0.86
Projects are completed within the allocated budget.	4 (2.1%)	7 (3.7%)	79 (41.8%)	71 (37.6%)	28 (14.8%)	3.59	0.86

The results presented in Table 4.9 indicate mixed perceptions regarding project completion within budgetary allocations. For the statement "Projects are often completed over budget," only 1 (0.5%) of respondents strongly disagreed, while 11 (5.8%) disagreed, against 76 (40.2%) who remained neutral. A significant number, 84 (44.4%), agreed, and 17 (9.0%) strongly agreed, resulting in a mean score of 3.56 with a standard deviation of 0.76. This suggests that a considerable portion of participants believe that projects frequently exceed their budget, highlighting an area of concern for project management practices.

When examining the consideration of budgetary constraints, the response distribution shows that 2 (1.1%) strongly disagreed and 8 (4.2%) disagreed, whereas a substantial proportion, 82 (43.4%), remained neutral, alongside 68 (36.0%) who agreed and 29 (15.3%) who strongly agreed. The mean score for this statement is 3.60 with a standard deviation of 0.84, indicating a positive perception overall. These results imply that while many respondents recognize the inclusion of budgetary constraints in project planning, there remains some uncertainty, as denoted by a significant neutral response.

The adequacy of fund allocation for project completion also produced notable results, with no respondents strongly disagreeing and only 12 (6.3%) disagreeing. A considerable number, 78 (41.3%), were neutral, while 79 (41.8%) agreed, and 20 (10.6%) strongly agreed, yielding a mean score of 3.57 and a standard deviation of 0.77. This suggests general agreement regarding fund allocation sufficiency, yet the neutral responses indicate that improvement in communication about funding adequacy could bolster confidence among stakeholders.

Furthermore, regarding the statement "The budgetary allocation is sufficient for project completion," the results show a more polarized perspective with 6 (3.2%) strongly disagreeing and 8 (4.2%) disagreeing. There were 84 (44.4%) neutral responses, suggesting uncertainty, while 71 (37.6%) agreed and another 20 (10.6%) strongly agreed, resulting in a mean score of 3.48 and a standard deviation of 0.86. This variability indicates that while many participants are optimistic about the sufficiency of allocations, there are notable doubts about their overall effectiveness in meeting project needs.

Lastly, when respondents reflected on whether projects are completed within the allocated budget, the feedback remained cautiously affirmative, with 4 (2.1%) strongly disagreeing and

7 (3.7%) disagreeing. A significant portion, 79 (41.8%), remained neutral, with 71 (37.6%) agreeing and 28 (14.8%) strongly agreeing, resulting in a mean score of 3.59 and a standard deviation of 0.86. This outcome further emphasizes that while a majority believe projects can be completed within budget, the notable neutral responses suggest that there is still hesitation about the consistency with which this occurs. Overall, these results imply that while there is a perception of relatively good project management concerning budgetary adherence, there remains an undeniable need for addressing uncertainties and enhancing transparency around financial processes.

The respondents' perceptions highlight a nuanced view of project budgeting in road projects. There is a moderate level of agreement that projects often exceed their budgets, pointing to potential challenges in budget management. However, there is also a belief that budgetary constraints are considered during project execution, indicating an awareness of financial limitations among project planners. The sentiments about the adequacy of fund allocation and the sufficiency of budgetary allocations for project completion are mixed, suggesting a general sense of satisfaction but also room for improvement. Lastly, there is a moderate agreement that projects are often completed within their allocated budgets, reflecting a positive yet cautious outlook on budget adherence. These insights underscore the need for continued attention to budget management and allocation practices to ensure financial efficiency and project success.

4.4.2 Descriptive Statistics for Completion Time

Table 4.10 presents the descriptive statistics for completion time, based on the responses of Strategy Implementation Officers in Charge.

Table 4. 10

Descriptive Statistics for Completion Time

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
Projects are often delayed.	2 (1.1%)	9 (4.8%)	75 (39.7%)	81 (42.9%)	22 (11.6%)	3.5926	0.7977
Completion time is well-managed.	1 (0.5%)	11 (5.8%)	75 (39.7%)	83 (43.9%)	19 (10.1%)	3.5714	0.7728
Project timelines are realistic.	2 (1.1%)	8 (4.2%)	89 (47.1%)	68 (36.0%)	22 (11.6%)	3.5291	0.7959
Projects are completed within the expected time frame.	1 (0.5%)	9 (4.8%)	85 (45.0%)	77 (40.7%)	17 (9.0%)	3.5291	0.7477
Delays in project completion are due to external factors.	0 (0.0%)	11 (5.8%)	81 (42.9%)	66 (34.9%)	31 (16.4%)	3.6190	0.8270
Valid N (listwise)						**189**	

The results from the survey regarding completion time of projects reveal insightful perspectives on project management. A majority of respondents, 42.9% (81), agreed that projects are often delayed, while 39.7% (75) remained neutral, and only 1.1% (2) strongly disagreed. The mean score for this statement was 3.59, with a standard deviation of 0.80, indicating a tendency towards the view that delays are a common issue in project execution. This suggests that most participants recognize the recurring problems relating to project timeliness, pointing toward possible inefficiencies in project management practices.

When considering the statement that completion time is well-managed, results showed that 43.9% (83) agreed, with a mean of 3.57 and a standard deviation of 0.77. The relatively high percentage of agreement, coupled with a majority in the neutral category (39.7%, 75),

underscores a certain level of optimism among the respondents. However, the proximity of the neutral responses suggests a cautious acceptance rather than an enthusiastic endorsement, indicating that while some believe in effective management practices, there may still be significant room for improvement.

Regarding project timelines being realistic, the responses reflected that 47.1% (89) were neutral, while 36% (68) agreed and only 1.1% (2) disagreed. The mean score of 3.53, paired with a standard deviation of 0.80, indicates that many respondents are unsure about the realism of timelines set in projects. This uncertainty may imply that stakeholders feel insufficiently informed or engaged in the planning stages, which can contribute to perceived delays and unachievable project goals.

In evaluating whether projects are completed within the expected timeframe, a similar trend was observed, with 45.0% (85) of participants neutral and 40.7% (77) in agreement. The mean score of 3.53 and a standard deviation of 0.75 suggest that while there is moderate confidence in meeting deadlines, the significant neutral response indicates that respondents are unsure about consistent punctuality. This can be a critical finding, as consistent completion delay can undermine trust in project effectiveness and future engagements.

Finally, the statement regarding delays being due to external factors elicited considerable response, with 34.9% (66) agreeing and 42.9% (81) neutral. A mean score of 3.62 with a standard deviation of 0.83 indicates that the participants may be attributing some of the delays to factors outside their control. This perception of external influences on project timelines may reflect broader systemic issues faced in project execution, which may necessitate addressing potential barriers to streamline project completion processes effectively. Overall, the results

highlight a nuanced view of project completion timeliness, indicating both recognition of existing delays and a desire for better management practices.

Based on the analysis of the respondents' perceptions, it emerges that there is a general consensus among participants regarding various aspects of project management. While respondents generally agree that projects are frequently delayed, there is also a prevailing belief that completion time is reasonably well-managed and that project timelines are generally realistic. Additionally, there is moderate agreement that projects are completed within the expected time frame, although delays are sometimes attributed to external factors. Overall, these findings suggest a nuanced understanding among participants regarding the complexities of project management, with recognition of both internal and external factors influencing project outcomes.

4.4.3 Descriptive Statistics for Quality of Project as per Provided Standards

The Table 4.11 presents the descriptive statistics for the ratings provided by Strategy Implementation Officers in Charge concerning the Quality of Project as per Provided Standards.

Table 4. 11

Descriptive Statistics for Quality of Project as per Provided Standards

Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std Dev.
The quality of road projects is substandard.	0	7 (3.7%)	68 (36.0%)	87 (46.0%)	27 (14.3%)	3.71	0.75

The quality of the projects meets the provided standards.	1 (0.5%)	6 (3.2%)	78 (41.3%)	79 (41.8%)	25 (13.2%)	3.64	0.77
Quality control measures are well-implemented.	1 (0.5%)	9 (4.8%)	68 (36.0%)	84 (44.4%)	27 (14.3%)	3.67	0.80
The quality of the project is inspected and evaluated.	0	3 (1.6%)	80 (42.3%)	86 (45.5%)	20 (10.6%)	3.65	0.69
There are mechanisms to ensure compliance with standards.	2 (1.1%)	6 (3.2%)	75 (39.7%)	80 (42.3%)	26 (13.8%)	3.65	0.80

The results presented in Table 4.11 highlight the respondents' perceptions regarding the quality of road projects in relation to established standards. The statement "The quality of road projects is substandard" received significant support, with 87 respondents (46.0%) agreeing and 68 respondents (36.0%) remaining neutral. Only 7 respondents (3.7%) disagreed, while none strongly disagreed. The mean score for this statement was 3.71, indicating a tendency towards agreement, with a standard deviation of 0.75, suggesting a moderate level of consensus among respondents regarding the substandard quality of road projects.

In evaluating whether "The quality of the projects meets the provided standards," a similar trend emerged, with 79 respondents (41.8%) agreeing and 78 respondents (41.3%) remaining neutral. A very small minority, comprising 1 (0.5%) strongly disagreed. The mean score of 3.64 indicates that while many felt the projects aligned with standards, a significant portion remained uncertain, as denoted by the standard deviation of 0.77, reflecting variability in responses.

For the statement regarding the implementation of quality control measures, the results indicate a relatively positive perspective, with 84 respondents (44.4%) agreeing and 68 respondents (36.0%) remaining neutral. The mean score of 3.67 suggests a favorable view, but the standard deviation of 0.80 indicates there is some divergence in perceptions regarding quality control effectiveness. This implies that while many perceive quality control measures as adequate, there remains a noteworthy segment that is either skeptical or unsure of their implementation.

Respondents' perceptions concerning project inspections and evaluations also followed a similar pattern. The majority of respondents, 86 (45.5%), agreed that quality was inspected and evaluated, while 80 (42.3%) remained neutral. The mean score of 3.65 and a standard deviation of 0.69 demonstrate a generally positive outlook on inspection processes, but the neutrality of a significant proportion of respondents reveals potential gaps in awareness or clarity regarding evaluation practices.

Finally, when assessing mechanisms that ensure compliance with standards, the results indicate that 80 respondents (42.3%) agreed with the presence of such mechanisms, while 75 (39.7%) were neutral. These findings result in a mean score of 3.65, similar to previous statements, and a standard deviation of 0.80, suggesting some variability in perceptions of compliance mechanisms. Overall, the results reveal a mixed perspective on road project quality and related practices, underscoring the necessity for further investigation and potential improvements in communication and transparency regarding project standards and evaluations.

Based on the analysis of respondents' perceptions, it emerges that there is a varied viewpoint regarding the road projects' quality and the adherence to standards. While respondents generally express a neutral to slight agreement that the quality of road projects is substandard, there is also a cautious optimism that the quality of projects aligns with provided standards. Furthermore, respondents tend to believe that quality control measures are adequately implemented and that project quality undergoes inspection and evaluation processes. However, there is less certainty about the existence of mechanisms to ensure compliance with standards, with respondents leaning towards a neutral stance on this aspect. Overall, these findings suggest a nuanced understanding among participants regarding the quality assurance processes in road projects, with a mix of concerns and confidence in the implementation of quality control measures.

4.5 Diagnostic tests

4.5.1 Auto-Correlation Test

Table 4.12 presents the outcomes of the Durbin-Watson test, obtained from a model analyzing the determinants of road project performance. Autocorrelation refers to the correlation of errors in a regression model with one another; the Durbin-Watson test is employed to assess the presence of this condition. The autocorrelation of a model may influence the dependability of the statistical results derived from it. Analyzing the Durbin-Watson statistic in Table 4.12 is essential for determining the presence of autocorrelation in a model. The Durbin-Watson statistic ranges from 0 to 4. When the value approaches 2, autocorrelation is absent; when it is markedly below 2, positive autocorrelation exists; and when it is much over 2, negative autocorrelation is present.

Table 4. 12

Durbin-Watson

Model	R	Durbin-Watson
1	.843[a]	1.080

a. Predictors: (Constant), Leadership Styles, Availability of Resources, Technology Adoption, Communication, Corporate Governance Practices,

b. Dependent Variable: The Performance of Road Projects

Table 4.12 indicates that the Durbin-Watson statistic for Model 1 is 1.080. The Durbin-Watson value, being marginally below 2.0, indicates a potential presence of positive autocorrelation in the model's residuals. This may affect the precision of the predicted coefficients and the general dependability of the model's results. Further study is required to resolve this issue. One method may be analyzing the residual plots to visually evaluate the existence of any patterns or trends. Furthermore, it is essential to examine the characteristics of the data and the context of the study. Autocorrelation may be anticipated in time series data owing to intrinsic temporal relationships.

4.5.2 Multi-Collinearity Test

Collinearity statistics offer critical insights into the multicollinearity of predictor variables in a regression model. Severe multicollinearity can compromise the reliability of coefficient estimations and complicate the interpretation of the individual impacts of predictors. This analysis focuses on the collinearity statistics for the determinants of organizational performance, as seen in Table 4.13.

