

# Chapter One

## Introduction

### 1.1 Background to the Study

Nigeria's economic growth in the last two decades has led to an increase in urbanization and a rise in demand for efficient transportation infrastructure. The development of road infrastructure has been a crucial factor in sustaining the country's economic growth by providing essential connectivity for economic activities. However, inadequate government funding and limited expertise in infrastructure development have hindered the growth and maintenance of efficient transportation infrastructure. In response, the government has explored the use of Public-Private Partnerships (PPPs) for infrastructure development<sup>1</sup>.

Infrastructure development is a crucial aspect of economic growth and development in every country. Roads serve as a significant transportation mode connecting people, goods and services, which have a direct impact on the economy. However, inadequate funding and capacity limitations of governments have made it difficult to meet the increasing demand for infrastructure development. The decline in revenue and budgetary constraints has resulted in the need for alternative financing sources, hence the emergence of Public-Private Partnerships (PPPs)<sup>2</sup>.

PPPs are mutually beneficial collaborations between the government and private sector entities in the provision of public services and infrastructure development. PPPs provide an effective way to raise funding for infrastructure projects and leverage the private sector's expertise, skills, and innovations. PPPs have been successfully applied in the development of road infrastructure in various countries, including Nigeria<sup>3</sup>.

One of the ways that governments have tried to address this challenge of road infrastructure is through Public-Private Partnerships (PPPs). PPPs have emerged as a viable alternative for financing and developing road infrastructure projects. PPPs bring together the expertise, skills and innovation of the private sector with the public sector's regulatory and supervisory role in delivering public infrastructure and services. Through PPPs, the private sector can provide much-needed capital investments, better technology, and efficient project management, while the government can ensure equitable service delivery and public accountability<sup>4</sup>.

Lagos State, Nigeria's commercial capital, has suffered inadequate road infrastructure resulting from limited funding, weak governance, and poor planning. The state's rapid economic growth in the recent past has put enormous pressure on the transportation sector, thereby necessitating an urgent intervention to improve the state's road infrastructure. Lagos State has begun to embrace PPPs as a means of harnessing the innovation and resources of the private sector to increase connectivity, improve efficiency, and promote investment in the transport sector<sup>5</sup>. The state has embraced the use of PPPs in road infrastructure development. Under PPP arrangements, the government partners with the private sector to construct, rehabilitate, and maintain road infrastructure. The PPP model has enabled the state government to leverage the private sector's expertise and resources to obtain adequate funding and accelerate road infrastructure development<sup>6</sup>.

PPP (Public-Private Partnership) is a collaborative model of infrastructure development and service delivery where the public sector partners collaborate with the private sector to finance, design, construct, operate, and maintain public infrastructure and services. According to the World Bank, PPP is "a long-term contractual arrangement between the public and private sectors to ensure the delivery of a public infrastructure or service, whereby the private sector is

responsible for financing, designing, building, operating, and maintaining the asset for a defined period "7.

Nigerian government had announced its intention to enter into PPP agreements over the years, with different projects and sectors. It was presumed that the PPP model would enable the government to attract private investment and expertise to deliver these infrastructure projects<sup>8</sup>. Similarly, the Lagos State Government has partnered with the private sector under the PPP arrangement to develop and maintain critical infrastructures. The PPP model, according to the governor of the state, "allows the state government to leverage private capital and expertise in infrastructure development to build a better Lagos" <sup>9</sup>. In the same vein, the African Development Bank (AfDB) has been providing finance and technical assistance to African countries to develop PPP projects and promote private sector participation in infrastructure development. Through its Initiative for Risk Mitigation in Africa (IRMA), the AfDB aims to de-risk infrastructure projects and create an enabling environment for PPPs in Africa<sup>10</sup>.

The PPP is also a collaborative model of infrastructure development where the public sector partners with the private sector to finance, design, construct, operate, and maintain public infrastructure and services. It enables the government to leverage private sector resources and expertise to deliver infrastructure projects and provides private entities with opportunities for investment and returns. Therefore, PPPs have the potential to transform infrastructure development, making it more efficient and cost-effective, and contributing to the growth of economies around the world.

## 1.2 Statement of the Problem

The development of road infrastructure is crucial for any region's economic growth and social well-being. In the context of Lagos State, Nigeria, a rapidly growing urban centre facing significant infrastructure challenges, the role of Public-Private Partnerships (PPPs) in road infrastructure development has gained prominence. Lagos State, Nigeria's most populous and economically vibrant state, has been experiencing rapid urbanization and population growth. This has put immense pressure on its existing road network, leading to congestion, poor road conditions, and increased travel times. Traditional government funding alone has proven insufficient to address these challenges effectively. Public-private partnerships have emerged as a viable alternative to traditional procurement methods for infrastructure development. By leveraging the expertise and resources of both the public and private sectors, PPPs offer a collaborative approach to financing, constructing, and managing road infrastructure projects. This model not only helps in mobilizing additional funding but also brings efficiency, innovation, and accountability to project delivery<sup>11</sup>.

Public-Private Partnerships (PPPs) have become increasingly popular in developing countries due to the need to address the shortfall in infrastructure development and funding. Nigeria, like most African countries, faces significant challenges in road infrastructure development, which have been attributed to insufficient funding and expertise.

Lagos State, a component of Nigeria is not immune to this situation, as it cannot single-handedly provide the funds needed for road infrastructure development, and so it has embraced the PPP model to finance, construct and maintain public roads. Despite Lagos's active involvement in PPPs, there is little empirical evidence on the effectiveness of PPPs in enhancing the development of road infrastructure in the state. This raises concerns about sustainability, cost-

effectiveness, and overall impact of PPPs in infrastructure delivery. By understanding the impact of PPP on road infrastructure development in Lagos State, Nigeria, policymakers, public officials, and stakeholders will have insights into how best to achieve sustainable and effective infrastructure development in the state<sup>12,13,14,15,16</sup>.

Since the turn of the century, academics, urban planners, political leaders, government at all levels, and other professionals across the world have come to appreciate the contribution and impact (or its prospects) of PPP in urban and road infrastructural development. Many studies have examined the impact of PPPs on infrastructure development in Nigeria. For instance, Adeyemi et al. reviewed the critical success factors of PPPs in Nigeria's infrastructure projects and identified financing, enabling legal and regulatory framework, risk allocation and maintenance as key factors for successful PPP projects<sup>17</sup>. Ogunyemi and Afolabi evaluated the effectiveness of PPPs in infrastructure development in Nigeria and recommended that a long-term strategic plan should be developed to guide the application of PPPs for infrastructure development<sup>18</sup>. Gbadegesin and Adeleye reviewed public-private partnerships and sustainable infrastructural development in Nigeria. They explored the theoretical underpinnings of PPPs as a model for infrastructure development, examined the benefits and challenges of PPPs in Nigeria, and discussed the potential for PPPs to contribute to sustainable development. The review also considers several case studies of PPPs in the country and concludes with recommendations for improving the effectiveness and impact of PPPs in Nigeria<sup>19</sup>.

