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VIABILITY OF PUBLIC-PRIVATE PARTNERSHIPS IN KENYA: A COST- BENEFIT ANALYSIS OF THE NAIROBI EXPRESS-WAY

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ABSTRACT

The purpose of this study was to establish the viability of public-private partnerships in Kenya: a case of Nairobi express-way cost-benefit analysis. Specifically, the study examines the costs and benefit analysis of the Nairobi Expressway Public private partnership project to the government, costs and benefit analysis of the Nairobi Expressway Public private partnership project to the users and assessing how risk distribution among stakeholders affect the Nairobi expressway Public private partnership project. The theoretical basis for this study is resource dependency theory. Descriptive research methods, including the use of visual aids to clarify the data distribution was used to collect and evaluate event data in this study. This research investigated a target population of 1200 persons. The study used a sample size of 120 people. Semi structured questionnaires were used to collect. The Cronbach's alpha procedures were used to assess the instruments' reliability. The reliability of a research instrument was judged according to whether or not the coefficient is 0.70 or higher. A larger absolute value indicates greater consistency across the spectrum. The researcher's supervisor will do a thorough assessment of the tool. Descriptive statistics was used to analyses quantitative data is made easier with the help of SPSS. Frequency tables, bar graphs, and pie charts were used to illustrate the results. In order to safeguard the rights and confidentiality of the participants, the study will publicly address ethical concerns. The researcher asked for written consent by respondents. The significance, goals, length, voluntary nature, at will withdrawal, privacy and confidentiality protections, and point of contact for queries and concerns will all be explained to the participants. The study findings revealed that cost benefit analysis to government had positive significant effect on changes in viability of public private partnerships in Kenya. The findings also indicated that cost benefit analysis to users have positive effect in changes in viability of public private partnerships in Kenya. Again, the result indicates that Risk distribution among stakeholders had a positive effect on changes in viability of public private partnerships in Kenya.

Key Words: *Public Private Partnership, Costs and Benefit Analysis, Risk Management*

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INTRODUCTION

PPP as a policy framework can be located back to the Roman Empire, two thousand years ago. During that time, the establishment of postal networks and highway systems was facilitated by the utilization of PPP concepts. Muslim traders in South of India Kerala states provided resources to the Buddhist missionaries to carry out public works, especially health and educational centers in the sixth century. The constructions of fortified towns and villages in ancient France in the 13th century are also an example where PPP principles were put to use. Though less talked about, PPP was prevalent during the colonial days. Colonial masters supported private corporations to develop trade outside Europe (ICA, 2013).

Gomes (1990) posits that the concept of "Private-Public Partnership" (PPP) emerged and gained traction throughout the 1970s, coinciding with the rise of liberal economic theories that began to challenge the prevailing state-centric approach to fostering economic development. PPPs were commonly mentioned in this frame of reference as alternative solutions to government bureaucracy in public services and unproductive government entities, mostly to encourage private sector participation. It was contended that giving off public tasks to non- state firms (i.e., privatizing, contracting them out, or at the minimum carrying them out in partnership with privately owned businesses) was the principal method for reducing the responsibility of the state and enhancing the effectiveness of public service delivery and public administration (Savas, 1982).

Initiative was created to encourage private sector participation in public service delivery (Hellowell, 2010). Public-Private Partnerships (PPPs) have grown to include cooperation in education, healthcare, and other public infrastructure (Vaillancourt, 2000). According to experts like Linder (2000), Public-Private Partnerships (PPP) now comprise a broad range of potential cooperation between private sector and government. In Asia, PPPs have extensively been utilized for infrastructural projects, such as power plants, ports highways and roads. According to an Asian Development Bank (ADB) report, between 2009 and 2018, over 1,800 PPP projects were implemented in Asia, with a total investment of $1.5 trillion (ADB, 2020). Some of the largest Public – Private Partnership projects in Asia include the Incheon International Airport in South Korea, the Hong Kong-Zhuhai-Macao Bridge in China, and the Delhi Metro in India (KPMG, 2019).

In Africa, PPPs have been gaining momentum as a means of delivering public infrastructure and services. The African Development Bank (AfDB) has been at the forefront of promoting PPPs on the continent, and has provided technical assistance and funding for numerous projects. According to the AfDB, over 200 PPP projects have been implemented in Africa since 1990, with an investment amounting to a total of over $68 billion (AfDB, 2019). Some of the largest PPP projects in Africa include the Azura-Edo

In East Africa, PPPs have been used primarily for infrastructural projects, such as power plants, airports and roads. Kenya has been one of the most active countries in the region in regards to PPP implementation, with projects in healthcare, transport and energy sectors.

In Ethiopia, PPP contracts were in use prior to the introduction of legislative frameworks. Before a separate legal framework was implemented, concepts had been maturing and developing. PPP was defined and its models were outlined for the first time in the Federal Procurement and Property Administration Proclamation No. 649/2009. PPP contracts have been used in Ethiopia, mostly in the electricity production sector, but also in irrigation, solid waste, and service or social infrastructure (Bahta, 2017).

