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EFFECT OF FUNDING STRAGEGIES ON PERFORMANCE MATRICS OF KENYA NATIONAL HIGHWAYS AUTHORITY

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Abstract:
The global focus on funding strategies is critical for infrastructure development, particularly in emerging economies. In Africa, inadequate financial strategies hinder sustainable infrastructure projects, essential for economic growth. Kenya recognizes the importance of funding in promoting development, with the Kenya National Highways Authority (KeNHA) playing a pivotal role in highway development and maintenance. However, KeNHA faces financial constraints, limited credit access, and challenges in Public-Private Partnerships (PPPs). This study analyzed the effect of funding strategies on KeNHA's performance, focusing on the Road Maintenance Levy Fund, PPPs, and development partner funding. Anchored on Institutional Theory, Resource-Based View, Financial Intermediation Theory, and PPP Theory, the study adopted a correlational research design. The target population comprised 489 KeNHA staff, with 215 respondents selected via simple random sampling. Primary data were collected through structured instruments, with reliability and validity confirmed via Cronbach's alpha (≥0.7). Data were analyzed using multiple linear regression. Findings revealed significant positive correlations between the Road Maintenance Levy Fund ($r = 0.754$), PPPs ($r = 0.530$), and development funding ($r = 0.818$) with performance. Regression results showed development funding ($\beta = 0.616$) and the levy fund ($\beta = 0.276$) positively influenced performance, while PPPs were not significant. It is recommended that KeNHA enhance funding strategies, particularly development funding, and continue fostering PPPs to optimize infrastructure performance and support Kenya's economic growth.

JEL: H54 – National Government Expenditures and Related Policies (Public Infrastructure) H57 – Publicly Provided Goods O22 – Project Evaluation; Social Discount Rate L32 – Public Enterprises; Public-Private Enterprises D73 – Bureaucracy; Administrative Processes in Public Organizations R42 – Transportation Economics – Public Investment and Pricing P25 – Development Planning and Policy

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Keywords: Funding Strategies, Infrastructure Development, Road Maintenance Levy Fund, Public-Private Partnerships, Development Partner Funding, Kenya National Highways Authority (KeNHA), Performance Metrics, Economic Growth, Financial Constraints

1. Introduction

1.1 Background of the Study

The Kenya National Highways Authority (KeNHA) plays a pivotal role in the development and maintenance of the country's road infrastructure. Understanding how Road Maintenance Levy Fund (RMLF), Public-Private Partnerships (PPPs), and Development partner funding impact KeNHA's performance is imperative for informed policy formulation and strategic decision-making. The findings will not only provide insights into the efficiency of financial resource utilization by KeNHA but also contribute valuable knowledge to the broader discourse on optimizing financial strategies for sustainable and inclusive infrastructure development in Kenya. PPPs often lead to improved project delivery timelines. By leveraging private sector efficiency and expertise, projects can be completed faster compared to traditional public sector projects. This results in better performance metrics for KENHA, such as reduced project completion times and adherence to schedules. Funding from development partners usually goes toward achieving sustainable development objectives and long-term planning. This improves performance measures for long-term infrastructure development and strategic planning and is in line with KeNHA's strategic objectives. KeNHA's performance metrics are greatly improved by development partner funding because it brings capital, enhances project quality, introduces advanced technologies, builds capacity, ensures sustainability, enforces monitoring and evaluation, reduces risks, increases economic benefits, involves communities, and supports long-term planning. Together, these elements support KENHA's infrastructure projects' efficacy and success.

Addressing this need is paramount for fostering economic growth, ensuring the robustness of the national highway network, and advancing the overarching goals of funding strategies in the country.

In recent years, the importance of funding strategies in fostering economic development has gained significant attention globally. Funding strategies, characterized by the accessibility and usage of formal financial services by all segments of society, are recognized as a critical driver for inclusive growth (World Bank, 2022; Sarpong & Amponsah, 2022). Financial Intermediation Theory is appropriate for this study as it underpins the relationship between funding strategies and performance metrics in infrastructure development. By exploring the role of financial intermediaries in enabling access to capital, the theory allows for a better understanding of how KeNHA can optimize funding through funding strategies and PPP models. It also helps to identify the challenges that KeNHA may face in implementing these strategies, such as the

inefficiencies in the Kenyan financial market. The theory's focus on resource allocation, risk mitigation, and transaction cost efficiency provides valuable insights into how financial intermediaries can improve KeNHA's operational efficiency and infrastructural outcomes. Thus, applying this theory enables a comprehensive analysis of how financial strategies influence the authority's performance in addressing

The Kenya National Highways Authority (KeNHA) plays a crucial role in the development, management, and maintenance of the road infrastructure in Kenya, a critical factor for the country's economic development. KeNHA's performance is intertwined with the nation's broader economic goals, where an efficient transportation network directly supports trade, commerce, and overall economic activities. This research proposal aims to explore the relationship between funding strategies initiatives comprising Road Maintenance Levy Fund (RMLF), Public-Private Partnerships (PPPs), and Development partner funding and the performance metrics of KeNHA. By examining the roles of funding strategies, the study aims to contribute to the discourse on optimizing financial strategies for sustainable and inclusive infrastructure development in Kenya. Through this study, insights will be garnered into the financial mechanisms that can optimize the sustainability and effectiveness of KeNHA in fulfilling its mandate.

1.2 Funding Strategies

Funding strategies refer to the structured approaches employed by organizations to secure financial resources for specific projects or operations. Funding strategies, defined as the access and use of formal financial services by all societal segments, particularly underserved populations, are recognized as a key driver of inclusive growth and sustainable development (Sarpong & Amponsah, 2022). In the context of infrastructure development, it refers to the various methods and approaches used to secure financial resources necessary for the planning, construction, and maintenance of infrastructure projects. These strategies are critical for ensuring that projects are adequately financed and can proceed on schedule while meeting the needs of stakeholders. The key funding strategies include the Road Maintenance Levy Fund (RMLF), Public-Private Partnerships (PPPs), and Development partner funding.

The RMLF is a dedicated fund established to ensure consistent financing for the maintenance of road networks, sourced from levies on fuel and vehicle registration, thereby providing a stable revenue stream for upkeep and repairs.

PPPs involve collaborative agreements between public entities and private sector companies to finance, construct, and operate infrastructure projects, leveraging private investment, expertise, and innovation to enhance project delivery and efficiency.

Development partner funding encompasses financial support from government budgets, international donors, and multilateral financial institutions, aimed at large-scale infrastructure initiatives that contribute to national development goals.

Together, these funding strategies are integral to addressing infrastructure deficits and enhancing the operational effectiveness of organizations like the Kenya National

Highways Authority (KeNHA) (World Bank, 2017). Globally, the importance of funding strategies in promoting economic development has been well-documented (World Bank, 2022).

In Russia, funding strategies and initiatives have been integrated into broader economic policies aimed at enhancing infrastructure and overall economic performance (World Bank, 2022). These global examples underscore the potential of funding strategies, when effectively implemented, to significantly contribute to the development and maintenance of essential infrastructure, such as transportation networks (Sarpong & Amponsah, 2022).

1.3 Performance Metrics

Performance metrics employed by the Kenya National Highways Authority (KeNHA) emphasize key areas related to project execution and infrastructure management. KeNHA's ability to complete infrastructure projects on schedule, within budget, and to specified quality standards is assessed using performance indicators such as project completion rates, cost variances, and adherence to quality benchmarks, as highlighted by Neely (2007). These measures help gauge the effectiveness of project management and resource allocation.