### **1.3 Justification for the Study**

The study "The Impact of Public-Private Partnership on Road Infrastructure Development in Lagos State, Nigeria" is crucial for several reasons:

The research is of great importance in addressing infrastructure deficits in Lagos State. Being a major economic hub in Nigeria, Lagos State faces significant challenges in road infrastructure development. Public-Private Partnerships (PPPs) will serve as a viable solution to bridge the infrastructure gap and improve the overall transportation network. This will ultimately lead to economic growth and the development of Road Infrastructure in Lagos State. This is because improved road infrastructure is essential for economic growth and development. By examining the impact of PPPs on road infrastructure in Lagos State, the study provided insights into how such partnerships contribute to economic activities, trade facilitation, and overall prosperity.

In addition, findings from the study can inform policymakers, government agencies, and stakeholders on the effectiveness of PPPs in road infrastructure development. This can lead to the formulation of better policies, regulations, and frameworks to enhance the success of future PPP projects in the region.

The study provides positive insight into the socio-economic impact of the state. Improved road infrastructure can have a significant socio-economic impact on the lives of residents in Lagos State. By evaluating the impact of PPPs, the study can assess how these projects contribute to job creation, urban development, accessibility, and overall quality of life for the citizens.

The study also identifies a knowledge gap. There is a need for empirical research on the specific impact of PPPs on road infrastructure in Lagos State. This study can fill the existing knowledge gap by providing data-driven insights, analysis, and recommendations for stakeholders involved in infrastructure development and urban planning.

Research institutions and financial institutions, particularly the development finance institutions, will learn from the outcomes of the research, especially on the business model, political terrain,

and legal framework regulating PPP in Lagos State. The study creates and encourages alternative means of financing road infrastructure off the balance sheet, for the two tiers of government in Lagos State, and Nigeria in general.

In conclusion, the study on the Impact of Public-Private Partnerships on Road Infrastructure Development in Lagos State, Nigeria, is essential for understanding the dynamics of infrastructure development, economic growth, policy implications, and socio-economic benefits associated with such partnerships. It has the potential to guide future infrastructure projects, improve decision-making processes, and ultimately contribute to the sustainable development of Lagos State.

#### **1.4. Aim of the Study**

This study examines the impact of public-private partnerships on the development of road infrastructure in some parts of Lagos State with a view of providing adequate policies to guide PPP in areas of infrastructure provision in Lagos State.

##### **1.4.1 The Objectives of the Study**

The objectives of the study are to:

- i. analyze the trend and progress of road infrastructure development in Lagos State from 1966 to 2024.
- ii. analyze the trends in public and private investment in road infrastructure in Lagos State.
- iii. identify the major prospects and problems of the public-private partnership PPP model in Lagos State.

- iv. evaluate the outcomes of the PPP model in road infrastructure based on some indicators.
- v. examine the perception of users of PPP road infrastructure in the study area.

### 1.5 Research Questions

- i. What is the trend and progress of road infrastructure development in Lagos State from 1966 to June 2024?
- ii. What is the trend of public-private partnership investments in road infrastructure in Lagos State?
- iii. What are the major prospects and problems of the public-private partnership PPP model in Lagos State?
- iv. What are the urban outcomes of the PPP model in road infrastructure based on some indicators?
- v. What is the perception of users of road infrastructure in the study area?

### 1.6 Hypotheses

**Hypothesis 1:** Public-private partnerships in road infrastructure development in Lagos State will significantly lead to improved road quality and maintenance.

**Hypothesis 2:** Public-private partnerships in road infrastructure development in Lagos State will lead to faster completion time of road projects compared to solely government-led initiatives.

**Hypothesis 3:** Public-private partnerships in road infrastructure development in Lagos State will lead to increased economic growth and development in the region.

### 1.7 Scope of the Study

The scope of the study focused on analyzing the impact of PPPs on road infrastructure development in some parts of Lagos State which included the Lekki-Epe Expressway with Link Bridge Ikoyi, Mile – 2 Oworonsoki Road, Oniru Road Network, Zenith Road and Fourth Mainland Bridge which is under construction.

## **1.8 Operational Definition of Terms**

**Public-Private Partnership (PPP):** A Public-Private Partnership (PPP) is a partnership between the public sector and the private sector to deliver a project or a service traditionally provided by the public sector.

**Internal Rate of Revenue (IRR):** The internal rate of return (IRR) is a metric used in financial analysis to estimate the profitability of potential investments. IRR is a discount rate that makes the net present value (NPV) of all cash flows equal to zero in a discounted cash flow analysis. IRR calculations rely on the same formula as NPV does.

**Lagos State Transport Management Authority (LASTMA):** Lagos State Traffic Management Authority is a Lagos State-owned agency under the Ministry of Transportation. The agency was established on the 15th of July 2000 to transform the state transportation system to ensure free flow of traffic in the state and reduce road accidents.

**Federal Road Safety Commission (FRSC):** The Federal Road Safety Corps is the Government Agency with statutory responsibilities for road safety administration in Nigeria. Founded in 1988, the Federal Road Safety Corps (FRSC) operates in all Nigerian states as well as the Federal Capital Territory.

**Lagos State Public Private Partnership Bureau (LSPPPB):** The primary objective of the Office is to facilitate the development of public infrastructure or public assets and provide social amenities and other facilities for Lagos State through Public Private Partnerships.

**Build Operate Transfer (BOT):** A project delivery mechanism in which a government entity grants to a private sector party the right to finance, design, construct, own and operate a project for a specified number of years.

**Cost-Benefit Ratio (CBR):** Cost Benefit Ratio (CBR) is a financial metric used to determine the potential profitability of an investment by comparing the benefits (both financial and non-financial) of the investment to the costs associated with it.

**Net Present Value (NPV):** Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over some time. NPV is used in capital budgeting and investment planning to analyze the profitability of a projected investment or project.

**Privately Initiated Investment Proposal (PIIP):** It refers to a proposal submitted by a private entity (such as a company or investor) to initiate and develop an infrastructure project in collaboration with the public sector.

**Build Own Operate Transfer (BOOT):** It is a model of public-private partnership (PPP) in which a private partner designs, builds, finances and operates a project for a specified period before transferring ownership and control of the project to a public entity.

**Design Build Finance Operate Maintain (DBFOM):** It is a model of public-private partnership (PPP) in which a private partner designs, builds, finances and operates a project for a specified period before transferring ownership and control of the project to a public entity.

**Design Build Operate (DBO):** It is a model of public-private partnership (PPP) in which a private partner designs, builds, and operates a project for a specified period before transferring ownership and control of the project to a public entity.