Kenya has established legal and administrative frameworks that serve as the foundation for forming public-private partnerships (PPP) in a variety of industries that offer infrastructure to the public. This is in pursuit of the 2030 vision. Kenya managed to enter into a Public Private Partnership with China Road & Bridge Corporation in 2019 under the BuildOperate-Transfer (BOT) model to fund and build the Nairobi Expressway, a 26.7-kilometer Class A dual-carriageway road. As per CRBC's 2021 Annual Report, and financial disclosures thereof, the contract value for the project is $668 million (Sh72.8 billion). The

Moja Expressway Company, a CRBC subsidiary, will manage the project for the next twenty-seven years before giving it up to the Kenya National Highway Authority (KeNHA). CRBC will collect toll fees from road users to earn back its investments. A public project's objectives are to enhance citizens' well-being and to keep or boost overarching economic success (Keating & Keating, 2013). It is the obligation of the government to verify that the advantages of decision making exceed the costs to the community. In public administration, all project implications on the community must be appropriately assessed when evaluating infrastructure works.

Mendelsohn (2006) says CBA is the most important policy problem-solving method. Its objectivity, creation, evaluation, and comparison of alternatives, including various scales, monetization of benefits and costs, and guidance for policymakers make it a widely used project appraisal method for major infrastructure investment portfolios in the public sector (Boardman *et al*., 2016). The primary objective of this study is to provide a thorough assessment of the Nairobi expressway. Its utilization is an essential instrument employed in the process of decision-making, wherein the expenses associated with a particular project or activity are evaluated in relation to its advantages. The analyses will provide valuable insights into a project's profitability, economic impact, and potential risks, making it easier to determine the benefits and costs associated with the project.

Statement of the Problem

Public-Private Partnerships (PPPs) have gained significant traction as a prevalent approach for funding and executing infrastructure projects globally, with a particular emphasis on developing nations that may face constraints in their governmental financial resources (Joshi et al., 2016). The utilization of PPPs in infrastructural development has gained considerable traction in Asia, Africa, and East Africa in recent years (Mbachu, 2018).

However, PPPs are not without their challenges, particularly in balancing the interests of private partners and the public good. The Nairobi Expressway project in Kenya is a prime example of such challenges, with concerns raised about high toll fees and potential cost overruns.

Despite the potential benefits of PPPs, concerns remain about their viability and effectiveness. One significant concern is the potential for private partners to prioritize profit over the public interest (Odingo, 2019). In the Nairobi Expressway project, high toll fees have been criticized as prioritizing the need for private sectors to recover its investment over the affordability of the project for the general public (Mwaura, 2018). Another concern is the risk of cost overruns and hidden costs, as private partners may underestimate the costs of a project to win the bid, ultimately passing on the additional costs to the government (Odingo, 2019).

The above studies depart from this current one since none of the above undertook to explore viability of PPP in Kenya: a cost – benefit analysis of Nairobi express-way. Therefore, there existed a conceptual gap that this study sought to fill by examining how costs, benefits and risk distribution influenced the implementation of the Nairobi expressway public private partnership.

Objectives of the Study

The research was conducted with the aid of the following objectives:

- To ascertain the costs and benefit analysis of the Nairobi Expressway Public private partnership project to the government.
- To determine the costs and benefit analysis of the Nairobi Expressway Public private partnership project to the users
- To assess how risk distribution among stakeholders affect the Nairobi expressway Public private partnership project.

The following questions guided the research:

- What are the costs and benefits of the Nairobi expressway Public private partnership project?

- What are the advantages of the Nairobi expressway Public-Private Partnership project?
- What are the risks distributed among different stakeholders of the Nairobi expressway Public private partnership project?

LITERATURE REVIEW

Empirical Review

Public Private Partnerships

Cheung, Chan and Kajewski, (2012) asserted that public-private partnerships have been successfully utilized for a long while in many countries across the globe. Countries such as Belgium, Denmark, and the Netherlands were early implementers of PPPs. Across various countries, PPP misrecognized by different naming for instance, in Canada, it is referred to as the Private Finance Initiative; in the United States of America, it is called the Alternative Financing procurement. India being one of the developing countries with one of the rapidly growing PPP transportation mega projects. Amadi (2017) mentions that between 1995 and 2016, the government appropriated an estimated US $35.8 billion in PPP initiatives.

In Uganda, Twinomuhwezi and Herman (2020) mentioned that the country adopted a PPP model in 2007 that involved outsourcing education services with private schools at secondary levels as affiliates (MoES, 2007). This kind of ePPP is defined as "the process by which the government obtains education-related services from specific providers in a specified quantity and quality at a specified price" . In line with the policy, the Uganda government ratified a Memorandum of Understanding (MOU) with a select group of privately owned secondary schools to provide USE services to state-sponsored students for a prescribed timeline (Ministry of Education and Sports, 2013).

In Kenya, PPPs were at first pitched in Kenya on 10th March 2009, to improve monetary motivating forces (Kamau, 2016). Kenya's government has given the go-ahead for 58 projects to be funded through synergies with the private sector players in an effort to close a sizable financing gap between demand for public investment and the existent the supply of funding (Musyoka, 2012). The Cabinet has allowed the 58 projects to proceed with development as PPPs after they passed a series of suitability approvals, as per to the

Treasury (Koimett, 2013). The operation and maintenance of a 40-kilometer section of the Nairobi-Thika superhighway, as well as a 30-kilometer Nairobi Southern bypass, are major projects in the PPP broad framework. The Jomo Kenyatta International Airport Terminal 2 construction is projected to fall under PPP venture and is anticipated to have a yearly capacity of 12 million passegers (PPP Unit, 2014).