In addition, KeNHA's role in expanding and maintaining the road network to support Kenya's economic and social needs is evaluated through metrics that assess the adequacy and durability of infrastructure. This includes the length of roads constructed, the quality of infrastructure, and its broader impact on economic growth and connectivity, in line with the metrics recommended by the World Bank (2019). These performance measures provide a comprehensive view of KeNHA's effectiveness in fulfilling its mandate. Specific focus areas such as: provision of adequate infrastructure, road network maintenance and durability, operational effectiveness and efficiency, environmental sustainability, road safety, end user satisfaction and the capability in development and management of national trunk roads offer a detailed perspective on the authority's overall capacity to manage and enhance the national road network (KeNHA's Strategic plan 2023-2027). The key performance metrics of KeNHA can be measured through the Annual Road Inventory Condition Survey (ARICS), where an inventory of the road infrastructure is carried out to ensure that the road infrastructure is in place, and it's also useful in planning for the tendering processes. The Dynamic Response Intelligent Monitoring System (DRIMS) is also used in checking the effectiveness and efficiency of the infrastructure by checking the roughness index of the roads. Monthly inspection of the roads work with the road engineers and inspectors on the ongoing road works to ascertain contractors' compliance as per the standard specification of the contracts. A substantial inspection is also carried out on completed road works to ensure that the works are completed within the construction period of a given road. Financial audits by OAG, Internal audit and technical audits by KRB, donor supervision missions and stakeholder engagement forums to assess end-user satisfaction (KeNHA's Strategic plan 2023-2027)

2. Statement of the Problem

The Kenya National Highways Authority (KeNHA) plays a crucial role in the development, management, and maintenance of national trunk roads, yet its performance continues to face significant challenges. Despite its mandate, KeNHA struggles to meet performance metrics, including the provision of adequate infrastructure that meets stakeholder needs, road network maintenance and durability, operational effectiveness and efficiency and the capability in development and management of national trunk roads. A key factor contributing to this underperformance is the inadequacy of funding strategies. The Resource-Based View (RBV) theory suggests that an organization's performance is contingent on its ability to effectively acquire and deploy financial, physical and intangible resources (Barney, 1991).

In relation to KeNHA, this theory implores that inefficient and insufficient funding strategies undermine its capacity to construction, maintenance, and rehabilitation of road networks. Insufficient funding for road projects has led to the accumulation of pending bills, delays in infrastructure development, limited maintenance activities, and the inability to meet growing transportation demands. Also, limited access to funding by contractors has significantly hampered KeNHA's capacity to deliver on its objectives (KeNHA, 2023). For instance, the budgetary allocation for road infrastructure in Kenya has been growing at a mere 3.5% annually, while the demand for road maintenance and new constructions has increased by 7.8% (National Treasury, 2022). This funding gap has resulted in a backlog of road maintenance projects, with over 35% of roads in Kenya classified as being in poor condition (Kenya Roads Board, 2022). Kenya's expansive road network, spanning over 161,000 kilometers, demands substantial funding for both maintenance and development (Kenya Roads Board, 2022). Yet, KeNHA has only been able to meet 60% of its road maintenance targets annually, which compromises the functionality and durability of key highways. Consequently, the increasing number of dilapidated roads affects economic activities, road safety, and stakeholder satisfaction.

Moreover, previous studies have presented mixed findings on the effectiveness of PPPs as a funding strategy for KeNHA. While some studies suggest that PPPs improve operational efficiency and infrastructure development, others reveal limited success due to inadequate legal frameworks and inconsistent government support (Ngigi *et al.*, 2020). This inconsistency makes it difficult to conclusively determine the impact of PPPs on performance. Additionally, KeNHA has struggled with funding, limiting its ability to access credit for large-scale infrastructure projects. The inability to mobilize sufficient resources through traditional and innovative financing methods has further constrained the agency's capability to manage and develop national trunk roads effectively.

Akinyi and Mbugua (2021) utilized case studies to illustrate successful RMLF implementations in various regions, emphasizing that localized strategies could drive better results. Their findings advocate for customized approaches tailored to specific regional needs. However, the study's limited sample size raises concerns about the robustness of the conclusions drawn, highlighting the need for larger-scale

investigations. There is also a need for comprehensive studies that apply mixed methods to analyze the relationship between funding strategies and KeNHA's performance metrics. Existing literature on KeNHA's performance is fragmented, with a lack of robust statistical evidence to determine the extent to which funding strategies impact road infrastructure development. However, significant gaps remain, including the need for longitudinal studies to understand long-term impacts, the establishment of standardized metrics for evaluating funding strategy effectiveness, and a deeper exploration of stakeholder perspectives and engagement. Addressing these gaps could enhance understanding of how various funding strategies can be optimized to improve infrastructure performance and better serve the community. This study will address this issue by employing both qualitative and quantitative approaches to assess the effectiveness of these funding strategies, thus offering more conclusive insights into their influence on the operational efficiency, road network durability, and overall infrastructure development managed by KeNHA. Therefore, the failure to adequately address financial constraints has hindered KeNHA's ability to meet key performance metrics, resulting in suboptimal road network functionality and operational inefficiencies. A statistically driven analysis of these challenges is essential to enhance KeNHA's ability to develop and manage national trunk roads, thereby contributing to sustainable infrastructure development in Kenya.

2.1 Objective of the Study

To evaluate the effect of public-private partnership on performance metrics of KeNHA.

3. Literature Review

3.1 Introduction

This section examines the theoretical underpinnings of the study. It elucidates the primary ideas that inform the study variables with the aim of finding the research gap. It additionally encompasses the empirical research pertaining to the subject area addressed to inform the study variables with the aim of finding the research gap. It additionally encompasses the empirical research pertaining to the subject area addressed.

3.2 Theory of Public-Private Partnership (PPP)

The Theory of Public-Private Partnership (PPP) posits that collaboration between the public and private sectors can enhance the delivery of public goods and services by leveraging the strengths of both sectors. The public sector, which includes government agencies like the Kenya National Highways Authority (KeNHA), provides oversight, regulation, and policy guidance, while the private sector contributes efficiency, innovation, funding, and technical expertise. The combination of these elements is theorized to result in improved outcomes, such as more efficient operations, higher quality services, and enhanced infrastructure development. This theory has been popularized by scholars such as Grimsey and Lewis (2005), who operationalized it by

identifying key success factors for PPPs, including the necessity of clear legal frameworks, transparent procurement processes, and equitable risk-sharing mechanisms.

In the context of KeNHA, PPPs are seen as a critical strategy for overcoming infrastructure financing challenges and improving operational efficiency. With Kenya's infrastructure needs outpacing public sector resources, KeNHA must engage with private partners to close the funding gap and bring in technical expertise for large-scale projects. PPPs allow for resource pooling, where the public sector's regulatory oversight and access to land or permits are combined with the private sector's financial capital and innovative construction techniques. This arrangement facilitates not only the mobilization of resources but also the acceleration of infrastructural development, which is vital for Kenya's economic growth. Through risk-sharing mechanisms, PPPs also distribute project-related risks such as financial shortfalls, construction delays, and operational inefficiencies between KeNHA and private entities, reducing the burden on public funds.

The theory's tenets are centered on the idea that public and private sectors can achieve mutual benefits through collaboration. Key principles include risk-sharing, where financial, operational, and construction risks are distributed based on the capabilities of each partner; innovation transfer, where private sector entities contribute cutting-edge technology and efficient project management techniques; and performance-based accountability, where private partners are held accountable for project outcomes, ensuring high-quality delivery of infrastructure projects. Clear legal and regulatory frameworks are essential to the success of PPPs, ensuring that both sectors understand their roles and responsibilities, and that project goals align with national development objectives.

Strengths of the PPP theory include its ability to mobilize private sector capital for public infrastructure projects, which is particularly beneficial in contexts where government funding is insufficient. The theory also promotes innovation by incorporating private sector efficiency and technology into public projects, often resulting in cost savings and improved service delivery (Grimsey & Lewis, 2005). Furthermore, PPPs help to distribute risks more equitably between the public and private sectors, reducing the financial burden on governments and minimizing potential project failures. However, the weaknesses of the theory lie in its dependency on strong governance and transparent legal frameworks. In contexts where there are weak regulatory environments or insufficient legal protections, PPPs can become vehicles for corruption, inefficiency, and inequitable risk distribution, where private entities may exploit the public sector for profit while delivering subpar infrastructure (Akintoye, Beck, & Hardcastle, 2008). Additionally, PPPs can be politically contentious, with public opposition arising from fears of privatization of essential services. This can lead to delays and resistance, especially if there is a lack of transparency in the negotiation and execution of PPP agreements.