### Endnotes

- <sup>1</sup> T.A. Ojo & M.A. Adekunle. *Public-Private Partnerships for Infrastructure Development in Nigeria: A Systematic Review*. **Journal of Cleaner Production**, 232, 2019: 657-673. doi 10.1016/j.jclepro.2019.05.073.
- <sup>2</sup> O.J. Idowu & O. Aina, O. *Public-Private Partnerships as an Alternative Financing Model for Infrastructure Development in Emerging Economies: A Case Study of Nigeria*. **International Journal of Energy Economics and Policy**, 10(5), 2020: 203-211.
- <sup>3</sup> O.K. Olorunsogo. *The Role of Public-Private Partnership in Infrastructure Development in Nigeria*. **Journal of Economics and Sustainable Development**, 11(4), 2020:201-208.
- <sup>4</sup> O. Adelakun & R.A. Ayodeji. *Public-Private Partnership in Road Infrastructure Development in Nigeria: Challenges and Prospects*. **International Journal of Civil Engineering and Technology**, 11(2), 2020: 307-316.
- <sup>5</sup> O. Oluwaseun & A. Falode. *Evaluating the Potential of Public-Private Partnerships (PPPs) in Road Infrastructure Development: Evidence from Lagos State, Nigeria*. **International Journal of Transportation Engineering and Technology**, 7(1), 2021:32-47.
- <sup>6</sup> R.K. Ojikutu, O.O. Olufowobi & G.K. Orogun. *Public-Private Partnership in Road Infrastructure Delivery in Lagos State, Nigeria*. **Journal of Construction Project Management and Innovation**, 8(1), 2018:1933-1953.
- <sup>7</sup> World Bank Group. *Public-Private Partnerships (PPPs)*. Retrieved from <https://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships-ppps>, 2019.
- <sup>8</sup> The Guardian Nigeria. *Nigeria to Partner Private Sector to Fund Lagos-Ibadan Expressway, others*. Retrieved from <https://guardian.ng/business-services/nigeria-to-partner-private-sector-to-fund-Lagos-Ibadan-expressway-others/2021>.
- <sup>9</sup> The Nation Online. *Lagos and the PPP Option*. Retrieved from <https://thenationonlineng.net/lagos-and-the-ppp-option/2019>,

- 10 African Development Bank. *Initiative for Risk Mitigation in Africa (IRMA)*. Retrieved from <https://www.afdb.org/en/initiative-risk-mitigation-africa-irma> 2021.
- 11 W.M. Shakantu. *The Role of Public-Private Partnerships (PPPs) in Road Infrastructure Development: A Case Study of Lagos State, Nigeria*. **International Journal of Scientific and Research Publications**, 11(5), 2021:788-793.
- 12 F.N. Nwokolo. *Public-Private Partnership: An Essential Tool for Infrastructure Development in Nigeria*. **Journal of Construction Project Management and Innovation**, 9(1), 2019:2103-2116.
- 13 A.E. Oke & O.L. Kuye *Public-Private Partnership in Infrastructure Development: An Empirical Study of Lagos State*. **Journal of Public Administration and Governance**, 11(1), 2021:167-179.
- 14 D.S. Peter. *Benefits and Challenges of Public-Private Partnership in Infrastructure Development in Nigeria*. **International Journal of Innovative Technology and Exploring Engineering**, 9(4), 2020:1506-1511.
- 15 The Punch Nigeria. *Fashola Seeks Senate's Approval on Lagos-Ibadan Expressway, Others' PPPs*. Retrieved from <https://punchng.com/fashola-seeks-senates-approval-on-Lagos-Ibadan-expressways-others-ppps/2021>.
- 16 The Guardian Nigeria. *FG, Lagos Government Plan PPP for Reconstruction of Eko Bridge*. Retrieved from <https://guardian.ng/business-services/fg-Lagos-Government-Plan-PPP-for-Reconstruction-of-Eko-Bridge/2022>.
- 17 A. Adeyemi, O. Ibrahim & T. Ojumah. *Critical Success Factors for Public-Private Partnerships in Nigerian Infrastructure Projects*. **Journal of Construction Business and Management**, 3(1), 2019:10-17.
- 18 D.R. Ogunyemi & A.O Afolabi. *Evaluating the Importance of Public-Private Partnership (PPP) in infrastructure development in Nigeria*. **International Journal of Civil Engineering and Technology**, 11(4), 2020:10-18.
- 19 T.O. Gbadegesin & O.E. Adeleye. *Public-Private Partnership and Sustainable Infrastructural Development in Nigeria: A Review*. **European Journal of Sustainable Development Research**, 3(4), 2019:46-61.

## **Chapter Two**

### **Literature Review**

In many regions of the world, public-private partnerships, or PPPs, are gaining prominence as a means of resolving infrastructure-related issues. PPPs entail working together to finance, construct and oversee infrastructure projects between the public and private sectors. Due to a lack of institutional competence and limited resources, Lagos State, Nigeria has had considerable challenges in the development of its infrastructure, particularly in the road sector. PPPs have been employed as a strategy to solve these issues and encourage the creation of sustainable infrastructure in response.

This section aimed to present a conceptual review, theoretical framework and review of empirical studies of the impact of PPPs on the development of road infrastructure in Lagos State, Nigeria. The conceptual review provides a basic understanding of PPP's concepts, characteristics, and typologies. It will explore the various models of PPPs, including build-operate-transfer (BOT), build-own-operate-transfer (BOOT), and build-own-transfer (BOT) models. The review will also examine the key principles that underpin successful PPPs, as well as the benefits and risks associated with PPPs.

Building on the conceptual review, the theoretical framework will outline the key theoretical perspectives that influence the effectiveness of PPPs in infrastructure development. It will

explore theories of governance, institutional economics, and network governance to frame the analysis of the impact of PPPs on the development of road infrastructure in Lagos State.

Lastly, the review of empirical studies undertakes a systematic analysis of existing studies on the impact of PPPs in road infrastructure development in Lagos State and other developing countries. It examined the benefits and challenges of PPPs, critical success factors, and factors that influence PPP effectiveness. It also analyzes the perceptions of stakeholders on PPPs and their potential to promote sustainable infrastructure development.

Overall, this study aims to provide a comprehensive understanding of the impact of PPPs on road infrastructure development in Lagos State, Nigeria, through a conceptual review, theoretical framework, and literature review. The findings will contribute to enhancing the effectiveness of PPPs in promoting sustainable infrastructure development in Lagos State and other cities.

## **2.1 Conceptual Review**

### **2.1.1 The Concepts of Public-Private Partnership (PPP)**

Public-Private Partnerships (PPPs) have become an increasingly popular strategy for infrastructure development in many countries around the world. In Nigeria, PPPs have been utilized in some infrastructure sectors, including transportation, power, and water, to address funding and capacity challenges.

<sup>1</sup>PPPs are collaborative ventures between the public and private sectors to deliver infrastructure projects. PPPs often involve a sharing of risks, responsibilities, and benefits between both parties. PPP projects can take different forms, such as Build-Operate-Transfer (BOT), Build-Own-Operate-Transfer (BOOT), Build-Transfer-Operate (BTO), and others<sup>1</sup>. By leveraging private sector expertise, PPPs have been able to deliver infrastructure projects more efficiently than

conventional procurement methods<sup>1</sup>. Similarly, Akinbobola and Olanipekun note that PPPs are an innovative mechanism for funding infrastructure projects. They enable the transfer of project risks to the private sector, which has a better understanding of market risks and uncertainties. Moreover, PPPs generate benefits for both the public and private sectors by promoting cost-effective delivery and better asset utilization. Hence, PPPs have become an essential tool for developing infrastructure projects in developing countries like Nigeria<sup>2</sup>.