Cost and Benefits analysis and Public private partnerships project to the government

Almarri *et al*. (2020) analyzed UAE PPP viability. The UAE's public-private partnership (PPP) framework, initiatives, and economic effects were investigated within this study. According to the report, UAE public-private partnership efforts are viable and can benefit both private and public sectors. One research examined the UAE, while this one examines the Nairobi highway in Kenya. Thus, this research will cover a fundamental framework gap. Kamau (2016) studied infrastructure financing and Kenyan economic growth. A descriptive census questionnaire was issued to twenty-five respondents. The examination integrated essential and optional evidence and analysed it using descriptive measurements and a regression model. The results showed that infrastructure financing and public-private partnerships boost Kenyan economic growth. This research studied infrastructure funding and economic growth, but this paper examines how costs effect PPPs in Kenya. This will fill the conceptual gap with the study.

In another study, Kipkirui and Gitau (2019) examined the sustainability of Kenyan PPPs, including the Nairobi Expressway, using MCA. If properly planned and implemented, PPPs like the Nairobi Expressway can be sustainable, according to the report. The report also stressed risk assessment and management for PPPs'

long-term survival. This study will explore its factors using a descriptive approach instead of a multi-criteria approach.

Cost and Benefits analysis and Public private partnerships project to the users

A study on Cost-benefit analysis of highway PPP projects by Singh and Sinha (2017) examined PPP projects in India. The study analyzed four PPP highway projects' economic viability. PPP initiatives in India can be financially successful if planned and executed well, according to the report. The research advised the Indian government to establish a more credible and transparent PPP cost-benefit analysis methodology. This study examines Nairobi's express motorway, while the previous study examined Indian highways.

The Cost-Benefit Analysis of PPP Projects of the Lekki Toll Project in Nigeria was undertaken by Oyedele et al. (2020). The project's economic, social, and long-term viability were studied. The study found that the Lekki Toll Road Project enhanced transportation infrastructure, travel time, and job possibilities for the neighborhood. This study examined Nigerian toll highways, whereas this one examines a Kenyan expressway.

Mutisya, Njoroge, and Mwangi (2018) examined the societal costs and benefits of the Nairobi expressway public-private partnership (PPP) project in Kenya using cost-benefit analysis (CBA). They collected primary data from project-area businesses and families using a standardized questionnaire. The analysis found that the Nairobi expressway PPP project generated $One hundred and seventy million in net social benefits, outweighing its expenditures. This study focused on social costs and benefits, but the current study examines costs, benefits, and risk distribution to establish expressway viability.

Risk distribution and Public Private Partnerships

Bibliometric literature assessment on operational risk management of PPP infrastructure projects by Gao, Jiang, Jiang, Martek, and Yang (2022). The present study conducted a comprehensive evaluation of pertinent scholarly literature in order to build a robust mechanism for managing operational risks. A comprehensive study of the literature using qualitative bibliometric methods was undertaken. The review included 60 peer-reviewed articles from 12 reputable journals. The selection criteria made the studies operational risk management-related. The analysis shows that the sector lacks a defined list of operational risk indicators. Risk consequences are rarely considered while allocating operational risk factors. Additionally, operational risk management system selection and efficacy research is still underway. The present study would use descriptive research, unlike the previous study, which used a bibliometric review of published papers.

Aziz, Chan, Choudhry, Edwards, Ghaithan, Mazher, Mohammed, and Zahoor (2022) sought risk management techniques for public-private infrastructure projects in underdeveloped nations. The study was based on substantial literature review, subject matter expert interviews, and a survey. The research showed the importance of each indicator, which was spread across the project's life cycle and organizations. The previous study analyzed poor countries in general, but this study specifically examines Kenya.

The study by Sudić, Ćirović, and Mitrović (2017) examined risk management in Serbian PPP projects. The researchers used descriptive research. Multiple linear regressions, Pearson's correlation, and descriptive statistics assessed the data. Public-private partnerships (PPPs) and risk assessments in Serbia were found to be strongly correlated. The research also found a strong positive association among risk management and analysis and private-public partnership project performance. The previous study explored risk management in Serbian public-private partnerships (PPPs), while this study will focus on risk distribution among stakeholders.

Theoretical Review

The Agency Theory

This theory of work explores the behavioral patterns exhibited by employees inside the workplace (Panda & Leepsa, 2017). The concept is predicated on the supposition that individuals inside a corporate entity adhere

to a utility maximization framework, wherein they strive to get outcomes that are most advantageous for themselves, even if such outcomes are not optimal for the organization as a whole (Eisenhardt, 1989). According to Barnard (1938), agency theory highlights the inherent conflict between the aspirations of different individuals who, while employed by these organizations, prioritize their personal goals above the interests of the enterprise. However, this inclination adds complexity to the establishment of firm-specific stereotypes. Barnard (1938) offers a critique of this theory, contending that it places undue emphasis on self-interest and opportunistic human behaviors, while neglecting to consider the underlying motivations that drive human actions.