Table 4. 13

Collinearity Statistics

Model		Collinearity Statistics	
		Tolerance	**VIF**
1	(Constant)		
	Leadership Styles	.393	2.543
	Technology Adoption	.293	3.417
	Availability of Resources	.321	3.112
	Communication	.243	4.117
	Corporate Governance Practices	.353	2.830

The collinearity statistics indicate varying degrees of multicollinearity among the predictor variables. Leadership styles exhibit moderate collinearity, with a Tolerance value of 0.393 (39.3% unexplained variance) and VIF of 2.543. Similarly, Technology Adoption has a Tolerance of 0.293 (29.3% unexplained variance) and a VIF of 3.417, reflecting moderate collinearity. Availability of Resources shows a Tolerance of 0.321 (32.1% unexplained variance) and VIF of 3.112, indicating moderate multicollinearity. Communication's Tolerance of 0.243 (24.3% unexplained variance) and VIF of 4.117 suggest notable collinearity. Corporate governance practices has a Tolerance of 0.353 (35.3% unexplained variance) and a VIF of 2.830, indicating moderate multicollinearity. Addressing multicollinearity through techniques like feature selection or regularization is recommended to enhance result reliability and interpretation in the regression model, ensuring that predictor variables contribute distinct information to understand their impact on organizational performance.

4.5.3 Residuals Statistics

The presented table 4.14 provides an insightful overview of the residual statistics related to the dependent variable, "The Performance of Road Projects." Residuals denote the discrepancies between actual and anticipated values, which are crucial for assessing the accuracy and dependability of a statistical model. The table showcases key statistics derived from these residuals, shedding light on the distribution and characteristics of the model's errors.

Table 4. 14

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.2214	4.3796	3.5965	.38845	189
Residual	-.71970	.90920	.00000	.24777	189
Std. Predicted Value	-3.540	2.016	.000	1.000	189
Std. Residual	-2.866	3.620	.000	.987	189

a. Dependent Variable: The Performance of Road Projects

In terms of the predicted values, the minimum and maximum observed values are 2.2214 and 4.3796, respectively, with an average (mean) of 3.5965. This suggests that the model's predictions span a reasonable range and center around the mean value. The standard deviation of predicted values is 0.38845, indicating the dispersion of predictions from the mean. Moving on to the residuals themselves, the minimum and maximum residuals are -0.71970 and 0.90920, with a mean residual of 0.00000. The residuals' standard deviation of 0.24777 showcases the typical magnitude of deviations from the predicted values. Additionally, the

standardized versions of predicted values and residuals are provided, which help in assessing the relative position and magnitude of individual data points within the dataset.

These residual statistics help us comprehend how well the model predicts things. The fact that the mean residual is nearly zero indicates that, generally speaking, the model's predictions agree well with the observed values. On the other hand, the residuals' standard deviation shows how erratic or inaccurate these forecasts were. Further investigation could be carried out to explore patterns or trends within the residuals and assess if any systematic biases are present in the model's predictions. This table provides an essential foundation for evaluating the model's accuracy and identifying potential areas for improvement, ensuring a more robust analysis of the road project performance data.

4.5.4 Test for Normality

Table 4.15 presents the results of normality evaluations conducted using two methods: the Kolmogorov-Smirnov test and the Shapiro-Wilk test. The normality tests assess whether the data for each factor follows a normal distribution, which is crucial for certain statistical analyses and assumptions.

Table 4. 15

Test for Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Corporate Governance	.169	188	0.483	.927	188	0.416
Leadership Styles	.184	188	0.993	.802	188	0.428
Technology Adoption	.152	188	0.873	.951	188	0.492
Availability of Resources	.177	188	0.640	.842	188	0.899

Communication	.178	188	0.623	.779	188	0.623
Performance of Road Projects	.159	188	0.957	.869	188	0.799
a. Lilliefors Significance Correction						

Table 4.15 shows Shapiro-Wilk test with a p-value of 0.416 for Corporate Governance, which implies that, the normality assumption is met for the variable. Findings also reveals Shapiro-Wilk test with a p-value of 0.428 for Leadership Styles, which implies that the normality assumption is met for the variable. Likewise, the Shapiro-Wilk test with a p-value of 0.492 for Technology Adoption, implies that the normality assumption is met for the variable. The Shapiro-Wilk test of a p-value of 0.899 for Availability of Resources, implies that the normality assumption is met for the variable. Equally Shapiro Wilk test for Communication is 0.623 meaning that the variable is normally distributed. Finally, Shapiro-Wilk test of a p-value of 0.799 for Performance of Road Projects which is the dependent variable in this study, implies that the normality assumption was not violated and therefore the parametric statistics can be performed for all variables.

Figure 4.2

Regression Histogram

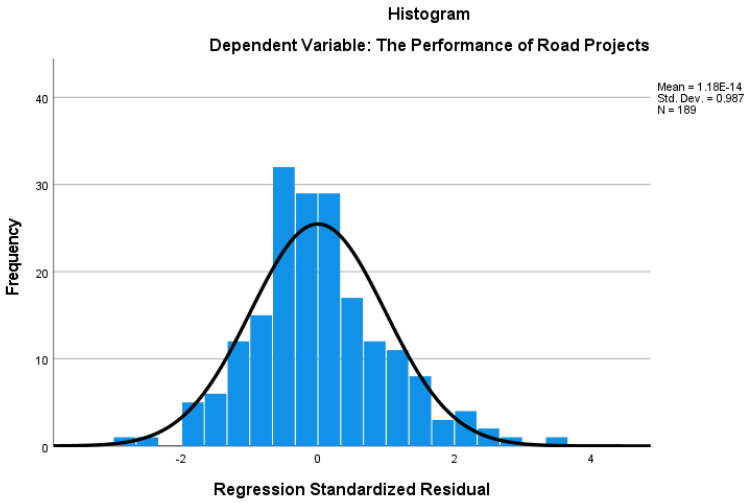
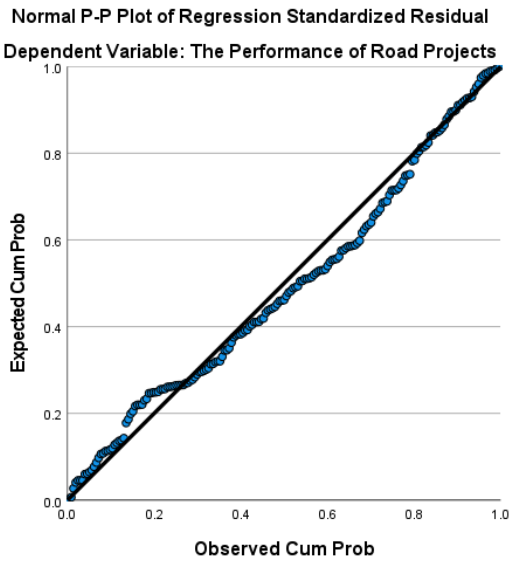


Figure 4.3

Normal P-P Plot of Regression



4.6 Bi-Variate Correlation Analysis

The presented table 4.16 displays the correlation coefficients and their statistical significance between different factors related to Strategy Implementation and the Performance of Road Projects.

Table 4. 16

Association between Strategy Implementation and performance of Road Projects

Position			X_1	X_2	X_3	X_4	X_5	Y
SIOs at KeRRA	X_1	r	1					
		Sig. (2-tailed)						
		N	90					
	X_2	r	.550	1				
		Sig. (2-tailed)	.000					
		N	90	90				
	X_3	r	.603	.556	1			
		Sig. (2-tailed)	.000	.000				
		N	90	90	90			
	X_4	r	.459	.666	.548	1		
		Sig. (2-tailed)	.000	.000	.000			
		N	90	90	90	90		
	X_5	r	.360	.595	.471	.637	1	

		Sig. (2-tailed)	.000	.000	.000	.000		
		N	90	90	90	90	90	
	Y	r	**.508**	**.618**	**.578**	**.615**	**.816**	1
		Sig. (2-tailed)	.000	.000	.000	.000	.000	
		N	90	90	90	90	90	90
SIOs with Contractors	X_1	r	1					
		Sig. (2-tailed)						
		N	99					
	X_2	r	.749	1				
		Sig. (2-tailed)	.000					
		N	99	99				
	X_3	r	.738	.780	1			
		Sig. (2-tailed)	.000	.000				
		N	99	99	99			
	X_4	r	.719	.809	.827	1		
		Sig. (2-tailed)	.000	.000	.000			
		N	99	99	99	99		
	X_5	r	.620	.726	.711	.840	1	
		Sig. (2-tailed)	.000	.000	.000	.000		
		N	99	99	99	99	99	
	Y	r	**.652**	**.687**	**.701**	**.758**	**.765**	1
		Sig. (2-tailed)	.000	.000	.000	.000	.000	
		N	99	99	99	99	99	99

**. Correlation is significant at the 0.05 level (2-tailed).

Key: Y = Performance of Road Projects, X_1 = Leadership Styles: X_2 = Technology Adoption X_3 = Availability of Resources:X_4 = Communication: X_5 = Corporate Governance: r = Pearson Correlation.

All independent variables (X_1 to X_5) and the dependent variable (Y) had statistically significant associations for the "SIOs with KERRA" group. Interestingly, every connection is positive, meaning that road project performance tends to rise along with the independent variables. This suggests that factors like Corporate Governance Practices, Technology Adoption, Availability of Resources, Communication, and Leadership Styles have a favorable correlation with improved performance in road construction projects.

The analysis of the performance of road projects in relation to various independent variables reveals a consistent pattern of positive correlations. Leadership styles (X1) demonstrate a strong positive relationship with the performance of road projects (Y), indicated by a correlation coefficient of 0.508 ($p < 0.05$). This suggests that effective leadership contributes significantly to the successful execution of road projects, as strong leadership often fosters better decision-making, enhanced coordination, and accountability.

Similarly, the adoption of technology (X2) is positively correlated with the performance of road projects, with a higher correlation coefficient of 0.618 ($p < 0.05$). This strong correlation highlights the crucial role of modern technological tools in enhancing project performance. The integration of technology, such as advanced project management software, data analytics, and automated processes, helps improve efficiency, reduce errors, and accelerate project timelines, leading to improved project outcomes.

The availability of resources (X3) also shows a significant positive relationship with road project performance, with a correlation coefficient of 0.578 ($p < 0.05$). Resources, including financial capital, materials, and human resources, are critical to the successful completion of road projects. Adequate resources ensure that projects are well-equipped to meet targets, deadlines, and specifications, further contributing to overall performance.

Communication (X4) exhibits a strong positive correlation with project performance, with a coefficient of 0.615 ($p < 0.05$). Effective communication among stakeholders is essential in ensuring that project plans are understood, tasks are coordinated, and issues are promptly addressed. Clear communication mitigates misunderstandings and fosters a collaborative environment, which is crucial for the smooth operation of road projects.

Corporate governance (X5) demonstrates the strongest positive correlation with road project performance, with a coefficient of 0.816 ($p < 0.05$). Good corporate governance practices, such as transparency, accountability, and proper risk management, are vital for ensuring that projects are managed effectively and ethically. Strong governance frameworks provide the necessary oversight and structure to guide project execution, leading to better outcomes.

Further analysis of the group of Senior Infrastructure Officers (SIOs) working with contractors reveals statistically significant positive correlations between all independent variables (X1 to X5) and road project performance (Y). This suggests that improvements in leadership, technology adoption, resource availability, communication, and corporate governance all contribute positively to enhancing the performance of road projects. The consistency of these correlations with the findings from road engineers reinforces the importance of these factors across different roles within project teams.

In the context of Chief Executive Officers (CEOs), the same positive trends are observed. Leadership styles (X1) are strongly correlated with road project performance, with a coefficient of 0.652 ($p < 0.05$), highlighting the importance of top-level leadership in driving successful project outcomes. Technology adoption (X2) also shows a significant positive correlation, with a coefficient of 0.687 ($p < 0.05$), emphasizing the continued relevance of technology in improving project efficiency.

The availability of resources (X3) has a positive correlation with project performance in the CEO group, with a coefficient of 0.701 ($p < 0.05$), indicating that resource management remains a critical factor for success at the executive level. Communication (X4) also shows a strong positive correlation (0.758, $p < 0.05$), further supporting the notion that clear and

effective communication is key to the successful management of road projects. Finally, corporate governance practices (X5) maintain their strong positive relationship with road project performance, with a correlation coefficient of 0.765 ($p < 0.05$), demonstrating the importance of robust governance frameworks in achieving favorable project outcomes.

Comparing the two sets of analyses, it's evident that the associations are generally consistent across the two groups. Both "Road Engineers" and "Chief Executive Officers" show significant positive correlations between the independent variables (Corporate Governance Practices, Technology Adoption, Availability of Resources, Communication, and Leadership Styles) and the dependent variable (road projects' performance). This suggests that these factors are crucial in influencing the success of road projects regardless of the specific group being examined.

The presented correlations demonstrate a clear positive relationship between various strategic implementation factors and road projects' performance. These correlations are statistically significant, indicating that the associations are likely not due to chance. The consistency of these associations across the two groups, "Road Engineers" and "Chief Executive Officers," further underscores the importance of factors such as Leadership Styles, Technology Adoption, Availability of Resources, Communication, and Corporate Governance Practices in achieving successful road project outcomes.

The findings of the present study align closely with existing literature on the relationship between strategic implementation factors and road project performance. The significant positive correlations observed between Leadership Styles, Technology Adoption, Availability of Resources, Communication, and Corporate Governance Practices with the performance of

road projects resonate with prior research. For instance, Wong et al. (2021) found a favorable correlation between technology alignment and project success in Malaysian road construction, which parallels our findings regarding Technology Adoption. Similarly, Ameyaw et al. (2019) discovered that technological alignment significantly improves project performance in Ghanaian road construction, consistent with our results on the positive correlation between Technology Adoption and road project performance. Moreover, the emphasis on effective communication strategies in improving project performance echoes the findings of Park et al. (2019), underlining the importance of Communication in our study context.

Furthermore, the literature review provided insights into the influence of Corporate Governance Practices on project success, which is corroborated by our findings. Wang et al. (2021) demonstrated that corporate governance significantly improves the effectiveness of road projects in both Malaysia and China, emphasizing the role of transparency, accountability, and stakeholder engagement. Our study aligns with these findings, as we found a strong positive relationship between Kenyan road project success and corporate governance practices. Moreover, Muriuki et al. (2021) highlighted the importance of good governance techniques, including accountability and stakeholder involvement, in influencing project performance, which resonates with our findings regarding Corporate Governance Practices.

