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PUBLIC-PRIVATE PARTNERSHIP AND IMPLEMENTATION OF ROAD INFRASTRUCTURE PROJECTS IN KENYA

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DECLARATION

This project is my original work and has not been presented for a degree in any other university.

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DEDICATION

To my family, for your relentless inspiration.

To my late father, Alexander Kipchumba Arusey, for his relentless encouragement that made my rise on the education ladder possible up to this level.

To all the public and private agencies, professionals, consultants and scholars involved in championing for public private partnerships in achievement of Kenya's Vision 2030.

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May God bless you all.

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LIST OF ABBREVIATIONS AN ACRONYMS

AfDB:	Africa Development Bank
BOO:	Build-Own-Operate
BOOT:	Build-Own-Operate-Transfer
BOT:	Build-Own-Transfer
BTO:	Build-Transfer-Operate
DBFOMT:	Design-Build-Finance- Operate- Maintain-Transfer
GDP:	Gross Domestics Product
IMF:	International Monetary Fund
KENHA:	Kenya National Highways Authority
KEPSA:	Kenya Private Sector Alliance
KURA:	Kenya Urban Roads Authority
NACOSTI:	National Council of Science, Technology, and Innovation
NPM:	New Public Management
O&M;	Operation and Maintenance
OECD:	Organization for Economic Co-operation and Development
PAT:	Principal-Agent Theory
PPP:	Public-Private Partnerships
PPPU:	Public-Private Partnership Unit
SAP:	Structural Adjustment Programme
UK:	United Kingdom
VGF:	Viability Gap Funding

ABSTRACT

Public-private partnership has emerged as a strategic tool in enhancing economic growth for infrastructure and service delivery. Despite this recognition, different types of PPPs exist and are likely to influence how road projects are implemented, but this has not been fully researched. The study investigates how various aspects of public-private partnership influence implementation of road infrastructural development in Kenya. The study combined qualitative and quantitative approaches using a cross-sectional design. Secondary data was complimented with primary data collected from 35 purposively sampled respondents. The study established that PPP road projects have mostly utilized the DBFOMT model. While a range of stakeholders exist, engagement of NGO/CSO, community and public are still limited due to a lack of transparent and accountable measures. PPP has not resulted in reduction in the total cost of the projects, despite improvements in quality and efficiency. Challenges of PPP range from contractual political, legal to stakeholder-related. The study concluded that the nature off PPP used can influence the quality of road infrastructure projects. Policy recommendations focused on the need for government to utilize the potential benefits of Joint Venture arrangements while embracing a bottom-up approach when engaging with all stakeholders to avoid cost and time overruns and ensure quality of roads

CHAPTER ONE: INTRODUCTION

1.1Background to the Study

Across the globe, the demand for road networks in enhancing economic growth has advanced the rising adoption of Public-Private Partnerships (PPPs). Ideally, this strategic move has now become an important tool through which governments can implement both institutional and infrastructural developments. Many governments are now shifting towards PPP as a considerable strategy in delivering long-lasting infrastructure projects (Leigland, 2018).

Public-private partnership is a central element for governments across the globe in their pursuit to boost infrastructural development. For a long time, public sector has mainly relied on old-style system to deliver services to the citizens. However, globalization has seen changes in the world order, with a need to widen scope of development for both developed and developing countries. To keep pace, the private sector has increasingly been called upon to fill this gap, thereby taking up key role in service delivery that have been a preserve of the state. PPP, therefore, describes a structure of the relationship between two parties with the intent for optimal public services (Colverson & Perera, 2012). However, they vary depending on a variance of factors, including but not limited to country-specific laws, sector and particular project in question as well as the framework in which the take place. across countries. This is because PPPs have different usages, ranging from capital investment, financing, sharing of profits/risks (Obosi, 2017). This is because various governments have different institutional mechanisms that guide the PPP process. Furthermore, each country has unique centralized PPP Units designed to address various projects to suit the individual government needs (Tseng & Peng, 2018). Therefore, the PPP models used, their function, location (within government), and jurisdiction (who controls it) may differ amongst countries. As such, comparative analysis for PPPs across countries should take into account the unique cases under which every country or sector applies them. Such aspects also makes the cost-effectiveness and relevance of such projects unique.

Historically, the implementation of infrastructure project before the introduction of PPP date back to the Roman Empire in Europe (Bovaird, 2010); where several ports and harbors were constructed through concessions and community by associated tolls (Bezancon, 2004). The European industrial revolution set pace for rapid development in transport set-up such as

roads, railroad and energy sectors. These infrastructure projects, around the 1960s, were financed by private consortia, mainly contractors and banks (Gaffey, 2010). However, the economic shocks of the oil crisis in the 1970s pushed governments to rethink their development path, which gave escalated privatization between 1980-1990s. With limited financial strength, a rising demand to seek new ways of doing business facilitated private sector cooperation. Along with this approach came the New Public Management and reinventing public sector performance by Osborne and Gabler (1992).

According to Nalo (2018), the implementation of infrastructure projects in Africa before PPP was often undertaken without a specific policy, legal, or regulatory framework. A critical point for Africa was the Structural Adjustment Programmes that revolutionized governments' way of doing business. This policy shift led to the privatization of government-run entities, to boost service delivery and efficiency owing to the budget cuts that had impacted on country's economy. According to Kang'ara (1999), institutional reforms were necessary to ensure key infrastructural sectors like energy, roads, and seaports would attract investment and grow the Gross Domestics Product (GDP). The need for private financing was also fuelled by the low budget allocations for the road sector, with the poor state of roads that hampered connectivity, transport of goods and services, and slowed economic growth. Therefore, an analysis of how public-private-partnerships are performing begs for more research.

In Kenya, implementation of infrastructure schemes relied on annual national budget, facilitated by road tariffs that were limited and hence led to poor road maintenance. The Privatization Public Procurement and Disposal Acts of 2005 paved the way for PPP (Ong'olo, 2006). Within the Kenya Vision 2030 blueprint, the Government of Kenya also made efforts to invest heavily in infrastructure through PPP arrangements to attain this vision target. Furthermore, progress was made to reorganize delivery of huge infrastructure ventures, which paved way for the PPP Act of 2013. This bold move provided a robust framework for engaging private partners in service delivery, particularly with the creation of the PPP Unit under the State Treasury.

Many countries both developed and developing have adopted PPP policy arrangements as a mechanism to maintain a sustainable project pipeline in the road sector. However, PPP application varies across sectors and jurisdiction in which PPP is operating (Zen & Regan,

2014). At the global level, Canada, France, India are a few examples showcasing PPP projects within the road sector. In Canada, PPPs take various shapes, with different funding models used in road contracts producing different outcomes. For example, the "Highway 407 Express Toll Route (ETR)" highway road in Canada is one PPP project that proved successful in assuring cost-effectiveness, relevance, and stakeholder involvement. Nevertheless, an analysis of its long-term benefits and risk factors associated with these projects showed that the government spent extra finances after it was launched (Ruck, 2016). In France, a DBFOMT model was applied in developing A65 motorway project. According to Vaisseir and Seniuta (2015), road projects under PPP in France have been regarded as cost-effective and relevant in addressing infrastructural gaps. In India, following establishment public private partnership guideline agenda in 1992, placed India's road sector as a vibrant economy in utilizing various PPP models (Nallathiga & Shah, 2014). According to the authors, the road sector in India has greatly benefited from PPPs. Such projects include the Panagarh-Palsit Highway project, under the design, construction, operation, and maintenance model in 2001. Despite the successes, PPP projects have also presented some risks, especially in the design, implementation, and management stages. Delays caused by land availability and conflict issues, changes related to the scope of works, and mismatch in the PPP contracts were critical challenges that led to time overruns and insufficient quality (Nallathiga& Shah, 2014).

In Africa, road infrastructure in most countries has benefited from significant Public-Private Partnership (PPP) investments (Oyedele, 2012). South Africa, Nigeria, Uganda are some countries where PPP is being implemented. In South Africa, several PPP projects within the road sector have been implemented. Some of the projects include the highway connecting South Africa and Mozambique, a PPP project under Build-Own-Transfer (BOT) model launched in the year 1997. According to Volden (2018), these infrastructural projects have increased efficiency in time-frames of project delivery, but the cost implications remain a key aspect in evaluating their effectiveness. In Nigeria, a major road project PPP includes the Lekki Toll Road launched in 2000 linking Victoria Island and Lekii Peninsula in Lagos. According to Oyedele (2012), this project was considered a key infrastructure to boost government service delivery. However, several challenges including community riots against paying tolls led to the cancellation of tolling (Oyedele, 2012).In Uganda, PPP within the road sector hasn't picked up as much, with the PPP Act that provides the framework for

PPP implementation approved in 2015 (Ndandiko, 2018). Although there has been progress towards PPP, projects like the Kampala-Jinja expressway faced a number of challenges, majorly institutional capacity within the PPP framework (Ndandiko, 2006).

In Kenya, a Public-Private Partnership (PPP) legal and policy framework are guided by the PPP Act of 2013. The Act guides all government and private sector operations that enlist transportation ventures (Nalo, 2018). The Act stipulates institutions mandated with oversight, regulation, and supervision of PPP contracts. Within the National Treasury, the PPP Unit is mandated with overseeing systematic coordination of projects and contracts review and approval process. Moreover, this unit has the responsibility to monitor and coordinate viable transactions and enhance policy formulation and furtherance (Kamau, 2016).

1.2 Problem Statement

There has been a growing attention for governments to utilize public private partnerships in delivering infrastructural ventures. However, challenges associated with poor road networks, road maintenance, and limited access to services due to the state of roads had hampered economic growth. This infrastructure gap was driven by limited financial and technical capacity for state agencies to deliver huge projects under tight budgets. Furthermore, the macro and micro-economic issues that affected African governments (Guarara & Mwase, 2017), including Kenya, had limited access to essential services, inequality, and poverty. Consequently, the effects of Structural Adjustment Programmes (SAPs) reforms brought about inflation and hence limited government ability to boost infrastructure development. A shift to private sector role thus emerged to fill this gap. In Kenya, the Public-Private Partnership (PPP) emerged during the 1990s following the rising gap in infrastructure provision, which had slowed down economic growth (Obosi, 2017). This was followed by a transient public private partnership Act which also provided for establishment of PPP Unit. The benchmarks informing PPP were stimulated by the growing need to provide a regulatory environment that could enhance public service efficiency, private sector engagement with government projects, and a fair but competitive process in implementing huge infrastructure projects.

Kenya has used different forms and models of PPPs developed to implement road projects. Due to different conceptualizations of PPP by different scholars and entities at different

times, road infrastructure development projects in Kenya embraced aspects of PPP in different proportions, although, even the government itself was oblivious of the exact model used. The categorization of PPP models ranges from category A1 to C3, depending on the level of involvement of public leverage, contracting out, franchising, joint ventures, and strategic partnering (Obosi, 2015). The role of each partner differs, either by assuming a substantial stake in the project or through a joint venture. Consequently, PPP occurs at different phases either as financing, constricting or maintenance stage.

The growing role of Public-Private Partnership (PPP) has seen several road projects implemented using different PPP models. For example, Nairobi-Thika Super-Highway, Mombasa-Nairobi highway, Nairobi-Southern Bypass, Eastern Bypass, and the Nairobi-Nakuru-Mau Summit Highway represent milestones for PPP in the road sector in Kenya. Nairobi-Thika Highway was built through funding from the Kenyan Government, Africa Development Bank (AfDB), and the Exim Bank of China. The World Bank's funded Mombasa-Nairobi Highway was constructed via Chinese state-owned enterprises. Nairobi Southern Bypass was funded by China's Exim Bank and constructed by Chinese state-owned enterprises. These road projects represent different PPP arrangements with varying results in terms of effectiveness and efficiency.

While these cases demonstrate a growing interest for PPP, there lacks proper systematic analysis of how various aspects influence efficiency in delivering these projects. Identifying significant aspects of PPP, comprising a clear understanding of various PPP models available for adoption, concerned stakeholder management, value for money and institutional factors could offer success in implementing road projects. Therefore, recognizing the significance of these key aspects, along with challenges associated with various PPP forms could contribute to giving a clear picture and overall understanding of what PPP has achieved. It is against this background that the study investigated how various aspects of PPP have contributed to the road infrastructural development in Kenya.

1.3 Research Questions

i. How does the nature of public-private partnerships influence the implementation of road infrastructure projects in Kenya?
ii. How relevant is a public-private partnership in the implementation of road infrastructure projects in Kenya?
iii. What is the cost-effectiveness of using public-private partnerships in the implementation of road infrastructure projects in Kenya?
iv. What are the challenges of using public-private partnerships in the implementation of road infrastructure projects in Kenya?

1.4 Objectives of the Study

i. To examine how the nature of public-private partnership influences the implementation of road infrastructure projects in Kenya.
ii. To establish the relevance of public-private partnerships in the implementation of road infrastructure projects in Kenya.
iii. To determine the cost-effectiveness of public-private partnerships in the implementation of road infrastructure projects in Kenya.
iv. To examine the challenges of using public-private partnerships in the implementation of road infrastructure projects in Kenya.

1.5 Justification of the Study

Public private partnership has now become a critical strategy through which the government of Kenya intends to build more and better road infrastructure. This momentum is driven by a growing perspective that such arrangements help the state balance development and debt, as well as tapping potential technology and innovation from the private partner. Besides, the move towards PPP is a strategy to ensure the efficiency, relevance of projects in promoting socio-economic development and saving on costs. However, the nature of PPP would depend on the responsibility matrix between what the private sector can provide and what the public can provide, and what can be brought in the partnership. This means that

the nature of PPP is not definite, as every project has its own unique characteristic (Arezki, 2016).

The role of government and private partners differ. Sometimes, PPPs can co-opt an arrangement where the private sector undertakes full infrastructure projects to attract long-term benefits of public national development plans. In other cases, one form of PPP may bring regulation, finances, or management (Walker, 2014). However, given the different channels through which PPPs are implemented in the road sector, different results are expected, whether quality, timely completion and within expected budget. Therefore, thee varying forms in PPPs begs for a detailed analysis of how it affects project implementation. This study provided both scholarly and policy-related justifications.

1.5.1 Academic Justification

Public-Private Partnership (PPP)in its nature encompasses various forms. The factors influencing PPP project performance have been explored. For example, there have been various studies presenting critical success factors and criteria (Zhang, 2005), risk identification and allocation (Doloi, 2012), and barriers and impeding factors (Rohman, Doloi & Heywood, 2015). Empirical research on the nature of PPP and how each model influences project implementation is still sparse in the local context. Previous studies, such as Pedo, Kabare, and Makori (2018) assess frameworks of PPP without emphasis on the nature of PPP and key components such as relevance and cost.

Given that PPP comes in different forms, these various modes may influence project implementation in various parameters including operational efficiency requirements, relevance, cost implications, and challenges arising from the different roles. Therefore, it is not sufficient to only recognize attributes mentioned in other studies or factors without analysing how the nature of PPP, relevance, and cost play a role in delivering road projects. The study seeks to address these gaps by examining how various PPP aspects such as the nature of PPP, cost-effectiveness, relevance, and underlying challenges.

1.5.2 Policy Justification

Numerous PPP arrangements exist, which means there is no single common approach to engaging the private sector in service delivery. A sound understanding of how different PPP models can be applied in varying local contexts to appreciate their advantages and

limitations. Therefore, policymakers need clear benchmarks in applying different PPP models in delivering road projects. Also, stakeholders could develop best practices for each PPP model and ensure that partnerships bear economic benefits. This may also help the private sector understand the impact of PPP models being employed to make better decisions on the investment models for each road project.

The study's recommendation could act as a springboard from which the Government of Kenya can refine its policy framework to ensure relevance, cost-effectiveness, efficiency in not only new projects but also maintenance of road infrastructure. Agencies such as the state departments and parastatals charged with national transport and urban planning could also benefit and review their scorecard relating to the benefits and risks associated with road projects implemented under PPP. In addition, the study informs the PPP Unit (National Treasury) on the best-fit-model and develop measures to ensure the relevance and cost-effectiveness of such projects. The study can also help the private sector and investors generate benchmarks useful for measuring PPP performance as well as value for money and stakeholder role in delivering PPP projects.

1.6 Scope and Limitations of the Study

The study focused on Nairobi-Thika Super-Highway, Mombasa-Nairobi highway, Nairobi-Southern Bypass, the Nairobi-Nakuru-Mau Summit Highway, and the Ngong-Kiserian-Isinya, Kajido-Mashuru-Isara road. The study was delimited to four key aspects including the nature of PPP, relevance, cost, and challenges faced in using PPP within the road industry.

The confinement to the road infrastructure sector only limits the ability to take a broad view of the outcome to further sector projects in Kenya. Consequently, conducting a study on Public-Private Partnership (PPP) and especially, road projects that have varying projects is time-consuming given the processes involved in accessing government records. Given the divergent roles of public and private entities, providing general assumptions about the development impacts of all PPP forms is difficult. Assumptions must be tested at the assessment, monitoring, and evaluation stages for each PPP and specific road project by all of the actors involved.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This section provides an evaluation of related case studies and gaps emerging from these studies. The literature was thematically discussed as follows: historical evolution of PPP, the concept of PPP, how the nature of PPP affects road infrastructure project implementation, PPP's relevance, the cost-effectiveness of using PPP, and the problem arising from adopting PPP as a tool for delivering road projects in Kenya.

2.1 Overview of PPP as a Concept

The conception of public-private partnership has been growing covering many forms and involving various contracts depending on either government policy or the nature of the project. There are different definitions of PPP indicating the various categories ranging from private enterprise, a joint venture to private investment (Table 1.1). For example, Zen and Regan (2014) define PPP as a special arrangement vehicle where both public and private get into a long-term plan to share risks and investment for a particular project. According to Norton (2019), different definitions for PPP exist, and vary in how different countries and partners adopt an array of elements in financing, and span of control to manage the project life cycle. In some cases, PPPs are described by the functions transferred to the private party. For example, a Design-Build-Finance-Operate-Maintain (DBFOM) contract would allocate all those functions to the private party. Other PPP types such as Build-Operate-Transfer (BOT) focus instead on the legal ownership and control of the assets (Deep, Kim & Lee, 2019).

Public-Private Partnerships (PPPs) have been classified in various forms. According to Obosi (2015), various forms of PPPs differ in classification, depending on the project type or nature of contracts involved. According to Rashed and Ekjwan (2011), PPP could take many forms, such as concessions, joint ventures, BOTs, contracting out, franchising and strategic partnering. For example, PPP in the UK take the Private Finance Initiative (PFI) form while most European countries refer to their current private finance infrastructure programmes as PPP, which are very similar to the U.K. model (Norton, 2019).

In an ideal partnership, the role of each partner is based on the comparative advantage they bring to the collaboration and the nature of the PPP arrangement selected. According to Liu, Davis, and Regan (2014), the public partner plays a key role in creating a positive investment environment, promoting oversight through the existing permissible and regulatory structures, legitimacy and coordination mechanisms, as well as formal power. On the other hand, private sector could finance, in whole or part, the working capital, and bring on board innovation, technology in construction, operating and maintenance of the facility (Farquharson, Mastle, & Yescombe, 2011).

In its nature, Public-Private Partnership (PPP) covers a wide form of continuum, involving institutional agreements that cut across government agencies, parastatals to private units. In some cases, PPP contracts entail contractual mechanisms that may either be construction by the private sector, financing, operation, or later transfer back to the government. Within the PPP framework, and depending on how the specific government or sector is involved, such contracts are offered as a competitive plan to boost government financial strength for the provision of services. According to Obosi (2017), PPP has now become an ideal strategy through which governments provide a range of sector infrastructures such as water services (Obosi, 2017) and education (Obosi, 2018). Given that PPP is categorized into various forms, each model has its gains and drawbacks and how each partner undertakes their responsibility as shown in Table 1.2.

Table 1.1: A continuum of public-private partnerships

Classification	A1	A2	B1	B2	B3	B4	B5	C1	C2	C3
Responsibility/ Form	Public enterprise	Public PLC	Service contract	Manag. contract	Afferm. contract	Lease contract	Conces s. contract	BOT	Joint venture	Divestiture
Asset ownership	Public	Public	Public	Public	Public	Public	Public	Private	Private	Private
Tariff regulation	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public
Capital investment	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public
Cost and quality	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public
Monitoring										
Utility management	Public	Public	Public & Private	Public & Private	Private	Private	Private	Private	Private	Private
Operations and maintenance	Public	Public	Public & Private	Private	Private	Private	Private	Private	Private	Private
Working capital	Public	Public	Public	Public	Private	Private	Private	Private	Private	Private
Commercial risk	Public	Public	Public	Public	Private	Private	Private	Private	Private	Private
Contract duration	Unlimited	unlimited	1-2 years	3-5 years	8-15 years	8-15 years	20-30 years	20-30 years	Indefinite	Indefinite
City/Country	Original setup	Netherlands Poland Chile	Mexico City, Uganda	Johannesburg, Monagas State (Venezuela), Gambia	Coˆted'Ivoire, Senegal, France Guinea	Mozambique	Buenos Aires, Manila, La Paz, Nelspruit	San Jose´, Sao Paulo, Cancu´n	Colombia, Czech Republic, Hungary, Poland	England and Wales
Public										**Private**
Low										**High**
Popular participation autonomy										

Source: Adapted from Obosi (2015)-Page 14

2.2 Nature of PPP in road infrastructure

Maddock (2013) describes various models ranging from traditional operation and maintenance, Design/Built Operate Transfer, and those designed, financed, operated, and maintained and later handed over back after an agreed time. The nature of PPP used is based on the regulatory as well as institutional guidelines in place. In their nature, PPPs require careful analysis and evaluation before expanding their use in providing road infrastructure. This view is supported by Shah (2013), demonstrating that the nature of PPP used influenced the delivery of (construction, operation, and maintenance) in India's Mumbai Metro. Klijn

(2015) contends that the varying forms of financing PPP models could affect the contracts and also project under question, and may not necessarily lead to private financing in the long run.

Rashed and Ekhwan (201110 provided differences in PPP forms, such as concessions, BOT type agreements and joint ventures since they necessitate financing from private partner. Joint ventures allow both public and private to co-own or co-finance, and thus sharing of responsibility is a strategic move for risk-sharing and shared returns on investment. Finance-based PPPs include Build-Operate-Transfer (BOT), Build-Transfer-Operate (BTO), and Build-Own-Operate (BOO) arrangements. The service-based approach of PPP on the other hand depends on the skills and experience contributed by the private sector in form of innovation and management of the public sector infrastructure to provide the additional services needed in the public sector efficiently and effectively (Gaffey, 2010). According to Whettenhall (2011), a common feature for road projects is the DBFOMT model which gives the private partner power to design, conceptualize and deliver the asset ad still maintain it. Other PPP arrangements may allow the ownership to be into the hands of the private sector. with a realization that the project achieved better efficiency and operational maintenance.