The agency theory holds considerable importance in this study, as it pertains to an agency relationship inside a collaborative partnership wherein both sides acknowledge and comprehend that their individual achievements are dependent on the accomplishments of the other. The proposition of incorporating agency partnering is put out as a complementary approach to existing methodologies for evaluating the viability PPPs in infrastructure development and service provision contexts. The analysis of agency theory facilitates the examination of key factors that substantiate the potential of a specific partnership, validate the ongoing interest in PPPs within a specific sector, and inform the selection of a successful candidate in a procurement process. Additionally, it helps determine the essential components that should be incorporated into the partnership agreement (PPP contract) to ensure effective performance.

The Resource Dependence Theory

The concept in question was initially proposed by Pfeffer and Alison (1987), who underscored the significance of organizations establishing connections that facilitate the exchange of resources. According to Drees and Heugens (2013), the theory acknowledges that enterprises lack the necessary resources to independently generate value, and so depend on each other for assistance. In order to fulfill their operational requirements, firms must effectively manage their interactions with other entities within the ecosystem. Moreover, in accordance with this concept, the survival of a company is predominantly influenced by its ability to effectively interact with many stakeholders in the external environment to acquire resources, rather than being only dependent on managerial skills and expertise (Gaffney and Clampit, 2013).

Based on the resource-based theory, the establishment of strategic alliances can be attributed to two potential motives: the acquisition of additional resources possessed by other entities, and the protection of one's own resources and identity. In each instance, the agreement is predicated on the assumption that the result will possess a significantly greater magnitude than what any individual participant could do independently. Pooled advantages may arise when one party's strengths compensate for the disadvantages of another party, or when their pooled strengths are amplified or enhanced.

New Public Management Theory

The new public management theory (NPM) was built in the 1980s in response to public administration criticism. The theory emphasizes private-sector management approaches in public sector management. Christopher Hood, Ted Gaebler and David Osborne support NPM. Christopher Hood introduced "managerialism," which applies private-sector management principles to the public sector to improve efficiency and effectiveness (Hood, 1991). In their 1992 work "Reinventing The Government," David and Gaebler advocated for business-like methods including performance monitoring and contracting out in public administration. The NPM theory helps this study evaluate PPP projects like the Nairobi Expressway's economic viability. The idea is that PPPs may help the government deliver public goods and services by using its knowledge and resources. Thus, it is crucial to evaluate how the Nairobi Expressway project incorporates NPM concepts into its planning and execution.

Critics say the NPM theory could harm democracy, social fairness, and public accountability. Critics argue that implementing private sector practices into the public sector may major their focus on short-term results and that the NPM's concentration on efficiency may disregard equality and social justice (Pollitt & Bouckaert,

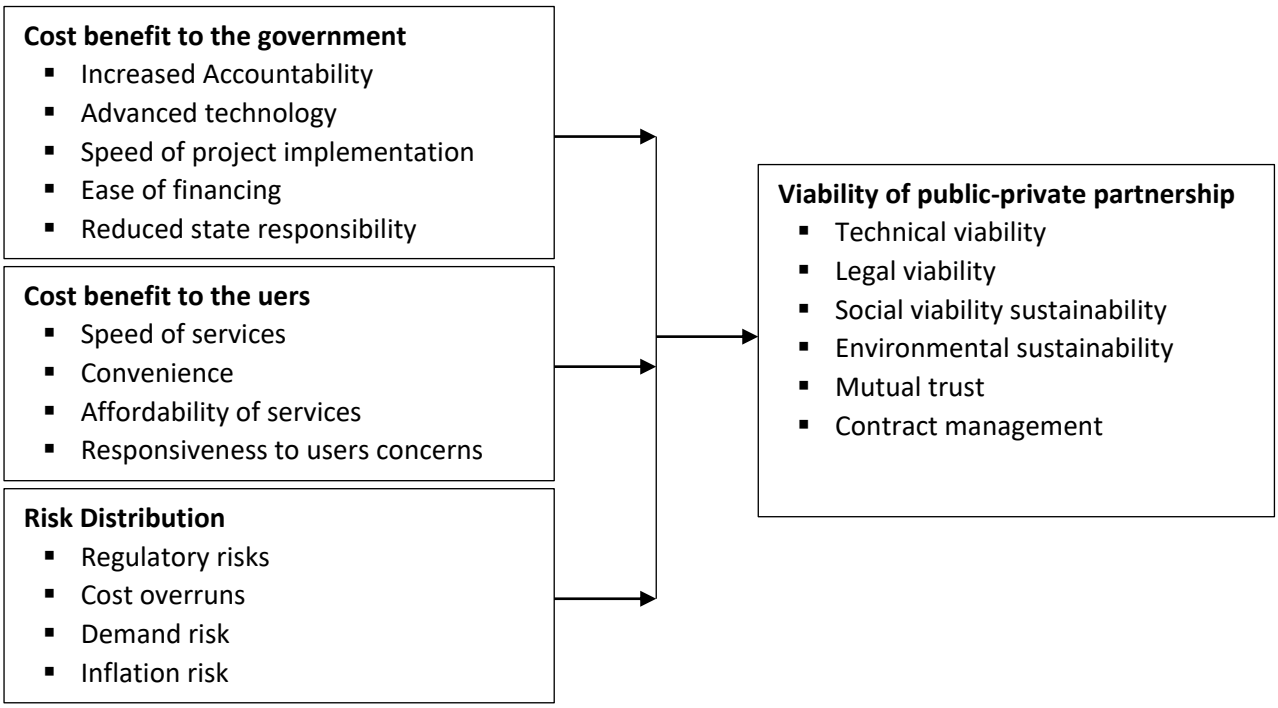
2011). Finally, the NPM theory helps evaluate PPP projects like the Nairobi Expressway. The theory has been criticized for its potential negative consequences on democratic governance, social fairness, and public accountability, yet it is beneficial for thinking about private sector management in public sector management.