The Theory of PPPs is particularly appropriate for this study on KeNHA because it directly addresses the organization's need to leverage private sector resources and expertise to meet its infrastructure development targets. Given the challenges faced by KeNHA in securing sufficient public funding for road construction and maintenance, PPPs offer a viable solution for financing and executing large-scale projects. Conceptually, the theory helps explain how KeNHA can use PPPs to improve its performance metrics, such as road network quality, operational efficiency, and project delivery timelines.

Contextually, Kenya's infrastructure sector is growing rapidly, but public funding limitations have slowed the pace of development. PPPs offer a way to accelerate infrastructure projects by bringing in private sector investment, while ensuring that KeNHA retains oversight and strategic control. Geographically, Kenya's expansive and complex road network, which includes both urban highways and rural roads, demands significant investment for maintenance and expansion. PPPs allow KeNHA to prioritize high-impact projects while reducing the financial burden on the government. Methodologically, this study will analyze the impact of PPPs on KeNHA's operational efficiency and infrastructure development through a mixed-methods approach, combining quantitative analysis of performance metrics with qualitative insights into stakeholder experiences and perceptions of PPP arrangements.

The application of PPPs theory in this study will offer insights into how KeNHA can navigate the challenges of funding strategies, effective project management, and risk-sharing to achieve sustainable infrastructure development. By evaluating the effectiveness of PPPs in improving KeNHA's operational efficiency and infrastructure performance, this study aims to provide a comprehensive understanding of the critical factors that determine the success or failure of PPP projects in Kenya.

3.3 Institutional Theory

Institutional Theory, developed by early proponents such as Meyer and Rowan (1977) and later expanded by Scott (1995, 2014), emphasizes that organizations are not only driven by internal dynamics but are also deeply influenced by the institutional environment, which includes the rules, norms, and values in which they operate. This theory highlights the importance of external pressures such as regulatory mandates, societal expectations, and professional norms that shape organizational behavior and strategies. According to Scott (2014), these institutional pressures can be categorized into three main dimensions: regulatory, normative, and cultural-cognitive. For KeNHA, this theory suggests that its financial strategies, including the adoption of Public-Private Partnerships (PPPs), are shaped by Kenya's regulatory frameworks, cultural expectations, and societal pressures within the infrastructure sector. KeNHA must align with these institutional norms to gain legitimacy, access to resources, and stakeholder support, which are critical for operational efficiency and successful infrastructure development.

Regulatory pressures refer to the legal and policy frameworks that influence how organizations like KeNHA operate. In Kenya, regulatory frameworks, such as the Public Procurement and Asset Disposal Act (2015) and the PPPs Act (2013), shape how KeNHA can secure funding through PPPs and other financial strategies. Compliance with these laws not only ensures legitimacy but also enhances KeNHA's ability to attract investment and form partnerships with private entities. Normative pressures, on the other hand, involve professional standards and industry best practices that guide how infrastructure projects are executed. For instance, global standards in road construction and maintenance influence KeNHA's operations and expectations from international development partners. Cultural-cognitive pressures are shaped by societal values and shared beliefs, which in Kenya place a high emphasis on infrastructure development as a driver of economic growth and national development. These pressures push KeNHA to prioritize infrastructure projects that align with national development goals, thereby enhancing its legitimacy and public trust.

Institutional Theory is particularly appropriate for this study as it provides a framework for understanding how external institutional factors influence KeNHA's funding strategies and its ability to implement infrastructure projects. Conceptually, the theory helps explain how KeNHA's decisions on PPPs and funding strategies are not solely based on internal capacities but are largely shaped by the broader institutional environment. Contextually, Kenya's infrastructure sector operates within a complex institutional framework, where regulatory compliance, professional norms, and societal expectations play significant roles in shaping organizational behavior. This makes Institutional Theory a fitting lens for analyzing how KeNHA navigates these external pressures in its funding and project implementation processes.

Geographically, Kenya's diverse infrastructure needs, coupled with the increasing demand for sustainable road networks, present unique challenges for KeNHA. The organization must mobilize adequate financial resources to meet the infrastructure demands across urban and rural areas, often relying on partnerships with private entities to bridge funding gaps. However, the success of such partnerships is contingent upon regulatory frameworks and societal acceptance, which are central tenets of Institutional Theory. This theory is also methodologically relevant to this study, as it provides a basis for evaluating how KeNHA's financial strategies and performance metrics are shaped by external institutional pressures. By employing a mixed-methods approach, this study can quantify the impact of funding strategies while also exploring how regulatory, normative, and cultural-cognitive factors influence decision-making processes within KeNHA.

Strengths of Institutional Theory include its ability to provide a comprehensive framework for understanding how organizations adapt to external pressures, making it highly applicable in contexts where organizations, like KeNHA, operate within complex regulatory and societal environments (Scott, 2014). It emphasizes the role of legitimacy, which is crucial for KeNHA as it seeks to secure funding and support through compliance with regulatory and societal expectations. Furthermore, the theory's focus on

institutional norms offers a structured approach to understanding how external factors shape organizational behavior, which is essential for assessing KeNHA's adoption of PPPs and funding strategies.

However, Institutional Theory also has weaknesses. One major limitation is its overemphasis on conformity to external pressures, potentially underestimating the capacity of organizations to innovate or resist these pressures (Greenwood *et al.*, 2011). In KeNHA's case, while the theory explains how external regulations influence financial strategies, it may not fully account for the agency of KeNHA in negotiating or resisting unfavorable regulatory constraints. Additionally, the theory tends to downplay internal organizational dynamics, such as leadership or internal resource limitations, which are critical factors influencing KeNHA's performance. Finally, Institutional Theory has limited predictive power—it is more descriptive than prescriptive, making it less useful for offering clear solutions to KeNHA's financial and operational challenges.

In conclusion, Institutional Theory is a suitable framework for analyzing the influence of funding strategies on KeNHA's performance metrics, particularly the effectiveness of funding strategies and performance. By highlighting the role of external regulatory, normative, and cultural pressures, the theory offers valuable insights into how KeNHA can improve operational efficiency and infrastructural development by aligning its strategies with institutional norms. Despite its limitations, the theory provides a robust foundation for understanding the complex interactions between KeNHA and the institutional environment, offering a conceptual basis for this study.

3.4 Empirical Literature Review

3.4.1 Public-Private Partnership and Performance

Public-Private Partnerships (PPPs) have been recognized as vital in enhancing operational efficiency and infrastructure development, particularly in sectors with significant public involvement like transportation. Muturi (2024) investigated the effectiveness of PPPs in improving the operational efficiency of KeNHA, focusing on the Nairobi Expressway project. The study aimed to evaluate how the partnership between the Kenyan government and private investors contributed to the project's success. Using a case study approach, the research involved 200 respondents from both KeNHA and private sector partners. The results revealed that PPPs significantly improved project delivery timelines and cost management, resulting in enhanced operational efficiency. This study affirms the critical role of PPPs in executing large-scale infrastructure projects within budget and time constraints.

Additionally, Onyango (2023) explored the impact of PPPs on infrastructural development in Kenya, with a focus on road construction projects under KeNHA's management. The study sought to assess how PPPs contribute to the quality and sustainability of infrastructure projects. Employing a mixed-methods design, the study surveyed 150 stakeholders, including project managers, contractors, and government officials. The findings indicated that PPPs led to improved infrastructure quality due to the infusion of private sector expertise and resources. However, the study also noted

challenges related to regulatory frameworks and risk-sharing between public and private entities. The study suggests that PPPs, despite their challenges, are essential for advancing infrastructural development in Kenya.

Nduati *et al.* (2023) examined the sustainability of PPPs in infrastructure development within Kenya, utilizing a qualitative research design. The study involved interviews with government officials and private sector partners to assess the long-term viability of these partnerships. Findings highlighted that while PPPs could lead to innovative solutions and improved operational efficiency, sustainability challenges arise due to a lack of continuous stakeholder engagement and ambiguous contractual terms. Although the research identifies critical sustainability concerns, it does not provide actionable recommendations for enhancing stakeholder involvement or clarifying contracts, leaving a gap in practical applicability for policymakers.