The analysis reveals significant positive correlations between all independent variables (Corporate Governance Practices, Technology Adoption, Availability of Resources, Communication, and Leadership Styles) and the performance of road projects across different stakeholder groups, including "SIOs with KeRRA," "SIOs with Contractors," and "Chief Executive Officers." This suggests that as these strategic implementation factors increase, road project performance tends to improve. These findings are consistent with existing

literature, which emphasizes the importance of factors such as technology alignment, effective communication, and corporate governance practices in enhancing project success. For instance, prior studies have highlighted the positive impact of technology adoption on project performance in various contexts, aligning with our results. Similarly, the emphasis on effective communication strategies and robust corporate governance practices in prior research resonates with our findings, further validating the significance of these factors in achieving successful road project outcomes. Overall, the study underscores the importance of considering these strategic implementation factors in road project management to ensure successful project outcomes.

4.7 Bi-Variate Regression Analysis and Test of Hypotheses

Bi-variate regression analysis was carried out to establish how each independent variable impact on the dependent variable. The same information was used to test study hypotheses.

4.7.1 Leadership Styles and Performance of Road Projects

As shown in Table 4.17, the results provide insights into how well leadership styles predict project performance, as measured by the R and R^2 statistics. The model includes leadership styles as the sole predictor variable.

Table 4. 17

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.579[a]	.335	.331	.37567

a. Predictors: (Constant), X1

The model has a R value of 0.579, signifying a relatively good correlation between leadership styles and project performance. The R^2 value of 0.335 indicates that leadership styles explain approximately 33.5% of the variance in project success. Although leadership has considerable influence, other elements—such as technology adoption, resource availability, communication, and corporate governance—are equally essential. The Adjusted R Square score of 0.331, somewhat lower than the R^2, considers the number of predictors in the model and reinforces the strength of the association. These findings underscore the significance of robust leadership in improving road project performance while also emphasizing the necessity of a holistic strategy that incorporates other essential aspects to get optimal outcomes.

The ANOVA table 4.18 assesses the model's significance in elucidating the variation in project performance.

Table 4. 18

ANOVA for Leadership Styles and Performance of Road Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.287	1	13.287	94.147	.000[b]
	Residual	26.391	187	.141		
	Total	39.678	188			

a. Dependent Variable: Y

b. Predictors: (Constant), X1

The F-value of 94.147 is highly significant, with a p-value of 0.000, showing that leadership styles (X1) have a strong influence on road project performance. The regression sum of squares (13.287) is substantially larger than the residual sum of squares (26.391), suggesting that the model explains a significant portion of the variance in project performance. These findings emphasize the effectiveness of leadership styles in shaping project outcomes, while

also suggesting that other factors not included in the model may contribute to the remaining unexplained variance.

This table 4.19 provides the coefficients from the regression analysis. It includes the unstandardized and standardized coefficients, t-values, and significance levels.

Table 4. 19

Coefficients for Leadership Styles and Performance of Road Projects

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.009	.166		12.102	.000
	X1	.433	.045	.579	9.703	.000

a. Dependent Variable: Y

The unstandardized coefficient for leadership styles (X1) is 0.433, with a standard error of 0.045, indicating that for each unit increase in leadership styles, project performance improves by 0.433 units. The standardized coefficient (Beta) is 0.579, demonstrating a strong positive link between leadership styles and performance. Additionally, the t-value of 9.703, with a significance level below 0.001, confirms that leadership styles are a significant predictor of project performance. These results highlight the crucial role effective leadership plays in enhancing road project outcomes, suggesting that refining leadership practices could further improve project performance.

Test of Hypothesis 1

$H0_1$: Leadership styles have no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.

Based on the results presented in Table 4.19, the p-value for the relationship between leadership styles and the performance of road projects is < 0.001, which is below the significance level of 0.05. Therefore, we reject the null hypothesis (HO1) that leadership styles have no statistically significant influence on the performance of road projects. This finding implies that leadership styles do indeed have a significant impact on the performance of road projects by the Kenya Rural Roads Authority.

Consequently, investing in effective leadership practices could enhance the performance and outcomes of road projects, emphasizing the need for strategic leadership development within the organization. The results are reinforced by a study by Li et al. (2019) highlighted how transformational leadership can foster team creativity and enhance learning, leading to improved project outcomes. Similarly, Białousz and Szafra-Bohdan (2019) demonstrated a positive impact of transformational leadership on Poland road project performance through strategy execution

4.7.2 Technology Adoption and Performance of Road Projects

Table 4.20 provides a summary of the model used to evaluate the effect of technology adoption on road project performance. The model focuses on assessing the influence of technology adoption (X2) on the performance outcomes of road projects.

Table 4. 20

Model Summary for Technology Adoption and Performance of Road Projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.694[a]	.482	.479	.33157

a. Predictors: (Constant), X2

The results show that the model has an R value of 0.694, indicating a strong correlation between technology adoption and project performance. The R Square value of 0.482 suggests that approximately 48.2% of the variance in road project performance can be attributed to technology adoption alone. The Adjusted R Square, at 0.479, refines this percentage to account for the number of predictors in the model, further emphasizing the significant impact of technology on project outcomes. Additionally, the Standard Error of the Estimate, which is 0.33157, indicates the average deviation of the observed values from the model's predictions. Overall, these results suggest that technology adoption is crucial for enhancing road project performance, underscoring the necessity of incorporating advanced technologies to improve project results. Table 4.21 presents the ANOVA results for the regression model that investigates the impact of technology adoption on road project performance. This analysis evaluates the overall fit and significance of the model, with technology adoption (X2) serving as the predictor variable.

Table 4. 21

ANOVA for Technology Adoption and Performance of Road Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.120	1	19.120	173.918	.000[b]
	Residual	20.558	187	.110		
	Total	39.678	188			

a. Dependent Variable: Y

b. Predictors: (Constant), X2

The ANOVA results indicate that the regression model has a Sum of Squares of 19.120, with 1 degree of freedom, resulting in a Mean Square of 19.120. The F-statistic of 173.918 is highly significant, with a p-value of less than 0.001.

This finding demonstrates that technology adoption significantly enhances the performance of road projects, as highlighted by the model's high F-value and significant p-value. These results confirm that the model effectively accounts for the variability in road project performance and underscores the essential role of technology in improving project outcomes.

Table 4.22 displays the coefficients for the regression model examining the impact of technology adoption on road project performance. This information helps quantify the relationship between technology adoption and project performance.

Table 4. 22

Coefficients for Technology Adoption and Performance of Road Projects

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.528	.159		9.621	.000
	X2	.558	.042	.694	13.188	.000

Dependent Variable: Y

The unstandardized coefficient for technology adoption (X2) is 0.558, with a standard error of 0.042, and the standardized coefficient (Beta) is 0.694. This high Beta value indicates a strong positive relationship between technology adoption and road project performance. The t-value of 13.188 and the significance level of < 0.001 show that the effect of technology adoption on performance is statistically significant. These results imply that increasing

technology adoption significantly improves road project performance, underscoring its critical role in enhancing project efficiency and outcomes. These results are in line with the research by Ntiamoah et al. (2020) in the U.S. found that technological alignment, including technology readiness, infrastructure, strategy, and investment, significantly improves project performance in road projects.

Test of Hypothesis 2

$H0_2$: Technology adoption has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.

Based on the results from Table 4.22, the significance level for technology adoption is < 0.001, which is less than the test significance level of 0.05. Therefore, we reject the null hypothesis (HO2) that technology adoption has no statistically significant influence on the performance of road projects by the Kenya Rural Roads Authority.

This implies that technology adoption does have a statistically significant positive impact on road project performance, highlighting the importance of integrating advanced technological solutions to improve the efficiency and effectiveness of road projects managed by the Authority. Similar to the rejection of the null hypothesis, studies by Akintoye et al. (2019) in the UK and Mir et al. (2020) in Pakistan also demonstrated a significant positive relationship between technology adoption and road project success, reinforcing the critical role of advanced technology in project efficiency and performance. Liu et al. (2021) demonstrated that these technologies significantly minimize human errors, optimize workforce allocation, and enhance overall project delivery timelines. This finding supports the notion that increased

technological integration can substantially elevate the performance of infrastructure projects by fostering greater operational efficiency.

4.7.3 Availability of Resources and Performance of Road Projects

The table 4.23 presents the model summary for the analysis of the relationship between the availability of resources (X3) and the performance of road projects. The model shows the goodness of fit for predicting project performance based on resource availability. The results indicate that the availability of resources explains a significant proportion of the variance in road project performance.

Table 4. 23

Model Summary for Availability of Resources and Performance of Road Projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.713[a]	.509	.506	.32278

a. Predictors: (Constant), X3

The research reveals a R value of 0.713, indicating a robust positive correlation between resource availability and the success of road construction. Additionally, the R Square value is 0.509, signifying that around 51% of the variance in road project performance is associated with resource availability. The Adjusted R Square value of 0.506, which considers the number of predictors in the model, further corroborates this conclusion.

The Standard mistake of the Estimate is 0.32278, signifying an average departure of observed values from projected outcomes, which indicates a substantial prediction mistake. In conclusion, although resource availability is a crucial predictor of road project success, it is essential to acknowledge that additional factors may also impact these results.

Table 4.24 displays the ANOVA findings for the model evaluating the influence of resource availability (X3) on road project success. This table includes the Sum of Squares, degrees of freedom (df), Mean Square, F statistic, and significance level (Sig.). The ANOVA analysis assesses the overall relevance of the model in elucidating differences in road project performance.

Table 4. 24

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.195	1	20.195	193.834	.000[b]
	Residual	19.483	187	.104		
	Total	39.678	188			

a. Dependent Variable: Y

b. Predictors: (Constant), X3

The ANOVA results indicate that the Regression Sum of Squares is 20.195, with a Mean Square also of 20.195, resulting in an F value of 193.834 and a significance level of less than 0.001. This highly significant F statistic ($p < 0.001$) suggests that the availability of resources is a statistically significant predictor of road project performance. The low p-value enhances the robustness of the model, confirming that resource availability accounts for a considerable portion of the variance in performance. Thus, the model serves as a reliable framework for assessing the impact of resource availability on road projects.

Table 4.25 presents the coefficients for the model analyzing the effect of resource availability (X3) on road project performance. This table includes the Unstandardized Coefficients (B), Standardized Coefficients (Beta), t-values, and significance levels (Sig.) for both the predictor variable and the constant.

Table 4. 25

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.372	.162		8.493	.000
	X3	.599	.043	.713	13.922	.000

a. Dependent Variable: Y

The findings reveal that the unstandardized coefficient for X3 is 0.599, accompanied by a standard error of 0.043. The standardized coefficient (Beta) is 0.713. The t-value for X3 is 13.922, with a significance level of less than 0.001. This highly significant p-value (< 0.001) indicates that the availability of resources has a strong and statistically significant positive effect on road project performance.

The positive Beta value suggests that as resource availability increases, there is a notable improvement in road project performance, underscoring the essential role of resource availability in enhancing project outcomes. Research by Bekisz and Kruszynski (2021) in Poland highlights that the allocation of vital resources—such as financial, material, labor, and equipment—significantly influences the performance of road construction projects. This supports your findings, where the unstandardized coefficient (0.599) and the Beta value (0.713) both underscore the significant positive effect of resource availability on road project performance.

Test of Hypothesis 3

$H0_3$: Availability of resources has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.

With a significance level set at 0.05, the p-value for the availability of resources (X3) is 0.000, significantly below this threshold. This finding leads us to reject the null hypothesis (HO3), which posits that the availability of resources does not significantly influence the performance of road projects managed by the Kenya Rural Roads Authority. This conclusion suggests that resource availability has a meaningful impact on road project performance, highlighting the necessity for sufficient resource allocation to improve the efficiency and success of these projects.

The results stress the importance of investing in and ensuring the availability of resources to attain superior project outcomes. Research conducted by Nawaz et al. (2019) and Tetteh et al. (2019) indicates that a lack of adequate resources can result in project delays, budget overruns, and subpar outcomes. These studies further reinforce the notion that ensuring adequate resources—reflected in the rejection of the null hypothesis—is crucial for enhancing road project performance.

4.7.4 Communication and Performance of Road Projects

Table 4.26 presents the model summary for assessing the impact of communication (X4) on the performance of road projects. This summary offers valuable insights into the model's ability to explain and predict how communication affects project outcomes.

Table 4. 26

Model Summary for Communication and Performance of Road Projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718[a]	.516	.513	.32049

a. Predictors: (Constant), X4

The R-value of 0.718 demonstrates a strong positive correlation between communication and road project performance. The R Square value of 0.516 indicates that communication practices account for 51.6% of the variability in performance. The Adjusted R Square value of 0.513 further validates that even after considering the number of predictors, the model still explains a significant portion of the variance. The Standard Error of the Estimate is 0.32049, representing the average deviation between the observed and predicted performance values. Collectively, these findings imply that effective communication plays a crucial role in enhancing road project performance, with the model offering a reliable prediction of outcomes based on communication practices.

Table 4.27 presents the ANOVA results from the regression analysis that examines the influence of communication (X4) on road project performance. This table assesses the overall adequacy of the model and the significance of the predictor variable in relation to project outcomes.

Table 4. 27

ANOVA for Communication and Performance of Road Projects

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	20.471	1	20.471	199.298	.000[b]
	Residual	19.208	187	.103		
	Total	39.678	188			

a. Dependent Variable: Y

b. Predictors: (Constant), X_4

The ANOVA results reveal that the model is highly significant, as indicated by an F-value of 199.298 and a p-value of less than 0.001. This strong F-value, along with the significant p-value, demonstrates that communication (X4) accounts for a considerable portion of the variability in road project performance. The regression Sum of Squares is 20.471, reflecting

the variance explained by communication, while the Residual Sum of Squares is 19.208, representing the variance that remains unexplained by the model. These findings affirm the model's ability to effectively predict performance based on communication, underscoring its role as a critical predictor.