Studies in developed economies like the USA and Canada show different PPP forms have been used to generate different infrastructure projects. According to a study by Lamman, Maclntyre, and Berechman (2013), Canada has achieved much with integrating PPP in the road sector, and this growth has been attributed to its flexibility in modeling various PPP forms such as DBFOMT and BOOT. In his recent study, Gebra (2018) observes that procedures that guide road projects have made PPP flourish in Ethiopia. However, while different PPP forms have been employed, the approaches still face challenges in terms of financing. Similar cases are also identified in South Africa and Tanzania, where the road sector is rapidly growing as part of continental economic development. In Tanzania, for example, Mgalla (2015) established that the Tanzania PPP framework has not overly enhanced the delivery of road projects despite the large allocation of resources towards roads. This, therefore, means that the nature of PPP applied is likely to influence how road projects are implemented, but this has not been locally researched.

2.3 Relevance of PPP in implementing road projects

The relevance of opting for a shared approach means that when the government and private sector come together, then this kind of arrangement should achieve the intended objective. The objective in this sense would be to ease the financial burden that streams down to the citizens including tax. However, even where PPPs have been proven successful, the need to ascertain whether the project achieved the intended goal is important. According to the World Bank (2019), PPP must consider the immediate environment of equal importance to the public within the policies, laws, regulations, procedures, and standards. Consequently, relevance for a PPP framework is about cost implications and management of risks to ensure the burden for huge infrastructure projects is spread out.

In the above analysis, it thus means that the relevance in engaging both private and public lies in the emphasis of the cost and other factors related to cost and how the general public derives socio-economic benefits from the project. On the same note, socio-economic benefits and the value is important in determining what constitutes a relevant PPP project. In his recent analysis, Whitefield (2017) demonstrates gaps in how PPPs in countries like India, Brazil, and Russia have had bottlenecks, often blamed for a mismatch in the methods used by the government and private sector to tabulate cost-benefit analysis for road projects.

On a positive note, Public-Private Partnership (PPP) has been successful as the literature had indicated, with benefits related to financing aspects of cost-cutting, lessening initial capital investments by one party, and quality standards brought about by private sector experience. However, in ensuring PPPs remain relevant, all stakeholders' needs should be considered and the overall benefit of users and the growth of the economy. More importantly, the relevance in line with how each sector creates the right environment and considerations for risks that could otherwise affect the end-users is important.

2.4 Cost-effectiveness of using PPP in road infrastructure

According to Maddock (2013), cost-effectiveness is a key parameter in PPP and a fundamental factor in establishing the type of PPP model adopted in road projects. Although the literature provides mixed results on the cost-effectiveness of PPP, value for money remains a critical factor in the demand for ventures within the road sector. This is important to safeguard socio-economic gains in the long-term; which should translate into micro and

macro-economic benefits including GDP, supply and demand, manufacturing of gods and services, job opportunities and production at local level. In any project, differences in cost overruns for PPP road projects can influence the road sector growth and investment, as well as timeframe and quality. For example, if a PPP project is perceived costly, then this may trickle down to the common citizen and affect taxation indicators, affect competition and stakeholders.

In the context of cost, PPP could result in the government spending more than actually cost-saving, and this implies such PPPs impact on the local economic growth and meet the needs of end-users. Given that road projects take a longer time to be implemented, then delivery time and nature of PPP contracts could affect cost. Key among cost is the risk sharing measures between the public and private partner. According to Rohimat (2018), risk management is important to ensure project offers value and hence help government benefit from a wider infrastructure development.

2.5 Challenges of using PPP in road infrastructure

Public-Private Partnership (PPP) in its nature has two parties that agree on certain terms and conditions. This kind of partnership is likely to create divergence and conflict of interest. In ensuring any road venture achieves its aim and within resources given, careful planning and coordination are paramount. A broad category of challenges and constraints do exist. First, political issues in a country can affect a project where government interest may be made for political gains. This means that in a politically charged environment, for example in post-election cases, violence affects the space for the PPP to flourish. Secondly, weak institutional capacity challenges the need for institutional capacity and the development of inclusive policies and plans (Weththasinghe, Gajendran & Brewer, 2016). Therefore, creating an enabling environment for PPP requires governments' commitment to address challenges related to political influence and also make more efficient decisions on building and strengthening institutions. Moreover, the lack of transparent, accountable, and participatory governance can cause conflict.

In the developed economies, studies in the UK show that, challenges relate to the hidden debt PPPs in the UK and have delivered new public infrastructure (Marin, 2009). Besides, PPP challenges may create a situation where competition is indeed good for the business

environment, but a ripple effect could limit certain local businesses. Indeed, certain PPP models have affected private investment and fair competition in the delivery of services and infrastructure projects. In Australia, Jayasuriya (2017) identified challenges in handling investors' and stakeholders' interests, socio-political predicaments, and inadequate information. Therefore, the need to explore what challenges exist for completed PPP road projects cannot be underscored.

In Kenya, various studies have explored public-private partnerships, but have not overly analyzed the proportion of successful projects in the context of models used, relevance, and compared to the challenges of non-successful projects. For example, Onditi (2014) looked at the issues that hinder successful PPP within the railway sector and established that institutional challenges, insufficient staff capacities, complex institutional oversight, and regulatory capacity were the most common challenges. Despite the analysis, these local studies fail to provide analysis of specific variables that could influence PPP project efficiency, cost, and benefits at large. The proposed study intends to address the research gaps by exploring variables including PPP models utilized, how relevant they are, cost-effectiveness, and challenges.

2.6 Theoretical Framework

The study applied the Principal-Agent Theory (PAT) by Jensen and Meckling (1976). This theory talks about relations involving two groups commonly referred to as principal and agent. In this relation, the principal has the stake in determining project success and or failure. The agent is the implementer but relies on the decisions of the principal. The key assumptions of the principal-agent theory are: first, that both the principal and agent have different opinions regarding the project in question. Secondly, the principal is better placed to take advantage of the agent's position and hence has an upper hand. Thirdly, the agent may act in a manner to exploit the contracts or projects for personal gains, but only at the expense of the main.

In applying public-private partnerships, the government as public entity retains the Principal role while the private acts as the Agent partner. However, experience shows that the government has a very important role to play in either the success or failure of particular

PPP projects. The public partner is the main actor that has a better position than any party, such as the private sector, to provide a friendly environment for successful PPP implementation such as legal, institutional and legal frameworks, political and economic conditions (Zhang, 2005). Furthermore, coordination in oversight, licensing and facilitating responsibilities such as land compensation is a key role of principal. On the other hand, the agent relies on its expertise, technology and innovation to gain profits while implementing the project. But the principal has an end goal of minimizing risks to the extent that the project doesn't render the principal insolvent.

The role of government thus varies depending on the PPP structure. This is because different PPP models create different incentives and tend to be associated with different risk allocations. In certain cases, the principal bears a hundred percent stake in the project through financing and controlling the quality of the project. Alternatively, in PPP models like Build-Own-Operate (BOO), the government endows the private partner the right to finance, design, build, operate, and maintain a project. The private entity is not required to transfer the facility back to the government. In some cases, it is a joint venture, with a 50/50 stake between the principal and the agent. In this case, the project venture is funded and operated through a partnership of government and one or more private sector companies (Rashed et al., 2011). Alternatively, a PPP agreement could account for a 20/80 percentage stake for principal and agent respectively.

In other cases, the agent, as seen in concession contacts, takes full responsibility in providing capital to design and building the infrastructure. Such as DBFOMT allows agent to own the facility for a period, such as 20-30 years as common for concessions. Typically, the Principal has ownership of the project in the long-term, but the agent has a bigger stake and bears a greater portion of the financing and revenue risks (Roman, 2015).

The principal must also ensure the project is relevant to the needs of the citizens and stakeholders' needs. Lastly, the principal has to assess the cost implications of the project to ease the tax burden on citizens. The relevance of the project is an important aspect of the principal. For example, stakeholder management is key in the road project life cycle. In light of this, the principal must analyze several options to be considered and compared to come up with the most appropriate PPP arrangement and model. This means a best-fit model should ensure principal balances all factors, with efficiency in stakeholder involvement.

Value for money is a major factor for the principal in determining the type of PPP to be applied and hence the agent's opportunistic tendencies of profit maximization should be balanced. Exploitation for two parties relating to a contract is a possible scenario, and where the private sector is mandated to finance, then out of the negotiation regarding benefits and risks, the government bears responsibility. The principal-agent theory has been applied in many governments and embraced as the framework through which governments are modernized in public service delivery. In the UK for example, the theory has been utilized in management governance for sector organizations to improve efficiency and access to services by citizens. The principal-agent theory had been criticized for flaying blame on the agent side, whereas the contract risks and challenges could also emanate from the principal. However, the theory offers an understanding of key aspects such as the nature of PPP, the relevance of PPP, cost-effectiveness, and challenges of PPP can be addressed.

2.7 Research Hypotheses

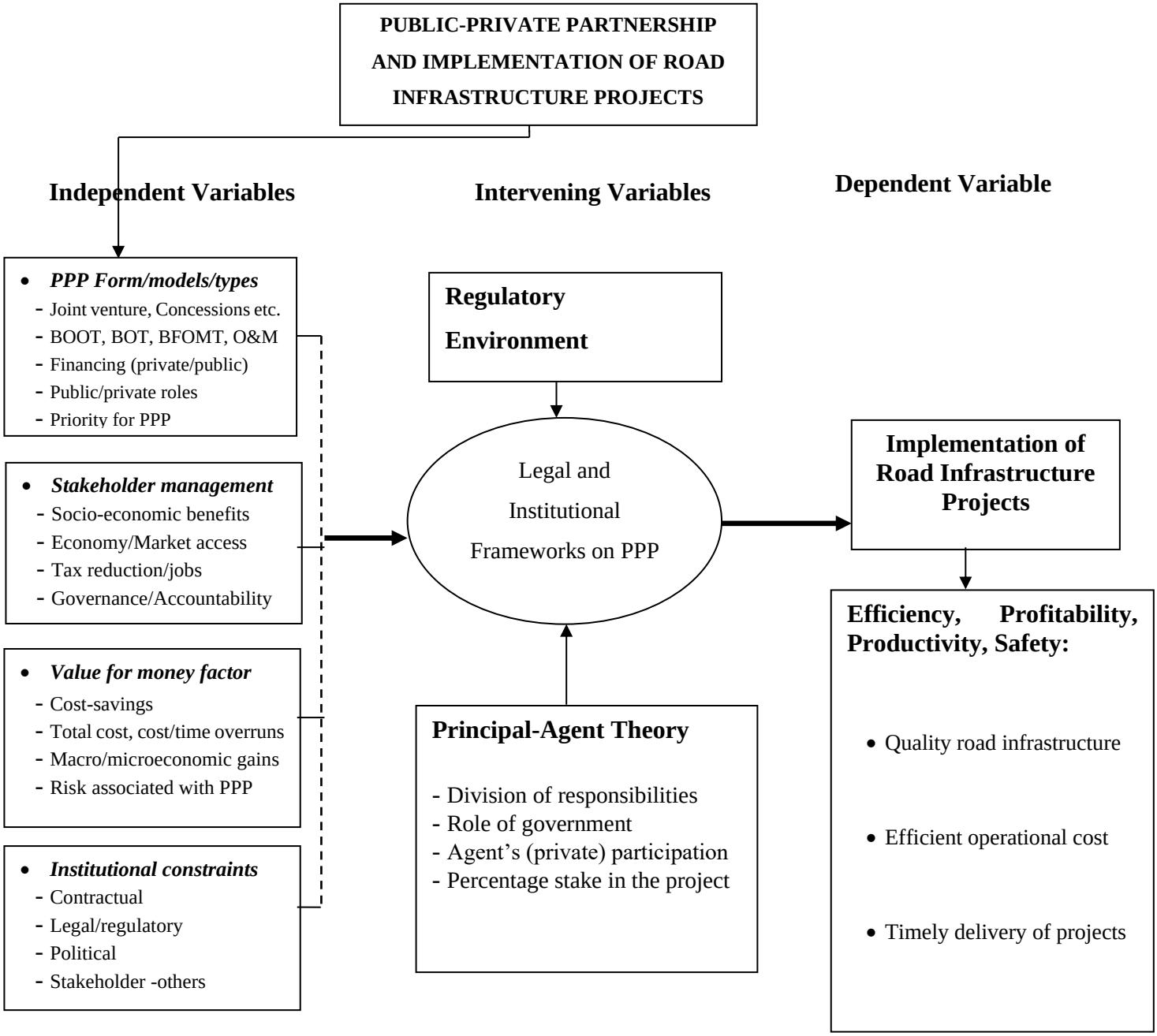
The study was guided by the following hypotheses:

i. Public-private partnership models have no influence on the quality of road projects implemented under PPP arrangement.
ii. Stakeholder management is a major challenge influencing the timely delivery of PPP road projects in Kenya.
iii. Value for money factor has influenced the cost of delivering road infrastructure projects using PPP.
iv. Institutional constraints have raised challenges related to effective planning and coordination of PPP road projects.

2.8 Conceptual Framework

The conceptual framework as illustrated in Figure 1.1 presents the linkage between independent variables and dependent variables. It also considers the intervening variables.

Figure 1.1: Conceptual Framework



Source: Author, 2020

The conceptual framework shows the relationship between the independent variables and the dependent variable. The independent variables aligned to the study hypothesis include; PPP forms/model, stakeholder management, value for money and institutional constraints. The dependent variable was implementation of road infrastructure projects.

PPP models are considered a predictor of project performance for road projects. In other words, the determinants for how a PPP is arranged are likely to influence the success of the project. These could take different forms, joint venture, concessions, BOTs and also apply different models such as BOOT, BOT, BFOMT, O&M. this is important because it reflects on the relationship between the public and the private partners with regards to financing, implementation roles of each partner and priority for best match model to deliver projects on a timely manner. On the other hand, relevance for PPP requires that all stakeholders are aligned to the implementation process since the extent of their contribution is key in evaluation how a PPP, regardless of the nature, achieves the intended objective. Such outcomes range from socio-economic benefits that include access to markets, tax reduction, job opportunities. This stakeholder process should also be seen to be transparent and accountable to foster efficiency.

While a best-fit PPP form and stakeholder management are key elements, PPPs, due to their complex nature, should offer value for money. This means that the PPP model used should achieve optimal gains in terms of cost and to the public (users) as compared to the traditional government procurement models. The value should also translate to not only cost, but how the PPP projects offer micro-and macro-economic benefits and risk management solutions. If this is not considered, then it could result into costly ventures that burden the citizens. Lastly, PPPs come with a set of challenges that need to be identified, evaluated and addressed. Institutional challenges whether legal, political, contractual could jeopardize a PPP process and hinder implementation.

An important aspect of the framework is also the intervening variable which is regulatory environment. Since PPPs operate in a environment that is outside government normal public service structure. The regulatory environment has a strong moderating effect on the effective performance measurement for road PPPs. Central to this is the Principal-Agent Theory that underlines roles and responsibilities to guide an effective and efficient context for implementing road infrastructure projects.

2.9: Definition and Operationalization of Key Concepts

There are different types of public-private partnerships. PPP can also embrace different models of asset ownership, and hence different PPP arrangements bring different results. However, each PPP must fulfill an end compatible with policy objectives. The following keywords are explained:

2.9.1: Cost-effectiveness: In this study, the concept of cost-effectiveness relates to value for money and the profitability in realizing the prospects of PPP road projects.

2.9.2: Infrastructure: According to Koh (2018), it refers to the physical structures and amenities that may include railway lines, airports, sewage systems, water networks, necessary for the well-being of a community, business, or country. In this study, the concept of infrastructure refers to how the scope of road networks, based on features of a project; time, cost, quality, and risks involved, have been delivered using PPP, within the economic and institutional environment.

2.9.3: Nature of PPP: Refers to the type of PPP and contractual structure involved and covers the models of PPP used in road projects. Models and forms could fall under Joint venture or concessions or BOTs. Secondly, the models cover specific PPP types that involve either, Design, Construct, Rehabilitate, Finance, Maintain, Operate (BOOT, BOT, BFOMT, O&M).

2.9.4: New Public Management: The shift from the out-of-date service delivery strategies to a transformed system evidenced by efficiency in public systems, the structure of governance such as minimizing bureaucracy (Guatam, 2017). In this study, NPM is the strategies adopted to support a smooth working environment between the government and private sector; enhance efficiency and relevance of PPP road projects; which include effective cost-management and delivery of PPP projects in the given timeframe without delays.

2.9.5: PPP Challenges: In this study, PPP challenges concerns all factors, aspects, and risks that limit expectations of PPP, regarding higher efficiency and faster implementation of road projects.

2.9.6: PPP cost-effectiveness: In this study, PPP cost-effectiveness outlines the value for money obtained from delivering road projects under PPP across the asset life-cycle. It rests on the questions: Whether the preferred PPP model demonstrates saving money compared to a publicly financed alternative. Within the road sector, value for money thus accounts for medium and longer-term efficiency gains and cost reductions enabled by best-fit model PPP infrastructure. These efficiency gains generated by the PPP are not only based on macro-economic gains but also micro-economic benefits, return on investment, and risk reduction in the whole life-cycle of road infrastructure maintenance.

2.9.7: Public-Private Partnership: A form of public service delivery, in which the government and private sector agree on scope and terms; each party achieving their objectives, but with an attempts to improve the value for money of the government, higher levels of efficiency and relevant to local needs in delivering road projects. Typically, government agencies establish project performance standards that must be met by the private firm(s) managing the project.

2.9.8: Relevance of PPP: In this study, the concept of the relevance of PPP is used to mean the resultant benefit that a particular PPP model used in delivering a road project, how it enhances stakeholder management, decreasing demand for excessive resources from government, and creating job opportunities at the local level. The ultimate goal is thus be boosting micro and macro-economic growth and socioeconomic gains, enhancing the quality of life of deprived citizens through opening up access to infrastructural facilities.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

The study combined quantitative and qualitative data within a single investigation. However, it gravitated to qualitative because of the following reasons: First, the aspects regarding the nature of the public-private partnership, relevance, cost-effectiveness, and challenges of PPP required a deeper meaning of the experience through conducting the interviews. Qualitative research was well suited due to the utilization of actual experiences that guided the researcher to get actual data on the occurring trends.

3.1 Research Design

The research was a cross-sectional design which derived data from various entities (public and private agencies), a cross-sectional survey was necessary to help the investigator measure the outcome and assess participants' views at the same time. A cross-sectional design was chosen because it allowed for information about the trends and outcomes of PPP projects that have been completed and also help make comparisons for ongoing projects across the independent variables. The design was also valuable in explaining population or sub-group within the population with respect to outcome. The design allowed the researcher to collect more extensive data that could not have been found in fact-sheets and documented reports.

3.2 Research Methods

The study used qualitative and quantitative research methods. Under quantitative methods, a fact-sheet questionnaire was used. For qualitative approaches, Bryman and Bell (2015) support the adoption of qualitative approaches in cross-sectional studies, to elicit feelings and emotional perspectives from participants. Qualitative methods derived information from structured personal interviews. The mixed-methods approach was suitable as it provided the researcher with the freedom to get diverse data from different groups involved in PPP projects.

3.2.1 Interviews

Key Informant interview guides were used to collect qualitative facts from participants who were stakeholders, primarily first hand experts involved directly in the five road projects.

3.2.2 Questionnaires

A fact-sheet questionnaire was used to collect relevant data from experts wo were involved in each of the five road projects. The questionnaire comprised of relevant statements regarding the nature, relevance, cost-effectiveness, and challenges of the PPP contract under each road project. To improve the understanding of the respondents, a brief introduction to the PPP approach was provided to them as a preamble to the questionnaire.

3.2.3 Target Population

The intended populace comprised key stakeholders from various institutions as follows: The National Treasury-Public-Private Partnership (PPP) Unit, Kenya National Highways Authority (KeNHA), Kenya Urban Roads Authority (KURA), The Ministry of Transport, Infrastructure, Housing and Urban Development, and Private Sector (drawn from KEPSA and other PPP consulting firms). The target population was delimited to particular case groups within PPP projects. While the focus was on completed projects under PPP, target groups were also drawn from PPP projects that are in progress. The study targeted seven key institutions involved in PPP projects as shown below.

Table 3.1: Distribution of key stakeholders by sector/state department

No.	Categories Region	Population
1.	National Treasury-PPP Unit	15
2.	Kenya National Highways Authority (KeNHA)	20
3.	Kenya Urban Roads Authority -KURA	15
4.	Ministry of Transport, Infrastructure, Housing and Urban Development (State Department for Infrastructure)	10
5.	Private Sector Partner(s).	12
6.	Other stakeholders/ civil society/ NGO/IGO	**10**
Total		**82**

3.3 Sampling Design and Techniques

Sampling involved the selection of key stakeholders involved in the five road projects under investigation. A non-random sample was used, and this involved selection of elements (road projects completed using PPP), based on the population of interest through a selection criterion. Therefore, the five roads namely Nairobi-Thika Super-Highway, Mombasa-Nairobi Highway, Nairobi-Southern Bypass, Nairobi-Nakuru-Mau Summit Highway and the Ngong-Kiserian-Isinya road and Kajido-Mashuru-Isara road were selected based on the nature of PPP applied, and within the timeframe between 2011-2019. Purposive sampling was used and targeted stakeholders who were directly involved in the PPP road projects from conception to completion stage.

3.3.1 Sample Size

This was calculated using a mathematical formula developed by Krejcie and Morgan (1970) where:

$N = (ZS)^2/E$
Where
N= Sample size
Z = Standard value corresponding to a confidence level.
S = Sample standard deviation or an estimate of the population
E = Acceptable magnitude of error (Sampling Error).

Utilizing the method was based on the 0.05 confidence level. Therefore, a sample of 35 was considered, drawing a response from five key institutions involved in PPPs and road infrastructure projects as presented in Table 1.3.

Table 3.2 Determination of Sample Size for the Study

No.	Categories Region	Population	Sample
1.	The National Treasury-PPP Unit	24	6
2.	Kenya National Highways Authority (KeNHA)	48	10
3.	Kenya Urban Roads Authority -KURA	42	5
4.	State Department of Infrastructure	24	4
5.	Private Partner Sector	24	7
6.	Other stakeholders; Civil society/ NGO	10	3
Total		**202**	**35**

3.4 Data Collection Procedures

A fact-sheet questionnaires and structured interview were used. The researcher relied on the snowball method as a convenience sampling approach, where the PPP Unit officers were who early sample members were were asked to refer other key informants who met the eligibility criteria.