Oduor *et al.* (2023) conducted a comparative analysis of different funding strategies to mitigate road maintenance challenges in Kenya. The research employed data from various infrastructure projects and analyzed the interplay between RMLF, PPPs, and development funding. The study found that a combination of these funding sources enhances road maintenance outcomes, as each strategy addresses specific funding gaps. However, the study does not sufficiently explore potential conflicts or synergies between these funding strategies, suggesting that a more nuanced understanding of their interactions is necessary for effective implementation.

Mwangi and Otieno (2022) conducted a study on the role of PPPs in enhancing operational efficiency in public infrastructure projects, with a focus on KeNHA. The objective was to determine the effectiveness of PPPs in reducing operational inefficiencies, such as delays and cost overruns. The study utilized a survey design, with data collected from 180 respondents involved in various PPP projects under KeNHA. The results showed that PPPs significantly reduced operational inefficiencies by introducing better project management practices and fostering accountability. The study concluded that PPPs are a viable strategy for improving the operational efficiency of public sector projects.

In a similar vein, Kamau (2021) examined the effectiveness of PPPs in facilitating infrastructural development in the transport sector in Kenya. The study aimed to evaluate the role of PPPs in mobilizing financial resources for large-scale infrastructure projects under KeNHA. Using a quantitative research approach, the study surveyed 120 respondents, including financial analysts, project managers, and government officials. The findings revealed that PPPs were instrumental in securing necessary funding for infrastructure projects, thereby ensuring their completion and long-term sustainability. The study highlighted the importance of PPPs in overcoming financial constraints in the public sector.

Moreover, Kariuki (2020) focused on the challenges and opportunities of implementing PPPs in infrastructure development, specifically within KeNHA. The study sought to identify the key factors that influence the success of PPPs in road construction projects. Employing a qualitative research design, the study conducted

interviews with 60 stakeholders, including senior management at KeNHA and private sector partners. The results indicated that while PPPs offer significant opportunities for infrastructure development, challenges such as misaligned objectives, bureaucratic hurdles, and inadequate risk management often hinder their effectiveness. The study suggests that addressing these challenges is crucial for maximizing the benefits of PPPs in infrastructure development.

Lastly, Wanjiru (2019) explored the effectiveness of PPPs in promoting operational efficiency in the public sector, focusing on KeNHA's road maintenance projects. The study aimed to assess how PPPs contribute to the operational efficiency of routine maintenance activities. Using a case study approach, the research involved 100 respondents from KeNHA and partnering private companies. The findings revealed that PPPs led to significant improvements in operational efficiency by introducing performance-based contracts and regular monitoring mechanisms. The study concluded that PPPs are effective in enhancing the operational efficiency of public sector projects, particularly in the area of infrastructure maintenance.

PPP and Performance. Turning to Public-Private Partnerships (PPPs), a growing body of literature emphasizes their potential to enhance performance metrics in infrastructure development. Karanja and Juma (2021) studied the effectiveness of PPPs in the Kenyan road sector through a survey of 200 stakeholders. Their findings indicated that successful PPPs initiatives significantly improved road network maintenance and operational efficiency. However, they noted challenges related to contract enforcement, which could potentially jeopardize the long-term sustainability of these partnerships. This study is valuable for highlighting the benefits of PPPs but raises questions about the mechanisms for ensuring compliance and accountability in partnership agreements.
Njuguna and Kihiu (2020) conducted a qualitative analysis of several PPPs frameworks across Kenya, emphasizing the importance of effective collaboration between public and private entities. Their study identified innovative solutions for infrastructure management but pointed out that misaligned interests between stakeholders remain a barrier to success. The critique here centers on the subjective nature of qualitative findings, suggesting that future research should employ mixed-methods approaches to validate these insights. Waweru *et al.* (2022) quantitatively assessed the impact of PPPs on trunk road management. They concluded that PPPs fostered enhanced capability and durability of road networks. However, they critiqued the absence of standardized evaluation metrics to systematically assess PPPs performance. This study underlines the necessity for uniform assessment frameworks, as inconsistent evaluation methods hinder the comparability of results across different PPPs projects.

Ngugi and Njuguna (2021) investigated stakeholder perceptions regarding PPPs contributions to operational effectiveness. Their study revealed a generally positive sentiment toward PPPs but indicated a need for better communication strategies to address transparency concerns. While the study effectively captures stakeholder opinions, it would benefit from a more extensive sample size and geographic diversity to enhance the reliability of findings. Omolo *et al.* (2023) analyzed the financial aspects of

PPPs and found that adequate funding mechanisms are critical to ensuring sustainable performance outcomes. They highlighted the importance of financial transparency and regular audits. However, the study could have explored the implications of financial mismanagement on project performance more comprehensively, thus presenting a more nuanced perspective.

Kiburi and Muthoni (2022) assessed the role of government policy in facilitating successful PPPs, arguing that supportive regulatory environments are essential for maximizing potential benefits. Their findings advocate for policy reform to enhance PPP efficacy. Nonetheless, the study's reliance on policy analysis without empirical data diminishes its practical applicability, calling for future studies to incorporate case studies or empirical evaluations. The literature on PPPs shows positive correlations with performance metrics, yet significant gaps persist regarding contract enforcement mechanisms, stakeholder alignment, and standardized evaluation metrics. Moreover, a substantial need exists for research that examines the long-term sustainability and impacts of PPPs projects on infrastructure performance. In summary, the reviewed studies underscore the effectiveness of PPPs in improving operational efficiency and infrastructural development within KeNHA. However, the literature reveals gaps in understanding the long-term sustainability of PPPs projects and the impact of regulatory frameworks on their success. Future research should focus on evaluating the sustainability of PPPs and identifying strategies to overcome regulatory challenges in the context of infrastructure development in Kenya.

4. Research Methodology

4.1 Research Design

The study intends to use a correlational research design. Kothari (2004) states that a correlational research design is employed where a statistical relationship is determined by using more than two variables from the same group of subjects. The research was quantitative in nature since quantitative data can be easily obtained and is the most appropriate for doing numerical approximation of responses for clear generalizability (Kothari, 2004). This study utilized primary first-hand data collected from the study respondents, who in this case will be staff.

4.2 Data Collection Procedure

The primary instrument for data collection in this study was a structured questionnaire. The use of a structured data collection sheet ensures that the data collected is consistent, relevant, and systematically organized for analysis (Field, 2013). The key independent variables of the study are Road maintenance levy fund, public-private partnership and development funding (which construct the measure of funding strategies). These were assessed using items in the questionnaire. These adopted a measurement style that uses a five-point Likert scale with each key variable having several items. The instrument was pre-tested to ensure clarity and comprehensiveness. The reliability of the data was

ensured by cross-referencing the extracted data with multiple sources to confirm accuracy and consistency. Validity was achieved by ensuring that the data collected aligns directly with the research objectives and questions (Kothari, 2004; Dinensio K. Zikanga, Dec 15, 2021)

4.3 Population

The research was carried out in Kenya, with a particular emphasis on the Kenya National Highways Authority (KeNHA). The Kenya National Highways Authority oversees the administration, advancement, restoration, and upkeep of the national roadways within Kenya. As a pivotal organization within the transportation sector, KeNHA significantly contributes to the nation's infrastructure development, rendering it an exemplary subject for examining the effects of funding strategy initiatives. The choice of KeNHA is warranted due to its critical role in national infrastructure and its dependence on a range of funding strategies and associated challenges.

The population for this study comprised 489 staff from KeNHA, who included the director general, director corporate services, development, maintenance services, maintenance audit PPP, highway and planning, deputy director procurement, legal and officers in those directorates related to KeNHA.

Table 3.1: Population

No	Population	Total
1	Senior managers	46
2	Middle-level managers	156
3	Junior staff	287
	Total	**489**

4.4 Sample Size

The research employed a straightforward random sampling method to choose participants from the specified population of 489 staff members. To determine the sample size, the formula proposed by Creswell (2017) was employed, but with a reduced sample size for practicality. This sample size is appropriate given the manageable nature of the population while still ensuring adequate representation. The confidence level remained at 95%, with a Z-value of 1.96. The population proportion (p) and its complement (q) were set at 0.5, as this conservative estimate is often used when the true population proportion is unknown. The margin of error (e) is set at 0.05 (5%).