Public Value Theory (PVT)

The importance of generating public value in firms operating within the public sector is emphasized through the public value theory. During the late 1990s, Mark Moore, Harvard University professor developed the hypothesis. The public sector should prioritize producing public value, which is described as "the value that the public sector creates in fulfilling its core purpose, in particular by creating public goods, improving social welfare, and/or delivering social justice" (Moore, 1995). The theory emphasizes that public value is not exclusively defined by economic or monetary variables, but also by public institutions' capacity to provide services that matter to citizens and improve societies as a whole. The PVT is pertinent to the current study because it offers a framework for assessing how much the Nairobi Expressway project adds to the creation of public value.

According to the theory, PPP initiatives must to be evaluated for their financial viability as well as their contribution to societal well-being. As a result, it's essential for determining how well the Nairobi Expressway project meets the demands and priorities of the entire population. Public Value Theory has been criticized for its difficulties in defining and assessing public value, as well as the potential conflicts between different public values. Critics claim that the hypothesis may lead to a concentration on immediate outcomes and that reconciling contradictory values, such as effectiveness and fairness, may be challenging (Bovaird & Löffler, 2012). The Public Value Theory provides a framework useful for assessing the contribution of PPP initiatives to the creation of public value, such as the Nairobi Expressway. While the idea has been critiqued for its difficulty in defining and assessing public value, it continues to be an important tool for considering the larger societal implications of PPP initiatives.

Conceptual Framework



Independent Variables **Dependent Variable**

Figure 1: Conceptual Framework

Source: Research Data (2024)

METHODOLOGY

A descriptive research design was harnessed by the researcher due to its appropriateness for studies involving the evaluation and documentation of a specific phenomenon in its current state (Orodho, 2009). The total target population encompassed; one hundred PPP unit officials (from the Treasury ministry), 100 Kenya National Highway Authority (KENHA) engineers and 1000 Expressway users (they will include commercial road users and private motorists) target population of 1200 is justifiable. For this study, purposive and stratified sampling methods were utilized. A 120-sample size will be derived from the target population to represent 10% of the total population selected using purposive sampling. Standardized questionnaires and interviews with key stakeholders including KENHA and PPP officials was used collect primary data. Secondary data was collected from various sources such as academic literature, news articles, and online databases. The study used questionnaires administered by research assistants. Data collection commenced subsequent to the approval of the project and the issuance of a letter written by the National Commission for Science, Technology, and Innovation (NACOSTI) and the University. For reliability analysis, Cronbach's alpha was calculated using SPSS. In the process of data analysis, a hybrid of quantitative and qualitative statistics were employed.

FINDINGS

Descriptive Analysis

Costs and benefit analysis of the Nairobi Expressway Public private partnership project to the government

The study sought to establish Costs and benefit analysis of the Nairobi Expressway Public private partnership project to the government of Kenya and found as presented in table 1: below;

Table 1: Costs and benefit analysis of the Nairobi Expressway Public private partnership project to the government

Statements	SD	D	N	A	SA
PPPs project have enhanced accountability systems	20	20	0%	20%	40%
There is stakeholder reporting and feedback among partners in the Nairobi Expressway Projects	10%	20%	20%	40%	10%
Technology used in the construction ensured seamless progress of the project	0%	15%	5%	40%	40%
There was technical capacity in operating the technology	0%	9%	5%	85%	1%
Automatic detection system and digital payment systems are beneficial to both government and private partners	10%	10	0%	20%	60%
The technology used contributed to delivery of a high-quality expressway project	12%	8%	0%	20%	60%
The speed of implementation was swift and effective compared to other implemented projects	5%	7%	5%	33%	50%
All the needed funds for the project were availed on time	0%	0%	40%	20%	40%
Availability of funds ensured a good quality of work	10%	10%	20%	40%	20%
There was reduced state responsibility in the project	1%	9%	33%	24%	33%
State responsibility was limited to supervision	7%	10%	33%	20%	30%
There were state officers overseeing the project from beginning to the end	10%	15%	15%	20%	40%

Source: Research Data (2024)