3.4.1 Fact-Sheet questionnaire

The fact-sheet was purposefully used since the study targeted persons with practical experience of the problem as well as insight examples relating to PPP road cases selected in the study. Data from questionnaires was targeted to officers working on PPP road projects. The questionnaires were hand-delivered where each participant answered on their own. Because of the prevailing COVID-19 crisis, the researcher also developed an online survey questionnaire tool to complement and reach all the target groups. The intent was also to reach respondents who were knowledgeable but working out of office. Online calls were made as a follow-up to clarify areas of concern and information gathered. A rating scale (Likert scale) was also used to assess their level of agreement or satisfaction. In the context of this study, a documentary analysis was used to cross-check the fact-sheet questionnaire responses. Documentary analysis was important in assessing the first and third objectives, regarding the nature of PPPs and cost-effectiveness respectively. Specifically, reports on PPP projects from KENHA and PPP Unit were examined against the fact-sheet responses.

3.4.2 Interview Schedule

A semi-structured interview gave detailed information and facts on PPP and specific roads selected in the study. Given that data collection was undertaken during the Covid-19 pandemic, an interview protocol was developed to drive the interviewing process. In particular, each interview was only scheduled for less than an hour. To encourage the interviewee to have confidence and freedom to speak about their thoughts, free space and time were given in line with the healthy protocols of COVID-19. Where necessary, questions were restructured to obtain key themes from each expert involved and their line of PPP engagement.

The researcher first identified experts at the PPP Unit at the National Treasury who also provided telephone and email directories of other experts involved in the PPP projects from other agencies involved such as KENHA, KURA, State department of Infrastructure, and Private sector partners in PPP projects. The experts also helped to refine the questions which were then framed to align with each PPP and road-specific guidelines. After getting this list, the researcher booked appointments in advance with the key informants. The researcher took notes, while in certain cases; the proceedings were audio-tape recorded and as backup and transcribed thereafter. The majority of the interview sessions took 40 minutes.

A total of 11 interviews (7 experts from the public agencies and 4 from the private sector) were undertaken. To preserve the confidentiality of the interviewees as well as for easy reference, the experts were abbreviated as PA (Public Agency) for public agencies and pE (Private Entity) for the private sector. The interview respondents' schedule was as presented in Table 1.3.

Table 3.3 Interview respondents' schedule

Target Group Institution	Code	No. of respondents
PPP Unit-Treasury	PA	2
KENHA	PA	2
KURA	PA	1
State Department of Infrastructure	PA	2
KEPSA	pE	1
PPP Consultants /IGOs, Law Firms/contractors/	pE	1
Other stakeholders/ Civil society Groups	pE	2
Total		**11**

For objective one, which discussed how the nature of PPP influences the implementation of road infrastructure projects in Kenya, the data collection was primarily based on a fact-sheet questionnaire and Likert scale on various aspects regarding PPP projects initiated since 2009 and models used in a selected road project. The researcher was keen to understand the true picture of the PPPs status, where government reports were also utilized through document analysis. Some of the reports utilized included the Kenya Public-Private Partnerships (PPP) Programme Status-January 2020; KENHA Strategic Plan 2019-2022 and Ministry of Transport, Infrastructure, Housing, and Urban Development State Department of Infrastructure Report-2017.

For objective two, which discussed the relevance of PPP, the data collection was primarily based on interviews and Likert scale questionnaire.

For objective three, which discussed the cost-effectiveness of PPPs in the implementation of road infrastructure projects, the data collection method was documented by fact-sheet questionnaire, particularly targeted at the Public-Private Partnership Unit (PPPU) and also the expert interviews to support the evidence. As for objective four, which explored the challenges of using PPP in the implementation of road infrastructure, the data collection method was through interviews, which helped elicit an understanding of the experiences and events leading to the phenomenon under study.

3.5 Pilot Study

This was done by giving out a fact-sheet questionnaire and conducting structured interviews with a small sample group at the National Treasury and Kenya Private Sector Alliance. The pilot study helped categorize themes and identify questions that were not clear and gave room for reviewing them accordingly.

3.5.1 Reliability

Two pilot tests were conducted before the real study. The first and second pilot were compared, with the instruments (questionnaire and interviews) used to verify any changes in feedback. Thereafter, the computation was then be carried out to determine the association to measure the instruments' reliability (Douley, 2004). The association measure established a correlation coefficient (r) of 0.75 which was considered high enough to judge the reliability of the instrument as supported by Yasar and Cogenli (2014). The researcher also ensured that the codes were well defined and used consistently.

3.5.2 Validity

The appropriateness of the findings was measured to ensure they achieve the intended objective. The researcher relied on the appropriateness of the items on the instrument and how they answer the hypotheses. Content analysis was based on PPP and the thematic guidelines of the independent variables.

To ensure the instruments were aligned to the key objectives and remained straightforward, each variable concept was assessed in line with PPP stakeholders' comments and reports along with experts in the PPP Unit. This ensures the accuracy of the instruments was cross-checked and interpreted within the study general objective. During this process, both the fact-sheet questionnaire and Likert Scale were assessed and reviewed with each set of items. Further evaluations with supervisors in the Department of Political Science and Public Administration

Helped to remove controversial questions and provide a more accurate assessment tool.

3.6 Data Analysis

The study utilized techniques that ensured both qualitative and quantitative were complimentary and benchmarked with findings from the literature review. Data generated from interviews were analyzed through explanatory inquiry. The researcher organized the qualitative data into thematic units, and synthesized it and to obtain patterns. The intent was to make sure important themes aligned to the study answered the hypotheses were identified. Specifically, this was based on a thematic approach to generate themes or descriptions before making the interpretation or meaning of the data. Data collected was first be sorted and coded. SPSS tool was used to compact the raw quantitative data. Descriptive information was used to help sum up the data and establish patterns. The presentation was then be made in form of percentages and figures.

3.7 Ethical Considerations

All ethical concerns about the study were taken. First, the researcher sought for a letter of authority and approval from the Department of Political Science and Public Administration to conduct the research. Furthermore, consent was sought from the Public-Private Partnership (PPP) Unit and the National Council of Science, Technology, and Innovation (NACOSTI). Confidentiality for all participants was accorded and the identities of all participants were only through codes and not their names or departments.

CHAPTER FOUR
DATA ANALYSIS PRESENTATION AND DISCUSSION

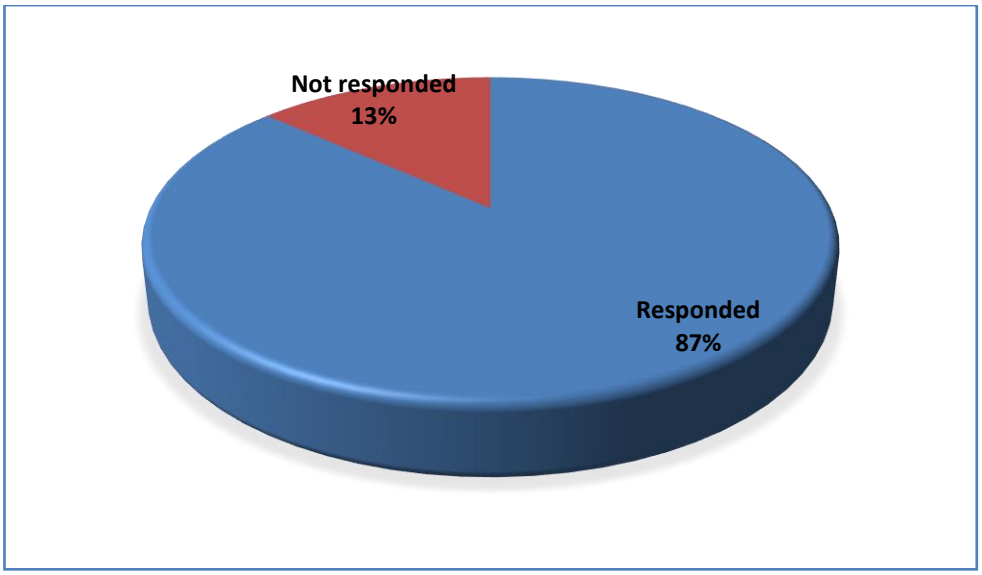
4.0 Introduction

In this chapter, results of the field data analysis are presented. The findings are interpreted, discussed and compared with relevant literature to reach conclusions based on each research objective. The purpose of the research was to investigate how PPP influence the implementation of road infrastructure projects in Kenya. The discussion of findings is aligned to the objectives of the study.

4.1 Response Rate

The target respondents were 35. The researcher interviewed 11 experts from both public and private agencies. Overall, a response rate of 86.7% was achieved as shown in Figure 4.1.

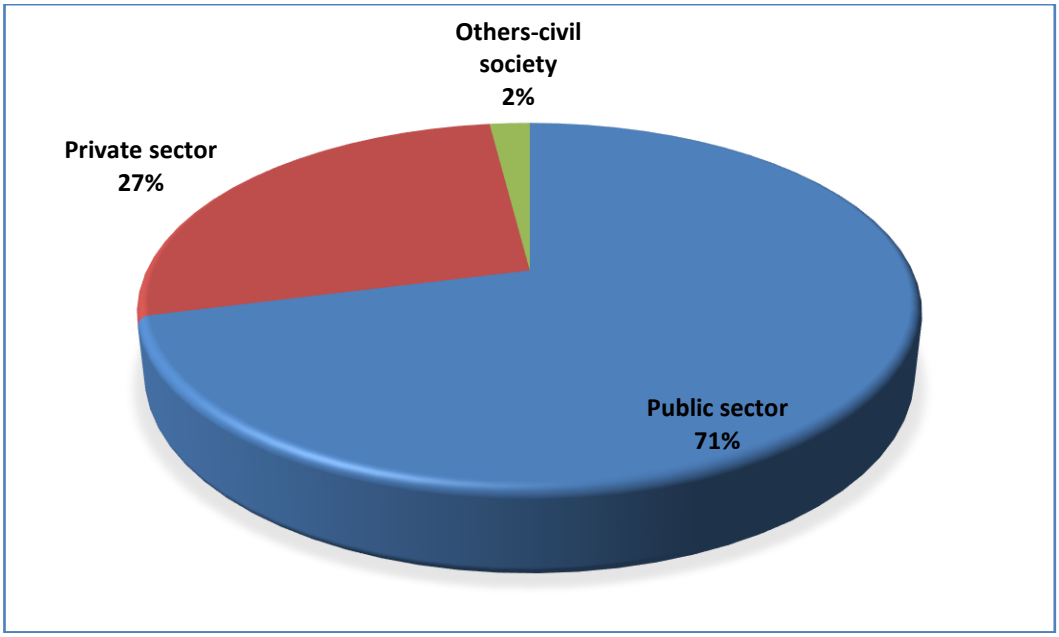
Figure 4.1 Respondents' response rate



Source: Author, 2020

The response rate was 72% for public and 28% for the private sector participants as summarized in Figure 4.2.

Figure 4.2: Participation rate per sector



Source: Author, 2020

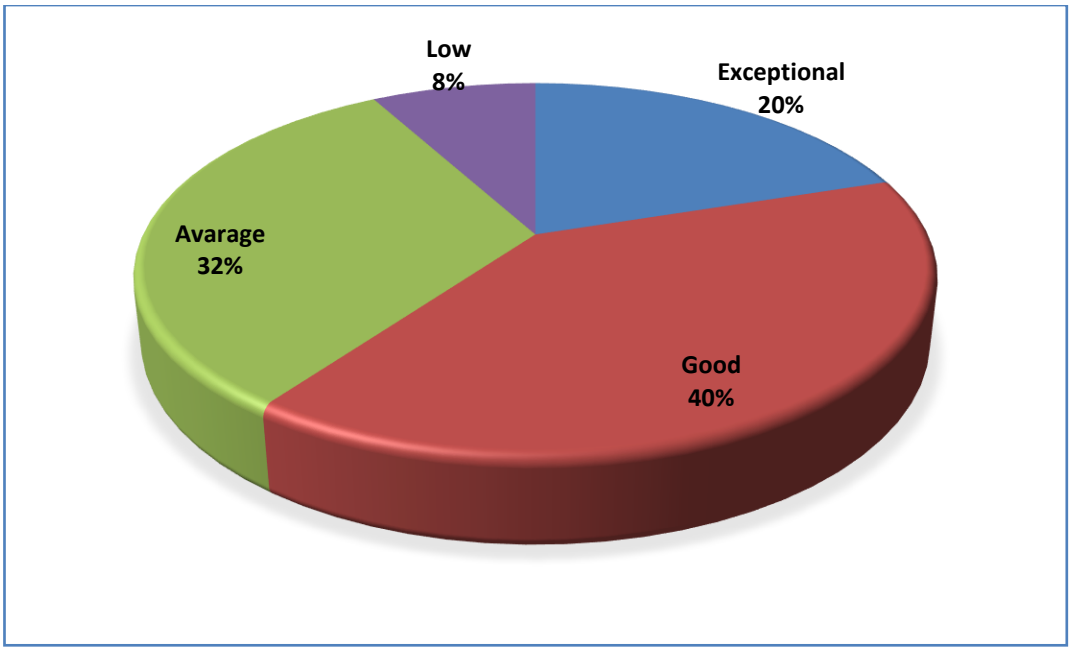
4.1.1 Respondents' Profile

The study targeted key informants representing different agencies but having expert insights and who had gained a comprehensive understanding of PPP, the researcher only considered sex and the general understanding of the respondents on matters of public private partnership in road projects.

4.1.2 Respondents' general experience with PPP in roads

The question here was to assess respondents' level of engagements with PPP projects in the road sector or any other sector. The results were presented as shown in Figure 4.3.

Figure 4.3 Respondents' experience with PPP projects



Source: Author 2020

Figure 4.3, the majority (40%) demonstrated a positive experience and knowledge with PPP projects and 20% exceptional. 32% said average while 8% below average. The varying responses may be attributed to various reasons, including the PPP sectors or departments they are mostly involved with. For instance, the PPP Unit at the National Treasury in Kenya has departments each charged with various mandates. Similarly, a PPP Unit exists and the Kenya National Highways Authority (KENHA) charged with managing the national highways, while other experts cut across private entities that offer consultant services and support to government entities on PPPs.

4.2 The Nature of Public-Private Partnership in Road Projects

The first objective was to establish how the nature of public-private partnerships influenced implementation of road infrastructure projects. Analysis of this objective was majorly based on fact-sheet data, and compared with available government and ministry reports. In order to address the objective, the study hypothesized that: Public-private partnership models have no influence on the quality of road projects implemented under PPP arrangement. The following indicators were assessed: Form of PPP, PPP Model, PPP financing mechanism and contract partners, share of public/private financing, ownership of the road/period of ownership period and priority/rationale for best-fit PPP models; and the responses presented as follows:

4.2.1 PPP models used in road projects

The question that was posed was: What PPP form/arrangement and PPP model have been utilized in the five roads listed and what was the contract period for each of the roads listed? A summary of the responses is presented in Table 4.1.

Table 4.1 PPP models used in road projects

	Road	Road description	PPP Form/arrangement	PPP Model	Contract period
1.	Mombasa-Nairobi Highway	Length-485km; running in various phases; ;41.7km Mombasa-Mariakani-Designated in 2009; work in progress.	BOT/Concession contract	Design, Finance, Build, Operate and Transfer (DBFMOT)	30 years
2.	Nairobi-Nakuru-Mau Summit Highway	Length-175km; running from Rironi-Naivasha Nakuru-Mau-summit; Designated in 2019; work in progress. Expected completion-2022	Concession contract	DBFMOT Operation and Maintenance	30 years
3.	Nairobi-Thika Highway	Length-50km; running from Nairobi to outskirts of Thika town: Designated in Jan.2009; Completed Nov. 2012.	Joint Venture	DBFOMT Currently under O&M	10 years
4.	Southern Bypass	Length-29.6km; running from Mombasa road to Kikuyu. Designated in June 2012; Completed- Nov. 2016	Joint Venture	DBFOMT Proposed for O&M	10 years
5.	Ngong-Kiserian-Isinya-Kajiado to Imaroro	Length-90.55km; running from Ngong Isinya-Imaroro; Designated in June 2018. Expected completion-Oct.2022	Concession contract (Road Annuity Programme)	DBFOMT	10 years

Source: Author, 2020

Table 4.1 shows different PPP models used in implementing road projects. According to Table 4.1, Mombasa-Nairobi Highway adopted a BOT (Build-Operate-Transfer) 30 years concession contract using the DBFOMT (Design-Build-Finance-Operate-Manage-Transfer) model. Nairobi-Nakuru- Mau Summit Highway, which is still under construction, is currently on a 30-year concession with both DBFMOT and Operation and Maintenance (O&M) models.

Table 4.1 also shows Nairobi-Thika Highway, which was designated in 2009 and completed in 2012, was Joint Venture using a DBFOMT model. The highway has a current Operation and Maintenance (O&M) arrangement for 10 years. The Nairobi Southern Bypass, which was designated in 2012 and completed in 2016, was also on a Joint Venture PPP arrangement using the DBFOMT model. On the other hand, the Ngong-Kiserian-Isinya-Kajiado to Imaroro road which was designated in 2018, is under construction using a special PPP scheme called Annuity Programme. The road is a 10-year concessionaire using the DBFOMT model.

From Table 4.1, it can be observed that two road projects (Nairobi-Thika highway and Souter Bypass) were implemented on a Joint Venture arrangement. On the other hand, three road projects (Mombasa-Nairobi, Nairobi-Mau-Summit and Ngong-Kiserian-Isinya-Kajiado to Imaroro used concession arrangement. The table also shows a varying PPP models, with three projects, Nairobi-Thika highway, Mombasa-Nairobi Highway and Nairobi-Nakuru-Mau Summit highway were implemented using DBFOMT with and O&M component. However, two roads, Mombasa-Nairobi and Ngong-Kiserian-Isinya and Kajiado to Imaroro were implemented using the Design, Finance, Build, Operate and Transfer (DBFMOT) model only.

In addition, Table 4.1 reveals a varying contract period with three roads (Nairobi-Thika Highway, Southern Bypass and Ngong-Kiserian-Isinya-Kajiado to Imaroro) for a period of 10 years, as compared to Mombasa-Nairobi and Nairobi-Nakuru- Mau Summit Highway which were contracted for a period of 30 years.

The Table shows each road project carries a unique arrangement, even if the PPP model is the same. For example, the Table shows roads with a Joint Venture form (Nairobi-Thika highway and Southern Bypass) carried an O&M scheme for a shorter contract period of 10 years as compared to the Nairobi-Nakuru- Mau Summit Highway road that has an O&M

arrangement but for a longer period of 30 years. Consequently, while all the five roads utilized a DBFMOT model, the PPP form and contract duration differed. Therefore, Table 4.1 shows the government undertakes various types of road projects under different PPP arrangements. The Table demonstrates the government of Kenya has considered Joint Venture, BOT and concessions contracts with preference for DBFOMT and O&M.

These findings underscore governments' commitment to look for ideal PPP models that reflect best possible prevailing economic situation of the country. The findings agree with what Rashid and Alam (2011) established in their case studies showing that developing countries are shifting to DBFOMT. In addition, similar studies have shown that the nature of PPP is critical not only for increasing infrastructure projects, since hybrid PPP models could be appropriate for ensuring efficiency and quality of road projects (Nahidi, 2017).

The findings clearly show a mixture of different types of PPP models, where, although the majority element is for DBFOMT, there are adjustments of the PPP arrangement and contract period of road operation by the private partner. Overall, it can be concluded that PPP road projects in Kenya show a growing preference for DBFOMT model, even where different PPP arrangements (Concessions or Joint Venture) as well as contract period varies.

To further assess how different PPP models influence quality of road projects, the study further examined characteristics that define each PPP model. The question was: Who were the partners involved in each of the five PPP road projects listed? Who was responsible for capital investment, commercial risk, tariff regulation and utility management in each of these roads?

The characteristics were deemed important in defining how different PPP models give different results as shown in Table 4.2.

Table 4.2 PPP characteristic influencing implementation of road projects

	Road	Continuum classification	Form	PPP Model	Contract partners	Working Capital Investment	Commercial risk	Tariff regulation	Utility managemen
1	Mombasa-Nairobi Highway	C1	BOT/Concession contract	DBFMOT	AfDB; World Bank, GDB, EDB, GoK	Private	Private	Public	Private
2	Nairobi-Nakuru-Mau Summit Highway	C1	Concession contract	DBFMOT O&M	World Bank	Private	Private	Public	Private
3	Nairobi-Thika Highway	C1	Joint Venture	DBFOMT Currently under O&M	AfDB, GoK, Chinese Government	Public /Private	Public /Private	Public	Private
4	Southern Bypass	C2	Joint Venture	DBFOMT Proposed for O&M	Gok Chinese Government	Public/Private	Public/Private	Public	Private
5	Ngong-Kiserian-Isinya")-Kajiado to Imaroro	B5	Concession contract (Road Annuity Programme)	DBFOMT	N.Treasury, commercial banks-KCB Group), Private contractor	Private	Private	Public	Private

Source: Author, 2020

Table 4.2 shows different PPP forms and characteristics defining each model as it were applied for the different road projects.

The Mombasa-Nairobi Highway (DBFOMT) shows a concession contract involving various partners including AfDB; World Bank, GDB, EDB and GoK. Working capital investment, utility management and commercial risk were by the private partner while tariff regulation was undertaken by government. Nairobi-Nakuru-Mau Summit Highway has a DBFOMT and O&M PPP model, with capital investment from the world Bank. Capital investment, commercial risks and utility management are delegated to the private partner while tariff regulation is undertaken by public partner.

The table also shows the Nairobi-Thika Superhighway (DBFOMT) was a special joint investment PPP arrangement between the Government of Kenya, Chinese Government and the African Development Bank. Capital investment was by all the parties, commercial risk was both public and private, tariff regulation was undertaken by government while utility management by the private partner. The Nairobi Southern Bypass Joint Venture between

the government of Kenya and Chinese Government who both provided the working capital. Commercial risk is by both public and private while utility management is by the private partner. The government retains tariff regulation for the project. Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, a special PPP vehicle under the Annuity Programme was idealized. The concession contract involved partners including National Treasury (public), participating commercial banks (KCB Group) and contractor.

From the results, it can be observed that three projects Mombasa-Nairobi Highway, Nairobi-Nakuru-Mau Summit highway and Ngong-Kiserian-Isinya and Kajiado to Imaroro were idealized through concession contracts. On the other hand, Nairobi-Thika Superhighway and Southern Bypass adopted the joint venture contracts.

The Table also shows that PPP arrangements take different forms and characteristics, which in turn influence associated elements including financing, operational efficiency and risk management for either the public or private entity. For example, the table highlights commercial risk for both public and private partners for Joint Venture projects (Nairobi-Thika Highway and Southern Bypass) while the remaining three roads implemented using BOT/concession contracts indicate commercial risk for the private partner only.