Using Cochran's formula to calculate the initial sample size (n_0):

Substituting the values we have,

$$n_0 = \frac{(1.96)^2 \times 0.5 \times 0.5}{0.05^2} \approx 384$$

However, due to the practical considerations of the study, the sample size was reduced. To adjust for the finite population of 489, the finite population correction (FPC) will be applied:

$$n_0 = \frac{n}{1 + \frac{n}{N}}$$

$$n = \frac{384}{1 + \frac{384}{489}} = 215$$

Thus, the final sample size was approximately 215 participants. This smaller sample size still allows for meaningful data collection while ensuring a representative cross-section of the population.

Table 3.2: Sample Frame

No	Target Cadres	Total
1	Senior managers	37
2	Middle-level managers	68
3	Junior staff	110
	Total	**215**

The sample size was therefore distributed as shown in Table 3.2. This approach ensures that the study captures essential variations in the data, leading to more robust and generalizable findings (Creswell & Creswell, 2017).

4.5 Reliability

Reliability denotes the degree to which an instrument consistently measures a concept across different time intervals. An instrument of reliability yields stable and consistent outcomes across various occasions, formats, and evaluators. The assessment of reliability can be approached through a variety of methodologies, including test-retest reliability, inter-rater reliability, and internal consistency. Test-retest reliability assesses the consistency of the instrument across time by administering the identical test to the same participants at two distinct intervals and subsequently correlating the resulting scores (Tavakol & Dennick, 2011). Inter-rater reliability evaluates the degree of agreement among various evaluators, guaranteeing that the instrument produces uniform outcomes regardless of the individual administering it. Internal consistency, often assessed through Cronbach's alpha, examines the degree of correlation among items within an instrument, thereby confirming that all items effectively measure the same underlying construct (Field, 2018). The assurance of high reliability and validity is paramount in establishing the credibility and generalizability of research findings. The present investigation consequently employed the Cronbach's reliability method.

Table 3.3: Reliability Results

Variable	Number of Items	Cronbach's Alpha Value	Reliability
Development Funding	6	0.81	Reliable
Public-Private Partnership	6	0.79	Reliable
Road Development Levy Fund	6	0.84	Reliable
Performance of KeNHA	6	0.88	Highly Reliable

The study variables' reliability was evaluated through Cronbach's alpha, ensuring that there is internal consistency among the items that measure each construct. Every variable attained Cronbach's alpha values exceeding the benchmark of 0.70, signifying satisfactory reliability. Specifically, the performance of KeNHA demonstrated the highest reliability (α = 0.88), reflecting strong internal consistency in the responses. Development funding (α = 0.81), public-private partnership (α = 0.79), and the road development levy fund (α = 0.84) also met the criteria for reliability. These results suggest that the measurement instruments used for this study were robust and reliable for analyzing the constructs.

4.6 Data Analysis

The analysis of data will necessitate the utilization of regression models to investigate the interrelations among the variables. Consequently, the standard multiple regression model, as outlined by Box, Jenkins, and Reinsel in 2015, was employed. The examination further encompassed hypothesis testing to ascertain the statistical significance of the observed relationships, employing methodologies such as the F-test and t-test. The subsequent regression model shall be employed for the analysis.

Objective one:

Y=β_0 + β_1 X_1 + ε

Objective two:

Y=β_0 + β_1 X_2 + ε

Objective three:

Y=β_0 + β_3 X_3 + ε

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

Where represents a linear regression equation aimed at examining the effect of various funding strategies on the performance metrics of the Kenya National Highways Authority (KeNHA).

In this equation,

- **Y** represents the dependent variable, which indicates the performance metrics of KeNHA. These metrics may include aspects such as adequate infrastructure

provision, road network maintenance and durability, operational effectiveness and efficiency, and capability in trunk road management.

- **$\beta 0$** is the intercept of the model. It signifies the expected value of YYY when all independent variables are equal to zero. In practical terms, this can be interpreted as the baseline performance metric of KeNHA when there are no influences from the funding strategies.
- **B_1, β_2, $\beta 3$,** are the coefficients corresponding to the independent variables X_1, X_2, X_3. Each coefficient quantifies the effect of its associated funding strategy on the performance metrics of KeNHA:
- **$\beta_1 X_1$**: This term reflects the impact of the Road Maintenance Levy Fund (RMLF) on KeNHA's performance metrics. A positive coefficient suggests that an increase in funding through RMLF is associated with improved performance.
- **$\beta_2 X_2$**: This term captures the influence of Public-Private Partnerships (PPPs) on performance metrics. A positive coefficient would indicate that effective PPP strategies contribute positively to the operational efficiency and infrastructure development of KeNHA.
- **$\beta_3 X_3$**: This term indicates the effect of development funding on performance metrics. Again, a positive coefficient would imply that greater investment through development funding enhances the performance metrics of KeNHA.
- **ϵ** represents the error term, accounting for the variation in Y that is not explained by the independent variables. This could include unmeasured factors that may affect KeNHA's performance, such as political, environmental or social factors.

4.7 Pilot

The questionnaire will be pilot tested before the final drafting so as to improve the validity and reliability of the instruments. A sample of 20 respondents will be chosen for the pilot study to create a manageable yet diverse group, facilitating in-depth qualitative insights. This sample size is ideal for a pilot study as it provides enough participants to uncover significant issues with the research instruments, such as unclear questions or technical glitches with the funding strategies. The feedback obtained will be essential for refining these instruments, pinpointing areas that need adjustments to ensure clarity, relevance, and functionality. Additionally, a smaller sample size allows for a concentrated analysis, enabling researchers to make necessary revisions before expanding the study to a larger, more representative sample. This iterative methodology is essential for improving the validity and reliability of the instruments in forthcoming, more extensive research endeavours. This is informed by the proposition put forth by Saunders, Lewis, and Thornhill (2007) that a minimum of ten participants in pre-testing is sufficient. The individuals in question will not participate in the concluding phase of the research. The administrator of the questionnaire will be evaluated on their ability to reframe the questions should any challenges arise.

5. Findings and Discussions

5.1 Introduction

This chapter presents the results and analysis of the data collected to examine the relationship between funding strategies and the performance metrics of the Kenya National Highways Authority (KeNHA). It includes a detailed presentation of the descriptive statistics, correlation analysis, and regression analysis conducted on the key variables: Road Maintenance Levy Fund, Public-Private Partnerships, Development Funding, and KeNHA's performance. The findings are organized in tables and figures to highlight the statistical relationships and the significance of each factor, providing a comprehensive overview of how these funding strategies impact KeNHA's performance in infrastructure development and management.

5.2 Response Return Rate

The response rate for this study was determined by the total number of surveys disseminated and the number of completed responses obtained. The results are displayed in Table 4.1.

Table 4.1: Response Return Rate

Total Surveys Distributed	Completed Responses	Response Rate
215	209	97.20%

A total of 215 surveys were initially distributed, and 209 completed surveys were returned. Therefore, the response rate for the study is approximately 97.2%, which indicates a high level of participant engagement and the reliability of the data collected.

5.3 Demographic Characteristics

The demographic characteristics of the respondents were analyzed to provide an understanding of their distribution across various key variables. These variables included their department affiliation (non-technical or technical), period worked (categorized as below two years, 3–5 years, or over six years), management level (middle, operational, or top-level), and their designation within the organization. These analyses aimed to capture the diversity of the workforce in terms of their roles, experience, and hierarchical positions, providing a comprehensive context for interpreting the study's findings. The results are summarized in the demographic characteristics table below.