Table 4.28 provides the coefficients from the regression analysis that evaluates the impact of communication (X4) on road project performance, including both unstandardized and standardized coefficients along with their significance levels.

Table 4. 28

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.411	.157		9.014	.000
	X_4	.590	.042	.718	14.117	.000

a. Dependent Variable: Y

Table 4.28 indicates that the unstandardized coefficient for communication (X4) stands at 0.590, with a standard error of 0.042. The standardized coefficient (Beta) is recorded at 0.718, while the t-value is 14.117, accompanied by a p-value of less than 0.001. These findings suggest that communication exerts a strong positive influence on road project performance, with the Beta value indicating that communication accounts for a considerable portion of the variance in performance outcomes. The elevated t-value and significant p-value further validate that this effect is statistically significant, highlighting the essential role of effective communication in improving road project performance.

Research conducted by Bekefi et al. (2023) in Hungary underscored that effective stakeholder communication is vital for the success of road projects, as it ensures that all stakeholders are informed and engaged in the decision-making process. Additionally, Gorsevski et al. (2021) demonstrated that communication—assessed through stakeholder engagement, feedback mechanisms, and issue resolution—significantly enhances the performance of road projects.

Test of Hypothesis 4

$H0_4$: Communication has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.

Based on the regression analysis presented in Table 4.28, where the p-value for communication (X4) is 0.000, which is below the significance level of 0.05, we reject the null hypothesis (HO4) that communication has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority. The implication of this verdict is that effective communication plays a crucial role in improving the performance of road projects, and investing in better communication strategies can significantly enhance project outcomes. This finding underscores the importance of prioritizing communication processes to achieve better results in road project management. Studies by Memon et al. (2020) in Asia and Park et al. (2019) in the USA confirmed that communication strategies such as regular progress reporting and feedback mechanisms are critical predictors of project success. The rejection of the null hypothesis (HO4) aligns with these studies, showing that effective communication has a direct and significant influence on improving project outcomes

4.8 Multiple Regression Analysis

The purpose of the multiple regressions of the research variables, which are presented in this section, is to determine the relationship between the variables. The independent variables comprised leadership styles, technology adoption availability of resources and communication. The moderating variable in this context is the corporate governance, while the dependent variable is the Performance of Road Projects.

4.8.1 Regression of Variables: without moderating variable

Regression analysis of the dependent variable; "The performance of road projects," was assessed in relation to four independent variables; leadership styles, technology adoption, availability of resources and communication and the results indicated in the table 4.29.

Table 4. 29

Model without Moderating Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Without the Moderating Variable	(Constant)	.943	.135		6.990	.000
	Leadership Styles	.454	.054	.567	8.406	.000
	Technology Adoption	.087	.056	.109	1.553	.122
	Availability of Resources	.162	.053	.200	3.021	.003
	Communication	.029	.056	.043	.528	.598

a. Dependent Variable: The Performance of Road Projects

Leadership Styles significantly positively predict the performance of road projects ($\beta = 0.567$, $p = < 0.001$ indicating that higher levels of effective leadership are associated with better

project performance. Technology Adoption does not significantly predict road project performance (β = 0.109, p = .122) suggesting that technological factors may not directly influence project performance in this context. Availability of Resources is a significant predictor of road project performance (β = 0.200, p = .003) indicating that having adequate resources positively impacts project outcomes. Communication does not significantly predict road project performance in either model (β = 0.043, p = .598) suggesting that communication factors may not have a direct influence on project performance.

The finding that leadership styles significantly predict road project performance (β = 0.567, p = 0.000) aligns with studies by Li et al. (2019) and Białousz and Szafra-Bohdan (2019), which emphasize the positive impact of transformational leadership on project outcomes through enhanced team collaboration and strategy execution. Conversely, the non-significant effect of technology adoption (β = 0.109, p = 0.122) contrasts with research by Ntiamoah et al. (2020) and Liu et al. (2021), who found that technological alignment improves road project performance through better resource allocation and efficiency. The significant influence of resource availability (β = 0.200, p = 0.003) corroborates findings by Bekisz and Kruszynski (2021) and Taufik (2022), which show that adequate resource allocation, including financial and material resources, is crucial for project success. Lastly, the non-significant role of communication (β = 0.043, p = 0.598) contrasts with studies like Gorsevski et al. (2021), which highlight that effective communication typically improves stakeholder engagement and project performance.

4.8.2 Introducing Moderating Variable in the Regression Model

The moderating variable was introduced in the regression analysis of the dependent variable; "The performance of road projects," in relation to four independent variables; leadership styles, technology adoption, availability of resources and communication and the results indicated in the table 4.30.

Table 4. 30

Model with the Moderating Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
With the Moderating Variable	(Constant)	.916	.134		6.814	.000
	Leadership Styles	.457	.054	.571	8.533	.000
	Technology Adoption	.050	.058	.063	.859	.392
	Availability of Resources	.120	.057	.148	2.115	.036
	Communication	.019	.056	.028	.344	.731
	Corporate Governance Practices	.095	.046	.129	2.042	.043

a. Dependent Variable: The Performance of Road Projects

In the model including the moderating variable, Corporate Governance Practices emerge as a significant predictor of road project performance ($\beta = 0.129$, $p = .043$), indicating that better corporate governance practices are associated with improved project outcomes. This suggests that the introduction of the moderating variable adds explanatory power to the model, highlighting its importance in understanding the relationship between the predictors and the

dependent variable. The emergence of corporate governance practices as a significant predictor of road project performance ($\beta = 0.129$, $p = 0.043$) aligns with studies by Bello et al. (2019) and Wang et al. (2021), which emphasize the positive influence of governance factors such as transparency, accountability, and stakeholder engagement on project outcomes . These studies show that effective corporate governance improves decision-making, resource allocation, and risk management, all of which contribute to better project performance. The introduction of corporate governance as a moderating variable enhances the model's explanatory power, underscoring the crucial role governance plays in shaping the success of road projects by strengthening the relationship between leadership, resources, and project outcomes

4.8.3 Comparison between model with and without moderating variable

The model with a moderating variable and the model without one were compared, and the results are shown in the table. It was interpreted in the same way. The findings of a regression analysis that looks at the link between several characteristics and the success of road projects are shown in the table, with a particular emphasis on the moderating role of corporate governance. Four independent factors are evaluated in connection to the dependent variable, "The performance of road projects," which includes leadership styles, technology adoption, resource availability, and communication. The findings of the model with corporate governance practices as the moderating variable and the model without it are also included in the table 4.31.

Table 4. 31

Comparison between the Model without Moderating Variable and Model with moderating variable: regressed variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Without the Moderating Variable	(Constant)	.943	.135		6.990	.000
	Leadership Styles	.454	.054	.567	8.406	.000
	Technology Adoption	.087	.056	.109	1.553	.122
	Availability of Resources	.162	.053	.200	3.021	.003
	Communication	.029	.056	.043	.528	.598
With the Moderating Variable	(Constant)	.916	.134		6.814	.000
	Leadership Styles	.457	.054	.571	8.533	.000
	Technology Adoption	.050	.058	.063	.859	.392
	Availability of Resources	.120	.057	.148	2.115	.036
	Communication	.019	.056	.028	.344	.731
	Corporate Governance Practices	.095	.046	.129	2.042	.043

a. Dependent Variable: The Performance of Road Projects

The Regression models were as follows.

$$Y = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 X_1 + \boldsymbol{\beta}_2 X_2 + \boldsymbol{\beta}_3 X_3 + \boldsymbol{\beta}_4 X_4 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$Y = 0.943 + 0.454 + 0.087 + 0.162 + 0.029 + 0.135$$

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta jZj + \varepsilon \ldots\ldots\ldots\ldots (2)$$

$$Y = 0.916 + 0.457 + 0.050 + 0.120 + 0.019 + 0.095 + 0.134$$

In both models, Leadership Styles significantly positively predict the performance of road projects (β = 0.567, p < .001; β = 0.571, p < .001, respectively), indicating that higher levels of effective leadership are associated with better project performance. In the model without the moderating variable, Technology Adoption does not significantly predict road project performance (β = 0.109, p = .122). Even when Corporate Governance Practices are included, Technology Adoption remains non-significant (β = 0.063, p = .392), suggesting that technological factors may not directly influence project performance in this context. Corporate Governance Practices do not influence the relationship between leadership styles and predict the performance of road projects.

Availability of Resources is a significant predictor of road project performance in both models (β = 0.200, p = .003; β = 0.148, p = .036, respectively), indicating that having adequate resources positively impacts project outcomes. Communication does not significantly predict road project performance in either model (β = 0.043, p = .598; β = 0.028, p = .731, respectively), suggesting that communication factors may not have a direct influence on project performance. The situation even becomes worse with the introduction of the moderating variable.

In the model including the moderating variable, Corporate Governance Practices emerge as a significant predictor of road project performance ($\beta = 0.129$, $p = .043$), indicating that better corporate governance practices are associated with improved project outcomes. This suggests that the introduction of the moderating variable adds explanatory power to the model, highlighting its importance in understanding the relationship between the predictors and the dependent variable. The inclusion of corporate governance practices as a moderating variable significantly enhances the model ($\beta = 0.129$, $p = .043$), echoing studies like Bello et al. (2019), which demonstrate that good governance practices positively impact project performance. This suggests that strong governance enhances the relationship between key predictors and project outcomes.

Overall, while Leadership Styles and Availability of Resources consistently emerge as significant predictors of road project performance, the introduction of Corporate Governance Practices as a moderating variable enhances the model's predictive ability, indicating its importance in influencing project outcomes.

The analysis indicates that effective Leadership Styles and Availability of Resources consistently predict better road project performance across both models. Leadership Styles significantly positively predict project performance, highlighting the importance of strong leadership in driving successful project outcomes. Availability of Resources also emerges as a significant predictor, emphasizing the positive impact of having adequate resources on project success. However, the role of Technology Adoption remains non-significant, suggesting that technological factors may not directly influence project performance in this context. Additionally, Communication does not significantly predict project performance in either model. However, when Corporate Governance Practices are introduced as a moderating

variable, they become a significant predictor of project performance, indicating their importance in enhancing project outcomes. This suggests that corporate governance practices play a crucial role in influencing the relationship between predictors and project performance.

4.8.4 Model Summary

The table 4.32 presents the results of the regression analysis comparing models without and with the moderating variable, Corporate Governance Practices, on the relationship between independent variables (Leadership Styles, Availability of Resources, Technology Adoption, and Communication) and the dependent variable, Performance of Road Projects.

Table 4. 32

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Without the Moderating Variable	0.839[a]	0.704	0.698	0.25329
With the Moderating Variable	0.843a	0.711	0.703	0.25113

a. Predictors: (Constant), Leadership Styles, Availability of Resources, Technology Adoption, Communication

a1. Predictors: (Constant), Corporate Governance Practices, Leadership Styles, Availability of Resources, Technology Adoption, Communication

The model summary indicates that the model including the moderating variable slightly improves the predictive ability compared to the model without it. When the moderating variable is included, the R-squared value shifts from 0.0704 to 0.711, indicating that the independent factors plus the moderating variable together account for around 71.1% of the

variation in the dependent variable. The adjusted R-squared also shows a slight improvement from 0.698 to .703 with the inclusion of the moderating variable. These results imply that introducing the moderating variable has a modest effect on the regression model, indicating that Corporate Governance Practices may indeed play a role in moderating the relationship between the independent variables and the performance of road projects. Further analyses such as examining the significance of interaction terms using ANOVA can provide deeper insights into the specific effects of Corporate Governance Practices on the regressed variables.

4.8.5 Analysis of Variance (ANOVA)

The table 4.33 presents the findings of the analysis of variances comparing models without and with the moderating variable, Corporate Governance Practices, on the relationship between independent variables and dependent variable under the study.

Table 4. 33

Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
Without the Moderating Variable	Regression	28.104	4	7.026	109.520	.000[b]
	Residual	11.804	184	.064		
	Total	39.909	188			
With the Moderating Variable	Regression	28.367	5	5.673	89.959	.000[b]
	Residual	11.541	183	.063		
	Total	39.909	188			

a. Dependent Variable: The Performance of Road Projects

b. Predictors: (Constant), Leadership Styles, Availability of Resources, Technology Adoption, Communication

a1. Dependent Variable: The Performance of Road Projects

b1. Predictors: (Constant), Leadership Styles, Availability of Resources, Technology Adoption, Communication, Corporate Governance Practices (Moderating Variable)

The ANOVA results indicate significant regression for both models, without and with the moderating variable (F (4, 184) = 109.520, p < .000; F(5, 183) = 89.959, p < 0.01, respectively), suggesting that the models explain a significant amount of variance in road project performance. However, it's noteworthy that the model with the moderating variable has a slightly lower regression sum of squares and mean square compared to the model without it, indicating a potential reduction in explanatory power. Nevertheless, both models exhibit high statistical significance. These findings suggest that the introduction of the moderating variable may influence the regressed variables.

4.9 Regression Analysis by Category of Respondents

This section presents the regression analysis by Category of Respondents. The categories were SIOs with KeRRA and SIOs with Contractors.

4.9.1 Model Summary

Table 4.34 presents the regression analysis model summary, illustrating the relationship between significant variables and road upgrade success across various respondent groups.