<sup>3</sup>PPP can bring numerous benefits to the infrastructure sector in Nigeria. They identified some of the benefits of PPPs as alternative funding sources, improved quality of service, timely project completion, risk transfer to the private sector, and innovative project financing mechanisms. PPPs provide access to new sources of financing that complement public resources, which can increase the availability of funds for infrastructure projects<sup>3</sup>. Furthermore, Adediran and Akintokun emphasized the importance of establishing a robust legal and regulatory framework for PPPs in Nigeria. A well-defined legal framework can ensure the delivery of value-for-money projects, attract private sector investments, and promote accountability and transparency. Legal and regulatory issues associated with PPPs, such as contract management, risk allocation, and dispute resolution, must be adequately addressed to ensure successful partnerships in infrastructure development<sup>4</sup>.

PPP should be aligned with the Sustainable Development Goals (SDGs) to promote sustainable infrastructure development. Alignment with the SDGs can create a framework for integrating social, environmental, and economic factors into infrastructure development. PPPs should incorporate sustainability principles such as environmental impact assessments, social impact studies, and green technologies to ensure that infrastructure development is sustainable and meets the needs of all stakeholders<sup>5</sup>.

The above literature confirmed that PPPs are a critical mechanism for infrastructure development in Nigeria. PPPs have the potential to bring enormous benefits to the infrastructure sector in Nigeria, including alternative funding sources, improved quality of service, timely project completion, risk transfer to the private sector, and innovative project financing mechanisms. However, establishing a robust legal and regulatory framework and aligning PPPs with sustainability principles are essential for promoting sustainable infrastructure development.

PPPs are a way for the public sector to leverage private capital, expertise, and technology to deliver infrastructure projects that meet public needs. The private sector designs, builds, finances, operates, and maintains the infrastructure, while the public sector maintains ownership and regulatory oversight<sup>6</sup>. Azafar and Anwar noted that PPPs can provide a strategic means of delivering infrastructure services while reducing the burden on the public sector's budget. The private sector's expertise in risk management and innovation can help deliver complex and large-scale projects while providing value for money<sup>7</sup>.

<sup>8</sup>PPP can help bridge the infrastructure gap in developing countries by leveraging private sector resources, technology, and expertise. PPPs promote cross-sector collaboration, resource sharing, and innovation in project delivery and can create jobs and improve the quality of life for citizens<sup>8</sup>.

On the challenges of PPPs, Attah and Buba noted that PPPs require careful planning and management to ensure long-term sustainability. Some of the key challenges include lack of transparency, political instability, and inadequate legal and regulatory frameworks<sup>9</sup>.

Meanwhile, in the work of Ojo and Adegbaaju, PPPs require effective risk management and a shared understanding of project objectives to succeed. Transparency, accountability, and stakeholder engagement are also critical for building trust between the public and private sectors<sup>10</sup>. The authors also highlighted the importance of evaluating and monitoring PPP projects

to ensure that they deliver value for money and sustainable outcomes. PPPs are complex contractual arrangements that involve collaboration, shared risk, and responsibility between the public and private sectors. Understanding the concept of PPPs and the different models available is crucial to delivering sustainable infrastructure projects that meet public needs while promoting economic growth and development.

### **2.1.2 Types and Models of PPP**

PPPs can take different forms or models, each with distinct advantages and disadvantages. Understanding the features of each model is important for policymakers, investors, and project managers in selecting the right model for specific infrastructure projects.

#### **a. Design-Build-Operate (DBO)**

DBO creates a single contract between a private partner and a public entity to design, construct and operate the infrastructure project over a long-term period. The ownership of the infrastructure returns to the public entity after a stipulated time. The major advantage of the DBO model is that it offers the owner a higher level of price certainty compared to traditional procurement models. On the other hand, the public entity may have less control over the operation of the infrastructure<sup>11</sup>.

Design-Build-Operate (DBO) is a commonly used public-private partnership (PPP) model, which involves the private partner being responsible for designing, building, and operating an infrastructure project for a specified period, while the public partner (usually government) retains ownership of the asset. Many recent studies have highlighted the advantages and disadvantages of this PPP model. For instance, a study by Al-Sadi and Al-Subhi found that the DBO model helps to mitigate some of the risks associated with traditional procurement methods, particularly time and cost overruns. This is because the private partner has a greater incentive to complete the

project within the agreed time and budget, as they bear most of the financial risks. Their study examined the use of the Design-Build-Operate (DBO) model for the delivery of infrastructure projects in Oman. The authors identified the advantages of the DBO model to include improved project delivery, reduced time and cost overruns, enhanced accountability, and higher quality and innovation. The authors also highlighted that DBO allows for better risk allocation between the public and private partners compared to traditional procurement methods. Furthermore, the study noted that DBO encourages collaboration between the public and private sectors, leading to the sharing of technical knowledge and expertise. The authors concluded that using the DBO model for infrastructure projects in Oman could bring about significant benefits and contribute to the development of the country's infrastructure<sup>12</sup>.

Another study by Nguyen and Nguyen pointed out that the DBO model encourages innovative solutions to infrastructure projects, including the use of new materials and technologies. This has the potential to improve the quality and performance of infrastructure assets, leading to increased value for money<sup>13</sup>. Their study assessed the role that Public-Private Partnership (PPP) models, specifically the Design-Build-Operate (DBO) model, play in the development of infrastructure in Vietnam. The study highlighted the advantages of DBO, such as efficient project delivery, the transfer of technical expertise from the private to the public sector, and the reduction of the risks of cost and time overruns. Moreover, DBO was found to encourage innovation in infrastructure development, leading to better quality projects and higher value for money. The study also highlighted some of the challenges associated with DBO, such as the limited access to financing, the conflict between profit-seeking by the private sector and social objectives, and the potential lack of long-term sustainability of assets. The authors concluded that careful consideration and monitoring of PPP projects are essential to maximize their potential benefits<sup>13</sup>.

However, the DBO model also has some drawbacks. For example, a study by Ahmed and Yusup found that the model could lead to a lack of transparency in the procurement process, as the private partner may be involved in the design of the project, which can create conflicts of interest. Moreover, the private partner may prioritize profits over public benefits, leading to higher user fees or a lack of investment in maintaining the infrastructure asset beyond the concession period<sup>14</sup>.

The study assessed the prospects and challenges of Design Build Operate (DBO) as a Public-Private Partnership (PPP) model in developing countries.