Table 4.2: Demographic Characteristics

Category	Frequency	Percent (%)
Department		
Non-Technical Department	94	45.20%
Technical Department	114	54.80%
Period Worked		
3-5 Years	94	45.20%
Below 2 Years	14	6.70%
Over 6 Years	100	48.10%
Management Level		
Middle Level	86	41.30%
Operational Level	89	42.80%
Top Level	33	15.90%
Designation		
Assistant ICT Officer	13	6.30%
Senior Engineer	13	6.30%
Accountant	7	3.40%
ASC MO - Projects	7	3.40%
Assistant Director	7	3.40%
Others	139	66.80%
Total	208	100.00%

The demographic results of the study show the distribution of participants based on various characteristics such as department, period worked, management level, and designation. Regarding the department, most participants are from the technical department, accounting for 54.8%, while 45.2% are from the non-technical department. This indicates a slightly higher representation of technical staff in the sample. In terms of the period worked, the largest group consists of employees with over 6 years of experience (48.1%), followed by those with 3-5 years of experience (45.2%). A smaller proportion (6.7%) has worked for less than two years, suggesting a more experienced workforce.

In terms of management level, the study shows that the majority of participants hold operational-level positions, representing 42.8% of the sample, closely followed by middle-level employees at 41.3%. Only 15.9% of participants are in top-level management positions. This distribution highlights that the study captures a broad range of perspectives, with a higher concentration of responses from mid-level and operational staff. Finally, the designations within the organization reflect a diverse set of roles, with several participants holding titles such as Assistant ICT Officer (6.3%), Senior Engineer (6.3%), and Accountant (3.4%). However, many designations are held by a relatively small number of individuals, suggesting a varied yet specific workforce with different areas of responsibility.

5.4 Public-Private Partnerships (PPPs)

The table presents the descriptive analysis of Public-Private Partnerships (PPPs) in KeNHA based on eight statements assessed using a five-point Likert scale ranging from

1 ("Strongly Disagree") to 5 ("Strongly Agree"). Means and SDs were used to analyze the data, providing a summary of the respondents' perceptions regarding the role of PPPs in improving infrastructure quality, accelerating project completion, reducing financial constraints, and enhancing sustainability. The mean scores represent the level of agreement with each statement, while the SDs indicate the extent of variability in responses. This descriptive approach facilitates a detailed understanding of how PPPs contribute to KeNHA's operational effectiveness and infrastructure outcomes.

Table 4.3: Public-Private Partnerships (PPP)

Public-Private Partnerships (PPPs)	**M**	**SD**
Public-private partnerships have improved the quality of infrastructure delivered by KeNHA.	3.73	.919
The involvement of the private sector in road projects has accelerated the completion of infrastructure under KeNHA.	3.95	.741
PPP arrangements have helped reduce financial constraints faced by KeNHA in implementing road projects.	3.75	.848
KeNHA's collaboration with private companies leads to innovative solutions for road development.	4.09	.587
The performance of road projects under PPP agreements is higher compared to projects solely funded by the government	3.78	1.048
PPP initiatives have contributed to better risk management in road projects undertaken by KeNHA.	3.87	.797
KeNHA’s capacity to handle large-scale road projects has improved due to its experience with PPPs.	3.77	.653
Public-private partnerships have enhanced the long-term sustainability of infrastructure projects managed by KeNHA.	4.00	.758

Key: M-Mean, SD-Standard Deviation.
Source: Field Survey (2024).

The findings reveal that public-private partnerships (PPPs) have a positive impact on the quality of infrastructure delivered by KeNHA, as reflected by a mean score of 3.73. This indicates moderate agreement among respondents that PPPs contribute to improved infrastructure quality. However, the SD of 0.919 suggests a noticeable range of opinions, pointing to variability in experiences or perceptions of PPP-related outcomes across different projects or stakeholders. The involvement of the private sector in road projects is perceived to have accelerated the completion of infrastructure under KeNHA, with a higher mean score of 3.95. This reflects strong agreement among respondents regarding the efficiency gains associated with private sector participation. The relatively low SD of 0.741 suggests consistent perceptions, indicating widespread recognition of the private sector's ability to enhance project timelines.

Respondents agree that PPP arrangements have helped reduce financial constraints faced by KeNHA in implementing road projects, as shown by a mean score of 3.75. While this is a positive indication, the SD of 0.848 shows moderate variability in responses, suggesting that some financial challenges may still persist in certain PPP projects. Addressing these gaps could strengthen the financial benefits of PPPs for

KeNHA. Collaboration with private companies is viewed as a significant driver of innovative solutions for road development, with the highest mean score of 4.09. This indicates a strong agreement among respondents on the creative advantages of PPPs. The relatively low SD of 0.587 reflects high consistency in responses, underscoring the reliability of this finding. Encouraging further collaboration could enhance innovation in infrastructure development.

The performance of road projects under PPPs agreements is rated higher than that solely funded by the government, as evidenced by a mean score of 3.78. However, the SD of 1.048 indicates considerable variability in opinions, suggesting that while PPPs are generally effective, their performance may depend on specific conditions or implementation practices. Further research into these factors could help optimize PPPs project outcomes. PPP initiatives are perceived to contribute to better risk management in road projects undertaken by KeNHA, with a mean score of 3.87. This finding highlights the strategic value of PPPs in addressing risks associated with road development projects. The SD of 0.797 indicates relatively consistent agreement among respondents, suggesting that this is a broadly accepted benefit of PPP arrangements. KeNHA's capacity to handle large-scale road projects is seen to have improved due to its experience with PPPs, as reflected by a mean score of 3.77.

The low SD of 0.653 shows consistent perceptions, suggesting that PPPs play a critical role in building institutional capacity for managing complex infrastructure projects. Sustaining and expanding these experiences could further enhance KeNHA's operational effectiveness. Finally, public-private partnerships are viewed as enhancing the long-term sustainability of infrastructure projects managed by KeNHA, with a mean score of 4.00. This indicates strong agreement that PPPs provide enduring benefits for infrastructure development. The SD of 0.758 reflects consistent perceptions among respondents, underscoring the importance of PPPs in ensuring sustainable infrastructure outcomes. Strengthening PPP frameworks could further maximize these benefits for KeNHA and its stakeholders.

5.5 Performance of KeNHA

Table 4.6 presents the descriptive analysis of KeNHA's performance based on eight statements measured using a five-point Likert scale, ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The data were analyzed using means and SDs to summarize respondents' perceptions of various aspects of KeNHA's performance, including project timeliness, infrastructure quality, financial management, and stakeholder engagement. The mean values provide an overall indication of agreement levels for each statement, while the SDs illustrate the variability in responses. This approach offers a comprehensive view of how respondents perceive KeNHA's performance across the different dimensions outlined in the study.

Table 4.4: Performance of KeNHA

Performance of KeNHA	M	SD
KeNHA consistently completes its road projects on time.	3.45	.972
The overall quality of infrastructure delivered by KeNHA meets the required standards.	3.96	.913
KeNHA effectively manages its financial resources to complete projects within budget.	3.74	.922
The road networks developed by KeNHA contribute significantly to economic growth in Kenya.	4.15	1.104
KeNHA's road projects are well-maintained over time.	3.79	.817
KeNHA's performance in delivering infrastructure has improved over the past five years.	4.16	.687
KeNHA effectively engages with stakeholders to ensure successful project delivery.	4.30	.686
The public is satisfied with the quality of the road networks managed by KeNHA.	3.84	.775

Key: M-Mean, SD-Standard Deviation.
Source: Field Survey (2024).

The findings on the performance of KeNHA reveal varying levels of achievement across multiple dimensions. KeNHA's ability to consistently complete its road projects on time recorded a mean score of 3.45 and a SD of 0.972. This relatively moderate mean reflects mixed perceptions regarding the timeliness of project completion, and the higher SD suggests notable variability among respondents. These findings may point to challenges in maintaining consistent schedules, possibly due to factors such as funding delays, logistical issues, or regional disparities in project management. The quality of infrastructure delivered by KeNHA was rated more positively, with a mean of 3.96 and a SD of 0.913. This indicates a strong perception that KeNHA generally meets the required standards for road infrastructure, with minimal variability in opinions. This finding underscores the authority's capacity to deliver projects that align with national and technical benchmarks, though continuous improvements may be required to consistently exceed expectations.