Table 4. 34

Model Summary

Category of Respondent	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
SIOs with KeRRA	1	.857[a]	.735	.719	.22898	1.216
SIOs with Contractors	2	.811[c]	.657	.639	.25662	.917

a. Predictors: (Constant), Leadership Styles, Corporate Governance Practices, Availability of Resources, Communication, Technology Adoption

b. Dependent Variable: The Performance of Road Projects
c. Predictors: (Constant), Leadership Styles, Corporate Governance Practices, Availability of Resources, Technology Adoption, Communication

Model 1: SIOs with KeRRA

Based on the predictor factors of leadership styles, resource availability, communication, technology adoption, and corporate governance practices, this model seeks to forecast the success of road projects. With an R-squared of 0.735, the model's predictor variables can explain approximately 73.5% of the variability in the dependent variable. The Adjusted R-squared of 0.719 suggests that this model seems to account for the number of predictors.

The statistically significant predictors (based on the 0.05 significance level) are not explicitly mentioned in the information provided. However, a t-test or p-values associated with each predictor would be necessary to ascertain their significance. The Durbin-Watson statistic of 1.216 indicates the presence of positive autocorrelation to some extent.

Model 2: SIOs with Contractors

Similar to the first model, this analysis also intends to predict the performance of road projects using the predictor variables: Leadership Styles, Availability of Resources, Technology Adoption, Communication, and Corporate Governance Practices. The predictor variables in this model account for around 65.7% of the variation in the dependent variable, according to the R-squared value of 0.657. According to the Adjusted R-squared of 0.639, this model is likewise deemed to be fairly fitted.

As with the first model, the information provided doesn't explicitly indicate the statistically significant predictors. This requires further examination of t-tests or p-values associated with

each predictor. The Durbin-Watson statistic of 0.917 suggests the presence of some autocorrelation, though less than in the first model.

Comparing the two models, Model 1 (SIOs with KeRRA) appears to have a slightly higher R-squared value (0.735) compared to Model 2 (SIOs with Contractors) with an R-squared value of 0.657. This suggests that Model 1 might be explaining more variance in the dependent variable. However, a more detailed comparison of the predictor coefficients, their significance, and other diagnostic measures like p-values and confidence intervals would be necessary to draw definitive conclusions about the differences in these models' predictive capabilities.

4.9.2 Analysis of Variance (ANOVA)

Table 4. 35

ANOVA of SIOs with KeRRA and SIOs with Contractors Separately

Category of Respondents		Model	Sum of Squares	df	Mean Square	F	Sig.
SIOs with KeRRA	1	Regression	12.215	5	2.443	46.595	.000[b]
		Residual	4.404	84	.052		
		Total	16.620	89			
SIOs with Contractors	1	Regression	11.745	5	2.349	35.670	.000[c]
		Residual	6.124	93	.066		
		Total	17.870	98			

a. Dependent variable: the performance of road projects
b. Predictors: (constant), leadership styles, availability of resources, communication, technology
c. Adoption, corporate governance practices,
d. Predictors: (constant), leadership styles, availability of resources, technology adoption, communication, corporate governance practices

The result provided in table 4.35 shows the outcomes of two distinct regression studies that were conducted using Analysis of Variance (ANOVA) to evaluate the correlation between various predictors and the dependent variable, "The Performance of Road Projects." The predictors in question include "Leadership Styles," "Corporate Governance Practices," "Availability of Resources," "Communication," and "Technology Adoption." Important data for assessing the importance of the relationships between the predictors and the dependent variable are provided by the ANOVA table 4.35.

For the analysis involving SIOs with KeRRA (Kelantan Regional Development Authority), the ANOVA results indicate a statistically significant relationship between the combined set of predictors and the performance of road projects. The F-statistic of 46.595 is much greater than the critical F-value, and the associated p-value of < 0.001.000 is well below the 0.05 significance level. This shows that the success of road projects for SIOs using KeRRA is significantly impacted by the predictor factors taken together.

In the instance of SIOs with Contractors, the results of the ANOVA likewise demonstrate a statistically significant link between the performance of road projects and the total set of factors. The significance threshold of 0.05 is considerably exceeded by the p-value of < 0.001. while the F-statistic of 35.670 is significantly greater than the crucial F-value. This implies that the predictor factors as a whole have a major impact on how well road projects work out for SIOs and Contractors.

Comparing the results of the two sets of analyses, it's apparent that both scenarios show statistically significant associations between the predictor variables (Leadership Styles, Corporate Governance Practices, Availability of Resources, Communication, Technology

Adoption) and the performance of road projects. The high F-statistics and low p-values in both cases indicate strong evidence of the predictors' influence on project performance.

The results from the ANOVA analyses provide robust evidence that the combined predictor variables have a statistically significant impact on the performance of road projects, regardless of whether the organizations are SIOs with KeRRA or SIOs with Contractors. The similarity in the outcomes across these two organizational contexts highlights the consistent influence of the chosen predictors on project performance. The associations are strong enough to reject the null hypothesis and support the assertion that these predictors collectively contribute to determining the performance of road projects.

4.9.3 Regression Coefficients

The table 4.36 supplied displays the findings of a regression study that examines the link between several independent factors (technological adoption, communication, leadership styles, and availability of resources) and their influence on the dependent variable (road project success). Additionally, the table examines how the moderating variable (corporate governance practices) influences this relationship. The data has been categorized based on whether Strategy Implementation Officers (SIOs) are working with KeRRA or Contractors.

Table 4. 36

Regression Coefficients

			Unstandardized Coefficients		Standardized Coefficients		
	Model		B	Std. Err	Beta	t	Sig.
SIOs with KeRRA	1	(Constant)	.297	.253		1.172	.244
		Leadership Styles	.144	.072	.149	2.004	.048
		Technology Adoption	.057	.079	.061	.718	.474
		Availability of Resources	.133	.074	.139	1.792	.077

		Communication	.011	.068	.014	.169	.866
		Corporate Governance Practices	.566	.067	.651	8.473	.000
SIOs with Contractors	1	(Constant)	1.327	.178		7.449	.000
		Leadership Styles	.093	.060	.155	1.564	.121
		Technology Adoption	.027	.081	.039	.335	.738
		Availability of Resources	.092	.085	.128	1.080	.283
		Communication	.097	.089	.161	1.088	.279
		Corporate Governance Practices	.304	.083	.414	3.664	.000

In the context of road projects, the results indicate several significant findings. For SIOs working with KeRRA, the coefficients suggest leadership styles have a positive impact on project performance ($\beta = 0.149$, $p = 0.048$). This implies that well-defined leadership styles can contribute to improved project outcomes. Moreover, the t-value was greater than 1.96, thus showing that the relationship was statistically significant. However, the impact of other variables such as technology adoption, availability of resources, and communication appears to be less pronounced, as their coefficients are relatively smaller and statistically insignificant.

The most significant factor influencing project performance for SIOs with KeRRA is corporate governance practices ($\beta = 0.651$, $p = 0.000$). This substantial coefficient shows that the corporate governance practices adopted significantly affects road project outcomes. This implies that effective corporate governance practices can greatly enhance project success, by influencing the behavior of other predictors in this study. This aligns with studies by Bello et al. (2019), which underscore the role of governance in improving project outcomes.

For SIOs working with Contractors, a slightly different picture emerges. In this case, the results show that none of the independent variables, including leadership styles, technology adoption, availability of resources, and communication, have statistically significant effects on project performance. Nonetheless, the relationship between these factors and project

success is significantly moderated by corporate governance standards ($\beta = 0.414$, $p = 0.000$). This suggests that even in the context of contractors, corporate governance practices remain a critical factor in achieving successful road projects.

This analysis underscores the significant influence of corporate governance practices on road project performance, regardless of whether SIOs are working with KeRRA or Contractors. While leadership styles play a positive role in projects involving KeRRA, their impact is relatively muted in the case of Contractors. This emphasizes the importance of effective leadership in driving successful road project outcomes, irrespective of the specific circumstances or stakeholders involved. Other variables, such as Technology Adoption, Availability of Resources, and Communication, seem to have limited direct impact in comparison to the powerful role of leadership style.

4.10 Moderating influence of Corporate Governance on Strategy Implementation and Performance of Road Projects

The following table 4.37 presents the model summary for a study investigating the moderating effect of corporate governance on strategy implementation and the performance of road projects. It includes various regression models designed to assess different factors affecting project performance.

Table 4. 37

Model Summary for Moderating influence of Corporate Governance on Strategy Implementation and Performance of Road Projects

Model	R	R Square	Adjusted R Square	Std. Err. of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.782[a]	.612	.603	.28935	.612	72.479	4	184	.000
2	.892[b]	.795	.789	.21087	.183	163.452	1	183	.000
3	.895[c]	.802	.792	.20956	.007	1.574	4	179	.183

a. Predictors: (Constant), X4, X1, X3, X2

b. Predictors: (Constant), X4, X1, X3, X2, X5

c. Predictors: (Constant), X4, X1, X3, X2, X5, M1, M3, M4, M2

Model 1 demonstrates a strong positive relationship between the independent variables (leadership styles, technology adoption, resource availability, and communication) and road project success, evidenced by a R value of 0.782 and a R squared value of 0.612. This suggests that around 61.2% of the volatility in road project success may be attributed to these tactics. The F-statistic (72.479) and the associated p-value (< 0.001) indicate that the model is statistically significant, implying that strategy implementation significantly affects the performance of road projects.

Model 2 incorporates corporate governance as a moderating variable, leading to an increase in the R value to 0.892 and an R squared of 0.795. This shows that including corporate governance as a moderating factor improves the model's explanatory power, accounting for about 79.5% of the variance in performance. The F-statistic increases substantially to 163.452, maintaining a strong statistical significance ($p < .001$).

This result indicates that corporate governance practices effectively enhance the relationship between strategy implementation and road project performance, suggesting that attention to governance is crucial for optimizing project outcomes.

In Model 3, the introduction of interaction terms between the independent variables and the moderating variable presents a minor increase in R squared to 0.802. However, the F change statistic (1.574) with a p-value of 0.183 signifies that the interaction terms do not contribute significantly to explaining the performance of road projects. This could imply that while corporate governance overall improves strategy implementation effectiveness, the specific interactions may not be as critical for explaining variance in performance further than what is already captured by the strategies established in Models 1 and 2.

Overall, these findings underscore the critical role of corporate governance as a moderator in enhancing strategy implementation for road projects. Effective governance structures should be seen as integral to the successful execution of strategies aimed at improving project outcomes. However, the limited impact of interaction terms in Model 3 points to the need for further exploration into how specific dimensions of corporate governance interact with various strategy aspects, potentially suggesting areas for future research.

Table 4.38 presents the Analysis of Variance (ANOVA) findings for three regression models evaluating the influence of many variables, including corporate governance, on road project success. The ANOVA table assesses the extent to which the independent factors account for the variation in the dependent variable being examined.

Table 4. 38

ANOVA Table Summary for Strategy Implementation and Performance of Road Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.273	4	6.068	72.479	.000[b]
	Residual	15.405	184	.084		
	Total	39.678	188			
2	Regression	31.541	5	6.308	141.866	.000[c]
	Residual	8.137	183	.044		
	Total	39.678	188			
3	Regression	31.818	9	3.535	80.503	.000[d]
	Residual	7.861	179	.044		
	Total	39.678	188			

a. Dependent Variable: Y

b. Predictors: (Constant), X4, X1, X3, X2

c. Predictors: (Constant), X4, X1, X3, X2, X5

d. Predictors: (Constant), X4, X1, X3, X2, X5, M1, M3, M4, M2

Model 1 reveals a significant positive relationship between the independent variables (leadership styles, technology adoption, availability of resources, and communication) and road project performance, with an R value of 0.782 and an R squared value of 0.612. The results indicate that about 61.2% of the variance in road project performance may be ascribed to the techniques employed. The model demonstrates statistical significance, evidenced by an F-statistic of 72.479 and a p-value below 0.001. This research substantiates the notion that the execution of these methods is pivotal in affecting the success of road projects.

Model 2 incorporates corporate governance as a moderating variable, leading to an increase in the R value to 0.892 and an R squared of 0.795. This shows that including corporate governance as a moderating factor improves the model's explanatory power, accounting for about 79.5% of the variance in performance. The F-statistic increases substantially to 163.452,

maintaining a strong statistical significance ($p < 0.001$). This result indicates that corporate governance practices effectively enhance the relationship between strategy implementation and road project performance, suggesting that attention to governance is crucial for optimizing project outcomes.

In Model 3, the introduction of interaction terms between the independent variables and the moderating variable presents a minor increase in R squared to 0.802. However, the F change statistic (1.574) with a p-value of 0.183 signifies that the interaction terms do not contribute significantly to explaining the performance of road projects. This could imply that while corporate governance overall improves strategy implementation effectiveness, the specific interactions may not be as critical for explaining variance in performance further than what is already captured by the strategies established in Models 1 and 2.

The findings underscore the critical role of corporate governance as a moderator in enhancing strategy implementation for road projects. Effective governance structures should be seen as integral to the successful execution of strategies aimed at improving project outcomes. However, the limited impact of interaction terms in Model 3 points to the need for further exploration into how specific dimensions of corporate governance interact with various strategy aspects, potentially suggesting areas for future research.

The following table 4.39 presents the coefficients from the regression analysis examining the influence of various independent variables on the performance of road projects, with the inclusion of corporate governance as a moderating factor. The results of this analysis help identify the impacts and significance of each variable involved.