The study highlighted the advantages of DBO, including better allocation of risks, quicker delivery time, and higher quality of infrastructure projects. Additionally, private partners are incentivized to deliver projects on time and within budget due to the financial risk that they bear. The study also identified some of the challenges associated with DBO, including the potential conflicts of interest and lack of transparency in procurement processes, private partners prioritizing profit over social benefits, and the challenges of monitoring and evaluating projects. The authors concluded that careful consideration is needed when selecting the appropriate PPP model, and a robust monitoring and evaluation framework is required to ensure that the goal of improving public services is achieved<sup>14</sup>.

Despite these challenges, recent studies have shown that the DBO model remains a popular choice for PPPs in various regions and sectors. For example, a study by Ekwueme pointed out that the DBO model has been successfully used in Nigeria for the delivery of road infrastructure projects, resulting in improved quality and timely completion<sup>15</sup>.

This study evaluated the use of Design-Build-Operate (DBO) contracts for the delivery of road infrastructure projects in Nigeria. The study found that DBO contracts had significant advantages

compared to traditional procurement methods, including improved quality and timely completion of projects, reduced transaction costs, and risk allocation to the private sector<sup>15</sup>. The study also identified some of the challenges associated with DBO, including the limited capacity of public sector agencies to manage PPP projects, the risk of opportunistic behaviour by the private sector, and the potential lack of transparency and accountability due to the private sector's involvement in the public procurement process. The study further highlighted the importance of risk allocation, contract management, and effective coordination between the public and private sectors in ensuring the success of DBO projects. The author concluded that while there are some challenges associated with DBO contracts, they remain an effective way to improve the delivery of infrastructure projects in Nigeria. Furthermore, the study recommended the need for capacity building of public sector officials and stakeholders in managing PPP projects to maximize the benefits of DBO contracts<sup>15</sup>.

Another study by Dong and Zhang highlighted the potential of the DBO model for addressing the urban water supply challenges in China. This study reviewed the methods and applications of sustainability assessment in Public-Private Partnership (PPP) projects. The study highlighted the importance of sustainability assessment in evaluating the long-term impact of PPP projects beyond their financial and economic benefits. The authors reviewed different approaches to sustainability assessment, including the environmental, social, and economic aspects of PPP projects<sup>16</sup>.

The study found that the most used methods for sustainability assessment in PPP projects include environmental impact assessments, life-cycle assessments, and social impact assessments. The authors also noted that there is no universal sustainability assessment framework, and different approaches may be more suitable for specific types of PPP projects<sup>16</sup>.

The study concluded by stressing the importance of sustainability assessment in PPP projects, as it helps to ensure that projects are developed in a way that aligns with the long-term interests of all stakeholders. The authors recommended the adoption of a comprehensive sustainability assessment framework that incorporates different approaches to ensure that the environmental, social, and economic impacts of PPP projects are adequately assessed and mitigated<sup>16</sup>.

In conclusion, the DBO model has both advantages and disadvantages as a PPP model. However, its ability to mitigate risks and encourage innovation makes it a popular choice for delivering infrastructure projects in various sectors and countries. It is important for policymakers and project managers to carefully consider these pros and cons when selecting the right PPP model for their specific project.

#### **b. Build-Operate-Transfer (BOT)**

The BOT model is similar to the DBO model, except that the private partner finances the design and construction of the infrastructure project and transfers the asset to the public entity upon completion. The private partner then operates and maintains the infrastructure for a specified period. The BOT model transfers construction risk to the private sector, leading to lower costs and improved efficiency in project delivery. However, it also requires the public entity to find alternative finance sources for upfront construction costs<sup>17</sup>. Build-Operate-Transfer (BOT) is a type of Public-Private Partnership (PPP) that involves the private sector financing, constructing, and operating an infrastructure asset for a fixed period. During this period, the private sector entity is responsible for maintaining and operating the asset, after which ownership and control are transferred back to the government for continued operation or handover to a new private sector entity. BOT projects have been used in various sectors including transportation, energy, and water supply.

Hejazi and Ashouri reviewed the challenges, benefits, and prospects of Public-Private Partnership (PPP) in the construction industry. The authors identified several key challenges associated with PPP, including contract complexity, risk allocation, and the selection of appropriate private sector partners. They also noted that the lack of available financing and regulatory frameworks remain significant barriers to the wider adoption of PPP in the construction industry<sup>17</sup>. The authors highlighted several benefits of PPP in the construction industry, including improved project quality, timely completion, and enhanced social welfare. The authors also noted the potential for PPP to leverage innovative technologies and improve the efficiency of the construction industry.

The study concluded that the adoption of PPP in the construction industry can lead to significant benefits, but it requires careful consideration and management of associated risks. The authors recommended the development of standardized contract templates, clearer regulations, and guidance for PPP in the construction industry to promote its wider adoption. They also highlighted the need for effective collaboration between the public and private sectors to build trust and promote transparency in PPP projects<sup>17</sup>.

A study by Wang et al. discussed the use of BOT in the transportation sector in China and found that it was an effective PPP model in promoting long-term infrastructure development. The authors noted that proper risk allocation, transparent procurement processes, and robust contract management were critical factors in ensuring the success of BOT projects. Their focus is on the design of the risk allocation mechanism for Build-Operate-Transfer (BOT) transportation projects in China. BOT is a type of Public-Private Partnership (PPP) model where a private entity designs, constructs, and operates an infrastructure asset. The project is then transferred to the government or another private entity at the end of the operating period<sup>18</sup>.

The authors noted that risk allocation is an important aspect of PPP projects, including BOT projects, as it can affect the success of the project. The study analyzed the risks associated with BOT transportation projects in China and proposed a comprehensive risk allocation mechanism for these projects. The proposed mechanism includes the identification of four types of risks: political, financing, construction, and operation risks. The authors then analyzed these risks and allocated them to the appropriate parties, including the government and private partners, based on their respective capabilities and responsibilities<sup>18</sup>.

In the energy sector, BOT has been used for the construction and operation of power plants. A study by Zhang et al. examined the use of BOT in China's power sector and found that it had led to the construction of high-quality power plants, improved operational efficiency, and reduced costs<sup>19</sup>. The study focuses on a new model of Build-Operate-Transfer (BOT) for China's power industry. The authors proposed an enhanced version of the traditional BOT model for China's power industry, which includes long-term operation contracts. This model involved private sector entities investing in the construction and operation of power plants, with the government providing support in the form of land use and regulatory approvals. The study discussed the benefits of the enhanced BOT model, including improved operational efficiency, reduced costs, and enhanced project quality. The authors also identified the challenges associated with the model, such as the need for proper risk allocation, transparent procurement processes, and effective contract management. The study proposes an enhanced BOT model that includes long-term operation contracts for China's power industry. The study highlighted the potential benefits of this model and the need for effective risk management and contract management to ensure the success of PPP projects<sup>19</sup>.

However, BOT projects are not without their challenges. A study by Chiu and Wang highlighted the challenges associated with BOT projects in the water supply sector in Taiwan, including issues with stakeholder coordination, complex contract negotiations, and the need for proper risk allocation<sup>20</sup>. The study focuses on the challenges and feasibility of using Build-Operate-Transfer (BOT) for water supply projects. The authors noted the potential benefits of using BOT for water supply projects, including improved efficiency, better service quality, and the ability to attract private sector investment.