From the above findings in table 1: the study sought to establish the cost and benefit to the government the expressway to the government. When asked whether PPPs project have enhanced accountability systems 60% while 40% disagreed to the assertion. Concerning if there is stakeholder coordination among stakeholders in

the program 50% of the participants agreed to the statement while 30% disagreed. When asked whether the technology used in the construction ensured seamless progress of the project 80% agreed while 15% registered disagreement to that assertion, again, the respondents were asked whether there was technical capacity in operating the technology 86% of the study participants agreed while 9% disagreed to that statement. Additionally, the study asked whether the automatic detection system and digital payment systems are beneficial to both government and private partners the findings reveal that 80% agreed while 20% disagreed to that averment. Concerning the query on whether the technology used contributed to delivery of a high-quality expressway project 80% registered agreement while 20% recorded disagreement. Again, the study sought to establish whether the speed of implementation was swift and effective compared to other implemented projects 83% agreed to this while 12% disagreed. When asked about whether all the needed funds for the project were availed on time 60% agreed while 40% were neutral on this. With regards to whether availability of funds ensured a good quality of work 60% while 20% disagreed. On whether there was reduced state responsibility in the project 50% agreed whereas 17% disagreed. Concerning whether state responsibility was limited to supervision 50% agreed while 17% disagreed. Finally, with regards to whether there were state officers overseeing the project from beginning to the end 605 agreed while 25% were not in agreement with this assertion. These findings are consistent with Almarri *et al*. (2020) who analyzed viability public private partnership projects in United Arab Emirates and found out that the UAE public-private partnership efforts are viable and can benefit both private and public sectors.

The study asked for recommendation to the government towards optimizing benefits public private partnerships projects in Kenya and found that there was a strong emphasis on the need for proper management and increased accountability within PPP projects. This recommendation highlights the need of establishing clear models and structures for transparency and oversight throughout a PPP project lifecycle. By ensuring effective management approaches and enhancing accountability, stakeholders can ameliorate risks and promote the overall success of PPP initiatives. Secondly, respondents highlight the significance of ensuring value for money in project implementation. This involves a meticulous focus on quality and standards to maximize the return on investment for both public and private entities involved. By prioritizing quality and adhering to established standards, PPP projects can deliver tangible benefits to communities while also fostering trust and confidence among stakeholders.

Additionally, there is an emphasis on the importance of high-level involvement in technical aspects by state officers. This recommendation underscores the value of leveraging expertise and facilitating knowledge transfer between government agencies and private partners. By fostering collaboration and expertise-sharing at the highest levels, PPP projects can capitalize on diverse perspectives and effectively address complex technical challenges.

Costs and benefit analysis of the Nairobi Expressway Public private partnership project to the users

The study further sought to establish the Costs and benefit analysis of the Nairobi Expressway Public private partnership project to the users and presented the outcomes in the table 2: below;

Table 2: Costs and benefit analysis of the Nairobi Expressway Public private partnership project to the users

Statements	SD	D	N	A	SA
The digital payment system makes it easy to get through the toll station	10%	8%	2%	36%	42%
The automatic detection system helps users to drive through easily	10%	2%	2%	32%	54%
The expressway is convenient to the users	4%	10%	12%	30%	44%
I prefer it to the usual Mombasa Road	6%	10%	8%	36%	40%
The wide roads provide enough space to move without causing traffic snarls ups	6%	10%	8%	28%	48%
The charges are affordable to me	16%	36%	30%	8%	10%
Customer care services are way accessible and responsive	4%	10%	38%	34%	14%
The concerns of users are promptly addressed	6%	18%	40%	24%	12%
There are trained staff to address the users' concerns	2%	18%	28%	38	14%
There are standby officials ready to respond to any emergencies	34%	14%	36%	4%	12%

Source: Research Data (2024)

From the findings above with regards to digital payment system making it easy to get through the toll station 78% of the respondents were in agreement while 18% disagreed with the assertion. Also, when asked whether the automatic detection system helps users to drive through easily 87% of the participants agreed whereas 12% were in disagreement. Concerning whether the expressway is convenient to the users 74% agreed while 14% disagreed. When asked whether they prefer the expressway to the usual Mombasa Road, the 76% agreed while 16% disagreed. The participants were also asked whether the wide roads provide enough space to move without causing traffic snarls ups 76% were in agreement while 16% disagreed. Moreover, they were asked if the toll charges are affordable to them 52% disagreed while 18% agreed. Regarding whether customer care services are accessible and responsive 48% were in agreement with this assertion whereas 14% were of the contrarian view. Additionally, the respondents were asked if their concerns are promptly addressed 44% were in agreement while 24% disagreed. On whether there are trained staff to address the users' concerns 52% agreed while 20% were in disagreement. Concerning availability of standby officials ready to respond to any emergencies 48% disagreed whereas 16% agreed. These findings align with Oyedele *et al*. (2020) who found out that the Lekki Toll Road Project is affordable, convenient enhanced transportation infrastructure, travel time, and job possibilities for the neighborhood.