Table 4. 39

Coefficients of the Regression Analysis for Strategy Implementation and Road Projects Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.983	.156		6.295	.000
	X1	-.042	.056	-.056	-.757	.450
	X2	.163	.073	.202	2.228	.027
	X3	.263	.071	.314	3.696	.000
	X4	.320	.058	.390	5.547	.000
2	(Constant)	.362	.124		2.922	.004
	X1	.033	.041	.044	.812	.418
	X2	-.010	.055	-.012	-.176	.861
	X3	.080	.054	.095	1.480	.141
	X4	.149	.044	.181	3.361	.001
	X5	.638	.050	.666	12.785	.000
3	(Constant)	.968	.487		1.985	.049
	X1	-.164	.157	-.219	-1.044	.298
	X2	.211	.320	.263	.661	.509
	X3	.236	.373	.281	.632	.528
	X4	.101	.213	.123	.473	.636
	X5	.158	.216	.165	.734	.464
	M1	-.059	.085	-.487	-.693	.489
	M2	-.041	.097	-.331	-.418	.676
	M3	.012	.055	.094	.214	.831
	M4	.138	.060	1.003	2.287	.023

a. Dependent Variable: Y

Test of Hypothesis 5

$H0_5$: Corporate governance practices have no statistically significant moderating effect on the influence of strategy implementation on the performance of road projects by Kenya Rural Roads Authority.

Examining Model 1, it is evident that the independent variable X2 (Technology Adoption), X3 (Availability of Resources), and X4 (Communication) show statistically significant positive relationships with project performance. The coefficients for these variables are positive, and their p-values are less than 0.05, indicating that increases in these factors are

associated with improvements in road project performance. Notably, X3 shows the most substantial impact ($\beta = 0.314$, $p < 0.001$), emphasizing its critical role in successful project execution. Conversely, X1 (Leadership Styles) displayed a negative coefficient ($\beta = -0.056$, $p = 0.450$), indicating no significant influence on performance.

In Model 2, the introduction of X5 (Corporate Governance Practices) reveals a very high positive coefficient ($\beta = 0.666$, $p < 0.001$), which suggests that governance practices significantly enhance the relationship between strategy implementation and project performance. While the importance of X4 remains consistent, with a p-value of < 0.001, the earlier influences of X1 and X2 are diminished; neither shows statistical significance in this model. These results reveal a significant moderation of corporate governance and communication (M4) with a p-value of 0.023. This implies that all aspects of governance should always be effectively communicated to all stakeholders in a simple understandable way. If governance decisions are communicated well and timely, performance improves.

Model 3 includes various interaction terms (M1, M2, M3, M4) alongside main effects. Here, the significance of X5 remains strong; however, none of the other main effects or interaction terms achieves significance. Particularly, interaction term M4 ($\beta = 0.138$, $p = 0.023$) indicates a significant effect, suggesting that there is a meaningful interaction between one of the moderating variables and strategy implementation.

Hypothesis Testing on Corporate Governance

The Null Hypothesis 5 (H_05): Corporate governance practices have no statistically significant moderating effect on the influence of strategy implementation on the performance of road projects by the Kenya Rural Roads Authority) is rejected. While X5 displayed substantial significance in contributing to project performance in both Model 2 and as part of the interaction analysis in Model 3, corporate governance practices moderate communication. Since corporate Governance significantly moderates communication which is a variable under Strategy Implementation, then it is concluded that Corporate Governance has an effect on the relationship between Strategy Implementation and Performance of Road Projects. The H_05 is rejected.

In conclusion, the results affirm the necessity of adopting effective corporate governance frameworks as a means to enhance the successful execution of road projects. Stakeholders should prioritize not only the development of strategic initiatives but also ensure that robust governance practices are in place to elevate project performance.

4.9.1 Discussions on Moderation effect of Corporate Governance, Strategy Implementation and Performance of Road Projects

The findings from this study elaborate on the relationship between corporate governance, strategy implementation, and the performance of road projects. The results align partially with existing literature while also revealing discrepancies that warrant further exploration. For instance, the results indicate a significant moderating effect of corporate governance practices on the relationship between strategy implementation and project performance, echoing similar sentiments found in the studies conducted by Muriuki et al. (2021) and Akwaa-Mensah et al. (2019). Both studies underscore the critical role good governance practices such as accountability, transparency, and stakeholder engagement play in enhancing project performance within the road infrastructure sector. This convergence supports the notion that robust corporate governance creates an environment conducive to effective strategy execution, thereby improving overall project outcomes.

Similarly, Babajide and Ogundana (2021) highlight significant gaps and weaknesses in corporate governance practices within Nigerian road agencies but assert that these governance shortcomings can negatively impact project outcomes. The current study resonates with this perspective, suggesting that while certain governance practices within the Kenya Rural Roads Authority can enhance performance, there remain areas where improvements are necessary for optimal effectiveness. This implies that governance challenges are not unique to Nigeria, demonstrating a broader trend across sub-Saharan African countries where infrastructure projects are impacted by governance inefficiencies.

Conversely, discrepancies arise when comparing the findings with those of Mbwana and Kibona (2019), who found that attributes like board size and CEO duality did not significantly relate to project performance in Tanzania. This might indicate a contextual difference, as the current study suggests that corporate governance dimensions such as stakeholder engagement and risk management do play significant roles in shaping project success in Kenya. The divergence in findings can stem from the cultural and institutional differences between countries, indicating that the effectiveness of corporate governance mechanisms may vary based on local governance frameworks and the specific challenges faced by each sector.

The findings from the present study also align with Akwaa-Mensah et al. (2019), which emphasized the correlation between higher degrees of transparency and accountability with improved project performance outcomes. While the Akwaa-Mensah et al. study flagged fairness as a dimension of corporate governance lacking a significant relationship with project success, the current research did not find substantial evidence to refute the positive relationship of transparency and stakeholder engagement as critical moderators in Kenya's road projects. This succinctly illustrates the importance of tailoring corporate governance indicators to the specific contexts in which they are evaluated and highlights the ongoing need for further research into the qualitative aspects of governance that influence project performance.

While the current study reinforces existing literature by asserting the significant moderating role of corporate governance in relation to strategy implementation and performance, it also brings to light the complexity of this relationship as influenced by local contexts. The importance of accountability, transparency, and stakeholder engagement remains evident, yet the varying dynamics across different settings urge practitioners and policymakers to consider

country-specific governance structures when designing strategies to enhance road project performance. This discussion underscores the necessity for localized governance frameworks that not only improve accountability and stakeholder participation but also address the unique challenges faced by infrastructure agencies, ensuring that the correlation between governance and project outcomes is optimally leveraged.

4.11 Qualitative Data Analysis

Part of this study conducted a survey of how CEOs and middle level managers feel about various variables in this study. Content analysis was carried out on interviews held and a summary of the main issues is given in the following:

In response, to questions relating to the steps KeRRA takes to ensure the efficacy of corporate governance practices, the Director General gave the following responses.

Response on Board Independence: (How does KeRRA ensure that its Board is independent?)

> *KeRRA takes several crucial steps to ensure the independence of its Board. First and foremost, the nomination and appointment process for Board members is transparent and free from undue influence. Candidates are selected based on their qualifications and expertise, rather than personal or political affiliations. Additionally, the Board members are not employed by KeRRA or have any direct financial interests that could compromise their impartiality. Regular performance evaluations of Board members are conducted to ensure that they are fulfilling their roles independently and in the best interest of the organization.*

The findings show that according to the director, KeRRA's rigorous measures to ensure the independence of its Board have significant implications for the organization's governance and decision-making processes. By maintaining a transparent nomination and appointment process, free from external influences, and by selecting Board members based on expertise rather than affiliations, KeRRA fosters a culture of unbiased and informed decision-making. The absence of financial interests among Board members minimizes conflicts of interest and enhances their ability to act in the organization's best interest. Regular performance evaluations further reinforce the commitment to independence and accountability, ultimately contributing to effective oversight and strategic direction for the road projects.

Response on Board Accountability: (How does KeRRA ensure that its Board is accountable to its stakeholders and the public? (Board Accountability)

> *KeRRA places a strong emphasis on ensuring that its Board remains accountable to stakeholders and the public. Regular communication channels are established to provide updates on the organization's projects, financial performance, and strategic initiatives. The Board holds open and transparent meetings where stakeholders and the public can attend, ask questions, and voice concerns. Furthermore, KeRRA publishes comprehensive reports that outline the Board's decisions, the rationale behind them, and their impact on the organization's goals. This commitment to transparency ensures that the Board's actions are aligned with the expectations of stakeholders and the public.*

Response on Board Size: (What factors influenced KeRRA's decision on its Board size, and how has it affected the organization's performance?)

The decision on KeRRA's Board size was influenced by a careful consideration of the organization's complexity, the need for diverse expertise, and the efficiency of decision-making. A balanced number of Board members were selected to ensure representation from different relevant fields, such as engineering, finance, and public administration.

This diversity allows for well-rounded discussions and informed decisions. The optimal Board size has facilitated quicker decision-making, as it strikes a balance between incorporating various perspectives while maintaining operational efficiency.

This implies that KeRRA's thoughtful consideration of Board size reflects its dedication to effective governance and decision-making. By selecting a balanced number of Board members with diverse expertise, KeRRA ensures that critical discussions encompass a wide range of perspectives. This approach promotes well-rounded decisions and innovative problem-solving. The optimal Board size's positive impact on decision-making efficiency translates to quicker responses to challenges and opportunities. Through this balance between representation and efficiency, KeRRA enhances its ability to steer road projects toward successful outcomes.

Response on CEO Duality: What is your opinion on the use of CEO duality in an organization, and how does KeRRA ensure the independence of its CEO?).

The question of CEO duality is an important one, and at KeRRA, we recognize the value of having an independent CEO. The separation of the CEO and Board Chair roles helps prevent conflicts of interest and ensures a system of checks and balances. KeRRA maintains a clear distinction between the CEO and Board Chair

responsibilities to prevent concentration of power and decision-making authority. The CEO's performance is evaluated objectively by the Board, and the selection process for the CEO role is based on merit, experience, and leadership qualities that align with the organization's goals.

KeRRA's stance on CEO duality underscores its commitment to organizational integrity and balanced leadership. The separation of the CEO and Board Chair roles strengthens checks and balances within the organization, mitigating the risks associated with concentrated power. This separation minimizes conflicts of interest and promotes an environment where decisions are made with the organization's best interest in mind. The clear evaluation process for the CEO's performance and the merit-based selection criteria ensure that leadership remains focused on achieving the organization's goals while upholding its independence and ethical standards.

Response on Audit Committee Independence: (What measures does KeRRA have in place to ensure the independence of its Audit Committee?)

KeRRA places a high priority on maintaining the independence of its Audit Committee. The members of the Audit Committee are selected based on their expertise in finance, accounting, and auditing, and they are not involved in the day-to-day operations of the organization. This separation ensures that the Committee can critically review financial reports, internal controls, and risk management practices without any bias. The Audit Committee also has a direct line of communication with external auditors, which further enhances its ability to provide an unbiased assessment of KeRRA's financial health and compliance with regulations.

KeRRA's prioritization of Audit Committee independence is crucial for maintaining financial transparency and accountability. By selecting members with relevant expertise and excluding involvement in day-to-day operations, KeRRA ensures that financial oversight remains unbiased and thorough. The Committee's direct line of communication with external auditors enhances its ability to provide accurate and impartial assessments of the organization's financial health and regulatory compliance. This commitment to independent financial oversight boosts KeRRA's credibility and builds trust among stakeholders, promoting confidence in the organization's performance and project execution.

Table 4. 40

Hypothesis Testing Decision Making

S. No.	Null hypothesis	P-Value	Decision
H_{01}	Leadership styles have no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.	0.000<0.05	Null hypothesis was rejected
H_{02}	Technology adoption has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.	0.122>0.05	Null hypothesis was upheld
H_{03}	Availability of resources has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.	0.003<0.05	Null hypothesis was rejected
H_{04}	Communication has no statistically significant influence on the performance of road projects by Kenya Rural Roads Authority.	0.598>0.05	Null hypothesis was upheld

H_{05}	Corporate governance practices have no statistically significant moderating effect on the influence of strategy implementation on the performance of road projects by Kenya Rural Roads Authority.	0.043<0.05	Null hypothesis was rejected

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section discusses the summary of the research findings, conclusions and recommendations. The study's goal was to evaluate how the Kenya Rural Roads Authority's strategy execution affected the way its road projects performed. This chapter includes a thorough analysis of the study results, a summary that concludes recommendations for next steps, and possible directions for further research.

5.2 Summary of the Findings

5.2.1 Leadership Styles on the Performance of Road Projects

The findings from the study suggest that respondents hold a generally positive view of leadership styles at KeRRA (Kenya Roads Board), reflecting moderate to high levels of agreement with the various statements evaluated. The results of this research show that, according to a number of leadership statements that gauge different facets of their leadership styles, the project managers at the Kenya Rural Roads Authority demonstrate moderate to high levels of agreement. The study found a correlation between the timely completion of road building projects in Kenya and a number of leadership attributes. Notably, project managers showed a moderate to high level of agreement in areas such as agreeableness, visionary leadership, developmental leadership, contingent reward, compliance, trustworthiness, inspirational leadership, feedback, recognition, flexibility, sociability, meaning-making, intellectual stimulation, individualized consideration, and motivational leadership. These

findings suggest that these leadership qualities can contribute positively to project outcomes, with some variations in responses and some tendencies for left-skewed and leptokurtic distributions. However, the study also found that high scores in laissez-faire and resistance to change aspects may have potential negative implications for project completion, while directive leadership, although having a moderate level of agreement, can positively impact project outcomes. The study found that leadership styles significantly influence road project performance. The bivariate regression analysis between leadership styles and project performance yielded a positive and statistically significant relationship ($\beta = 0.512$, $p = 0.000$)

5.2.2 Influence of Technology Adoption on the Performance of Road Projects

The analysis of respondents' perceptions regarding various aspects of technological readiness and adoption within KeRRA (Kenya Roads and Rehabilitation Agency) and its contractors reveals several noteworthy findings. The study indicates a generally positive view toward the organization's technological preparedness and integration. Respondents' ratings suggest moderate agreement on multiple fronts, including KeRRA's technological readiness, adequacy of technological infrastructure, alignment of technology strategy with business objectives, investment in technology, alignment between business and IT strategy, integration of technological advancements, adaptability to changes in technology, possession of skills and expertise for technology utilization, and understanding of technology benefits. These results collectively reflect a perception that KeRRA and its contractors have made strides in incorporating technology to support and enhance road project execution. While respondents generally acknowledge positive efforts in technology integration, the presence of some variability indicates areas for potential improvement. The relationship between technology adoption and road project performance was examined, and the bivariate regression results

indicated a moderate positive relationship (β = 0.376, p = 0.004). This suggests that technology adoption contributes to improved project performance.