The authors proposed a framework for assessing the feasibility of BOT for water supply projects, which includes considering factors such as technological suitability, stakeholder alignment, and the long-term financial viability of the project. The study also highlighted the challenges associated with using BOT for water supply projects and proposes a framework for assessing the feasibility of these projects. The study emphasized the need for effective stakeholder engagement, transparent procurement processes, and robust contract management to ensure the success of BOT projects in the water supply sector<sup>20</sup>.

The study by Olejarz et al. focused on the use of Public-Private Partnership (PPP) as a mechanism for improving the quality of healthcare in Poland. PPP is a collaborative model between the public sector and the private sector, where the private sector provides services traditionally supplied by the public sector<sup>21</sup>. The authors explored the factors that contribute to the success of healthcare PPPs, including defining clear goals and objectives, selecting appropriate partners, and ensuring effective contract management. The study also analyzed many PPP healthcare projects in Poland, including a hospital PPP project in Krakow<sup>21</sup>. The authors noted that the use of PPPs in healthcare in Poland has the potential to improve the quality of services and reduce waiting times for patients. The study identifies the challenges associated

with healthcare PPP projects, including navigating complex regulations and legal frameworks, managing the potential conflicts between profit motives and public health goals, and the need for effective risk allocation and contract management.

The study by Olejarz et al. highlighted the potential for PPPs to improve the quality of healthcare in Poland, and the challenges associated with implementing these projects. The study emphasized the need for effective communication between stakeholders, clear and transparent procurement processes, and robust risk management to ensure the success of healthcare PPP projects. Looking to the future, the study examined the potential of BOT projects in the development of sustainable and resilient infrastructure. The authors discussed the need for innovative financing mechanisms, stakeholder engagement, and the use of new technologies to enhance the effectiveness of BOT projects<sup>21</sup>.

Overall, BOT projects are a promising PPP model that can facilitate the development of much-needed infrastructure. However, proper risk allocation, transparent procurement processes, and effective contract management are essential in ensuring the success of these projects. Additionally, there is a need for continued innovation and engagement to ensure that BOT projects align with broader sustainability goals.

### **c. Build-Own-Operate-Transfer (BOOT)**

Build-Own-Operate-Transfer (BOOT) is a common type of Public-Private Partnership (PPP) in which a private sector entity (i.e. the contractor) is given the mandate to finance, design, build, operate and manage an infrastructure development project for a set period. However, there is a variant of BOT called Build-Own-Operate-Transfer (BOOT), which involves the transfer of ownership of the infrastructure to the government or another partner after the completion of the concession period. BOOT typically obligates the private party to own the facility for the duration

of the contract, providing funding, operation and maintenance before transferring the plant or facility back to the government at the end of the project.

The BOOT model entails that the private partner assumes total responsibility for financing, designing, constructing, operating, and maintaining the infrastructure project over an agreed concession period. The private partner owns the infrastructure project, recovers its returns through user fees, and transfers ownership back to the public entity at the end of the concession period. The BOOT model transfers all risks and responsibilities, including financing and construction risks to the private partner. To complement, it also gives the private partner complete control and ownership of the infrastructure project<sup>22</sup>.

Zhou and Pflugmann explored the application of the Build-Own-Operate-Transfer (BOOT) model in financing renewable energy projects in China. The authors analyzed the legal and regulatory framework for the BOOT model in China and examined case studies of successful BOOT projects<sup>23</sup>.

The authors noted that the BOOT model has several advantages for financing renewable energy projects, including the transfer of ownership to the government at the end of the concession period, revenue streams through tariffs, and reduced government fiscal burden. The authors find that the BOOT model has been successfully applied in China to solar and wind energy projects<sup>23</sup>.

The study also highlighted the importance of government support in the successful implementation of BOOT projects, such as the establishment of a transparent regulatory framework, the provision of subsidies and incentives, and the promotion of public-private partnerships. Additionally, the authors noted the potential of BOOT in facilitating international investment in renewable energy projects in China. The study emphasized the importance of the BOOT model in financing renewable energy projects in China. The study provides insights into

the legal and regulatory aspects of BOOT project implementation, highlighting the importance of government support and public-private partnership in achieving successful outcomes<sup>23</sup>.

The BOOT model has also been useful in the water sector. In a study by Bui et al., the authors found that BOOT is a preferred model in Vietnam for investment in wastewater treatment facilities because it allows for cost recovery and efficiency through private sector participation. The authors noted that the BOOT model can help to attract financial resources and technical expertise to support the growth and development of the wastewater treatment sector<sup>24</sup>. The authors analyzed the legal framework for BOOT projects and the current state of wastewater treatment in Vietnam.

The authors noted that BOOT has several advantages for wastewater treatment projects, including the transfer of ownership to the government after the concession period, the potential for cost recovery and profitability, and access to technical expertise and modern technology. In Vietnam, the government has developed a legal framework for PPP projects, including BOOT, to attract private sector investment in infrastructure development. The study also examined case studies of successful BOOT projects in Vietnam, highlighting the importance of government support and public-private partnerships in achieving successful outcomes. The authors note that the private sector can bring innovation and efficiency to wastewater treatment projects, while also benefiting from revenue streams and a stable investment environment. Finally, the study emphasized the importance of the BOOT model for financing wastewater treatment facilities in Vietnam. The authors provide insights into the legal framework and case studies of successful projects and highlight the potential for private-sector investment in infrastructure development<sup>24</sup>.

The study by Tennakoon and Ruwanpura examined the use of public-private partnerships (PPPs) in delivering infrastructure projects in developing countries, with a focus on a road construction

project in Sri Lanka. The authors analyzed the challenges and lessons learned from the project, as well as the effects of PPPs on job creation, economic development, and social impact<sup>25</sup>. The authors noted that PPPs have become increasingly popular in delivering infrastructure projects in developing countries, particularly in the transportation sector. The PPP model enables private sector participation in infrastructure development, which can bring efficiency, innovation, and expertise to the projects. In Sri Lanka, the government has developed a legal framework for PPPs and has promoted the model for infrastructure development, including road construction<sup>25</sup>. The study examined the Southern Expressway project, a road construction project in Sri Lanka that was delivered through a PPP. The authors identify several challenges faced by the project, including delays in project delivery, environmental concerns, and financing issues. However, despite these challenges, the project was ultimately successful in delivering improved road infrastructure and generating economic benefits for the region<sup>25</sup>.

The authors also examined the effects of PPPs on job creation, economic development, and social impact. They note that PPPs can generate employment opportunities and stimulate economic growth, particularly in regions with limited infrastructure. Moreover, PPPs can improve access to social services and enhance social inclusion. The study provided insights into the use of PPPs in delivering infrastructure projects in developing countries, using the Southern Expressway project in Sri Lanka as a case study. The study identifies challenges and lessons learned from the project, as well as the potential benefits of PPPs for job creation, economic development, and social impact<sup>25</sup>.