KeNHA's effectiveness in managing its financial resources to complete projects within budget received a mean score of 3.74 and a SD of 0.922. This moderate mean reflects agreement that financial management practices are generally effective, though the variability in responses suggests that some projects might still experience budgetary overruns. Addressing inefficiencies and enhancing transparency in resource allocation could improve this perception further. The contribution of KeNHA's road networks to economic growth was rated highly, with a mean of 4.15 and a SD of 1.104. This high mean highlights the significant economic impact of KeNHA's infrastructure projects, while the higher SD suggests diverse experiences, possibly due to regional disparities in the accessibility or quality of road networks. Strengthening equity in infrastructure development could further enhance these contributions to economic growth.

KeNHA's ability to maintain its road projects over time received a mean score of 3.79 and a SD of 0.817. This reflects general agreement that road maintenance is adequate, with relatively low variability in responses. However, the moderate mean indicates room for improvement in ensuring consistent long-term upkeep of infrastructure across all regions under its jurisdiction. The authority's performance in delivering infrastructure has shown notable improvement over the past five years, as evidenced by a mean of 4.16 and a SD of 0.687. The high mean demonstrates widespread recognition of KeNHA's enhanced efficiency and effectiveness, while the low SD indicates strong consensus among respondents. These improvements may be attributed to enhanced funding strategies, better project management practices, and increased stakeholder engagement.

KeNHA's engagement with stakeholders to ensure successful project delivery scored the highest mean of 4.30 with a SD of 0.686. This reflects a strong perception that stakeholder collaboration has been highly effective, with minimal variability in responses. This finding emphasizes the importance of inclusive and participatory approaches in infrastructure development and suggests that stakeholder relationships are a key strength of KeNHA. Finally, public satisfaction with the quality of road networks managed by KeNHA recorded a mean score of 3.84 and a SD of 0.775. This indicates general approval of KeNHA's performance, with relatively low variability in responses. However, the moderate mean suggests that there is room for improvement in aligning public expectations with the quality of infrastructure provided. By addressing identified gaps and increasing public engagement, KeNHA could enhance its reputation and trust among stakeholders.

5.6 Relationship between Funding Strategies and Performance of KeNHA

The correlations table presents the results of a Pearson correlation analysis conducted to examine the relationships between key funding strategies—namely, the Road Maintenance Levy Fund, Public-Private Partnerships (PPP), and Development Funding—and the performance of the Kenya National Highways Authority (KeNHA). This analysis was performed as a preliminary step before fitting a regression model to assess the strength and direction of associations between the independent variables (funding strategies) and the dependent variable (performance). Correlation analysis is essential in identifying significant linear relationships, determining whether multicollinearity may exist, and providing initial insights into the variables' interactions. The analysis utilized a five-point Likert scale to measure perceptions related to each funding strategy and KeNHA's performance, ensuring that the data is standardized for meaningful interpretation. By exploring these relationships, the correlation analysis provided a foundation for subsequent regression modeling to determine the predictive power of the funding strategies on performance outcomes.

6. Summary of Findings, Conclusions and Recommendations

6.1 Introduction

Chapter Five of this study presents a comprehensive discussion of the findings, conclusions, recommendations, and suggestions for further research. This chapter provides a summary of the key findings from the analysis of the impact of funding strategies, including the Road Maintenance Levy Fund, Public-Private Partnerships, and Development Partner Funding, on the performance metrics of the Kenya National Highways Authority (KeNHA). Based on the study's results, conclusions are drawn regarding the effectiveness of each funding strategy in enhancing performance, followed by specific recommendations for KeNHA, the government, and other stakeholders. Additionally, the chapter proposes directions for future studies to further explore gaps and extend the understanding of the topic.

6.2 Summary of Findings

The objective was to assess the influence of PPPs on KeNHA's performance. The descriptive statistics indicated that PPPs were seen as a valuable tool for improving infrastructure quality and accelerating project completion. The correlation results also revealed a positive relationship between PPPs and KeNHA's performance, though the strength of this relationship was slightly weaker than that of other funding strategies. Despite this, the regression analysis showed that PPPs did not significantly contribute to KeNHA's performance. This suggests that while PPPs have the potential to improve certain aspects of infrastructure development, other factors might be more influential in driving overall performance outcomes at KeNHA.

6.3 Conclusions

The second objective sought to explore whether PPPs have an effect on the performance metrics of KeNHA. The study concluded that although PPPs are beneficial in some areas, their overall impact on performance metrics was not as significant as anticipated. Descriptive statistics suggested that PPPs contribute to improvements in infrastructure quality and innovation. However, the correlation and regression analysis revealed a weaker relationship between PPPs and performance, with PPPs not emerging as a strong predictor of KeNHA's performance. This indicates that while PPPs may support certain aspects of KeNHA's projects, they do not have as substantial an effect on the overall performance as other funding strategies. Thus, the hypothesis that PPPs significantly influence KeNHA's performance is not fully supported by the results.

6.4 Suggestions for Further Studies

Exploring the Impact of Governance Structures on KeNHA's Performance: Future studies could investigate how various governance structures, including leadership styles, decision-making processes, and transparency practices, affect the performance of

KeNHA. This would help identify governance-related factors that could enhance or hinder the effectiveness of funding strategies and overall infrastructure delivery.

Assessing the Long-Term Sustainability of PPPs in KeNHA Projects: Further research could examine the long-term effects and sustainability of in road infrastructure projects managed by KeNHA. This would involve exploring the challenges and benefits over extended periods, focusing on the outcomes for both the public and private sectors involved in these partnerships.

Comparative Analysis of Domestic vs. International Funding Sources on Infrastructure Performance: A study could compare the effects of domestic versus international funding on KeNHA's performance, analyzing how different funding sources influence project completion times, cost-effectiveness, and the quality of road infrastructure. This would provide insights into how the mix of domestic and international financial support can optimize performance outcomes.

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References

Akintoye, A., Beck, M., & Kumaraswamy, M. (2016). *Public-Private Partnerships: A Global Review*. Routledge. Retrieved from https://www.routledge.com/Public-Private-Partnerships-A-Global-Review/Akintoye-Beck-Kumaraswamy/p/book/9780367598198

Allen, F., Demirgüç-Kunt, A., Klapper, L., & Martinez Peria, M. S. (2016). The foundations of funding strategies: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation*, *27*, 1-30. https://doi.org/10.1016/j.jfi.2015.12.003

Chirambo, J., & Aker, J. C. (2023). The impact of development funding on rural road infrastructure performance in Malawi: A case study approach. *Journal of Transportation and Infrastructure Engineering*, *9*(1), 42-56.

Chirambo, J., & Aker, J. C. (2023). The impact of development funding on rural road infrastructure performance in Malawi: A case study approach. *Journal of Transportation and Infrastructure Engineering*, *9*(1), 42-56.

Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review*, 22(1), 20-47. https://doi.org/10.2307/259223

Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *The Global Findex Database 2017: Measuring Funding strategies and the Fintech Revolution*. World Bank Group. Retrieved from https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/332881525873182837/the-global-findex-database-2017-measuring-financial-inclusion-and-the-fintech-revolution

Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, 16(1), 49-64. https://doi.org/10.1177/031289629101600103

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, *14*(1), 57-74. Retrieved from https://www.jstor.org/stable/258191

Fourie, F., & Burger, P. (2017). The role of Public-Private Partnerships in enhancing public sector performance in South Africa. *Journal of Infrastructure Development*, 9(2), 115-131. Retrieved from https://openbooks.uct.ac.za/uct/catalog/download/5/7/194?inline=1

Gichuki, P. (2024). Challenges in implementing public-private partnerships in Kenya's infrastructure sector: The case of KeNHA. *Journal of Infrastructure Development*, *11*(2), 113-130.

Gichuru, C., & Thuo, J. (2018). Impact of Public-Private Partnerships on the performance of road infrastructure projects in Kenya: A case study of KeNHA. *Kenya Journal of Public Policy*, 7(1), 89-102.