From the table, it can be observed that tariff regulation is undertaken by the pubic partner for all the five roads, while utility management is undertaken by private partner. The government has considered concessions, joint ventures, and BOT schemes. The nature of PPP also varies considerably form one project to another. It was thus concluded that whilst DBFOMT model has been majorly applied in the road projects, there are differences in the way the public and private partner approach these contracts and manage their roles.

The study further assessed how the different PPP models influenced implementation of road projects in relation to operational efficiency (timely delivery/ease of contract signing) and quality road infrastructure. The question posed was: To what extent did the PPP model used influence the operational efficiency and quality of the five roads implemented using PPP?

The results were analyzed and presented as shown in Table 4.3. The assessment was based on a 5-point Likert Scale (Strongly Agree (SA); Agree-A; Neutral (N); Disagree (D); Strongly Disagree (SD) to establish how each PPP arrangement performed.

Table 4.3 PPP models and their effect on road projects

	Road	PPP Form/arrangement	PPP Model	Enhanced operational efficiency					Better quality road project				
				SA	A	N	D	SD	SA	A	N	D	SD
1.	Mombasa-Nairobi Highway	BOT/Concession contract	DBFMOT	30	10	40	8	12	36	14	32	10	8
2.	Nairobi-Nakuru-Mau Summit Highway	Concession contract	DBFMOT Operation and Maintenance		40	14	10	26	-		-	-	
3.	Nairobi-Thika Highway	Joint Venture	DBFOMT Currently under O&M	14	50	20	6	10	20	60	12	8	
4.	Southern Bypass	Joint Venture	DBFOMT Proposed for O&M	10	42	30	8	10	12	50	16	22	
5.	Ngong-Kiserian-Isinya-Kajiado to Imaroro	Concession contract (Road Annuity Programme)	DBFOMT	8	12	16	44	20	8	30	42	20	

Source: Author, 2020

Table 4.3 show how different PPP models gave different results in road projects. For Mombasa-Nairobi Highway, perceived operational efficiency was rated at 30% strongly agreed, 10% agreed, 40% were neutral, 8% disagreed while 12% strongly disagreed. For quality assessment, 36% strongly agreed, 11% agreed, 32% were neutral, 10% disagreed while 8% strongly disagreed

Regarding the Nairobi-Nakuru- Mau Summit Highway, operational efficiency (ease of contract management) was rated at 40% who agreed, 14% were neutral, 10% disagreed while 26% strongly disagreed. Quality was not assed given the work in progress.

In the case of Nairobi-Thika highway, operational efficiency was rated variably, 14% strongly agreed, 50% agreed, 20% were neutral, 6% disagreed while 10% strongly disagreed, while for quality of road projects, 20% strongly agreed, 60% agreed, 12% were neutral, 8% disagreed.

When it came to Southern Bypass, operational efficiency had 10% strongly agreed, 42% agreed, 30% were neutral, 8% disagreed while 10% strongly disagreed; while quality of project had 12% who strongly agreed, 50% agreed, 16% were neutral, while 16% disagreed.

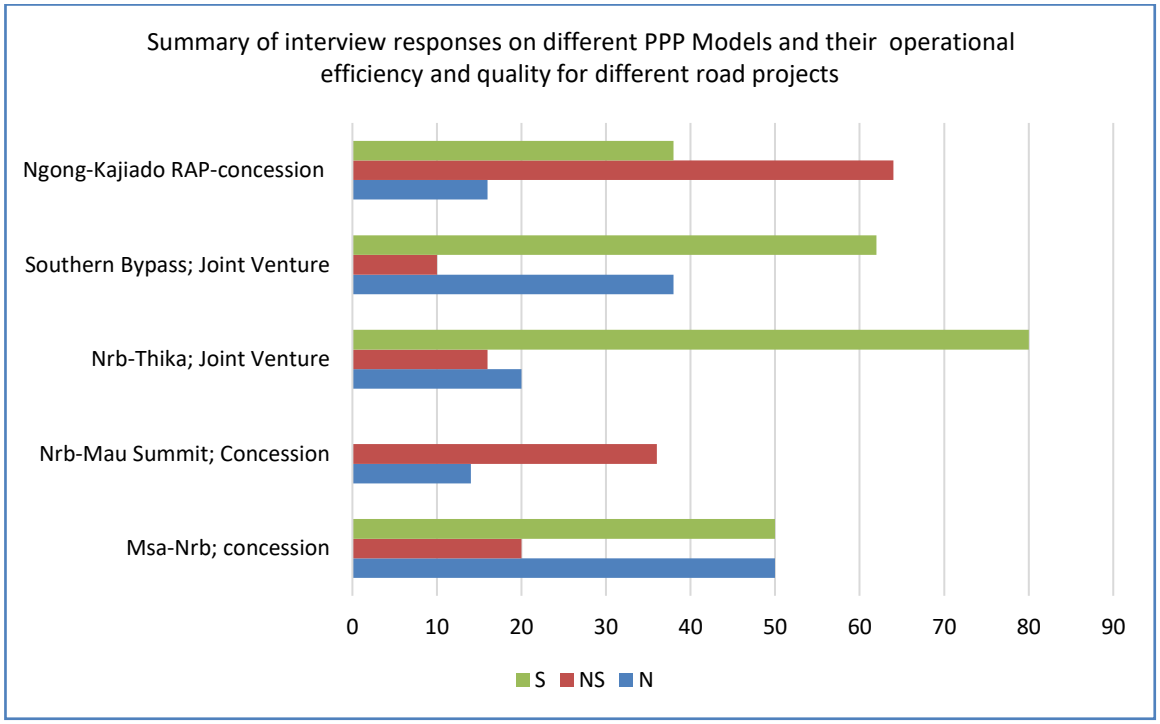
Regarding the Ngong-Kiserian-Isinya and from Kajiado to Imaroro road, Table 4.3 shows operational efficiency with 8% strongly agreed, 12% agreed, 16% were neutral, 44% disagreed while 20% strongly disagreed; while quality of project was rated with an 8% who strongly agreed, 30% agreed, 42% were neutral while 20% disagreed.

Table 4.3 shows different predictions emanating from each PPP model in terms of operational efficiency and quality of roads. The road comparisons also show roads that adopted a Joint Venture arrangement using DBFOMT (Nairobi-Thika highway and Southern Bypass) were rated positively for achieving operational efficiency and quality as compared to those roads with concession forms. The Ngong-Kiserian-Isinya-Kajiado to Imaroro road scored low both for operational efficiency and quality. Overall, Table 4.3 shows roads that had an O&M performed better in terms of quality as compared to those that did not. For example, taken together (SA and A), Nairobi-Thika highway had a 64% score as compared to Mombasa-Nairobi Highway which had 40%, similar to Ngong-Kiserian-Isinya-Kajiado to Imaroro that had a 30% score.

The table also shows that different PPP arrangements results into different outcomes for road projects. Even where the same PPP model is used, the PPP arrangement (the case of Concession contract under a Road Annuity Programme) for the Ngong-Kiserian-Isinya-Kajiado to Imaroro scored low as compared to the Nairobi-Nakuru- Mau Summit Highway. The table demonstrates that particular roads are better suited for specific PPP forms than others, and this choice likely affects the potential benefits and measurable performance outcomes in terms of quality. The table also shows performance ranking in terms of operational efficiency and quality, in which Nairobi-Thika Highway scored high on those who agreed, followed by Southern Bypass, Nairobi-Nakuru- Mau Summit Highway, Mombasa-Nairobi highway and lastly Ngong-Kiserian-Isinya-Kajiado to Imaroro road.

To justly capture this trend, these results were reinforced by the observations of the interview responses that were summarized in Figure 4.4 to provide a clear picture of how different PPP models give different results.

Figure 4.4 PPP Models and operational efficiency in road projects



Source: Author, 2020

KEY: RAP-Road Annuity Programme

Figure 4.4 show how different PPP models gave different results in road projects. The figure shows Ngong-Kiserian-Isinya, -Kajiado to Imaroro road regarding operational efficiency and quality was rated at 38% satisfactory, 64% not satisfactory while 16% said neutral.

When it came to Southern Bypass, operational efficiency and quality was rated at 64% satisfactory 10% not satisfactory and 38% neutral. In the case of Nairobi-Thika highway, 80% said satisfactory, 15% not satisfactory while 20% were neutral. Regarding the Nairobi-Nakuru- Mau Summit Highway, 36% satisfactory while 14% were neutral. For Mombasa-Nairobi Highway, perceived operational efficiency and quality had 50%, 20% not satisfactory while 50% were neutral.

Figure 4.4 shows Nairobi-Thika highway was the highest rated (satisfactory) on operational efficiency and quality (80%) from the interview responses, followed by Southern bypass (64%), Mombasa -Nairobi highway (50%) and lastly Ngong-Kiserian-Isinya, -Kajiado to Imaroro road.

In view of the above, different PPP forms are available, the results demonstrate general advantages and disadvantages of each PPP form, which eventually affect the efficiency and project quality. Joint venture DBFOMT model performed better in operational efficiency and quality standards as compared to concessions contracts such as PPP involving annuity programmes

Taken together, Table 4.3 and Figure 4.4 provide a clear picture of how different PPP forms present different outcomes with regards to efficiency and quality in the delivery of road projects. Despite PPPs models taking particularly DBFOMT and widespread forms (Joint Venture, BOT or Concessions), their impact in terms of road quality and efficiency varies across all the five roads. These findings show a strong evidence suggesting that different PPP models and arrangements perform better than others.

These findings are in agreement with Rashed and Ekhwan (2011), indicating that different PPP schemes come with their own set of gains and limitations, and specific factors must be considered to ensure its sustainability. Because different PPP models differ from each other, they possess different sets of strengths and weaknesses. Some of these models are more appropriate for certain situations and contexts. Therefore, exact details of a PPP model depend on the particular project and the context in which it takes place.

In view of the findings in Table 4.3 and Figure 4.4, it can be concluded that the nature of PPP has a great influence on the relevant aspects of quality of road design and operational efficiency.

4.2.2 Financing Mechanism-Share of public and or private financing

The study further assessed responses of the fact sheet on financing mechanisms and share of private and or public financing in the PPP road projects.

The question asked was: What was the percentage of the public and private partner in financing each of the five PPP road projects and how did this affect road safety outcome? Results are presented as shown in Table 4.4.

Table 4.4 Percentage of public and private financing and road safety

	Road	PPP arrangement/Form	Share of Public financing (%)	Share of Private financing (%)	Did the financing arrangement lead to enhanced road safety				
					SA	A	N	D	SD
1.	Mombasa-Nairobi Highway	BOT/Concession contract	-	100	20	26	32	22	
2.	Nairobi-Nakuru- Mau Summit Highway	Concession contract	-	100	-	-	-	-	
3.	Nairobi-Thika Highway	Joint Venture	15	85	40	42	11	8	
4.	Southern Bypass	Joint Venture	17	83	15	30	35	20	
5.	Ngong-Kiserian-Isinya-Kajiado to Imaroro	Concession contract (Road Annuity Programme)	-	100	12	20	30	38	

Source: Author, 2020

Table 4.4 shows how different roads adopted different financing mechanisms and subsequent outcomes in terms of road safety. For Mombasa-Nairobi Highway, financing was fully by the private sector and outcome effects on safety shows 20% strongly agreed, 26% agreed, 32% were neutral while 22% disagreed.

Regarding the Nairobi-Nakuru- Mau Summit Highway, financing was fully by the private sector, with no rating responses-based n the fact that the project was in progress. In the case of Nairobi-Thika highway, 15% financing was from public partner while a major part of 85% from the private sector. Consequently, the table shows road safety with 40% strongly agreed, 42% agreed, 11% were neutral while 8% disagreed.

When it came to Southern Bypass, the private partner financed 83% of the total cost of the project while public partner contributed 17%. Rating on road safety shows 15% strongly agreed, 30% agreed, 35% were neutral while 20% disagreed. Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, Table 4.3 shows financing was fully by the private

partner at 100%. However, rating on road safety shows 12% strongly agreed, 20% agreed, 30% were neutral while 38% disagreed.

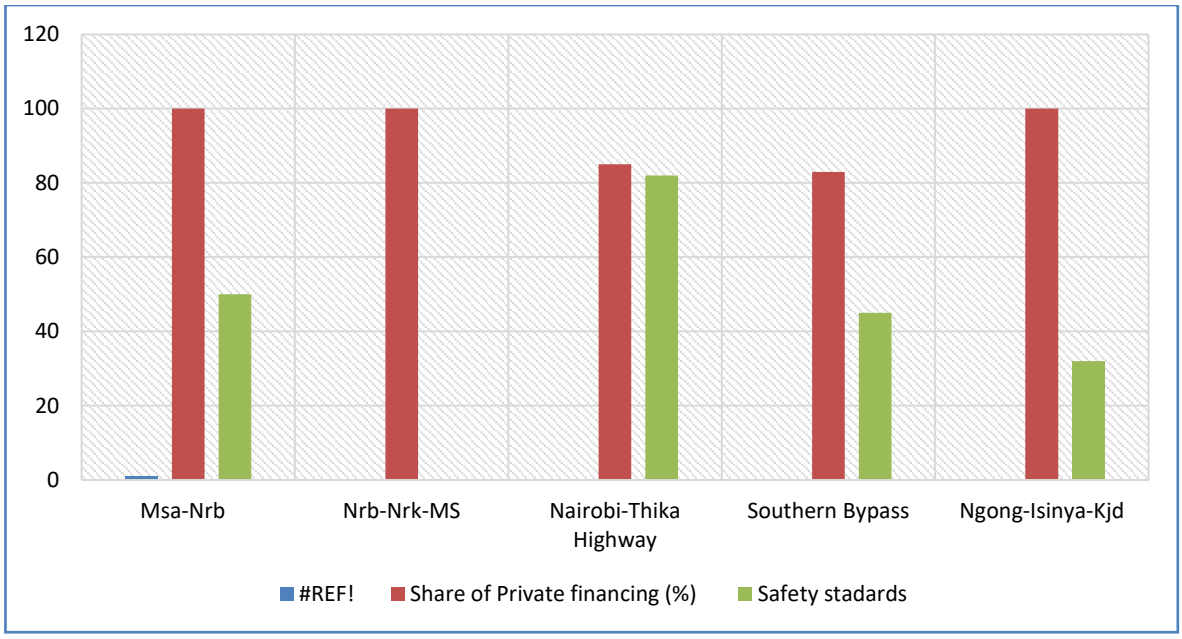
The table shows that different PPP arrangements take different financing forms, and give different results. Two roads were co-financed by both public and private partners, which are Nairobi-Thika highway and Southern Bypass. However, in both cases, the private partner accounted for the highest capital investment of both road projects. The table also shows three road projects namely Mombasa-Nairobi Highway, Nairobi-Nakuru-Mau Summit Highway and Ngong-Kiserian-Isinya-Kajiado to Imaroro road were fully financed by the private partner.

According to Table 4.4, financing arrangements differ across the different PPP forms, and even where the private sector fully financed the project (Nairobi-Nakuru-Mau Summit Highway and Ngong-Kiserian-Isinya-Kajiado to Imaroro), different results were recorded in terms of the road safety standards.

The table shows a clear trend from previous results on how different PPP forms give different results, with Nairobi-Thika highway and Southern Bypass rating showing strong support for road safety as compared to the other two (Mombasa-Nairobi Highway and Ngong-Kiserian-Isinya-Kajiado to Imaroro) road projects. The results show different financing arrangements that have been utilized for road projects, but demonstrate a major role of private financing for PPP projects.

Road project performance data collected through interviews with key informants revealed the same trend as presented in Figure 4.5. The interview question read: Is there a linkage between share of financing between public and safety standards for these five PPP roads?

Figure 4.5 Share of public and private financing and project outcome



Source: Author, 2020

Figure 4.5 shows different financing models exist depending on the nature of PPP employed. For Nairobi-Thika Superhighway, public (government) financing was 15% and 85% from the private partners. Regarding Southern Bypass, results reveal public entity contributed approximately 17% while 83% was from the private partner. However, results show Mombasa-Nairobi Highway, Nakuru-Mau-Summit and Ngong-Kiserian-Isinya- Kajiado-Imaroro road were fully financed by private partner(s).

Figure also 4.4 shows two road projects (Nairobi-Thika Superhighway and Southern Bypass) were co-financed by both public and private partners while three road projects were fully financed by the private partner.

In view of Table 4.4 and Figure 4.5, the nature of PPP influences the alternative financing arrangement for either public or private role in supplementing to finance and deliver road projects. These findings demonstrate that public and private financing responsibilities vary in degree, but translates into the nature of PPP utilized which ultimately brig about different results in terms of project safety standards.

Table 4.4 and Figure 4.5 also show that where both public and private sectors were responsible for providing infrastructure finances through jointly venture, this led to better road safety standards as compared to the concession agreement where financing was fully undertaken by the private sector.

The findings agree with comparative studies of Dong and Wang (2016), who listed PPP projects in USA and China as either vertical/contractual or horizontal/institutional in nature. The established similar trends where horizontal partnerships, where both public and private sectors were responsible for providing infrastructure resources and finances as shareholders in a special purpose vehicle (SPV), in which public and private shares were jointly ventured for the project purpose gave better results. Dong and Wang (2016) also found that vertical partnership, which were concession PPP contract assigned the responsibility of service delivery and financing to the private sector over its entire life cycle did not perform well in the long-term. Comparatively, the United Kingdom prioritizes Private Finance Initiative (PFI) by relying on commercial sectors such banks to finance their highways. As such, role of public and private differs depending on the PPP arrangement.

Therefore, the results demonstrate that the nature of PPP influenced the quality of project since joint venture arrangement was cited to have granted better safety standards of roads as compared to BOT/concessions. Therefore, it was concluded that joint venture is preferable because of its nature in delivering safety standards in road projects than concessions.

4.2.3 Roles of public and private partner in PPP contracts

Further assessment was made to establish how roles of public and private parties in a PPP arrangement are important. The question was: What was the role of public and private partner for each of the five road projects implemented under PPP? Results obtained were summarized in Table 4.5.

Table 4.5 Public and private roles in PPP projects

	Road	Role of Public partner	Role of Private Partner
1.	Mombasa-Nairobi Highway	- Defining the scope of works - Issuing permits, licenses, authorizations, - Land compensations - Dispute resolution mechanisms, - Oversight, advisory and monitoring	- Financing, designing, constructing the road infrastructure. - Operation and maintenance - Advisory on contract management
2.	Nairobi-Nakuru-Mau Summit Highway	- Defining the scope of works - Issuing permits, licenses, authorizations, - Dispute resolution mechanisms, -	- Financing, designing, constructing the road infrastructure. - Operation and maintenance of the road - Advisory on contract management
3.	Nairobi-Thika Highway	- Financing partly the working capital, Defining the scope of works - Issuing permits, licenses, land authorizations - Monitoring stakeholder management - Dispute resolution mechanisms	- Financing, designing, constructing the road infrastructure. Utility management, - Technical advisory and consultancy on - Operation and maintenance of the road
4.	Southern Bypass	- Financing partly the working capital - Issuing land permits, licenses, authorizations - Monitoring stakeholder management - Dispute resolution mechanisms, -	- Financing, designing, constructing the road infrastructure. - Technical advisory and consultancy - Advisory on contract management on O&M -
5.	Ngong-Kiserian-Isinya") and from Kajiado to Imaroro	- Defining the scope of works - Issuing permits, licenses, authorizations - Dispute resolution mechanisms, monitoring/evaluation	- Financing, designing, constructing the road infrastructure.

Source: Author, 2020

Table 4.5 shows that the public and private sectors play different roles. For Mombasa-Nairobi Highway, the public partner was involved with issuing permits, licenses, authorizations, land provision and compensation, dispute resolution mechanisms and advisory and monitoring of the project. on the other hand, the private partner's role was financing, designing, constructing the road infrastructure and offering advisory on contract management and operation and maintenance.

Regarding the Nairobi-Nakuru- Mau Summit Highway, the public partner was mainly tasked with issuing permits, licenses, authorizations, dispute resolution mechanisms while the private partner undertook the financing, designing, constructing the road infrastructure, operation and maintenance of the road and advisory on contract management. On the other hand, the private partner's role was financing, designing, constructing the road

infrastructure, utility management, technical advisory and consultancy on operation and maintenance of the road

Table 4.5 also shows that in the case of Nairobi-Thika highway and Southern Bypass, the public partner was involved with financing partly the working capital, issuing permits, licenses, land authorizations, monitoring stakeholder management and dispute resolution mechanisms. Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, the role of public partner was defining the scope of works, issuing permits, licenses, authorizations and dispute resolution mechanisms, while the private partner's role was financing, designing, constructing the road infrastructure.

Table 4.5 shows that while PPP forms vary, the roles of each partner also varies depending on the road project. Financing for both Nairobi-Thika highway and Southern Bypass roads was undertaken by both public and private, but the private partner undertook the designing, constructing the road infrastructure and utility management. The table also shows that while private partner financed all the roads in part or in full, the public partner had a main role of defining the scope of works. Table 4.5 also shows three roads (Mombasa-Nairobi Highway, Nairobi-Nakuru- Mau Summit Highway and Southern Bypass) had the private partner play a key role on advisory on contract management.

Government offers the right environment so that PPP can be affected. This, it does by issuing permits, licenses, defining scope of work, managing procurement, stakeholders and dispute mechanisms. It may also raise funds for the project. Conversely, the private partner raises funds and provides the workmanship through designing, financing and constructing the road infrastructure as well as maintenance and advisory.