5.2.3 Influence of Resources Availability on the Performance of Road Projects

The findings from the study's analysis, as presented in Table 4.6, reveal various insights. Respondents generally rate the adequacy of the project budget, availability of raw materials, sufficiency of human resources, efficiency of the supply chain, and effective utilization of project resources with mean ratings ranging from 3.672 to 3.7937, indicating a mixed perception. While most respondents tend to find these aspects acceptable, there are indications of dissent among some individuals who strongly disagree. Resource availability was found to have a strong and positive impact on road project performance, as evidenced by the bivariate regression results (β = 0.602, p = 0.000). This suggests that better project outcomes may result from increased resource availability.

5.2.4 Influence of Communication on the Performance of Road Projects

The study assessed the respondents' perceptions of various aspects of KeRRA's practices and interactions with contractors. The statement "KeRRA involves all stakeholders in project planning" garnered a moderately positive rating, indicating a generally favorable attitude towards involving stakeholders. Similar sentiments were observed for statements such as "Project progress is regularly communicated" and "Feedback mechanisms are easily accessible," which displayed slightly positive perceptions regarding communication and feedback. Respondents generally agreed that KeRRA promptly addresses issues, suggesting positive views of its responsiveness. Similarly, there was moderate agreement regarding "Information on road projects is readily available" and "Contractors involve KeRRA in project

planning." Respondents also moderately agreed that contractors provide regular progress updates and respond promptly to issues. The perception that "KeRRA provides adequate information to contractors" and "KeRRA and contractors work collaboratively" was slightly positive. Furthermore, a significant positive correlation was found between "Communication" and "Performance of Road Projects" (coefficient = 0.758, $p < 0.05$), suggesting that better communication is associated with better road project performance. Furthermore, resource availability was found to have a strong and positive impact on road project performance, as evidenced by the bivariate regression results ($\beta = 0.602$, $p = 0.000$). This indicates that the more resources—financial, human, and material—are available for a project, the more likely it is to be completed on time, within budget, and to the required standards.

5.3 Conclusions

The study concluded that these leadership qualities are positively correlated with the successful and timely completion of road construction projects. However, it also highlighted concerns, particularly with high levels of laissez-faire leadership and resistance to change, which could negatively impact project timelines. Additionally, while directive leadership showed moderate agreement, it was still linked to favorable project outcomes. Overall, these findings provide valuable insights into the leadership dynamics within KeRRA and their implications for the success of road projects.

The assessment of perceptions regarding technological readiness and adoption within KeRRA and its contractors highlights an overall positive view of the organization's technological preparedness and integration. Respondents generally show moderate agreement across various aspects, indicating strides in incorporating technology to enhance road project

execution. While acknowledging positive efforts, some variability suggests room for improvement. Notably, the statistical analysis demonstrates that technology adoption lacks a statistically significant influence on road project performance in this context, implying that other factors may have a more substantial role in determining project outcomes.

The analysis of the study's findings suggests that respondents hold a mixed perception regarding aspects such as project budget adequacy, raw material availability, sufficiency of human resources, supply chain efficiency, and resource utilization. While most respondents view these aspects as acceptable, dissenting opinions exist among some individuals who strongly disagree. Furthermore, the analysis demonstrates a considerable positive link between the availability of resources and the performance of road projects. This correlation is supported by regression analysis, showing a p-value below the significance threshold and a Beta coefficient confirming the positive and statistically significant impact of resource availability on project performance. This implies that increasing available resources could potentially result in improved project outcomes.

The study explores perceptions of KeRRA's practices and contractor interactions, revealing a moderately positive attitude towards stakeholder involvement and project communication. Respondents agree that KeRRA promptly addresses issues, but the statistical analysis suggests that while communication is associated with better road project performance, it lacks significant influence. The correlation between communication and performance is substantial, yet the p-value and low Beta coefficient indicate that this relationship is not statistically significant within this context. Therefore, the study concludes that while communication is linked to improved performance, its direct impact is not significant in shaping road project outcomes.

5.4 Recommendations

The study recommends that KeRRA should prioritize the cultivation of essential leadership traits that facilitate the timely completion of projects. This includes a focus on characteristics such as agreeableness, visionary leadership, and developmental leadership among project managers. By integrating these qualities into leadership development programs, KeRRA can significantly improve project success rates.

The study recommends that KeRRA should address identified leadership challenges by instituting targeted training initiatives and support frameworks. These programs should specifically aim to counteract tendencies toward laissez-faire leadership and resistance to change, as both can adversely affect project momentum. Additionally, increasing attention to directive leadership, which has shown a beneficial influence on project outcomes, is advisable.

The study recommends that KeRRA should adopt a holistic approach to project management that encompasses critical components such as governance practices, technology utilization, resource allocation, and effective communication. By creating an integrated strategy that considers these interrelated factors, KeRRA can enhance the overall efficacy of its project management efforts. It is also crucial to explore and address other unexamined variables that may impact project outcomes.

The study recommends that KeRRA should persist in its efforts to integrate advanced technology into its operations. While the findings indicate that technology might not statistically correlate directly with project performance, maintaining a high standard of technological preparedness is essential for long-term efficiency and competitive advantage.

Continuous investment in innovative technologies can streamline processes and foster operational excellence.

The study recommends that KeRRA should focus on optimizing resource allocation to improve project outcomes. This includes prioritizing budget management, ensuring the availability of raw materials, enhancing human resource deployment, and improving supply chain efficiencies. Recognizing the significant positive relationship between resource availability and project performance, KeRRA should implement strategies to bolster resource access.

The study recommends that KeRRA should commit to enhancing stakeholder engagement and communication practices. Although the findings suggest that communication may not always have a statistically significant impact on project outcomes, strong communication is critical for fostering stakeholder trust and satisfaction. Effective engagement strategies can lead to a more favorable perception of the organization.

The study recommends that the Board of Directors and Leadership Team at KeRRA should prioritize improvements in the governance framework. This involves refining board composition and size, as well as maintaining a clear separation between the roles of the CEO and the board to ensure accountability. Strengthening the independence and functionality of the audit committee is also recommended to bolster governance practices. Furthermore, acknowledging the importance of leadership styles within governance is crucial, as they significantly influence project performance.

5.5 Contribution of the Study

This research offers valuable contributions to both theoretical and practical areas, especially within the disciplines of strategic management, corporate governance, and public infrastructure development. The findings provide valuable insights that enhance the understanding of how strategy implementation and governance practices influence the performance of road projects under the KeRRA. These contributions are supported by the robust data analysis conducted in the study, including bivariate regression, which highlights the importance of key variables such as leadership styles, technology adoption, resource availability, and communication practices.

5.4.1 Theoretical Contribution

From a theoretical perspective, the study extends the application of the Resource-Based Theory (RBT), Agency Theory, Technology Acceptance Model (TAM), and Communication Theory within the context of public sector infrastructure projects. The bivariate regression analysis revealed that resource availability ($\beta = 0.602$, $p = 0.000$) and leadership styles ($\beta = 0.512$, $p = 0.000$) have the strongest impact on road project performance, providing empirical support for RBT and highlighting the critical role of strategic leadership in public project management. This study also enriches the discourse on the moderating role of corporate governance, illustrating how governance structures can align the interests of stakeholders and project implementers to improve project outcomes, thus contributing to the Agency Theory.

Moreover, this study provides empirical evidence that enhances the Technology Acceptance Model (TAM) by demonstrating that although technology adoption ($\beta = 0.376$, $p = 0.004$) positively influences road project performance, its full potential remains underutilized in

developing countries like Kenya due to infrastructure and training limitations. The findings underscore the need for more nuanced applications of TAM in public sector projects, where contextual factors such as resource limitations and governance structures play a significant role.

5.4.2 Practical Contribution

On a practical level, the study provides actionable insights for improving the performance of road projects, particularly in the Kenyan public sector. The analysis revealed that effective leadership, adequate resource allocation, and strong communication practices are essential for project success. These findings can guide KeRRA and other infrastructure authorities in adopting more effective strategies for project management. For instance, the strong correlation between resource availability and project performance indicates that ensuring consistent funding, materials, and skilled labor will significantly reduce delays and cost overruns.

Additionally, the study's findings on communication practices ($\beta = 0.489$, $p = 0.000$) highlight the importance of establishing clear feedback loops and engaging stakeholders throughout the project lifecycle. This insight is crucial for both KeRRA and policymakers who are looking to improve the transparency and accountability of public infrastructure projects. Enhancing communication infrastructure and mechanisms can lead to better project coordination and stakeholder alignment, ultimately improving the quality and timeliness of road construction projects.

In summary, this study not only contributes to the theoretical understanding of the factors influencing road project performance but also offers practical recommendations for KeRRA and other public institutions involved in infrastructure development. By integrating the

findings into strategic planning and governance practices, these institutions can improve project efficiency, accountability, and stakeholder satisfaction, ensuring that public funds are used effectively and that infrastructure goals are met.

5.4.2 Suggestions for Further Studies

Grounded on the provided results, here are five suggestions for further study:

A study needs to be undertaken to explore leadership styles impact on road project performance. Given the strong correlation between leadership styles within the governance framework and road project performance, a more in-depth investigation into specific leadership styles and their effects on the performance of road projects could be conducted. This study could delve into how different leadership approaches contribute to successful road project execution and whether certain styles are more effective in different project contexts.

There is a need for a study on the factors influencing technology adoption in road projects. In the context of KeRRA, the performance of road projects was not statistically significantly influenced by the deployment of technology. More investigation might explore the causes for this finding. Investigating the barriers and challenges that hinder the translation of technological readiness into project performance could provide insights into how to better align technology adoption efforts with positive project outcomes.

There is need for a study on resource optimization for road project success. Building upon the significant positive correlation between resource availability and road project performance, a more comprehensive study could focus on strategies for optimizing resource allocation. This research could explore how KeRRA can effectively allocate and manage resources to enhance

project outcomes and mitigate the dissenting opinions regarding aspects such as budget adequacy and resource sufficiency.

Research on communication strategies and the effectiveness of road projects should be done. Research looking at the particular communication practices and tactics that provide better results might be done in order to gain a deeper understanding of the complex link between communication and road project performance. This could involve qualitative research to identify effective communication practices and explore the reasons behind the lack of statistical significance despite the observed correlation.

There is need for a study on synergistic factors impacting road project success. Given the acknowledgment that factors beyond corporate governance practices influence road project success, a comprehensive investigation into these synergistic factors could be valuable. This study could explore the interplay between governance practices, technological adoption, resource availability, communication, and other variables to uncover complex relationships and identify key drivers of successful road projects.

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APPENDICES

Appendix I: Research Questionnaire for Strategy Implementation Officers in Charge

Introduction

Hello and thank you for participating in this study on the relationship between strategy implementation and the performance of road projects in Kenya Rural Roads Authority (KeRRA). We appreciate your time and willingness to share your thoughts and experiences. Your information will be kept private and used solely for research purposes.

Part A: General Information

1. What is your gender?

   Male [ ] Female [ ]

2. What is your age?

   18 years to 27 years [ ]

   28 years to 37 years [ ]

   38 years to 47 years [ ]

   48 years or above [ ]

3. What is your highest attained level of educational qualification?

   Primary school level [ ]

   Secondary school level [ ]

   College level [ ]

   Undergraduate degree level [ ]

   Postgraduate Degree level [ ]

   Any other specify ……

4. How long have you been with your current organization?

   4-8 years [ ]

9-13 [ ]

14-18 [ ]

19 and above [ ]

5. Have you been involved in road development projects with KeRRA?

   Yes [ ]

   No [ ]

6. What is your position at your organization?

   Road Engineer[ ]

   CEO [ ]

Part B: Corporate Governance Practices

7. Using a Likert scale with a maximum of five points (1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, and 5 being strongly agree), please rate how much you agree or disagree with the following statements about KeRRA's corporate governance policies.

Statement	**5**	**4**	**3**	**2**	**1**
The size of the board of directors at KeRRA is appropriate for effective decision-making.					
The CEO of KeRRA holds a separate position from the board of directors, allowing for greater checks and balances.					
The audit committee at KeRRA operates independently and effectively in its oversight of financial reporting and controls.					
Corporate governance practices at KeRRA have a positive impact on the performance of road projects.					
Corporate governance practices at the contractor level have a positive impact on the performance of road projects.					
There is transparency in the decision-making processes at KeRRA.					
Employees at KeRRA and contractors are held accountable for their actions and decisions.					
There are adequate mechanisms in place to detect and prevent fraud and corruption in the management of road projects.					

Part C: Technology Adoption

8. 8. Using a Likert scale with a maximum of five points (1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, and 5 being strongly agree), please rate your degree of agreement with the following claims regarding the use of technology at KeRRA.

Statement	5	4	3	2	1
KeRRA and its contractors have the necessary technological readiness to execute road projects efficiently.					
The technological infrastructure in place within KeRRA and its contractors is adequate to support road project execution.					
The technology strategy employed by KeRRA and its contractors is well-defined and aligned with business objectives.					
KeRRA and its contractors make sufficient investments in technology to support road project execution.					
There is alignment between the business and IT strategy within KeRRA and its contractors.					
Technological advancements have been effectively integrated into road project execution by KeRRA and its contractors.					
KeRRA and its contractors are able to adapt quickly to changes in technology that affect road project execution.					
The use of technology has improved the efficiency and effectiveness of road project execution by KeRRA and its contractors.					
KeRRA and its contractors have the necessary skills and expertise to effectively utilize technology for road project execution.					
KeRRA and its contractors have a clear understanding of the benefits of technology adoption for road project execution.					