Risk distribution among stakeholders affect the Nairobi expressway Public private partnership project

The study sought to establish whether risk distribution among stakeholders affect the Nairobi expressway Public private partnership project. The findings are showcased in the table 3below;

Table 3: Risk distribution among stakeholders affect Nairobi expressway Public private partnership project

Statements	SD	D	N	A	SA
Laws were favorable for the implementation of the project	3%	17%	0%	60%	20%
Regulations did not change in the course of the project	5%	15%	0%	65%	15%
There were cost overruns in the project	2%	8%	5%	60%	25%
There was enough finance to meet the cost overruns	40%	20%	20%	5%	15%
Risk associated with usage of Nairobi expressway were identified	23%	17%	20%	45%	15%
The risk of inflation affecting the project was foreseen and mitigative strategies deployed	5%	0%	40%	40%	10%

Source; Researcher Data (2024)

Concerning whether laws were favorable for the implementation of the project 80% of the respondents affirmed whereas 20% disagreed with that assertion. Additionally, with regards to whether regulations did not

change in the course of the project 80% of the respondents agreed while 20% disagreed to that statement. On whether there were cost overruns in the project 85% of the study participants whereas 10% disagreed to this averment. Also, when asked on whether there was enough finance to meet the cost overruns 60% disagreed while 20% agreed to this statement. Moreover, when asked whether risk associated with the usage of the Nairobi expressway were identified 60% agreed whereas 40% disagreed. Finally, concerning the query on whether the risk of inflation affecting the project was foreseen and mitigative strategies deployed 50% agreed while 5% of the respondents disagreed.

The findings above are consistent with a study by the Sudić, Ćirović, and Mitrović (2017) who examined risk management in Serbian public-private partnership (PPP) projects and found a strong and positive association between risk management and analysis and privatepublic partnership project performance.

Inferential Statistics

This section presents the correlation and regression analysis results based on 95% confidence interval. Following sections present the results of the model summary, ANOVA, and regression coefficients.

Correlation Analysis

The correlation outcomes presented below were premised on Pearson Correlation. The correlation coefficient had a range from +1 to -1. Values closer to +1 implied a strong positive correlation among variables and values that were close to -1 implied a strong negative correlation among variables. Moreover, values that were close to zero (0) implied a weak or no correlation between the variables. The inference of the outcomes was premised on significance level of 5%.

Table 4: Correlation analysis

		Cost and benefit to government	Cost and benefit to users	Risk distribution among stakeholders	Viability of PPPs
Cost and benefit to government	Pearson Correlation	1			
	Sig. (2tailed)				
	N	89			
Cost and benefit to users	Pearson Correlation	.731**	1		
	Sig. (2tailed)	.505			
	N	89	89		
Risk distribution among stakeholders	Pearson Correlation	.258*	.416**	1	
	Sig. (2tailed)	.515	.500		
	N	89	89	89	
	Sig. (2tailed)	.114	.492	.404	
	N	89	89	89	
Viability of PPPs	Pearson Correlation	.755**	.757**	.733**	1
	Sig. (2tailed)	.000	.000	.000	
	N	89	89	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

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

Source: Research Data (2024)

The correction was harnessed to test the nexus between the predictor and outcome variables. The outcomes also replicated that the correlation between cost and benefits to government and viability of PPPs demonstrate that there is positive significant correlation between the two variables with coefficient correlation of 0755. The results show that the correlation between cost and benefits to users and viability of PPPs this indicates that there exists a positive significant correlation among the two variables with coefficient correlation of 0.757. Further, the results show that the correlation between risk distribution among stakeholders and viability of PPPs indicates that there exists a positive significant correlation between the two predictor and outcome variables with coefficient a correlation of 0.733.

Regression Analysis

A multivariate regression analysis was conducted to explore the nexus of the predictor Variables and the outcome variable. The R was the correlation coefficient and it demonstrates the nature and strength of link between cost and benefit analysis and viability of PPPs in Kenya. The R^2 was the coefficient of determination which gave explanation of the variability of the outcome variable when the predictor variables are having changes.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.767[a]	.734	.723	3.31644

a. Predictors: (Constant), cost benefit analysis to government, cost and benefit analysis to users, Risk distribution among stakeholders

Source: Research Data (2024)

R-square represents the rate of the outcome variable variation as shown in the model above. The model designated the correlation at 0.767 showcasing that nexus between the study variables were significant and positive. The R^2 at 0.734 and the adjusted $R^2 = 0.723$, shows that 73.4% of changes in the viability of PPPs can be explained by the changes in the predictor variables of the research.

Analysis of Variance (ANOVA)

Table 6: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13139.542	4	3284.886	288.660	.000[b]
	Residual	923.896	84	10.999		
	Total	14063.438	88			

a. Dependent Variable: Viability of PPPs

b. Predictors: (Constant), Cost benefit analysis to government, Cost and benefit analysis to users, Risk distribution among stakeholders.

Source: Research Data (2024)

The Analysis of Variance (ANOVA) statistics in Table 6: measure whether the variability present among the variables was significant. The ANOVA results showed that the independent variables in this case Cost benefit analysis to government, Cost and benefit analysis to users, Risk distribution among stakeholders all had a significant effect on the empowerment of the Viability of PPPs (0.00< 0.05) which is lower than the prior set threshold value of 0.05, which was used to determine whether the predictor variables had a significant influence on the outcome variable. Additionally, p value (0.00< 0.05) implied that the variance was significant which proves that the proposed model is significant in explaining the links. Therefore, the adopted Multiple Linear Regression model well predicted the outcome variable and appropriately fits to model the data.