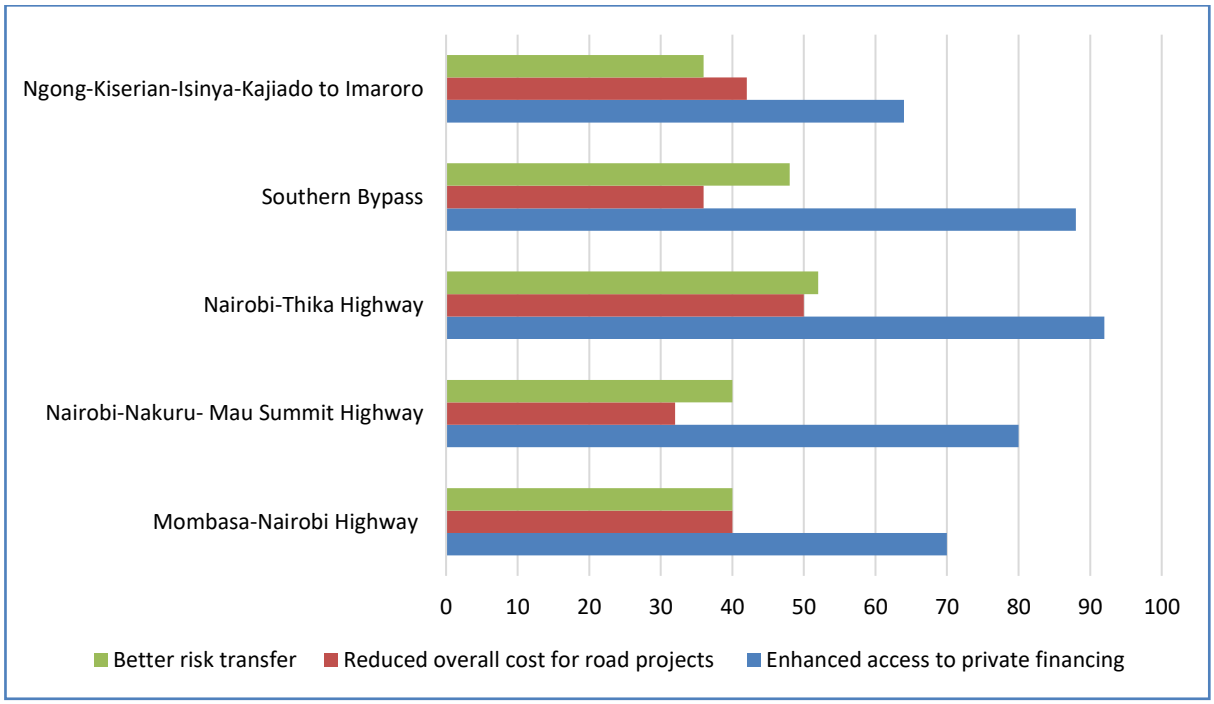
The need to define clear roles and responsibilities highlight best outcomes of delivering quality and ensuring efficiency. From the Principal-Agent perspective, the relation between principal and agent may stretch out of varying interest, which could affect the quality of works. It is clear that while roles vary, PPP models vary and are influenced by the parameters of the projects. Managing this relationship is thus important in attracting private financing for the government, as well as minimizing risks. The type of PPP structure thus guarantees the role played by each partner, but varies from project to project. However, public retains key role of defining scope of works and licenses while private partner majorly finances and undertakes the project design, construction and management role. Therefore,

it can be concluded that making PPP bankable calls for a balance on each partner's roles and responsibilities regardless of the PPP model used.

4.2.4 Priority for best-fit PPP model(s) in implementing road projects

The study further analyses interview responses regarding rationale for best-fit PPP models in the implementation of road projects in Kenya. The question posed was: What is the rationale for prioritizing a particular PPP model in the five different road projects? Results were summarized as presented in Figure 4.6.

Figure 4.6: Rationale for priority best-fit PPP model in road projects



Source: Author, 2020

Figure 4.6 show varying reasons for prioritizing a particular PPP arrangement across the five roads. For Mombasa-Nairobi Highway, Given the multiple responses, enhanced access to private financing was rated at 70%, reduced overall cost for road projects (40%) while Better risk transfer at 40%. Regarding the Nairobi-Nakuru- Mau Summit Highway, the rationale for PPP arrangement was linked to enhanced access to private financing was rated at 80%, reduced overall cost for road projects (32%) while better risk transfer at 40%.

In the case of Nairobi-Thika highway, Figure 4.6 shows enhanced access to private financing at 92%, reduced overall cost for road projects (50%) while better risk transfer at 52%. When it came to Southern Bypass, enhanced access to private financing was rated at 88%, reduced overall cost for road projects (36%) while better risk transfer at 48%.

Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, enhanced access to private financing was rated at 64%, reduced overall cost for road projects 42% while better risk transfer at 36%.

Figure 4.6 also reveals that enhanced access to private financing was an overriding factor for all the roads, despite their different PPP forms. Overall, the table shows the priority for best-fit PPP model in road projects did not anchor on reducing the overall project cost, given that all the roads scored below average. Only Nairobi-Thika highway rated at 50% on cost reduction as well as risk transfer.

The table also highlights risk transfer for Nairobi-Thika highway and Southern Bypass scored higher than the rest of the roads. Of importance is the Nairobi-Thika highway, which scored high (92%) followed by Southern Bypass (88%) regarding access to private financing, even though these two roads were co-financed by both public and private through Joint Venture.

These findings demonstrate that the motivation to go for a particular PPP arrangement is first inherent in how it opens up space for the more private sector financing, which is strongly captured in all roads, including those whose public partner contributed a percentage of the working capital. However, enhanced private sector financing did not translate to reduced project cost as well as a balanced risk sharing approach.

What comes out from these findings is that while utilizing different PPP models and forms, the rationale for public partner lies in its ability to attract more private investment in terms of financing of the road projects. Therefore, it was concluded that the choice of the nature of PPP has not served as a cost-reduction alternative and is not fully driven by the need to balance risk-sharing between the public and private.

In view of the six indicators assessed under this objective, it is clear that PPP road projects have mostly utilized the DBFOMT model, even where different PPP arrangements

(concessions or Joint venture) and contract period varies. Whilst DBFOMT model has been majorly applied in the road projects, there are differences in the way the public and private partner approach these contracts and manage their roles. The nature of PPP has a great influence on the relevant aspects of quality of road design and operational efficiency. However, road projects implemented via joint venture delivered better safety standards in road projects than those roads that utilized concessions. The results have demonstrated that an ideal PPP should create a right balance of roles and responsibilities regardless of the PPP model used. The rationale for a particular PPP is driven more by its ability to open up more space for private financing as compared to cutting overall project cost as well as balancing risks.

Overall, these findings show that different PPP models give rise to different results in terms of quality, safety standards, extent of public/private roles, financing mechanisms and risk sharing management. Considering the hypothetical underpinning of this objective, which was to examine how the nature of public-private partnership influences the implementation of road infrastructure projects in Kenya, the study findings confirm that PPP models have a strong influence on the quality of the road projects. Therefore, the findings reject the hypotheses that: public-private partnership models have no influence on the quality of road projects implemented under PPP arrangement.

4.3 The Relevance of Public-Private Partnership in Road Infrastructure Projects

The second objective focused on examining the relevance of PPP in infrastructure road projects. In order to address the objective, the study hypothesized that: Stakeholder management is a major challenge influencing the timely delivery of PPP road projects in Kenya. The following indicators were assessed: Level/effectiveness of stakeholder engagement, socio-economic benefits (tax reduction, market access), improved efficiency in performance standards (on-time completion), innovativeness of road projects (safety and security of users) and enhanced project governance mechanism (transparency and accountability)

4.3.1 Level and effectiveness of stakeholder engagement

Stakeholders are key player in public private partnerships. The question posed was: Who were the stakeholders involved in each of five the roads listed? Results were analyzed and presented in Table 4.6.

Table 4.6 Stakeholders involved in PPP road projects

	Road		Stakeholders involved
1	Mombasa-Nairobi Highway	-	Ministry of Transport, PPP Unit, KeNHA, AfDB, World Bank, GDC, KPA, Kenya Alliance of Resident Associations, Utility companies (KPLC, Data firms), Kenya Railways Corporation, NGOs/CBOs/civil society, County government of Mombasa, NEMA, KEPSA, Local administration, security agencies, affected community, end-users.
2	Nairobi-Nakuru-Mau Summit Highway	-	Ministry of Transport, PPP Unit, KeNHA, Kenya Alliance of Resident Associations, Utility companies (KPLC, Data firms); Kenya Railways Corporation, NEMA, Local administration, security agencies, NGOs/CBOs/civil society
3	Nairobi-Thika Highway	-	Ministry of Transport, PPP Unit, KeNHA, AfDB, Chinese Corporation, Kenya Alliance of Resident Associations, Utility companies (KPLC, Data firms); Kenya Railways Corporation, NEMA, Law Firms NGOs/CBOs/civil society, KEPSA, Local administration, public.
4	Southern Bypass	-	Ministry of Transport, PPP Unit, KeNHA, Chinese Corporation, AfDB, Kenya Alliance of Resident Associations, Utility companies (KPLC, Data firms); NGOs/CBOs/civil society, NEMA, KFS, Law Firms, Local administration, security agencies,
5	Ngong-Kiserian-Isinya") and from Kajiado to Imaroro	-	Ministry of Transport, National Treasury, KURA; Commercial Banks -KCB Group, NEMA, County Government of Kajiado, Civil Society, Youth Alliance, Local administration, Commercial Banks-KCB Group, KFS, community.

Source: Author, 2020

Table 4.6 shows various stakeholders ranging from state to non-state actors that were involved in the five road projects implemented using PPP.

For Mombasa-Nairobi Highway, stakeholders tanged from Ministry of Transport, PPP Unit, KeNHA, AfDB, World Bank, GDC, KPA, Kenya Alliance of Resident Associations, Utility companies (KPLC, Data firms), Kenya Railways Corporation, NGOs/CBOs/civil society, County government of Mombasa, NEMA, KEPSA, Local administration, security agencies. Regarding the Nairobi-Nakuru- Mau Summit Highway, stakeholders were Ministry of Transport, PPP Unit, KeNHA, Kenya Alliance of Resident Associations, Utility companies

(KPLC, Data firms); Kenya Railways Corporation, NEMA, Local administration, security agencies, NGOs/CBOs/civil society.

Table 4.6 also shows that in the case of Nairobi-Thika highway and Southern Bypass, stakeholders including Ministry of Transport, PPP Unit, KeNHA, AfDB, Chinese Corporation, Kenya Alliance of Resident Associations, Utility companies (KPLC, Data firms); Kenya Railways Corporation, NEMA, KFS, Law Firms NGOs/CBOs/civil society, KEPSA, Local administration and the adjacent public were involved.

Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, a range of stakeholders included Ministry of Transport, National Treasury, KURA; Commercial Banks -KCB Group, NEMA, County Government of Kajiado, Civil Society, Youth Alliance, Local administration, Commercial Banks-KCB Group, KFS and community.

Table 4.6 also shows varying stakeholder groups across the road projects, such as international institutions such as World Bank, AfDB for the Mombasa-Nairobi Highway and Chinese experts for Nairobi-Thika highway and Southern Bypass. The table also shows government institutions formed a major part of stakeholders, including Ministry of Transport, National Treasury, KeNHA, PPP Unit, KURA, NEMA, KFS, County Government and local administration. The results therefore depict a range of stakeholders involved in PPP road projects.

To further establish the effectiveness of stakeholder involvement across the groups, a question was posed as follows: To what extent were stakeholders from government entities, non-state actors and community (public) involved? How did this affect project delivery timeline?

Cross-project analysis was made to provide a general view for each road projects, covering stakeholder engagement for government entities, non-state actors and community (public). The summary of findings obtained, from both fact-sheet and interview were integrated and presented in Table 4.7.

Table 4.7 Ranking on effectiveness of stakeholders' involvement

	Road	Government agencies/international consultants		Non-state-NGO/CSOs; Community/ Users		Effect on project delivery timeline
		Satisfactory	***Not satisfactory***	***Satisfactory***	***Not satisfactory***	
1.	Mombasa-Nairobi Highway	70	30	50	50	Delayed kick-off after contract signing
2.	Nairobi-Nakuru-Mau Summit Highway	80	20	70	30	On-going (minimal delays on kick-off after contact signing) (2019-in progress.
3.	Nairobi-Thika Highway	60	40	40	60	Delayed completion within given timeline (2009-2012)
4.	Southern Bypass	78	22	35	65	Delayed completion within given timeline (2012-2016)
5.	Ngong-Isinya-Kajiado-Imaroro	60	40	40	60	Delayed completion (2018-due)

Source: Author, 2020

Table 4.7 shows stakeholder engagement varied across the road projects.

Nairobi-Mombasa highway satisfactorily (70%) engaged public entity stakeholders, local and international consultants. However, there was a relatively fair (50%) engagement non-state actors and community. This led to delays in project kick-off after contract signing.

Regarding Nakuru-Mau-Summit highway, results show all stakeholders were involved (80%) for state and 70% for non-state stakeholders were satisfactorily engaged which ultimately led to minimal delays in project kick-off after contract signing.

On the other hand, Nairobi-Thika highway recorded satisfactory (60%) for public entities, local and international stakeholders were satisfactory However, the engagement of NGOS/CSOs/community and users was at 40%, often blamed on the land compensation issues which delayed the project timelines that led to delays in project timelines.

For Southern Bypass, engagement 78% satisfactory with state and local/international stakeholders but ranked low (35%) for non-state stakeholders (NGOs/CSOs/community). Evidence suggests conflicts emanating from human-wildlife conflicts due to encroaching the Nairobi National Park, as well as Wilson Airport noise traffic. Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road project, 60% were satisfactory that state/local and

international stakeholder involvement while 40% for non-state actors (NGOs/CSOs/ community and users.

The Table sheds light on the need to enhance bottom-up approach to ensure efficiency and timely project implementation. PPPs remain relevant to macro and micro economic benefits. The views build on the framework for PPP and stakeholder role in assuring efficiency in terms of timely project implementation.

Table 4.7 demonstrates that although various stakeholder groups exists and vary depending on each project, the context of their involvement is what matters. If a particular PPP project is to be considered relevant, the chances of delays and failure could be increased if community and the public are not well involved, regardless of how large the government agencies/international consultants take part.

These results portray the importance of stakeholders in implantation of PPP road projects. Taken as a whole, external stakeholders' perspective represent public opposition to PPP projects that appear to either contradict environmental, wildlife and user safety and security. This ultimately had an effect on ether project delivery timelines and or project kick-off after contract agreements were signed. Stakeholder engagement is directly linked to timely delivery of road projects. If their roles and accountable measures are not taken into account, then PPP projects are bound to face resistance and delays.

According to a ADB (2019) report, Nairobi-Thika highway involved all key partners in varying degrees in the implementation of the project. They included Ministry of Transport, KeNHA, KURA, Nairobi City Council, the Ministry of Local Government, Kenya Railways Corporation and Local Administrators, amongst others. Local participation was quite visible: a local contractor was involved in the relocation of services; a local engineering consultancy firm was part of the studies and supervision of works team; and KeNHA engineers. The project offered an opportunity for training to KeNHA staff and transfer of expertise in road construction to local personnel working with the contractors and consultancy firm (more than 90% of works supervision personnel were local staff). The experience gained by local staff was meant to be useful for future road projects and maintenance of the project road.

Given those internal stakeholders (government entities, which in this case range from PPP Units and transport agencies and parastatals), their role lies in compliance with regulations, and enhancing project-buy-in and building relationship with external stakeholders. External stakeholders are the end-users (comprising non-state groups and community). Quite often, were the engagement is bot effective, then external stakeholders would view internal stakeholders with doubt and mistrust. Across the value chain of stakeholder groups (Table 4.7), the results demonstrate the need for transparency to ensure effective stakeholder management of PPP projects.

Within the literature analysis, Schepper, Dooms and Haezendonck (2014) also cited a mismatch on selection process for stakeholder responsibilities associated with PPP projects and the perceptions inherent in their roles. Martin (2013) offers a perfect scenario for Australia and the United Kingdom, where stakeholder engagement delivered timely delivery for road projects. Therefore, balancing stakeholder involvement is key for PPP projects.

In view of Table 4.7, PPP can offer significant advantages including timely project completion if stakeholder management is well balanced. Therefore, it can be concluded that stakeholder involvement directly influences the timely delivery of PPP road projects.

4.3.2 PPP governance principles in road projects

The study further assessed the relevance of PPP in terms of governance principles. These aspects were important because they relate to the nature of stakeholder engagement.

The question was: Rate and tick appropriately the extent to which (a) PPP project had a transparent stakeholder process and (b) the engagement led to accountability and trust among all stakeholders during project implementation.
The results are illustrated in Table 4.8.

Table 4.8 PPP and stakeholder governance principles in road projects

	Road	Project had a transparent stakeholder process					Engagement led to accountability and trust among all stakeholders				
		SA	**A**	**N**	**D**	**SD**	**SA**	**A**	**N**	**D**	**SD**
1.	Mombasa-Nairobi Highway	12	18	32	20	18	10	12	20	36	20
2.	Nairobi-Nakuru- Mau Summit Highway	20	12	30	10	28	12	10	40	10	28
3.	Nairobi-Thika Highway	24	18	30	10	8	36	24	20	8	10
4.	Southern Bypass	12	18	20	20	30	10	14	20	16	40
5.	Ngong-Kiserian-Isinya-Kajiado-Imaroro	30	20	20	16	14	30	22	12	20	16

Source: Author, 2020

Table 4.8 shows a varying trend on governance principles that define stakeholder management.

For Mombasa-Nairobi Highway, rating on whether the road project had a transparent stakeholder process shows 12% strongly agreed, 18% agreed, 32% were neutral while 20% disagreed while 18% strongly disagreed. On whether the engagement led to accountability and trust among all stakeholders, 10% strongly agreed, 12% agreed, 20% were neutral, 36% disagreed whereas 20% strongly disagreed.

Regarding the Nairobi-Nakuru- Mau Summit Highway, rating on whether the road project had a transparent stakeholder process shows 20% strongly agreed, 12% agreed, 30% were neutral while 10% disagreed while 28% strongly disagreed. On whether the engagement led to accountability and trust among all stakeholders, 12% strongly agreed, 10% agreed, 40% were neutral, 10% disagreed whereas 28% strongly disagreed.

The Table also shows Nairobi-Thika highway rating on whether the road project had a transparent stakeholder process shows 24% strongly agreed, 18% agreed, 30% were neutral while 10% disagreed while 8% strongly disagreed. On whether the engagement led to accountability and trust among all stakeholders, 36% strongly agreed, 24% agreed, 20% were neutral, 8% disagreed whereas 10% strongly disagreed.

When it came to Southern Bypass, rating on whether the road project had a transparent stakeholder process shows 12% strongly agreed, 18% agreed, 20% were neutral while 20% disagreed while 16% strongly disagreed. On whether the engagement led to accountability and trust among all stakeholders, 10% strongly agreed, 14% agreed, 20% were neutral, 16% disagreed whereas 40% strongly disagreed.

Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, rating on whether the road project had a transparent stakeholder process shows 30% strongly agreed, 20% agreed, 20% were neutral while 16% disagreed while 14% strongly disagreed. On whether the engagement led to accountability and trust among all stakeholders, 30% strongly agreed, 22% agreed, 12% were neutral, 20% disagreed whereas 16% strongly disagreed.

Table 4.8 also shows apart from the Ngong-Kiserian-Isinya-Kajiado-Imaroro which had a relatively high transparent stakeholder process, all the other roads scored below average. Similarly, Ngong-Kiserian-Isinya-Kajiado to Imaroro and Nairobi-Thika Highway scored high on accountability and trust among all stakeholders.

Accordant to Table 4.8, the main difference lies in Nairobi-Thika highway and Southern Bypass, which had a strong and weak accountability/trust among all stakeholders respectively. Since each stakeholder is key to making strategic decisions towards fulfilling the timely delivery of road projects. When the process is not transparent and trust is nurtured, it could complicate the operational process and limit the project completion. Therefore, it is essential for PPP projects to develop a comprehensive approach towards transparency and accountability efforts that ensures trust among all stakeholders helps them reach reliable decisions before project implementation.

Similar observations have been reported by a study by Kalpana (2014), who established that potential gaps that make PPP negotiations secretly handled lead to mistrust among stakeholders and ultimately hampered the ability for PPP to deliver its intended objectives. Furthermore, Engel, Fischer and Galetovic (2014) stressed the importance of accountability in PPP contracts since they are prone to unscrupulous influence from the private partner. On the basis of stakeholder involvement, these elements of accountability, transparency and trust are key to ensure all parties involved steer clear parameters that ensure road projects are completed on time.

Due to the potential contribution of stakeholders, the Table demonstrates a set of distinct trends where a weak transparent stakeholder process consequently leads to loss of trust, clearly demonstrated for the Southern Bypass road project. Therefore, it is concluded that the mistrust among stakeholders in PPP projects emanates from clear weaknesses in transparent and accountable processes of stakeholder management during PPP project implementation which create project delays.

4.3.3 Socio-economic benefits of PPP road projects

To further explore the particular indicators related to relevance of PPP projects, the study sought to establish whether PPP projects had resulted in overall socio-economic gains for the country and users. The question posed was: To what extent has PPP been relevant in offering increased trade and access to goods and services and employment opportunities to the public? The results were tabulated in Table 4.9.

Table 4.9 Socio-economic benefits of PPP road projects

Road	Increased trade and access to goods and services					Direct and indirect employment				
	SA	**A**	**N**	**D**	**SD**	**SA**	**A**	**N**	**D**	**SD**
1. Mombasa-Nairobi Highway	40	32	20	8	-	10	20	14	40	26
2. Nairobi-Nakuru- Mau Summit Highway	24	20	34	18	4	18	20	30	22	10
3. Nairobi-Thika Highway	60	24	8	8	-	40	20	22	10	8
4. Southern Bypass	16	30	18	20	16	16	12	34	18	20
5. Ngong-Kiserian-Isinya-Kajiado-Imaroro	14	22	40	10	14	10	8	40	32	10

Source: Author, 2020

Table 4.9 shows socio-economic gains emanating from the road projects which differed across the five road projects.

For Mombasa-Nairobi Highway, rating for increased trade access to goods and services varied considerably, and shows 40% strongly agreed, 32% agreed, 20% were neutral while 8% disagreed. On whether the same road had offered direct and indirect employment, 10%

strongly agreed, 20% agreed, 14% were neutral, 40% disagreed whereas 26% strongly disagreed.

Regarding the Nairobi-Nakuru- Mau Summit Highway, increased trade access to goods and services show 24% strongly agreed, 20% agreed, 34% were neutral, 18% disagreed while 4% strongly disagreed. On whether the same road had offered direct and indirect employment, 18% strongly agreed, 20% agreed, 30% were neutral, 22% disagreed while 10% strongly disagreed.

The Table also shows Nairobi-Thika highway ratings for increased trade access to goods and services where 60% strongly agreed, 24% agreed, 8% were neutral while 8% disagreed. On whether the same road had offered direct and indirect employment, 40% strongly agreed, 20% agreed, 22% were neutral, 10% disagreed while 8% strongly disagreed.

When it came to Southern Bypass, increased trade access to goods and services show 16% strongly agreed, 30% agreed, 18% were neutral while 20% disagreed while 16% strongly disagreed. On whether the same road had offered direct and indirect employment, 18% strongly agreed, 20% agreed, 30% were neutral, 22% disagreed while 10% strongly disagreed.

Regarding the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, increased trade access to goods and services show 14% strongly agreed,22% agreed, 40% were neutral while 10% disagreed while 14% strongly disagreed. On whether the same road had offered direct and indirect employment, 10% strongly agreed, 8% agreed, 40% were neutral, 32% disagreed while 10% strongly disagreed.