Part D: Availability of Resources

9. Using a Likert scale with a maximum of five points (1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, and 5 being strongly agree), please rate your degree of agreement with the following statements regarding the availability of resources at KeRRA.

Statement	5	4	3	2	1
The project budget is always adequate for the completion of work.					
The availability of raw materials is always sufficient.					
There are always enough human resources to complete the project.					
The supply chain is always efficient in delivering materials.					
The project resources are always effectively utilized.					
The lack of project budget has always affected project performance.					
Insufficient raw materials has always led to delays in completion.					
Inadequate human resources is always a key cause of project delays.					
Poor supply chain always affects project completion timelines.					
Inefficient utilization of resources always affects project outcome.					

Part E: Communication

10. 10. Using a Likert scale with a maximum of five points (1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, and 5 being strongly agree), please rate your degree of agreement with the following statements regarding communication at KeRRA

Statement	5	4	3	2	1
KeRRA involves all stakeholders in project planning					
Project progress is regularly communicated					
Feedback mechanisms are easily accessible					
Issues are resolved promptly by KeRRA					
Information on road projects is readily available					
Contractors involve KeRRA in project planning					
Contractors provide regular progress updates					

Contractors respond to issues in a timely manner					
KeRRA provides adequate information to contractors					
KeRRA and contractors work collaboratively					

Part F: Leadership Styles

11. 11. This quiz describes your leadership style. The twenty-one descriptive words in the following list. Assess the frequency with which each statement relates to you. Others might refer to your customers, group members, or supporters.

KEY

0 Definitely not 1 = Occasionally 2 = Occasionally 3 = Quite frequently 4 = Frequently, though not always

No.	Statement	0	1	2	3	4
1	I am a pleasant person to be around.					
2	I sum up what we could and ought to accomplish in a few straightforward lines.					
3	I help people come up with fresh solutions to long-standing issues.					
4	I assist others in growing.					
5	I advise others on what to do in order to receive compensation for their labor.					
6	When people adhere to the norms set out, I am satisfied.					
7	I'm happy to let people carry on doing things the same way they always have.					
8	Others have full confidence in me.					
9	I show enticing illustrations of what we can do.					
10	I provide folks fresh perspectives on perplexing issues.					
11	I express to others my opinion of their performance.					
12	When people accomplish their goals, I praise them.					
13	I don't attempt to modify anything as long as it's working.					
14	I'am okay with anything others want to do.					
15	People are pleased to associate with me.					
16	I support people in finding purpose in their job.					

17	I cause people to reconsider things they had never given much thought to before.					
18	I pay close attention to people who seem to have been ignored.					
19	I draw emphasis to the rewards that others might receive for their efforts.					
20	I inform people of the standards they must adhere to in order to do their duties.					
21	I don't expect anything more of others than what is absolutely necessary.					

Part G: The Performance of Road Projects

1. 1. On a scale of 1 to 5, with 1 denoting a strong disagreement and 5 denoting a strong agreement, please indicate how much you agree or disagree with the following statements

	5	**4**	**3**	**2**	**1**
Project completion within budgetary allocation					
Projects are often completed over budget.					
Budgetary constraints are taken into consideration in projects.					
There is adequate allocation of funds for project completion.					
The budgetary allocation is sufficient for project completion.					
Projects are completed within the allocated budget.					
Completion time					
Projects are often delayed.					
Completion time is well-managed.					
Project timelines are realistic.					
Projects are completed within the expected time frame.					
Delays in project completion are due to external factors.					
Quality of project as per provided standards					

The quality of road projects is substandard.					
The quality of the projects meets the provided standards.					
Quality control measures are well-implemented.					
The quality of the project is inspected and evaluated.					
There are mechanisms to ensure compliance with standards.					

Thank You!

Appendix II : Interview Schedule for Director General at KeRRA

Thank you for taking the time to meet with me today. The purpose of this interview is to examine the influence of strategy implementation on the performance of road projects by Kenya Rural Roads Authority (KeRRA). The following questions are designed to probe specific indicators that relate to corporate governance practices, technology adoption, availability of resources, communication, leadership styles, and the performance of road projects.

I. Corporate Governance Practices

1. What steps does KeRRA take to ensure the independence of its Board? (Board Independence)
2. How does KeRRA ensure that its Board is accountable to its stakeholders and the public? (Board Accountability)
3. What factors influenced KeRRA's decision on its Board size, and how has it affected the organization's performance? (Board Size)
4. What is your opinion on the use of CEO duality in an organization, and how does KeRRA ensure the independence of its CEO? (CEO Duality)
5. What measures does KeRRA have in place to ensure the independence of its Audit Committee? (Audit Committee Independence)

II. Technology Adoption

1. How does KeRRA determine its technological readiness, and what strategies does it use to maintain it? (Technological Readiness)
2. How does KeRRA ensure that its technological infrastructure is efficient, up-to-date, and meets the organization's needs? (Technological Infrastructure)
3. What is KeRRA's technology strategy, and how does it align with the organization's objectives? (Technology Strategy)
4. What types of technology investments has KeRRA made in the recent past, and how have they affected the organization's performance? (Technology Investments)
5. How does KeRRA ensure the alignment of its business and IT strategies? (Technology Alignment of Business and IT Strategy)

III. Availability of Resources

1. How does KeRRA ensure that its road projects are adequately funded and have the necessary budgetary allocations? (Project Budget Adequacy)
2. What measures does KeRRA take to ensure that it has the necessary raw materials for its road projects, and how does it affect the organization's performance? (Availability of Raw Materials)
3. What is KeRRA's approach to building its human resource capacity, and how does it affect the organization's performance? (Human Resource Capacity)
4. What strategies does KeRRA use to ensure that its supply chain is efficient and effective? (Supply Chain Efficiency)
5. How does KeRRA measure its effective utilization rate, and what steps does it take to improve it? (Effective Utilization Rate)

IV. Communication

1. How does KeRRA engage its stakeholders in its road projects, and how does it measure their level of engagement? (Stakeholder Engagement Level)
2. What is KeRRA's approach to project progress reporting, and how frequently does it do it? (Project Progress Reporting Frequency)
3. What measures does KeRRA have in place to ensure that feedback mechanisms are available to its stakeholders, and how does it respond to their feedback? (Feedback Mechanism Availability and Issue Resolution Response Time)
4. How does KeRRA ensure that information is easily accessible to its stakeholders? (Information Accessibility)

V. Leadership Styles

1. What is KeRRA's approach to leadership, and how does it ensure that its leaders are effective in implementing the organization's strategy? (Leadership Styles)
2. What measures does KeRRA take to ensure that its leaders are transformational and inspire their teams to achieve the organization's goals? (Transformational Leadership)

3. What is KeRRA's approach to transactional leadership, and how does it affect the organization's performance? (Transactional Leadership)
4. How does KeRRA address passive/avoidance leadership and ensure that its leaders are actively engaged in implementing the organization's strategy? (Passive/Avoidance Leadership)

VII. Performance of Road Projects

1. What measures does KeRRA have in place to ensure that its road projects are completed within budgetary allocation, and how does it track and report on this? (Project Completion within Budgetary Allocation)
2. What is KeRRA's approach to completing road projects within the specified timeline, and how does it ensure that it meets its deadlines? (Completion Time)
3. How does KeRRA ensure that the quality of its road projects meets the standards provided, and what measures does it have in place to maintain quality control? (Quality of Project as per Provided Standards)
4. What is KeRRA's project completion rate, and how does it track and report on this? (Project Completion Rate)

Thank You!

Appendix III: Table classifying the 47 Counties of Kenya into 8 Regions

Region	**Counties**
Central	Kiambu, Nyeri, Kirinyaga, Murang'a, Nyandarua, Meru, Tharaka-Nithi,
Coast	Mombasa, Kilifi, Kwale, Tana River, Lamu, Taita-Taveta
Eastern	Machakos, Kitui, Makueni, Embu
Nairobi	Nairobi
North Eastern	Garissa, Wajir, Mandera, Marsabit, Isiolo
Nyanza	Homa Bay, Kisii, Kisumu, Migori, Nyamira, Siaya
Rift Valley	Baringo, Bomet, Elgeyo-Marakwet, Kajiado, Kericho, Laikipia, Nakuru, Nandi, Narok, Samburu, Trans Nzoia, Turkana, Uasin Gishu, West Pokot
Western	Bungoma, Busia, Kakamega, Vihiga

Appendix IV: Population Distribution to the 47 Counties of Kenya

Cluster	KeRRAs' Strategy Implementation Officers	Contractors' Strategy Implementation Officers
Central Region	**14**	**14**
Kiambu	4	4
Kirinyaga	2	2
Meru	1	1
Muranga	2	2
Nyandarua	1	1
Nyeri	2	2
Tharaka Nithi	2	2
Coast Region	**17**	**17**
Kilifi	3	3
Kwale	3	3
Lamu	3	3
Mombasa	3	3
Taita Taveta	3	3
Tana River	2	2
Eastern	**7**	**7**
Embu	2	2
Kitui	2	2
Machakos	2	2
Makueni	1	1
Nairobi Region	**29**	**29**
Nairobi	29	29
North Eastern Region	**7**	**7**
Garissa	2	2
Isiolo	2	2
Mandera	1	1
Marsabit	1	1
Wajir	1	1
Nyanza Region	**12**	**12**
Homa Bay	3	3
Kisii	3	3
Kisumu	1	1
Migori	2	2

Nyamira	2	2
Siaya	1	1
Rift Valley	**36**	**36**
Baringo	3	3
Bomet	3	3
Elgeyo/Marakwet	2	2
Kajiado	3	3
Kericho	2	2
Laikipia	2	2
Nakuru	5	5
Nandi	3	3
Narok	2	2
Samburu	2	2
TransNzoia	2	2
Turkana	2	2
Uasin-Gishu	3	3
West Pokot	2	2
Western Region	**18**	**18**
Bungoma	4	4
Busia	4	4
Kakamega	6	6
Vihiga	4	4
Grand Total	**140**	**140**

Appendix V: KeMU Scientific Ethical Approval

KENYA METHODIST UNIVERSITY
P. O. BOX 267 MERU - 60200, KENYA FAX: 254-64-30162
TEL: 254-064-30301/31229/30367/31171 EMAIL: INFO@KEMU.AC.KE

July 3, 2023 KeMU/ISERC/BUS/04/2023

LEONARD OUMA MRONGO
BUS-4-0547-1/2019

Dear Leonard,

SUBJECT: INFLUENCE OF STRATEGY IMPLEMENTATION ON PERFORMANCE OF ROAD PROJECTS BY KENYA RURAL ROADS AUTHORITY

This is to inform you that Kenya Methodist University Institutional Scientific Ethics and Review Committee has reviewed and approved your research proposal. Your application approval number is KeMU/ISERC/BUS/04/2023. The approval period is 3rd July, 2023 – 3rd July, 2024

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 Kenya Methodist University Institutional Scientific Ethics and Review Committee.

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 KeMU ISERC 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 KeMU ISERC 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 KeMU ISERC.

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

Yours sincerely,

KENYA METHODIST UNIVERSITY KEMU SERC 03 JUL 2023

MR. HERBERT KIBEBE
CHAIR, ISERC

Appendix VI: KeMU Introductory Letter to NACOSTI

KENYA METHODIST UNIVERSITY
P. O. Box 267 Meru - 60200, Kenya
Tel: 254-064-30301/31229/30367/31171
Fax: 254-64-30162
Email: deanrd@kemu.ac.ke
DIRECTORATE OF POSTGRADUATE STUDIES

July 3, 2023

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear Sir/Madam,

RE: LEONARD OUMA MRONGO (REG. NO. BUS-4-0547-1/2019)

This is to confirm that the above named is a bona fide student of Kenya Methodist University, in the Department of Business Administration, undertaking Doctoral Degree in Business Administration and Management. He is conducting research on; **"Influence of Strategy Implementation on Performance of Road Projects by Kenya Rural Roads Authority".**

We confirm that his research proposal has been defended and approved by the University.

In this regard, we are requesting your office to issue a permit to enable him collect data for his research.

Any assistance accorded to him will be highly appreciated.

Yours sincerely

JUL 2023

Dr. John M. Muchiri (PhD)
Dean, Postgraduate Studies
Cc: Dean SBUE
CoD, BA
Program Coordinator - BA
Student Supervisors

Appendix VII: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **903852**

Date of Issue: **18/July/2023**

RESEARCH LICENSE

This is to Certify that Mr.. LEONARD OUMA MRONGO of Kenya Methodist University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Baringo, Bomet, Bungoma, Busia, Elgeyo-Marakwet, Embu, Garissa, Homabay, Isiolo, Kajiado, Kakamega, Kericho, Kiambu, Kilifi, Kirinyaga, Kisii, Kisumu, Kitui, Kwale, Laikipia, Lamu, Machakos, Makueni, Mandera, Marsabit, Meru, Migori, Mombasa, Muranga, Nairobi, Nakuru, Nandi, Narok, Nyamira, Nyandarua, Nyeri, Samburu, Siaya, Taita-Taveta, Tanariver, Tharaka-Nithi, Transnzoia, Turkana, Uasin-Gishu, Vihiga, Wajir, Westpokot on the topic: INFLUENCE OF STRATEGY IMPLEMENTATION ON PERFORMANCE OF ROAD PROJECTS BY KENYA RURAL ROADS AUTHORITY for the period ending : 18/July/2024.

License No: **NACOSTI/P/23/27722**

903852

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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