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.301	1.843		9.930	.000
	Cost and benefit analysis to government	1.398	.108	.540	12.976	.000
	Cost and benefit analysis to users	.779	.130	.264	5.959	.000
	Risk distribution among stakeholders	1.042	.140	.291	7.425	.000

a. Dependent Variable: Viability of PPPs

Source: Research Data (2024)

The regression model was represented below;

$$Y= 19.301 +1.398X_1 + 0.779X_2 + 1.042X_3 + \varepsilon$$

The results indicated that cost benefit analysis to government had positive significant effect on changes in viability of public private partnerships in Kenya (P=0.000<0.05). The findings indicated that taking all other independent variables to zero, a unit increase in cost benefit analysis to government will lead to 1.398-unit changes in viability of public private partnerships in Kenya. Further, the study results in Table 6: indicated that cost benefit analysis to government had a significant positive effect on viability of public private partnerships in Kenya. The result indicated that 0.779-unit changes in viability of public private partnerships in Kenya were as a result of a unit change in cost benefit analysis to government. Moreover, the result in table 6: indicates that Risk distribution among stakeholders had a significant effect on viability of public private partnerships in Kenya. The result indicates that a unit change in Risk distribution among stakeholders will lead to 1.042-unit changes in viability of public private partnerships in Kenya. The results on t values indicate as follows; first, on cost and benefit to government the t-value of 12.976 states that the coefficient for this independent variable is highly statistically significant. It suggests that changes in cost and benefit analysis to the government have a substantial impact on the viability of PPPs. With regards to cost and benefit analysis to users **t**he tvalue of 5.959 shows that the coefficient for this independent variable is statistically significant. It denotes that changes in cost and benefit analysis to users also hold a significant influence on the viability of PPPs, although to a lesser extent compared to the first predictor.

On Risk distribution among stakeholders the t-value of 7.425 demonstrate that the coefficient for this predictor variable is statistically significant. It suggests that the changes in risk distribution among stakeholders significantly influence the viability of PPPs, similar in degree to the effect of cost and benefit analysis to users.

SUMMARY

The study revealed that PPPs project have enhanced accountability systems. The study also found out that there is stakeholder coordination among stakeholders in the program. Further the study findings indicate that the technology used in the construction ensured seamless progress of the project. Again, the majority of the respondents agreed that there was technical capacity in operating the technology. Additionally, the study found that automatic detection system and digital payment systems are beneficial to both government and private

partners. Majority also agreed that the technology used contributed to delivery of a high-quality expressway project. The study also indicated that the speed of implementation was swift and effective compared to other implemented projects. Revelations also showed that all the needed funds for the project were availed on time.

From the findings with regards to digital payment system making it easy to get through the toll station majority of the respondents were in agreement. The study also indicate that the automatic detection system helps users to drive through easily. Majority of the respondents also agreed that the expressway is convenient to the users. The study further revealed that the expressway users prefer it to Mombasa Road. Majority of the respondents also agreed that the wide roads provide enough space to move without causing traffic snarls ups.

However, the study reveals that the respondents they disagreed that the toll charges are affordable to them. Regarding whether customer care services are accessible and responsive majority of the respondents agreed.

Furthermore, the study also revealed that laws were favorable for the implementation of the project. Additionally, the findings state that the regulations did not change in the course of the project. Study also found out that there were cost overruns in the project. Also, a majority of the respondents stated that there was enough finance to meet the cost overruns. Moreover, it was found that risk associated with the usage of the Nairobi expressway were identified. Finally, concerning the query on whether the risk of inflation affecting the project was foreseen and mitigative strategies deployed a majority agreed.

CONCLUSION

The results indicated that cost benefit analysis to government had positive significant effect on changes in viability of public private partnerships in Kenya. The findings also indicated that cost benefit analysis to users have positive effect in changes in viability of public private partnerships in Kenya. Again, the result indicates that Risk distribution among stakeholders had a positive effect on changes in viability of public private partnerships in Kenya.

The findings indicated that taking all other independent variables to zero, a unit increase in cost benefit analysis to government will lead to 1.398-unit changes in viability of public private partnerships in Kenya. Further, the study concludes that cost benefit analysis to government had a significant positive effect on viability of public private partnerships in Kenya. The result indicated that 0.779-unit changes in viability of public private partnerships in Kenya were as a result of a unit change in cost benefit analysis to government. Moreover, the study concluded that risk distribution among stakeholders had a significant effect on viability of public private partnerships in Kenya. The study also concludes that a unit change in Risk distribution among stakeholders will lead to 1.042unit changes in viability of public private partnerships in Kenya.

Recommendations of the study

The study recommends robust community involvement in the planning and implementation of PPPs. Onboarding of local communities and stakeholders throughout the PPP project lifecycle facilitates the identification and mitigation of social and environmental effects, enhancing greater social acceptance and minimizing any potential conflicts that may ensue.

The study further recommends that Kenya should invest in capacity building within national and county governments responsible for public private partnership management is key. Equipping staff with skills and expertise through targeted training and technical aid ensures effective oversight and evaluation of public private partnership projects.

Recommendations for further research

The study was focused on Nairobi expressway public private partnership. Further, future research should consider carrying out studies in other sectors of the economy such as healthcare, extractive industries, blue economy inter alia to compare the results. The present study was a case study hence policy and recommendations may not be imitated to other projects or sectors. A study of various projects in other sectors

was therefore recommended. Also, this study only focused on three variables, future research should examine other unexplored variables on public private partnerships.

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