The Table shows Mombasa-Nairobi Highway and Nairobi-Thika highway scored high on having increased trade and access to goods and services. Apart from Nairobi-Thika Highway, all the four road projects scored low on offering direct employment opportunities, with the least being Ngong-Kiserian-Isinya-Kajiado-Imaroro road. Despite the differences in road scope and location, Table 4.9 highlights a general trend of PPP projects expanding trade and access to goods and services, but this does not translate into jobs for the users.

Relevance of PPP should thus ensure users benefit from the facilities that come along with the road projects such as water, electricity and social amenities. Therefore, the choice of PPP scheme should not only offer the connectivity for business and exchange of goods and services, but also job opportunities. This however, needs to be clearly set out in the whole life cost. Consequently, PPP projects should also open up sectoral productivity and employment opportunities that are sustainable in reducing poverty. This side-lining of public and end-users reflects the clear gap in transparency and accountability in the preceding section, which ultimately show PPPs have not translated to job opportunities for the public.

These views concur with Hodge and Biygautane (2018), suggesting the need to link PPP benefits at policy level to direct user benefits through accurate data. Best PPP practices, as provided by McKenzie and Mookherjee (2013), proved that PPP in Bolivia succeeded on the premise that government prioritized the well-being of the communities particularly deprived households. In the context of the study, and considering PPP road projects underway, these results point to the need for expanding the microeconomic efficiency within the PPP framework.

Among the implications from Table 4.9 is the indication that roads that link urban to rural settings (such as the Ngong-Kiserian-Isinya-Kajiado-Imaroro) depict a weak rating for employment and trade. From the preceding section, it was noted that a range of stakeholders are involved, but clear gaps on the community and public involvement. The potential threat for not fully engaging the community and end-users in PPP projects in the long-run sidelines these groups from enjoying the direct and indirect socio-economic benefits. Therefore, the results concluded that PPP has offered the direct benefit of increased trade and access to goods and services but benefits of expanding job opportunities are still weak and linked to weak community/public stakeholder involvement.

Overall, the findings in this section show that while a range of stakeholders are involved in PPP road projects; there is a disjoint in how all stakeholders are managed. The limited engagement of NGO/CSO, community and the public category directly influences the timely delivery of PPP road projects. Gaps relating to transparency and accountability/trust have places a challenge on enhancing stakeholder management during PPP project implementation which creates project delays. This side-lining of public and end-users

reflects the breach in how PPPs have not remained relevant in offering increased trade, access to goods and services and job opportunities for the public. Stakeholder management is thus a factor that slows down the timely delivery of PPP road projects in Kenya. In consideration of the above conclusion, the study thus supports the hypothesis that read: Stakeholder management is a major challenge influencing the timely delivery of PPP road projects in Kenya.

4.4 Cost-Effectiveness of Public-Private Partnership in Road Projects

The third objective of the study sought to investigate the cost-effectiveness of using PPP in the implementation of road infrastructure projects in Kenya. In order to address the objective, the study hypothesized that: Value for money factor has influenced the cost of delivering road infrastructure projects using PPP. The following indicators were assessed: Value for money factor, rate of return on investment/rate, cost of construction (cost/time-overruns), macro and micro-economic benefits, operation/maintenance during the contract period (cost overruns) and risk management measures.

4.4.1 PPP and Value for money

The study assessed the cost-effectiveness of PPP in the implementation of road projects. The questioned posed was: To what extent has PPP contributed to value for money (cost-effective means of road construction). Their responses were as shown in Table 4.10.

Table 4.10 Whether PPP achieved value for money in PPP projects

	Type of Road	Value for Money (Whether PPP resulted in low cost road construction and maintenance				
		SA	**A**	**N**	**D**	**SD**
1.	Mombasa-Nairobi Highway	20	30	26	14	10
2.	Nairobi-Nakuru- Mau Summit Highway	10	30	30	22	18
3.	Nairobi-Thika Highway	12	40	30	18	-
4.	Southern Bypass	15	15	34	20	10
5.	Ngong-Kiserian-Isinya-Kajiado to Imaroro	12	20	22	24	20

Source: Author, 2020

Table 4.10 shows that value for money factor varied across the road projects. For Mombasa-Nairobi Highway, 20% strongly agreed, 30% agreed, 26% were neutral, 14% disagreed while 10% strongly disagreed that PPP had resulted in cost-savings.

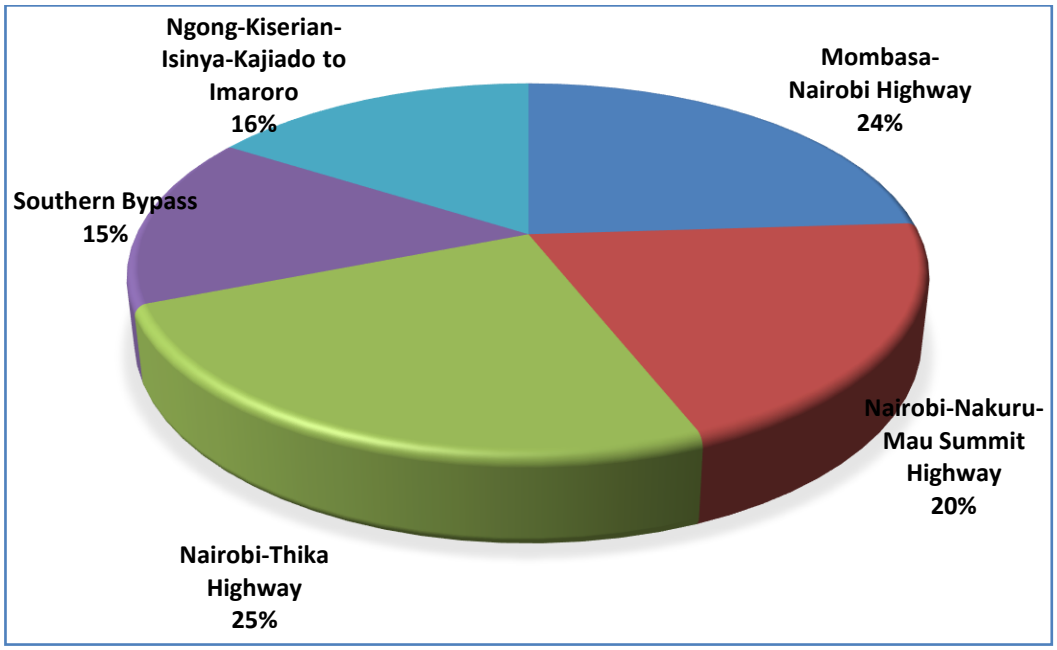
With respect to Nairobi-Nakuru- Mau Summit Highway, 12% strongly agreed, 40% agreed, 30% were neutral, 18% disagreed while 18% strongly disagreed. For Nairobi-Thika Highway, 24% strongly agreed, 20% agreed, 34% were neutral, 18% disagreed while 4% strongly disagreed

The Southern Bypass showed 15% strongly agreed, 15% agreed, 34% were neutral, 20% disagreed while 10% strongly disagreed. A similar trend for the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, where 12% strongly agreed, 20% agreed, 22% were neutral, 24% disagreed while 20% strongly disagreed

The analysis paints a picture of PPP not offering value for money. Only Mombasa-Nairobi Highway and Nairobi-Thika highway scored high. PPP is a long-term contractual agreement and thus value for money is key to ensure such projects not only improves efficiency and quality of roads, but also accountability and sustainability of public tax money over traditional government procurement. As observed earlier, the rationale for PPP was aligned to expanded fiscal space for government in accessing private financing of road projects. However, the findings in Table 4.10 clearly show not all PPP arrangement have translated into value for money in terms of cost-savings of the projects.

Interview responses from industry experts confirmed that a similar trend of Table 4.10. The interview question was: In your opinion, do you think PPP resulted in value money for the five road projects? A summary of the responses is presented in Figure 4.7.

Figure 4.7 Interview responses on PPP and value for money



Source: Author, 2020

Figure 4.7 shows different PPP projects projected varying trends on value for money. Mombasa-Nairobi Highway at 24%, Nairobi-Nakuru- Mau Summit Highway at 20%, Nairobi-Thika Highway at 25%. In addition, the Table shows Southern Bypass showed 15% while 16% for the Ngong-Kiserian-Isinya-Kajiado to Imaroro road. Figure 4.7 shows Nairobi-Thika Highway was rated highest as the road perceived to have attained a higher value for money, translated to the cost and cost and maintenance. Table 4.10 and Figure 4.6 underscore the need to re-evaluate the PPP models being utilized to counter check cost overruns.

The results suggest a larger part of differences reflected in the type of PPP arrangement used for each road. This is because one key motivation for PPP agreements is not only to improve efficiency and quality, but also to boost investments for expensive projects. Despite PPPs having been particularly widespread in form and type, Figure 4.7 indicates a strong evidence suggesting that they have not perform better in terms of saving overall cost as compared to alternative forms.

In their investigation on road costs and PPPs, Grimsey (2005) reiterated that a vital question related to PPP for the principal should be value for money. Consequently, this value for

money is should be based on how PPP delivers cost-saving as compared to traditional procurement.

Morallos and AMedkudzi (2008) in their paper reinforce the findings of Fitzerald's (2004) that the VfM is derived from factors like risk transfer, innovation, optimum asset utilization, and integrated whole life management. Yet, in previous studies, Hodge and Greve (2005) documented the economic aspects of PPPs in Australia and found out that the PPP had a six percent higher cost than traditional procurement.

In view of Figure 4.7, the progress towards utilizing different PPP arrangements is yet to fully achieve value for Money for all projects. it is therefore, concluded that PPP has not resulted in reduction in the total cost of the projects, despite improvements in quality and efficiency as observed earlier.

To further explore the value for money factor, the studies further assessed the cost overruns and time overruns and how they influenced cot of PP projects. The question posed was: Did PPP road projects results in any cost overruns? Were the projects completed in time and within budget? The results of this aspects were analyzed and presented as shown in Table 4.11.

Table 4.11 Cost and time overruns in PPP road projects

	Road	**Construction cost**	**Completion within budget**			**Completion in due time**		
			S	***N***	***NS***	***S***	***N***	***NS***
1	Mombasa-Nairobi Highway	11 Billion- Phase One	62	22	16	68	28	4
2	Nairobi-Nakuru- Mau Summit Highway	180 billion	-	-	-	-	-	-
3	Nairobi-Thika Highway	32 Billion	70	8	22	72	16	12
4	Southern Bypass	18 Billion	48	22	30	40	18	42
5	Ngong-Kiserian-Isinya-Kajiado to Imaroro	11 billion	48	20	32	28	32	40

Source: Author, 2020

Table 4.11 shows different results for PPP cost and time overruns were observed. For Mombasa-Nairobi Highway, which cost 11 billion for the first phase, majority 62% were

satisfactory on completion within budget while 68% satisfactory on completion within expected time. With respect to Nairobi-Nakuru- Mau Summit Highway, no response was recorded given the project was under construction expected to be completed in 2022.

The Table also shows for Nairobi-Thika Highway, 70% were satisfactory on project completion within budget with another 72% who noted it was completed within due time. For the Southern Bypass, results show 48% satisfactory while 22% were neutral with 30% not satisfactory on budget which clearly shows cost-overruns. With regards to the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, where 24% were satisfactory on project completion within budget as compared to 42% who were not. Similarly, majority (40%) were not satisfactory on project completion in due time; only 28% were satisfactory.

Table 4.11 also shows tow roads (Mombasa-Nairobi Highway and Nairobi-Thika Highway) were rated and perceived to have been completed within budget and in estimated timeline.

In view of the results, cost and time overruns were relatively higher in two roads (Southern Bypass and Ngong-Kiserian-Isinya-Kajiado to Imaroro road) as compared to Mombasa-Nairobi highway and Nairobi-Thika highway.

Contract negotiations for PPP involve various financing groups and stakeholders, and the technical evaluations, legal aspects emanating from risk sharing take time.

The views above pinpoint to criticisms by scholars from various perspective, such as Rahman and Hossein (2018) who cited a trend in PPP for developing countries, with statistics showing the weak institutional capacity was a major challenge that contributed to cost overruns. On the same note, Behera (2014) found out that cost overruns in India's road projects represented a major challenge in achieving PPP efficiency.

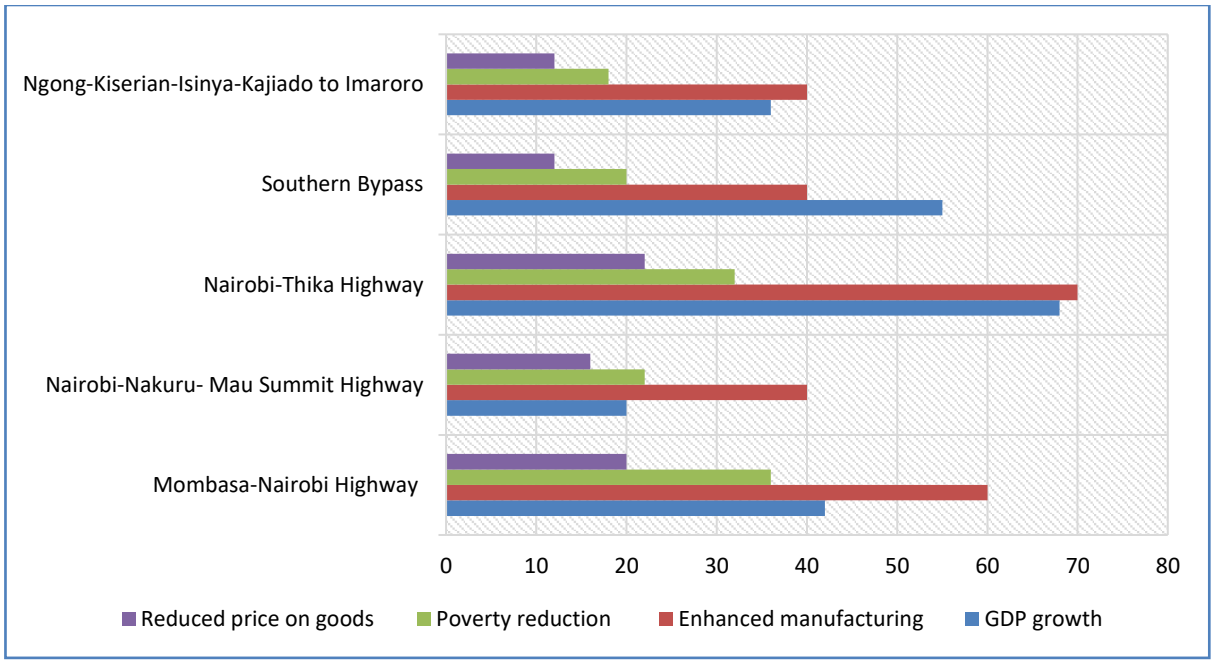
It can be observed in Table 4.11 that timely completion matched with within budget, which points to how PPP balance should be structured. This also explains the implication for PPP costs, benefits, risks, and wider implications of using different PPP models that give different results.

Overall, findings demonstrate that while gaining heightened popularity, PPP could open a window for hidden costs that may lead to cost overruns and ultimately limit the overall micro and macro-economic benefits. Therefore, a key conclusion arising from these findings is that value for money is challenged by construction cost overrun and time overruns which have presented significant problems in implementing road infrastructure projects.

4.4.2 Macro and micro-economic benefits of PPP road projects

The study further assessed the extent to which PPP rod projects had enhanced macro and micro economic benefits in general. The question posed was: How effective are PPP projects in enhancing macroeconomic indicators (GDP, Manufacturing) and micro (price reduction and poverty alleviation) among the end-users. Results were analyzed and presented in Figure 4.8.

Figure 4.8: Macro and micro-economic benefits of PPP road projects



Source: Author, 2020

Figure 4.8 shows varying trends between macro and micro economic indicators with different PPP roads.

For Mombasa-Nairobi Highway, enhanced GDP (42%), Manufacturing (60%), poverty alleviation 36% while price reduction 20%. With respect to Nairobi-Nakuru- Mau Summit

Highway, GDP (20%), Manufacturing (40%), poverty alleviation 22% while price reduction 16%.

The Figure also shows for Nairobi-Thika Highway, GDP (68%), Manufacturing (70%), poverty alleviation 32% while price reduction 22%. For the Southern Bypass, results show GDP (55%), Manufacturing (40%), poverty alleviation 20% while price reduction 12%. With regards to the Ngong-Kiserian-Isinya-Kajiado to Imaroro road, GDP (36%), Manufacturing (40%), poverty alleviation 18% while price reduction 12%.

The Figure also shows across all the five roads PPP have majorly achieved macro-economic benefits in increased manufacturing and growth in GDP. However, these have not translated into micro-economic benefits in terms of reduced prices of goods and poverty reduction. The Figure depicts Nairobi-Thika highway to have performed better on macro-economic benefits while as well as poverty reduction.

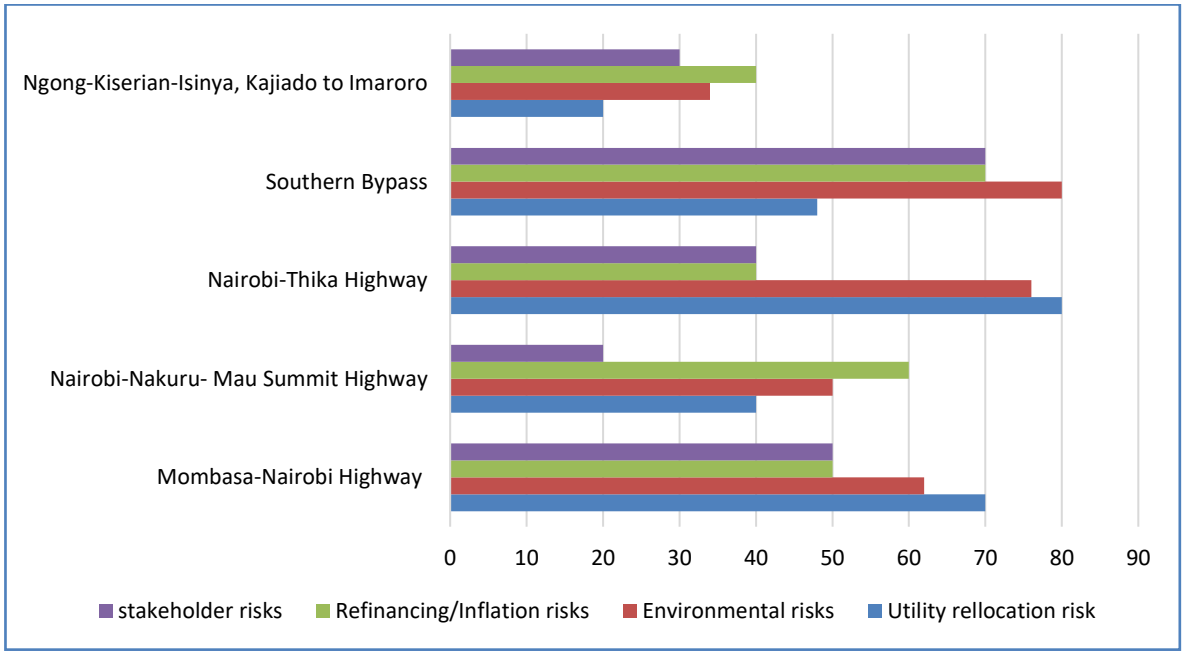
Microeconomics factors cover individual prices, quantities and markets while macroeconomics relate to behaviour of the economy as a whole. If a PPP is earmarked for generating efficiency gains, it then should also open up the market economy from GDP, inflation, employment as well as price controls, individual labour markets and consumer behaviour. Rooted in the value for money factor, the response above highlights the growing debate on whether the growing trend in championing for road projects through PPPs is a sustainable.

In support of the Figure 4.8, concerns regarding the cost-effectiveness of PPs, Bunch (2012) argues that road highway through PPPs are meant to serve the citizens and expand economy, yet they tend to advance short-term needs at the expense of long-term needs. The impact of road infrastructure provided evidence of its potential benefit at national and local level. However, these benefits can only be realized in PPP projects are delivered in time and on budget to offer long-term value for money. Therefore, it can be concluded that PPP have majorly enhanced macro-economic elements of GDP growth and expanded manufacturing. However, these have not translated into micro-economic benefits in terms of reduced prices of goods and poverty reduction among the end-users.

4.4.3 Risk associated with PPP in road projects

Further investigation was made to ascertain the risks during implementation of road projects using PPP. The question was: What are the common risks experienced during implementation of road projects using PPP? Responses from interviews were also combined to arrive at quantitative analysis. The results are reported in Figure 4.9.

Figure 4.9: Risk associated with PPP in road projects



Source: Author, 2020

Figure 4.9 shows various risks associated with PP road projects. Utility relocation skills and environmental risks scored high. Mombasa-Nairobi Highway showed 70% utility relocation, 62% environmental, 50% inflation risks and 50% stakeholder-related risks. Nairobi-Nakuru- Mau Summit Highway had 40% utility relocation, 50% environmental, 60% inflation risks and 20% stakeholder-related risks. Nairobi-Thika Highway 80% utility relocation, 76% environmental, 40% inflation risks and 40% stakeholder-related risks. Southern Bypass 48% utility relocation, 80% environmental, 70% inflation risks and 70% stakeholder-related risks. Ngong-Kiserian-Isinya, Kajiado to Imaroro 20% utility relocation, 34% environmental, 40% inflation risks and 30% stakeholder-related risks.

Figure 4.9 also shows three roads (Nairobi-Thika Highway and Southern Bypass and Mombasa-Nairobi highway) were cited with major risks utility and environmental risks. The Souter Bypass ranked high on the environmental risk (80%) and also topped on stakeholder-

management risks, while Nairobi-Thika Highway topped on utility reallocation-related risks. The Ngong-Kiserian-Isinya, Kajiado to Imaroro scored the least the less risks across all the risk-factors. Similarly, Southern Bypass and Nairobi-Nakuru- Mau Summit Highway had the top highest refinancing risks at 70% and 60% respectively.

The results point to varying risk trends across project specific PPPs, and underscores the role of risk management in an arrangement where various project partners come on board with different interests and objectives.

Figure 4.9 depicts important contribution to the PPP literature, given that perceptions of how road projects manage risk could be an indicator on whether a particular PPP arrangement poses potential problems in terms of measuring and obtaining value for money for taxpayers. The implications for this is that sharing of risks and responsibilities for any given PPP project attempts to attain the goal of asset maximization (Pentes, 2011), which is the optimal distribution of risks and value between the public and the private sector for a specific project. Therefore, through a Value for Money analysis, a public entity can assess whether the PPP choice will ultimately offer a cost-effective endeavour or not.