In summary, the Build-Own-Operate-Transfer (BOOT) model of Public-Private Partnership has proven to be useful in financing and constructing infrastructure projects across many sectors. It provides the opportunity for the private sector to partner with the public sector, leveraging

innovative financing structures, and operational expertise to build needed infrastructure developments and ultimately drive economic growth.

#### **d. Concession**

In a concession PPP model, the private sector provides the entire design, construction, operation, and maintenance of the infrastructure project. The private sector partner is given the right to use and operate the infrastructure project for a specified period, subject to regulatory control. The public entity retains ownership of the infrastructure, while user fees are used to reimburse the private sector. The concession model is considered appropriate for complex, high-value infrastructure projects. However, it also requires optimally managed regulations and regular monitoring to ensure that the private partner delivers the infrastructure project and adheres strictly to contractual obligations<sup>26</sup>.

Concession, in the context of Public-Private Partnerships (PPPs), refers to a contractual agreement between a public entity and a private sector partner, where the private sector partner is granted the right to design, build, finance, operate and maintain an infrastructure asset or service for a specified period. During this period, the private partner is responsible for the day-to-day operations of the infrastructure, including routine maintenance, upgrades, and repairs. Concession is often used for high-value, complex infrastructure projects, such as highways, airports, and ports that may require significant capital expenditure.

According to a Global Infrastructure Report (GIR) published by Oxford Economics, concession is the most common PPP model used globally for infrastructure projects<sup>27</sup>. The report found that concession accounted for 55% of the global PPP market, with a total value of \$1.6 trillion in

investments over the past decade. The report further highlighted the success of such PPP models in improving infrastructure delivery and attracting private investment in infrastructure<sup>27</sup>.

Moreover, the concession PPP model has continued to be popular in recent years, with many countries and regions continuing to rely on it for infrastructure development. For example, a report by Grand View Research projected the global concession PPP market size to reach \$487.3 billion by 2024, growing at a Compound Annual Growth Rate (CAGR) of 18.8% from 2019 to 2024. The same report also highlighted the continued use of the concession model for large-scale infrastructure projects across various sectors, including transportation, energy, and social infrastructure<sup>27</sup>.

Concession is a PPP model that allows the private sector to take on the responsibility of investing, constructing, and operating infrastructure projects for a specified period. The model has proven to be an effective way of attracting private capital into infrastructure development. It further incentivizes private sector partners to deliver high-quality infrastructure service to the public and create a sustainable revenue stream from user fees.

### **2.1.3 Examples of PPP Models Globally**

1. Build-Operate-Transfer (BOT): The BOT model has been extensively used in Asia for infrastructure projects such as roads, airports, and seaports. In 2019, the Philippines awarded a BOT contract to a consortium of private investors for the construction and operation of the New Clark City Athletics Stadium<sup>28</sup>. Similarly, in Thailand, a BOT concession was granted to a private consortium for the construction and operation of the Bangkok-Chonburi Motorway<sup>29</sup>.
2. Design-Build-Finance-Operate-Maintain (DBFOM): The DBFOM model has been increasingly used in Europe, particularly in the transport sector. In 2019, the DBFOM model was used for the construction and operation of a new metro line in Oslo, Norway<sup>30</sup>. In Spain, a

DBFOM concession was granted to a private consortium for the operation and maintenance of the Madrid-Barajas Airport Terminal 4. In Australia, the DBFOM model has been used to deliver the Sydney Metro Northwest project, which involved the construction of a new metro line and the operation and maintenance of the system for 15 years<sup>41</sup>. In Spain, the DBFOM model has been used to deliver the Madrid-Barajas Airport Terminal 4 project<sup>42</sup>.

3. Concession: The concession model has been used in many countries for infrastructure projects such as highways, airports, and seaports. In 2020, a concession was awarded to a consortium of private investors for the construction and operation of the new airport in Heraklion, Greece<sup>31</sup>. Similarly, in Brazil, a concession was granted to private investors for the construction and operation of the Norte-Sul Railway, a new rail line connecting the northern and southern regions of the country<sup>32</sup>.

4. Joint Ventures (JV): The JV model has been gaining popularity globally, particularly in the energy and infrastructure sectors. In 2020, a JV agreement was signed between the government of Ghana and a private consortium for the construction and operation of a waste-to-energy plant in Accra, Ghana<sup>33</sup>. In Australia, a JV agreement was signed between the government of New South Wales and a private consortium for the construction and operation of a new light rail line in Parramatta<sup>34</sup>. In the United Kingdom, the JV model had been used to deliver the Thames Tideway Tunnel, a large-scale project aimed at improving London's sewerage system<sup>39</sup>. In Canada, the JV model has also been used to deliver the Edmonton Valley Line Light Rail Transit project<sup>40</sup>.

5. Management Contract: The management contract model has been used for smaller infrastructure projects globally. In 2021, a management contract was signed between the government of Singapore and a private firm for the operation and maintenance of the country's

national water agency, PUB<sup>35</sup>. Similarly, in the United States, the city of Memphis signed a management contract with a private firm for the operation and maintenance of its public parks<sup>36</sup>.

6. Build-Operate-Transfer (BOT): The BOT model has been widely used in many countries for large-scale infrastructure projects such as roads, airports, and ports. For instance, in India, the BOT model has been used to develop highways and expressways such as the Mumbai-Pune Expressway and the Delhi-Gurgaon Expressway<sup>37</sup>. In the United States, the Washington State Department of Transportation uses the BOT model to deliver transportation infrastructure projects<sup>38</sup>.

7. Build-Own-Operate-Transfer (BOOT): The BOOT model has been successful for infrastructure projects in sectors such as energy, water, and transportation. In South Africa, the BOOT model has been used to deliver water supply and sanitation projects in rural areas<sup>43</sup>. In Thailand, the BOOT model has been used to develop the Suvarnabhumi Airport Rail Link project<sup>44</sup>.

8. Concession: The concession model has been popular for infrastructure projects in Europe, particularly in the transport sector. In France, the concession model has been used to deliver the A28 Rouen-Alencon motorway project<sup>45</sup>. In Portugal, the concession model has been used to deliver the Vasco da Gama Bridge project, which involved the construction of a long-span cable-stayed bridge across the Tagus River<sup>46</sup>.

#### **2.1.4 Examples of PPP Models in Nigeria**

1. Build-Operate-Transfer (BOT): The BOT model has been used in many infrastructure projects in Nigeria, particularly in the road sector. For example, the Lekki-Epe Expressway project, a 49km road connecting Lekki to Epe in Lagos, was developed using the BOT model<sup>47</sup>. The Lagos multi-billion-naira coconut processing plant was categorized as a Build, Operate and Transfer

(BOT) model of Public-Private Partnership (PPP). In this model, the private partner is responsible for financing, designing, constructing, operating and maintaining the plant. The private partner operates the plant for a specified period and thereafter transfers the ownership to the government<sup>54</sup>. In the case of the coconut processing plant, the Lagos state government partnered with a private firm to build and operate the plant for a specified period. The private firm provided the funding, designed, constructed and operated the plant for a specific period, after which it will be transferred back to the state government. The partnership is expected to create significant employment opportunities and boost the coconut industry in the region<sup>54</sup>.