Grimsey, D., & Lewis, M. K. (2017). *Public-Private Partnerships: The Worldwide Revolution in Infrastructure Provision and Project Finance* (2nd ed.). Edward Elgar Publishing. http://dx.doi.org/10.4337/9781845423438

Hove, M., & Dubus, A. (2019). The role of funding strategies in economic growth: A case study of South Africa. *Journal of Economic Development*, *44*(1), 63-88.

Ivanov, D., & Petrov, S. (2022). Government financing and financial performance of public transport agencies: A comparative analysis. *Journal of Public Economics*, 45(2), 67-89.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

Kamau, J. (2021). Financial challenges in leveraging public-private partnerships for infrastructure development: Insights from KeNHA. *African Journal of Economics and Finance*, *9*(4), 254-270.

Kamau, J. K. (2018). Credit accessibility and performance of agribusinesses in Nakuru County, Kenya. *Journal of Agribusiness in Developing and Emerging Economies*, 8(2), 123-134.

Karanja, E. (2019). Socio-political challenges in leveraging funding strategies and PPPs for infrastructure development in Kenya. *Public Policy and Administration Review*, *7*(3), 87-104.

Karanja, J., & Mwaura, P. (2022). Credit accessibility and financial performance of public infrastructure authorities in Kenya: A comparative analysis. *Journal of Public Finance*, 38(4), 98-113.

Kariuki, S., & Kamau, J. (2018). Credit access and financial performance of public infrastructure projects in Kenya. *East African Journal of Business and Economics*, 15(3), 145-160.

KeNHA. (2022). *Kenya National Highways Authority: Annual Report 2021/2022*. Kenya National Highways Authority. https://kenha.co.ke/document/kenha-annual-report-for-the-year-ended-2021-2022-digital-version/

Kenya National Highways Authority. (2021). *Annual report and financial statements*. KeNHA.

Kimani, M., & Njoroge, P. (2020). The role of government funding in enhancing the financial performance of state-owned enterprises in Kenya. *African Journal of Business Management*, 14(5), 112-125.

KIPPRA. (2021). *Kenya Economic Report 2021: Navigating the COVID-19 Era: Recovery and Beyond*. Kenya Institute for Public Policy Research and Analysis. Retrieved from https://repository.kippra.or.ke/items/7900c2b6-295c-4f4d-9e73-c7e209b0337b

Kivuva, P., & Mueni, M. (2020). Challenges and opportunities of Public-Private Partnerships in the road infrastructure sector in Kenya. *African Journal of Infrastructure Development*, 12(3), 134-149.

Lee, J., & Kim, S. (2021). Effects of credit accessibility on the performance of public infrastructure authorities in South Korea. *Journal of Infrastructure Finance*, 22(6), 207-223.

Mburu, L., & Wachira, N. (2020). The influence of credit access on the financial performance of transport sector projects in Kenya: A case study approach. *Journal of Transport Economics*, 29(3), 178-192.

Mouraviev, N., & Kakabadse, N. (2016). Public-Private Partnerships in Russia: Evolution and current state. *International Journal of Public Sector Management*, 29(5), 408-425.

Müller, H., & Schneider, F. (2017). Effects of government subsidies on the financial performance of public infrastructure projects in Germany. *Journal of Infrastructure Development*, 11(3), 210-230.

Mutua, C. W. (2016). The effect of credit accessibility on the performance of the tourism sector in Mombasa County, Kenya. *African Journal of Hospitality, Tourism and Leisure*, 5(4), 1-15.

Mwangi, G. (2019). Credit access and performance of public-sector infrastructure projects in East Africa. *African Journal of Development Studies*, 17(4), 112-130.

Mwangi, J., & Mutua, A. (2018). Government funding and financial performance of public sector projects in Kenya. *International Journal of Finance and Accounting*, 7(4), 133-145.

Mwangi, K., & Wanjiru, T. (2023). Funding strategies challenges in infrastructural development: A case study of KeNHA. *Kenya Journal of Development Studies*, *8*(1), 45-62.

Mwangi, P., & Njuguna, A. (2017). Credit accessibility and financial performance of microfinance institutions in Nairobi, Kenya. *International Journal of Finance and Banking Studies*, 6(2), 45-57.

Mwenda, A., & Mugisha, M. (2023). The role of development funding in enhancing performance outcomes in the education sector in Uganda. *East African Journal of Education and Social Sciences, 14*(1), 112-127.

Mwenda, A., & Mugisha, M. (2023). The role of development funding in enhancing performance outcomes in the education sector in Uganda. *East African Journal of Education and Social Sciences, 14*(1), 112-127.

Njoroge, M., & Ouma, S. (2021). The impact of credit accessibility on the performance of public secondary schools in Machakos County, Kenya. *Educational Research International*, 10(2), 25-35.

Nyangweso, P. (2020). The impact of credit accessibility on the performance of SMEs in Nairobi County, Kenya. *Global Journal of Business Research*, 14(1), 78-89.

Ochieng, D. (2022). Institutional challenges in implementing public-private partnerships for road infrastructure development. *Journal of Public Sector Management*, *15*(1), 67-82.

Odhiambo, P. (2019). Impact of public funding on infrastructure development in East Africa: A case study of Kenya. *East African Journal of Economics*, 10(1), 23-45.

Odhiambo, R. O. (2019). Credit accessibility and operational performance of public health facilities in Kisumu County, Kenya. *International Journal of Public Health Research*, 9(3), 112-120.

Ojo, J., & Ola, O. (2021). Development funding and infrastructure performance: Evidence from Nigeria's road sector. *Journal of African Development, 23*(3), 95-112.

Osei-Kyei, R., & Chan, A. P. (2017). Critical success factors for public-private partnership projects: A comparative analysis between Ghana and other developing countries. *International Journal of Project Management*, 35(4), 841-851.

Otieno, M., & Mutua, G. (2020). Regulatory challenges in public-private partnerships: The case of KeNHA. *East African Journal of Law and Policy*, *6*(2), 119-134.

Sahay, R., Čihák, M., N'Diaye, P., Barajas, A., Mitra, S., Kyobe, A., & Yousefi, S. R. (2020). *Funding strategies: Can it meet multiple macroeconomic goals?*. International Monetary Fund. Retrieved from https://www.imf.org/external/pubs/ft/sdn/2015/sdn1517.pdf

Sarpong, D., & Amponsah, O. (2022). "Funding strategies and economic development: Insights from the United States and United Kingdom." *International Journal of Financial Studies*, *10*(3), 142-156.

Tosi, H. L., Brownlee, A. L., Silva, P., & Katz, J. P. (2003). An empirical exploration of decision-making under agency controls and stewardship structure. *Journal of Management Studies*, 40(8), 2053-2071. https://doi.org/10.1046/j.1467-6486.2003.00411.x

Wambua, K., & Muturi, A. (2017). The relationship between credit accessibility and performance of state-owned enterprises in Kenya. *Journal of Financial Management*, 8(2), 89-102.

Wambugu, K. N. (2017). Credit accessibility and performance of manufacturing firms in Eldoret, Kenya: A longitudinal study. *Journal of Business Management*, 13(4), 193-207.

Wang, X., & Li, Y. (2021). The impact of government funding on the financial sustainability of highway authorities in China. *Journal of Transportation Economics*, 34(7), 299-315.

World Bank. (2018). *Public-private partnerships: Reference guide 3.0*. World Bank Group. Retrieved from https://ppp.worldbank.org/library/ppp-reference-guide-3-0-full-version

World Bank. (2021). *Funding strategies overview*. World Bank Group. https://www.worldbank.org/en/topic/financialinclusion/overview

World Bank. (2022). *Funding strategies: A pathway to inclusive growth*. World Bank Publications.

Yescombe, E. R. (2017). *Public-private partnerships in sub-Saharan Africa: A guide to governance and finance*. Routledge. Retrieved from https://africaportal.org/wp-content/uploads/2023/05/Public-Private-Partnerships-in-Sub-Saharan-Africa_Digital_FINAL-4_zZ5ae2z.pdf

Zhang, Y., & Liu, Q. (2022). Evaluating the effectiveness of development funding on public infrastructure projects in China: A quantitative analysis. *International Journal of Project Management, 40*(7), 697-710.