Central to the above views is the understanding that the success of PPP projects rest on proper management of these risks between the principal and the agent. In practice, allocating risk is difficult because it must first be identified and then allocated. Each party will attempt to minimize their exposure to risk. In the contract, care must be taken to ensure the proper transfer of risk. The commitment of investment by the private partner allocates risk towards the private partner.

Thus, the efficient allocation of project risk stands out as a key component in ensuring PPP project remain cost-effectiveness and offer value for money. However, this of not only calls for identifying best-fit PPP models used and stakeholder engagement, but also careful scrutiny of roles of each partner. Therefore, the conclusion is that the risk sharing in stakeholder risks are not largely prioritized in PPP road projects, particularly the overall benefits that the project offers value for money to the end-users/public since a major part of risk assessment is taken into the lens of government and private partners.

Overall, this objective has raised key areas of conclusion. First, PPP has not resulted in reduction in the total cost of the projects, despite improvements in quality and efficiency. The value for money is challenged by construction cost overrun and time overrun which have presented significant problems in implementing road infrastructure projects. PPP has majorly enhanced macro-economic elements related to improved GDP and manufacturing, but has not fully promoted micro-economic benefits of the end-users in terms of reduced prices of goods and poverty alleviation for end-users. In determining value for money, risk sharing is majorly focused on public and private partner financing, and often the overall benefits that the project benefits offer value for money to the end-users is neglected.

Contrary to the hypothesis, the findings demonstrate that value for money factor has not overly influenced the cost of delivering road infrastructure projects using PPP. Therefore, the researcher rejects the hypothesis which states that: Value for money factor has influenced the cost of delivering road infrastructure projects using PPP.

4.5 Challenges of using PPP in the implementation of road projects

The fourth objective of the study examined challenges related to PPP in road projects in Kenya. In order to address the objective, the study hypothesized that:

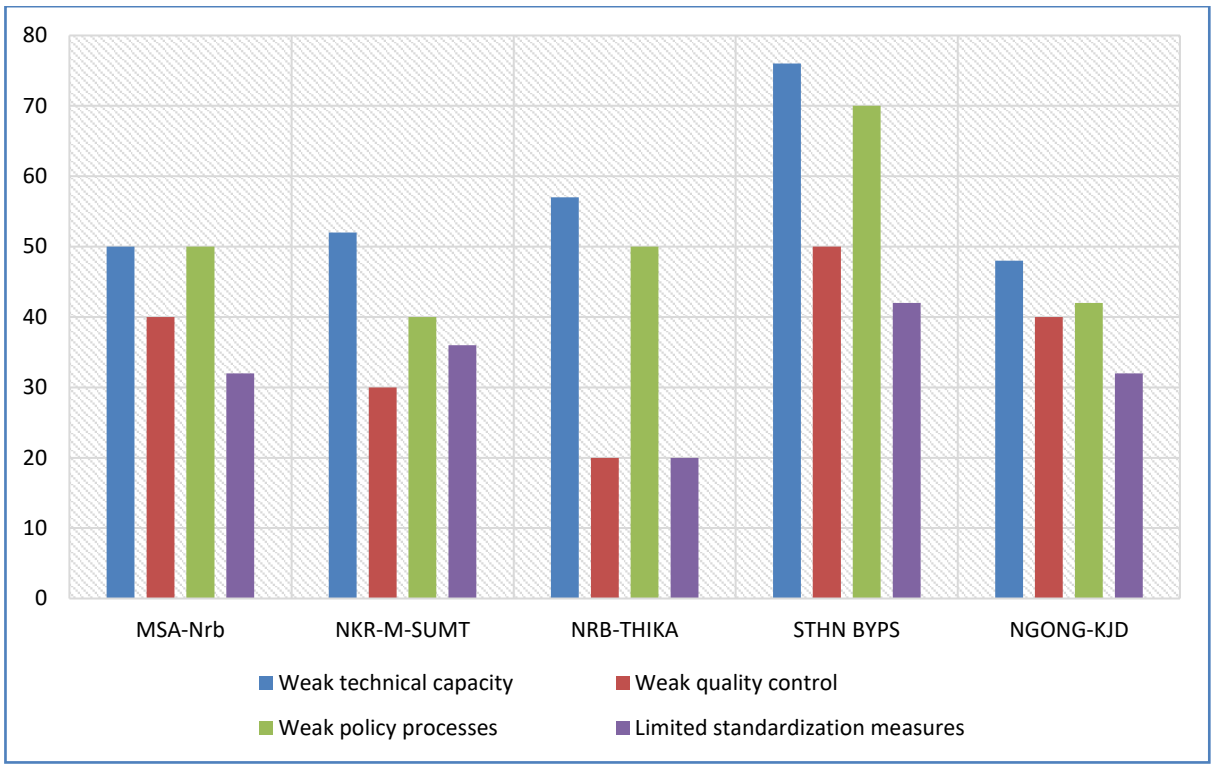
Institutional constraints have raised challenges to the effective planning and coordination of PPP road projects. The following indicators were assessed:

Institutional constraints relating to PPP Unit, and other institutional elements including contractual, legal, political, financial and stakeholder challenges.

4.5.1 Institutional challenges facing PPPs in road projects

The first component to ascertain the challenges of using PPPs in delivering road projects involved assessing the institutional challenges relating to performance of PPP Unit. The question was: What institutional challenges related to PPO Unit have been faced during implementation of the five road projects listed? Results were presented as shown in Figure 4.10.

Figure 4.10: Respondents' views on PPP Unit performance-related challenges



Source: Author, 2020

Figure 4.10 shows various risks associated with PPP Unit which cut across the road projects. for Mombasa-Nairobi Highway weak technical capacity (50%), weak quality control (40%), weak policy processes (50%) and limited standardization measures (54%).

Nairobi-Nakuru- Mau Summit Highway had weak technical (52%), weak quality control (30%), weak policy processes (40%) and limited standardization measures (32%). Nairobi-Thika Highway shows weak technical capacity (36%), weak quality control (20%), weak policy processes (50%) and limited standardization measures (20%). Southern Bypass had weak technical capacity (76%), weak quality control (50%), weak policy processes (70%) and limited standardization measures (42%), while Ngong-Kiserian-Isinya, Kajiado to Imaroro shows weak technical capacity (48%), weak quality control (40%), weak policy processes (42%) and limited standardization measures (32%).

Figure 4.10 also shows weak technical capacity and policy represented scored high as key challenges across the roads. Southern Bypass represented the major challenge cutting across technical, quality control, policy and standardization challenges.

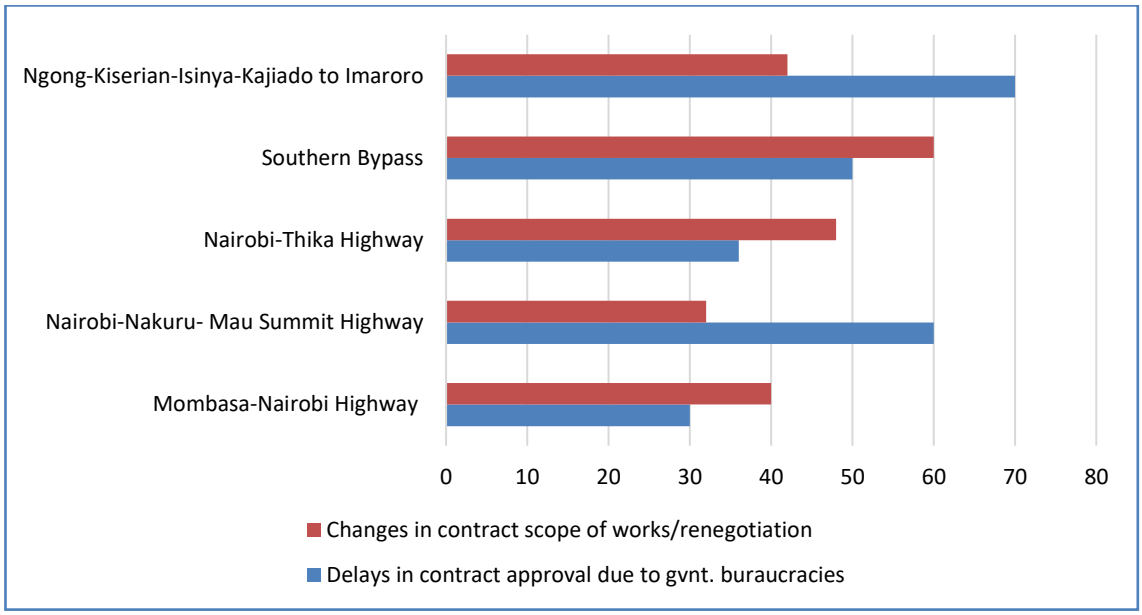
The Figure points to gaps underlying the proper coordination and planning for PPP processes, which are inherent in PPP Units charged with overseeing contract management and evaluation. PPP present different forms and models, which creates a more complicated contract process.
The results demonstrated that despite the progress made in adopting PPP, the PPP Units are still ill-equipped to fully coordinate effectively.

A lack of coordination is thus related to limited standardization, limited expertise, to fully disseminate information and manage PPP contracts effectively. These gaps in technical and capacity weaknesses could be attributed to gaps in coordination with other agencies because while the PPP Unit is anchored under the National Treasury, state agencies such as KeNHA also hold PPP divisions. With limited budget allocations, government ministries may find it difficult to invest heavily in structural and technical capacity, often relying on the private entity for technical and technological support. The trends in Figure 4.10 are in agreement with Puentes (2011) case studies in PPP in USA, who identified administrative as specific challenges that crippled the public in advancing PPP road projects.
Therefore, a clear conclusion is that weaknesses in technical and policy capacity within PPP Units have raised bottlenecks in the PPP process and influenced the smooth implementation of road infrastructure development. The study further explored contractual challenges.

4.5.2 Contractual challenges of PPP and road projects

To further probe this aspect, the study posed the following questions: What contractual challenges are common with each of the five PPP road projects listed? The results of the analysis were presented in Figure 4.11.

Figure 4.11: PPP contract-related challenged in road projects



Source: Author, 2020

Figure 4.11 shows contract-related challenges in PPP road projects span from delays in contract approval from a government authority and change in scope of works that led to renegotiation. In relation to delays in approval arising from government procedure and processes, Mombasa-Nairobi Highway showed 30%, Nairobi-Nakuru- Mau Summit Highway had 60%, Nairobi-Thika Highway 36%, Southern Bypass 50% while Ngong-Kiserian-Isinya, Kajiado to Imaroro had the highest at 70%. On the other hand, results also reveal Southern Bypass had the highest score (60%) related to change in scope of works, followed by Nairobi-Thika Highway at 48% while Nairobi-Nakuru- Mau Summit Highway had the least at 32%.

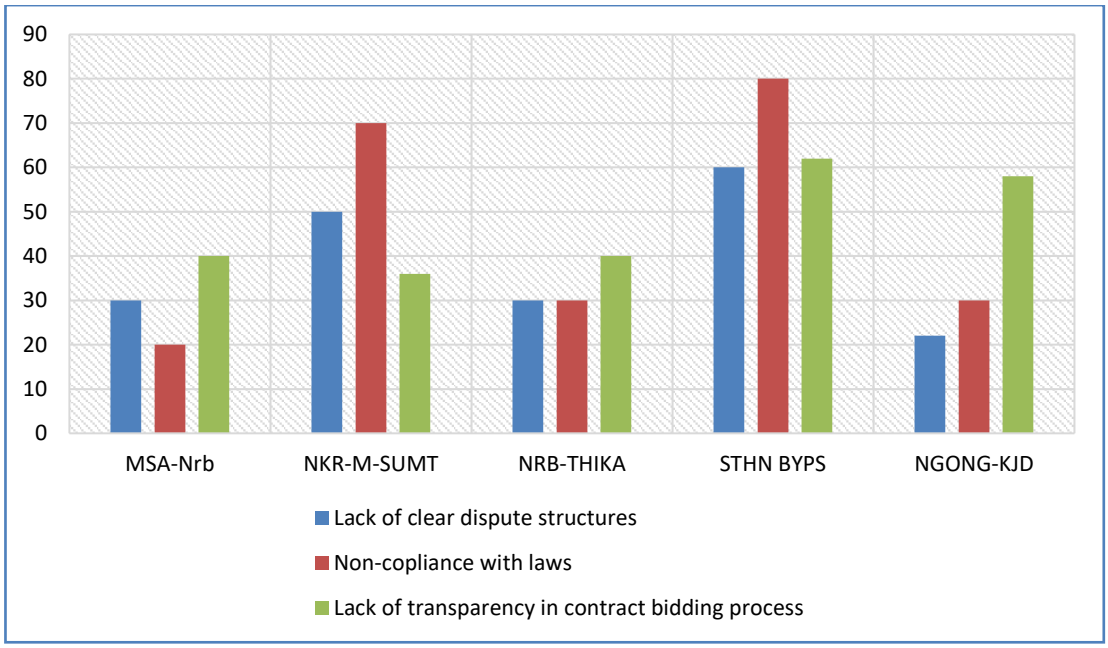
The figure also depicts a trend for delays in contract approval for Ngong-Kiserian-Isinya, Kajiado to Imaroro road as compared to Southern Bypass which had the highest changes in contract scope/ renegotiation. From the results, it can be observed that delays in approval arising from government procedure and processes would also reflect in the changes in scope or a call for renegotiating the PPP deal. Since the public (government) see PPPs as a way to access new sources of funding and push some of the infrastructure financing off-budget, then PPP with their long-term arrangements are likely to face delays because of renegotiations with partners involved. Similar findings have been reported by Li and Wang

(2016), who pointed out that PPP contracts and renegotiation not only influence efficiency but also cost of road projects. This means flexibility is ideal for PPP contracts to reduce the risks associate with delays in contract evaluations, which often lead to cost and time overruns. It therefore concludes that delays in contract signing challenge the effective planning and coordination of PPP road projects.

4.5.3 Legal challenges relating to PPP and road projects

The study additionally analyzed legal issues inherent in PPP which potentially challenged delivery of the road projects under investigation. The question was: What legal challenges have been raised during the implementation of these five road projects using PPP? The results are summarized as given in Figure 4.12.

Figure 4.12 Regulatory challenges of PPP in road



Source: Author, 2020

Figure 4.12 shows challenges related legal and regulatory issues in PPP road projects. Mombasa-Nairobi Highway shows a lack of clear dispute mechanism (30%), non-compliance with well-laid down rules (20%) and noncompliance with legislation and regulations (40%).

Regarding Nairobi-Nakuru- Mau Summit Highway, lack of clear dispute mechanism (50%), non-compliance with well-laid down rules (70%) and non-compliance with legislation and

regulations (36%). Nairobi-Thika Highway lack of clear dispute mechanism (30%), non-compliance with well-laid down rules (30%) and noncompliance with legislation and regulations (40%).

Regarding Southern Bypass, Figure 4.12 shows lack of clear dispute mechanism (60%), non-compliance with well-laid down rules (80%) and noncompliance with legislation and regulations (62%) while for Ngong-Kiserian-Isinya, Kajiado to Imaroro shows a lack of clear dispute mechanism (22%), non-compliance with well-laid down rules (30%) and noncompliance with legislation and regulations (58%). The figure also shows Southern Bypass and Nairobi-Nakuru- Mau Summit Highway have the highest challenges related to noncompliance with legislation and regulations.

What come out clear from the cross-comparison Figure is that while planning and coordination is made during PPPs, there are clear mismatches in existing legal and regulatory structures. The possibility of existing laws/ regulations to proscribe a particular PPP process could lead to coordination challenges and hence affect project outcome. The Table highlights a rising need for fundamental legal reforms and legislations, given that each project is unique and carries different partners. Transparent and competitive processes involve open and information access by government in awarding concessions and licenses, as well as the ability to implement these processes. Underlying the legal and regulatory challenges is the institutional arrangements in place. The PPP Units have also been created to support the implementation. Even with existing regulations and guidelines, such partnerships are challenged by the mere fact that competition and interests may elicit renegotiations and even legal bottlenecks.

Zhang (2015) identified various barriers for PPP road projects, and established inefficient public procurement systems as a legal challenge. Review of the tolling regime represents one challenge for PPP, and since some of these processes demand a policy directive, the process takes long from parliament to other agencies which take long.

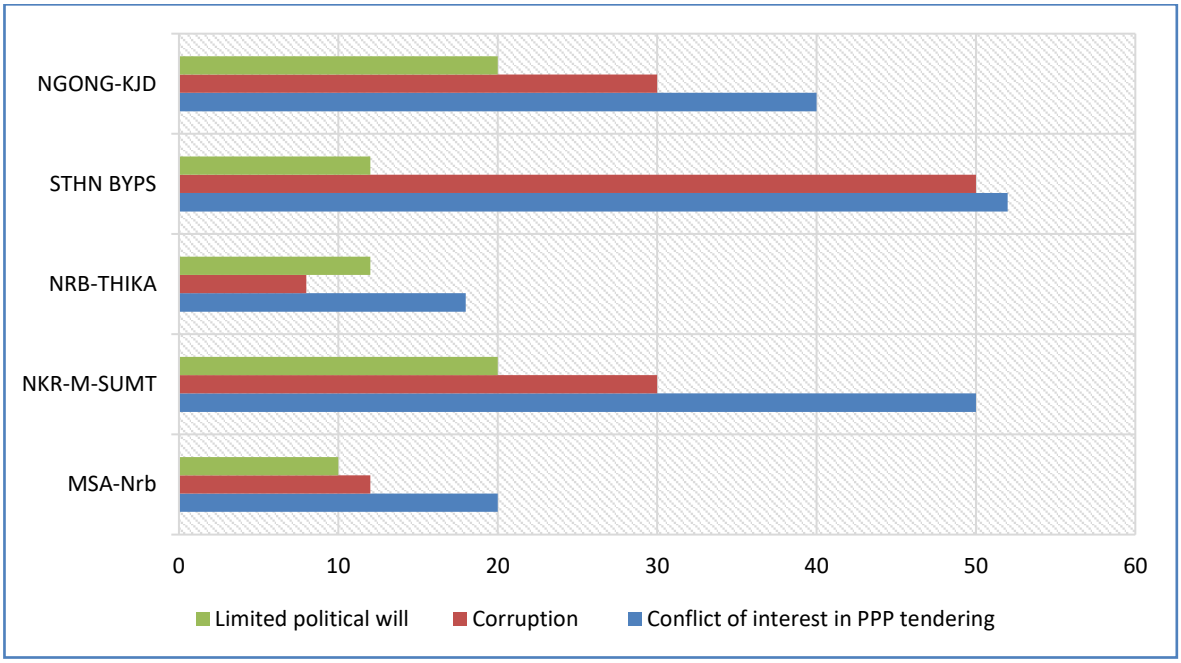
Wit loopholes in the laws and compliance, a PPP Unit may find it difficult to counter poor projects as such a case opens up communication lapses. This could also affect timely decision-making to concerned agencies. In such circumstances, coordination becomes a

challenge. Therefore, the study concludes that coordination and planning of PPPs in road projects are ineffective due to challenges of non-compliance with laws and a lack of transparency in PPP contract processes.

4.5.4 Political challenges of PPP in road projects

Further analysis was based on identifying challenges related to political issues. The question was: What political challenges have influenced these five PPP road projects? The results were presented as shown in Figure 4.13.

Figure 4.13 Political aspects challenging PPP and road projects



Source: Author, 2020

Figure 4.13 shows key political challenges in PPP road projects. Mombasa-Nairobi Highway shows conflict of interest in PPP tendering processes (20%), corruption (12%) and limited political will (10%). Regarding Nairobi-Nakuru- Mau Summit Highway, conflict of interest in PPP tendering processes (50%), corruption (30%) and limited political will (20%) for Nairobi-Thika Highway. conflict of interest in PPP tendering processes (18%), corruption (8%) and limited political will (12%). Regarding Southern Bypass, Figure 4.13 shows conflict of interest in PPP tendering processes (52%), corruption (50%) and limited political will (12%), while for Ngong-Kiserian-Isinya, Kajiado to Imaroro shows a conflict

of interest in PPP tendering processes (40%), corruption (30%) and limited political will (20%).

From Table 4.13, there is strong indication for conflict of interest in PPP tendering processes and corruption across all the five roads, but perceive rating shows the highest in the Southern Bypass road project. in addition, the Figure shows Southern Bypass and Nairobi-Nakuru-Mau Summit Highway represented the highest rated projects with conflict of interest in PPP tendering processes at 52% and 50% respectively.

From the results, the implications for this could be that the political leadership has a role in creating the right environment to assure the benefits of PPPs. Political factors thus form a critical pillar for the delivery of PPPs. Since balancing interests of stakeholders is a tough task, political will is key for proper planning and coordination of PPP projects. even clearly documented legal and regulatory contracts cannot pass in an environment where the political class is divided.

A strong political will thus advances both the government as well as stakeholder management including the public. Related to the political issue is the land questions, where land ownership and acquisition processes fall into the political interest that are likely indicators to derail planning and coordinating PPP road projects. since land acquisition is a politically sensitive topic, and can delay large projects for years if there is opposition from local residents. Governments should enforce transparent policies that enable firms, implementable processes to avoid land acquisition delays and at the same time, ensure fair relocation and compensation for the affected population.

Given their long-tern nature, figure 4.13 depicts a clear scenario of how the complex and time-consuming would be easily influenced by changes in political administration, which would lead to time overruns. In support, Osei-Kyei and Chan (2017) found a direct relationship between political influence and PPP road projects. There is no public expenditure on PPP is granted without the necessary support from politicians. Similar case studies (Vadali & Rajan, 2015) in India showed a lack of political will led to time and cost-overruns for three key PPP road projects.

It is worth noting that government is the lead and defines the project scope, secures licences and permits and is such cases, a lack of transparent and accountable structure would derail

the PPP contract process. From the foregoing, assessing political drivers can therefore predict how well PPP projects will likely to be coordinated. This therefore, leads to a conclusion that effective PPP planning and coordination is challenged by weakness arising from conflict of interest in PPP tendering processes, corruption and the bigger land issues.

4.5.5 Stakeholder challenges in PPP road projects

Further analysis was done to establish challenges related to stakeholder involvement and PPP road projects. The question was: Which road project raised the most stakeholder conflicts and what issues related to stakeholders' challenges implementation of these five road projects? Results are presented in Table 4.12.

Table 4.12: Stakeholder challenges in PPP road projects

	Road	Environmental impacts/wildlife conflicts	Irregular land compensation	Lack of public participation/Jobs
1	Mombasa-Nairobi Highway	50	50	40
2	Nairobi-Nakuru- Mau Summit Highway	22	18	24
3	Nairobi-Thika Highway	32	30	50
4	Southern Bypass	80	42	30
5	Ngong-Kiserian-Isinya-Kajiado to Imaroro	30	12	40

Source: Author, 2020

Table 4.12 shows varying stakeholder-related challenges. Mombasa-Nairobi Highway shows conflict related to environment protection/wildlife (50%), land compensation (50%) and pubic participation/job opportunities-related conflicts (40%). Regarding Nairobi-Nakuru- Mau Summit Highway, environmental/wildlife conflicts (22%), land compensation (18%) and lack of public participation/job opportunities-related conflicts (24%). For Nairobi-Thika Highway, environmental/wildlife conflicts (32%), land compensation (30%) and lack of public participation/job opportunities-related conflicts (50%). Regarding Southern Bypass, environmental/wildlife conflicts (80%), land compensation (42%) and lack of public participation/job opportunities-related conflicts (30%). With regards to while for Ngong-Kiserian-Isinya, Kajiado to Imaroro road project, environmental/wildlife conflicts (30%), land compensation (12%) and lack of public participation/job opportunities-related conflicts (40%).

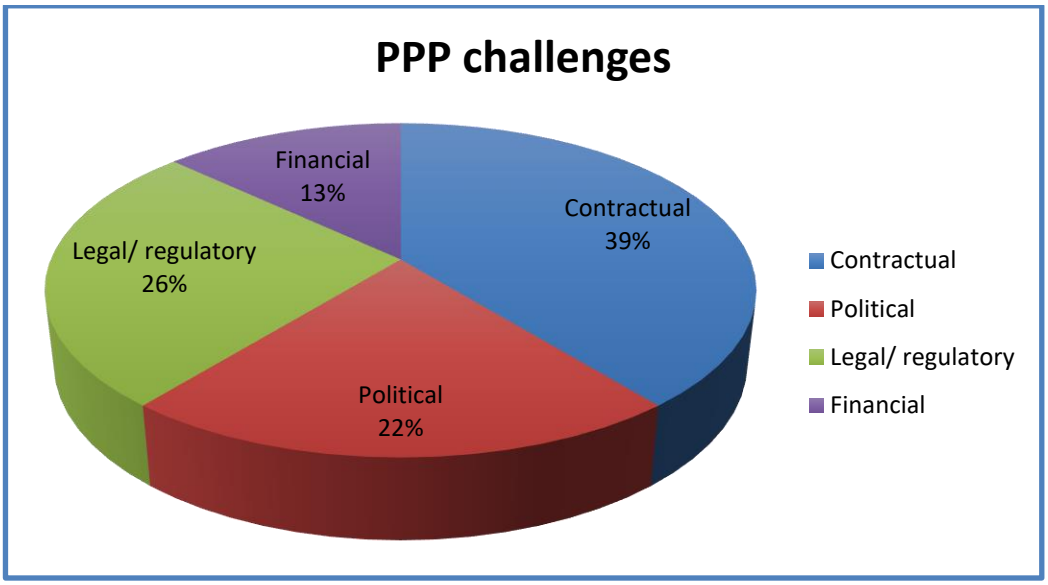
The Table shows Southern Bypass road project had the greatest stakeholder challenges related to environmental impacts/wildlife conflicts, while Mombasa-Nairobi Highway score high on challenges related to irregular land compensation. Similarly, Nairobi-Thika Highway was rated high on challenges associated with a lack of lack of public participation/ and job-related stakeholder conflicts.

In view of the above, perceptions on project financing against stakeholder views in PPP projects can challenge planning and coordination of PPP contracts and impanation process. PPPs are now facing challenges of managing stakeholders, and if the interests and concerns are not addressed, it affects efficiency and quality. A good example is a Southern Bypass, passing through the Nairobi National Park, which raised concerns. For a PPP project to be successful, stakeholder engagement has to be driven by a whole-stakeholder approach, utilizing bottom-up approaches the ensure end-users are kept abreast of the expectations and end goals.

The results demonstrate stakeholder conflicts could arise outside the scope of PPP contracts, but rather during project implementation. The findings thus conclude that challenges related to stakeholder conflicts affecting the operational phase of a PPP project are linked to negative environmental effects/ wildlife, improper land compensation and a lack public participation.

The study further sought to establish general challenges and their rating. The question posed was: What challenge do you consider the most pressing for PPP related to the five road projects listed in this questionnaire? The results of the analysis were presented as shown in Figure 4.13.

Figure 4.14 General challenges of PPP in road projects



Source: Author, 2020

While Public-Private Partnerships (PPPs) offer distinct advantages, responses in Figure 4.14 show that PPPs present several contractual (39%), political (22%), legal (26%), and financial challenges (13%). The cluster analysis results show that contractual challenges scored high. Contractual challenges were rated the highest, followed by political, legal and financial

Based on the results of this objective, it is evident that key challenges related to PPP Unit are weaknesses in technical and policy capacity which have raised bottlenecks in the PPP process and influenced the smooth implementation of road infrastructure development. Delays in contract signing challenges the effective planning and coordination of PPP road projects. Coordination and planning of PPPs in road projects are ineffective due to challenges of non-compliance with laws and a lack of transparency in PPP contract processes. Effective PPP planning and coordination is also challenged by weakness arising from conflict of interest in PPP tendering processes, corruption and the bigger land issues. Challenges related to stakeholder conflicts affecting the operational phase of a PPP project are linked to negative environmental effects/ wildlife, improper land compensation and a lack public participation. Overall, the study findings on this objective, therefore, confirm the hypothesis which stated that: Institutional constraints have raised challenges in the effective planning and coordination of PPP road projects.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of key findings and conclusions based on the key findings. The chapter also presents policy recommendations and further suggestions for areas of research.

5.2 Summary of Findings

The study set out to investigate public-private partnerships and the implementation of road infrastructure projects in Kenya. The summary of the study was informed by the study objectives of the study as described below:

5.2.1 How the nature of PPP influences the implementation of road projects

With respect to the first specific objective, the study established that PPP road projects have mostly utilized the DBFOMT model, even where different PPP arrangements (concessions or Joint venture) and contract period varies. Whilst DBFOMT model has been majorly applied in the road projects, there are differences in the way the public and private partner approach these contracts and manage their roles. The nature of PPP has a great influence on the relevant aspects of quality of road design and operational efficiency. However, road projects implemented via joint venture delivered better safety standards in road projects than those roads that utilized concessions. The results have demonstrated that an ideal PPP should create a right balance of roles and responsibilities regardless of the PPP model used. The rationale for a particular PPP is driven more by its ability to open up more space for private financing as compared to cutting overall project cost as well as balancing risks. Overall, these findings established that different PPP models give rise to different results in terms of quality, safety standards, extent of public/private roles, financing mechanisms and risk sharing management. The nature of PPP has a direct influence on the operational efficiency and quality of PPP road projects. Therefore, the findings reject the hypotheses that read: Public-private partnership models have no influence on the quality of road projects implemented under PPP arrangement.

Contrary to the hypothesis, the findings demonstrate that PPP models have an influence on the quality of road projects implemented under PPP arrangement.

5.2.2 The relevance of PPP in the implementation of road projects

The study findings established that while a range of stakeholders are involved in PPP road projects, there is a disjoint in how all stakeholders are managed. The limited engagement of NGO/CSO, community and the public category directly influences the timely delivery of PPP road projects. Gaps relating to transparency and accountability/trust have placed a challenge on enhancing stakeholder management during PPP project implementation which create project delays. The findings established the side-lining of public and end-users reflects the breach in how PPPs have not been relevant in enhancing access to goods and services and job opportunities for the end users/public. These concerns are therefore, key drivers that make sstakeholder management to have a direct influence on the timely delivery of PPP road projects in Kenya. The findings of the study thus confirmed the hypothesis that stakeholder management is a major challenge influencing the timely delivery of PPP road projects in Kenya.

5.2.3 The cost-effectiveness of PPP in the implementation of road projects

The study established that PPP has not resulted in reduction in the total cost of the projects, despite improvements in quality and efficiency. The value for money is challenged by construction cost overrun and time overruns which have presented significant problems in implementing road infrastructure projects. Furthermore, it was established that PPP has majorly enhanced macro-economic elements related to improved GDP and manufacturing, but has not fully promoted micro-economic benefits of the end-users in terms of reduced prices of goods and poverty alleviation for end-users. In determining value for money, risk sharing is majorly focused on public and private partner financing, and often the overall benefits that the project benefits offer value for money to the end-users is neglected. Contrary to the hypothesis, the findings demonstrate that value for money factor has not overly influenced the cost of delivering road infrastructure projects using PPP. Therefore, the researcher rejects the hypothesis which stated that: Value for money factor has influenced the cost of delivering road infrastructure projects using PPP.

5.2.4 Challenges of using PPP in the implementation of road projects in Kenya

The study established that key challenges related to PPP Unit are weaknesses in technical and policy capacity which have raised bottlenecks in the PPP process and influenced the smooth implementation of road infrastructure development. Delays in contract signing challenges the effective planning and coordination of PPP road projects, compounded by non-compliance with laws and a lack of transparency in PPP contract processes. Effective PPP planning and coordination is also challenged by weakness arising from conflict of interest in PPP tendering processes, corruption and the bigger land issues. Challenges related to stakeholder conflicts affecting the operational phase of a PPP project are linked to negative environmental effects/ wildlife, improper land compensation and a lack public participation. In terms of generalized rating, the findings established that contractual challenges were rated the highest, followed by political, legal and financial. Overall, the study findings on this objective, therefore, confirmed the hypothesis which stated that: Institutional constraints have raised challenges in the effective planning and coordination of PPP road projects.

In view of the summary of the findings above, the study shows the nature off PPP used, level of stakeholder engagement, value for money factor and effectiveness of institutional capacity were key aspects that influenced the implementation of the five road projects.

5.3 Conclusion of the Study

The nature of PPP has a direct influence on the quality and operational efficiency of a particular road project. While different PPP models give rise to different results, Joint Venture form using DBFOMT deliver better outcomes than concession contracts. PPP contracts that employ annuity programmes and O&M are limited. Private partner financing shapes the rationale for prioritizing PPP arrangements. Stakeholder engagement is a key indicator to how PPP achieves socio-economic gains of job creation. The distinct role of government and private highlight clear differences on the criticality of stakeholder management in PPP projects. Yet, weaknesses in transparency and accountability measures limit community and end-user's active involvement that make PPP lose its relevance and lead to time-overruns in road projects. Value for money factor is perceived differently. The preposition on the cost-effective of PPP has not been effective since it shifts more attention towards macro-economic gains (GDP and manufacturing) rather that micro-economic benefits (reduces prices and poverty reduction of end-users. Challenges of PPP are inherent

in the institutional structure relating to weak technical capacity, policy and legal gaps (non-compliance) and political issues (conflict of interest and corruption). Contractual challenges highlight underlying differences between the Government and private partner, which demonstrate the criticality of coordination and planning of PPPs. Overall, the nature off PPP used, level of stakeholder engagement, value for money factor and effectiveness of institutional capacity can influence the success of implementing road infrastructure projects in Kenya.

5.4 Recommendation of the Study

Based on the study's findings and conclusion, the study makes the following recommendation.

5.4.1 Policy Recommendations

First, the government should utilize the potential success of DBFOMT while exploring Joint Venture arrangements since it has greater long-term future opportunities for operational efficiency and quality standards in road projects.

Second, the government should establish a stakeholder mapping center for PPP to ensure it adopts a broader bottom-up approach when engaging with all stakeholders from the initial stage of every PPP project. This would go a long way in easing conflicts and time overruns.

Third, notwithstanding the value for money that PPP is envisioned to bring, the government should enhance regular monitoring of PPP project costs to ensure all macro-economic indicators are considered and directly address underlying socio-economic issues.

Finally, the e government should review the PPP contractual structure within the legal and regulatory framework to guard against opportunistic behaviour of PPP partners, whether public or private. This will ensure reputation tracking to curb against non-compliance and delays during the PPP bidding processes.

5.4.2 Recommendations for Further Studies

Additional research could pay attention on some areas that include the following:

One, a study should be dedicated to exploring the BOT/Concessions and Road Annuity Programmes and their operational efficiency in delivering infrastructure projects in Kenya.

Two, a comparative study is needed to investigate in depth the governance principles of accountability and transparency and community stakeholder-oriented perspectives in PPPs projects across different sectors.

Three, a study is needed to investigate the relationship between PPP road project appraisals from the community/road users and PPP performance measurement in employment creation in Kenya.

Finally, a study should analyze existing structural and technical capacity of PPP Units and their effect on PPP road projects with clear performance indicators.

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Appendix I: Introduction Letter

RE: REQUEST TO CONDUCT SURVEY FOR A RESEARCH PROJECT

To Whom It May Concern:

My name is Christopher Chumba. I am undertaking a study on Public-Private Partnership (PPP) and how it is applied in the execution of road projects in Kenya. Your department/ organization is recognized as a key player in PPP.

The purpose of this letter is to seek permission to administer questionnaires and carry out interviews with key stakeholders who have actively participated in delivering road infrastructure projects through PPP in Kenya.

Please note that all information provided will be kept confidential and for academic purposes only. Your participation is free, and you can choose to withdraw from this study if in any way you feel your rights are not taken into account as a participant.

Your participation will be of help for this study and I will be grateful if you will permit me to do so.

Hoping for your kind consideration.

Sincerely,

Christopher Chumba

Appendix II: Questionnaire (Fact-Sheet) For Key Stakeholders

Name of the investigator: Christopher Chumba. Please fill in or tick where appropriate

PART A:

Thematic Area	**Question**	**YES/ NO** Tick where appropriate	Thika Super Highway	Mombasa-Nairobi Highway	Eastern Bypass	Nairobi-Southern Bypass	Nairobi - Nakuru - Mau-Summit Highway
	General experience with PPP in roads	Exceptional Good Average Low					
PPP Models	What PPP form was used? What was the PPP model used? What was the contract period?						
	Who were the contract partners? **Who was responsible for:** Capital investment? Commercial risk? Tariff regulation? Utility management?						
	What was the share of public and private financing?						
	What was the role of each partner (public and private) in PPP contracts?						
	What was the rationale to prioritize for best-fit PPP model(s)						
Relevance of PPP	Who were the stakeholders involved?						
	How effective was stakeholder involvement from? a)-Government /agencies/international consultants' effectiveness? b)- Non-state-NGO/CSOs; community/ users' effectiveness?						
	Did PPP offer good governance principles/accountability/transparency/mutual trust?						
	Did PPP offer improved socio-economic gains a)-Increased trade and access to goods and services. b)-Direct and indirect employment.						
Cost-effectiveness of using PPP	Did PPP offer Value for Money? Cost-saving project						
	What was the project cost? Did PPP road projects result in any cost overruns						
	Were the projects completed in time and within budget?						
	Did PPP offer macro and micro-economic benefits?						
	What risks were experienced for each road projects?						

Challenges of using PPP	Did PPP have any Institutional constraints? PPP Unit -related challenges?						
	Were there contractual challenges?						
	Any legal/regularity challenges?						
	Any political challenges?						
	Were there any stakeholder issues /conflicts of interest?						
	Other challenges? (list) What challenge do you consider common in all these projects?						
General Comments on PPP							

PART B:

Nature of PPP in implementation of road projects

1. Rate your level of agreement on how each PPP model has influenced project efficiency?

	Road	**Enhanced operational efficiency**					**Better quality road project**				
		SA	**A**	**N**	**D**	**SD**	**SA**	**A**	**N**	**D**	**SD**
1	Mombasa-Nairobi Highway										
2	Nairobi-Nakuru- Mau Summit Highway										
3	Nairobi-Thika Highway										
4	Southern Bypass										
5	Ngong-Kiserian-Isinya-Kajiado to Imaroro										

2. Describe the financing mechanism (share of public and or private financing) for each of the road projects listed below:

	Road	Share of Public financing (%)	Share of Private financing (%)	Did the financing arrangement lead to enhanced road safety				
				SA	**A**	**N**	**D**	**SD**
1	Mombasa-Nairobi Highway							
2	Nairobi-Nakuru- Mau Summit Highway							
3	Nairobi-Thika Highway							
4	Southern Bypass							
5	Ngong-Kiserian-Isinya-Kajiado to Imaroro							

3. What was the role of each partner involved in the PPP contracts and road implantation?

	Road	Role of Public partner	Role of Private Partner
1	Mombasa-Nairobi Highway		
2	Nairobi-Nakuru- Mau Summit Highway		
3	Nairobi-Thika Highway		
4	Southern Bypass		
5	Ngong-Kiserian-Isinya") and from Kajiado to Imaroro		

4. What was the rationale for prioritizing the best-fit PPP model in road projects?

_____

_____

_____

The Relevance of PPP in implementation of road projects

5. Who were the stakeholders involved in each of the roads?

	Road	Stakeholders involved	Comments
1	Mombasa-Nairobi Highway		
2	Nairobi-Nakuru- Mau Summit Highway		
3	Nairobi-Thika Highway		
4	Southern Bypass		
5	Ngong-Kiserian-Isinya") and from Kajiado to Imaroro		

6. Rate (by ticking appropriately) the extent to which (a) PPP project had a transparent stakeholder process and (b) the engagement led to accountability and trust among all stakeholders during project implementation.

	Road	**Project had a transparent stakeholder process**						**Engagement led to accountability and trust among all stakeholders**				
		SA	**A**	**N**	**D**	**SD**		**SA**	**A**	**N**	**D**	**SD**
6.	Mombasa-Nairobi Highway											
7.	Nairobi-Nakuru- Mau Summit Highway											
8.	Nairobi-Thika Highway											
9.	Southern Bypass											
10	Ngong-Kiserian-Isinya-Kajiado-Imaroro											

7. To what extent has PPP been relevant in offering increased trade and access to goods and services and employment opportunities to the public? Tick where appropriate.

	Road	**Increased trade and access to goods and services**						**Direct and indirect employment**				
		SA	**A**	**N**	**D**	**SD**		**SA**	**A**	**N**	**D**	**SD**
6.	Mombasa-Nairobi Highway											
7.	Nairobi-Nakuru- Mau Summit Highway											
8.	Nairobi-Thika Highway											
9.	Southern Bypass											
10	Ngong-Kiserian-Isinya-Kajiado-Imaroro											

Cost-Effectiveness of Public-Private Partnership in Road Projects (Value for Money)

8. To what extent has PPP contributed to value for money (cost-effective means of road construction).

	Type of Road	**Value for Money (Whether PPP resulted in low cost road construction and maintenance**				
		SA	**A**	**N**	**D**	**SD**
9.	Mombasa-Nairobi Highway					
10.	Nairobi-Nakuru- Mau Summit Highway					
11.	Nairobi-Thika Highway					
12.	Southern Bypass					
13.	Ngong-Kiserian-Isinya-Kajiado to Imaroro					

9. Did PPP road projects result in any cost overruns? Were the projects completed in time and within budget?

	Road	**Construction cost**	**Completion within budget**			**Completion in due time**		
			S	***N***	***NS***	***S***	***N***	***NS***
1	Mombasa-Nairobi Highway							
2	Nairobi-Nakuru- Mau Summit Highway							
3	Nairobi-Thika Highway							
4	Southern Bypass							
5	Ngong-Kiserian-Isinya-Kajiado to Imaroro							

10. How effective are PPP projects in enhancing macroeconomic indicators (GDP, Manufacturing) and micro (price reduction and poverty alleviation) among the end-users.

_____

_____

_____

11. What are the common risks experienced during implementation of road projects using PPP?

_____

_____

_____

Challenges of using PPP in the implementation of road projects

What major challenges have been experienced in implementing road projects using PPP.

_____

_____

_____

Appendix III: Interview

Name of the investigator: Christopher Chumba

Topic: Public-Private Partnership and Implementation of Road Infrastructure Projects in Kenya.

The 5 road projects under investigation: Nairobi-Thika Super-Highway, Mombasa-Nairobi highway, Nairobi-Southern Bypass, Eastern Bypass, and the Nairobi-Nakuru-Mau Summit Highway.

Nature of PPP in road projects

1. What PPP arrangement and model was utilized for these roads: PPP models used in road projects:
2. Did PPP influence project efficiency to assure better quality standards of the project?
3. What is your view with regards to PPP financing for these roads? Did the financing arrangement lead to enhanced road safety?
4. What was the role of each partner involved in the PPP contracts and road implantation?
5. What was the rationale for prioritizing the best-fit PPP model in road projects?

The Relevance of PPP in road projects

1. Who were the stakeholders involved in each of the roads?
2. How effective is stakeholder's involvement in terms of government and other non-state actors? Does this stakeholder process influence timely delivery/completion of road projects listed here?
3. Governance is key in PPPs. In your opinion, did stakeholder engagement offer a transparent process/ as well as accountability and trust among all stakeholders during project implementation? Explain:
4. How relevant is PPP in offering socio-economic gains to the citizens?

Cost-Effectiveness of PPP in Road Projects (Value for Money)

1. Describe how value for money for money factor is perceived in PPP road projects?
2. Has PPP contributed to value for money (cost-effective means of road construction)? Explain:
3. Did PPP road projects result in any cost overruns? Were the projects completed in time and within budget?

4. How effective are PPP projects in enhancing macro and micro-economic benefits to the end-users.?
5. What are the common risks experienced during implementation of road projects using PPP?

Challenges of using PPP in the implementation of road projects

1. What challenges have been faced during implementation of the five road projects listed?
2. Were there any contractual challenges common with each of the five PPP road projects listed?
3. Were there any legal challenges raised during the implementation of these five road projects using PPP?
4. What political and stakeholder challenges have influenced these five PPP road projects?
5. In general, what challenge do you consider the most pressing for PPP related across the five roads listed?

End

Thank you for your contribution

Appendix IV: Consent Letter for Data Collection

University of Nairobi
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
Department of Political Science & Public Administration

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P.O. Box 30197
Nairobi, Kenya

24th June 2020

TO WHOM IT MAY CONCERN

AUTHORIZATION TO CONDUCT FIELD RESEARCH

This is to confirm that Mr. Christopher Chumba of Registration Number (C51/12244/2018) is a bonafide student at the Department of Political Science and Public Administration, University of Nairobi.

Mr. Chumba is pursuing a Degree in Master of Public Administration. He is researching on, **"Public-Private Partnership and Implementation of Road Infrastructure Projects in Kenya."**

He has successfully completed the first part of his studies (Coursework) and is hereby authorized to proceed to the second part (Field Research). This shall enable the student to collect relevant data for his academic work.

It is against this background that the Department of Political Science and Public Administration, University of Nairobi requests you to assist the student in collecting relevant academic data. The information obtained shall only be used for academic purpose.

The student is expected to abide by your regulations and the ethics that this exercise demands. In case of any clarification please feel free to contact the undersigned.

Thanking you for continued support.

Yours Sincerely,

Professor Fred Jonyo (PhD, Makerere)
Chairman,
Department of Political Science and Public Administration
UNIVERSITY OF NAIROBI

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