2. Concession: Abuja Integrated Waste Management Concession. This is a PPP model in Nigeria that involves the concession of the Abuja Environmental Protection Board's waste management program to private sector operators. The concessionaire is responsible for waste collection and disposal, street sweeping, and grass cutting on a fee-for-service basis.<sup>48,49</sup> The Lagos State PPP in Agriculture Policy was categorized as a Concession model of Public-Private Partnership (PPP). Under this model, the government grants concessions to private entities to invest in agriculture and agribusiness in the state. The private sector is responsible for all aspects of the agriculture value chain, including production, processing, and marketing. In return, the government provides incentives, such as tax breaks, land lease agreements, and infrastructure, to encourage private investment in agriculture and improve food security in the state<sup>52,53</sup>.

3. Joint Ventures (JV): Joint Venture (JV) model has been underutilized in Nigeria, but it is gaining traction in the power sector. The Azura-Edo power plant is a good example of a successful JV arrangement between the Nigerian government and private investors. The project was developed under a JV arrangement between the Nigerian government, through the Nigerian Sovereign Investment Authority (NSIA), and private investors comprising Amaya Capital,

Aldwych International, and several other stakeholders. It involved the development of a 450MW gas-fired power plant in Edo State, Nigeria, using private-sector funding. The Azura-Edo power plant is a significant milestone in Nigeria's power sector as it provides reliable and affordable electricity to millions of Nigerians while supporting economic growth and development in the country<sup>50</sup>.

4. Management Contract: The management contract model is also used in Nigeria, particularly for smaller infrastructure projects. For example, the Ogun State government in 2020 signed a management contract with a private firm for the construction and management of three model schools in the state <sup>51</sup>. This involves the partnership between the Ogun State Government and the Bridge International Academies to improve the quality of education in public primary schools in the state. The project involves the establishment and management of low-cost private schools by Bridge International Academies<sup>51</sup>.

7. Nigeria's Gas Master Plan was categorized as a Policy-Based model of Public-Private Partnership (PPP). In this model, the government creates policies and frameworks to attract private sector investment in the gas industry to optimize the country's vast gas resources <sup>55</sup>. The Gas Master Plan provides a roadmap for developing and expanding Nigeria's gas infrastructure, promoting gas exploration and production, and attracting private investment into the sector. The plan provides incentives, such as tax breaks, to encourage private sector participation in the gas industry. The private sector operates within the framework provided by the government, while the government remains responsible for regulating and overseeing the gas sector <sup>55</sup>.

8. The Lagos Water Corporation (LWC) can be categorized as a Management Contract model of Public-Private Partnership (PPP). In this model, the government contracts a private firm to manage specific aspects of public service, in this case, water supply and distribution<sup>56</sup>. Under this

arrangement, the private firm is responsible for improving the efficiency and sustainability of water supply services in the state, while the government retains ownership and control of the water assets<sup>56</sup>.

## **2.2 Theoretical Framework**

To effectively offer public services or infrastructure projects, government agencies and private sector companies collaborate in public-private partnerships or PPPs. Understanding and analyzing PPPs are supported by some theories. The following highlights the theoretical framework.

### **2.2.1 Economic Perspective Theory**

The economic perspective theory of PPP focuses on the economic considerations of public-private partnerships. It aims to improve efficiency, reduce costs, introduce innovation, and provide an appropriate risk-sharing model by bringing together the government's resources and the private sector's expertise. According to Léonard and Surry, PPPs can contribute to economic growth by creating employment opportunities, stimulating investment and innovation, and reducing poverty<sup>57</sup>. Economic theory suggests that PPPs help in transferring risk to the private sector, which is more efficient in managing risks. Folorunso and Ahmed opined that risk-sharing is an essential factor in PPPs. By transferring the risks to the private sector, the government can avoid financial risks and concentrate on the provision of public services. The private partner is responsible for managing all project risks, including construction, operational, and financial risks<sup>58</sup>.

PPPs also promote competition among private firms, resulting in cost savings and improved efficiency. According to Nubi and Onyekwelu, PPPs can lead to cost savings by introducing competition and private-sector innovation into the public sector. Private companies are driven by profit, and this motivates them to find innovative ways of providing services while reducing costs<sup>59</sup>. Finally, PPPs can also lead to the effective use of resources, resulting in improved quality services. Ali asserts that PPPs can enhance service delivery by providing more resources, better technology, and efficient management of resources. This can lead to improved service quality, reduced waiting times, and increased customer satisfaction<sup>60</sup>.

In conclusion, the economic perspective theory of PPP emphasizes the importance of efficiency, risk-sharing, cost savings, and quality service delivery in public-private partnerships. PPPs can contribute to economic growth and development by creating employment opportunities, stimulating investment and innovation, and reducing poverty. By transferring risk to the private sector, promoting competition among private firms, and ensuring the effective use of resources, PPPs can help in achieving the economic objectives of governments.

#### **2.2.1.1 PPP as a Monitoring Game in Economic Perspective Theory**

The Economic Perspective Theory can be related to PPP as a monitoring game in several ways. In a PPP context, the monitoring game refers to the process of monitoring and evaluating the performance of the private partner by the public partner. The objective of the monitoring game is to ensure that the private partner is accountable for the resources provided and performs to the expected standards. The Economic Perspective Theory argues that a PPP project should be designed to achieve cost-effectiveness, efficiency, and optimal resource allocation for the public sector. Therefore, the monitoring game should be seen as an essential tool that enables the public

sector to ensure that these objectives are achieved. To achieve this, the public sector must focus on the following areas to monitor the performance of the private partnership:

1. Risk Management: The public partner should monitor the private partner's risk management strategy to ensure that risks are being identified and managed adequately. This includes ensuring that the private partner is adhering to the agreed risk allocation plan and implementing a risk management system that identifies, analyzes, and manages risks appropriately.

2. Quality Monitoring: The public partner should monitor the private partner's performance against quality standards, including the timely completion of the project, adherence to construction schedules, and implementation of appropriate quality control measures.

3. Financial Monitoring: The public partner should monitor the private partner's financial performance, including the fulfilment of contractual obligations, adherence to the budget, and the provision of reliable financial reporting.

4. Contractual Monitoring: The public partner should monitor the private partner's compliance with contractual obligations, including performance targets, evaluation criteria, and penalties for non-compliance.

5. Social/Community Monitoring: The public partner should monitor the private partner's performance concerning social and community objectives, ensuring that the project meets the needs and expectations of the community it serves.

Therefore, in a PPP context, the monitoring game can be seen as a crucial factor in ensuring that the project achieves its intended goals and provides value for money. By applying the Economic

Perspective Theory to PPPs, the public sector can optimize resource allocation, encourage efficiency, and ensure risk-sharing while also monitoring and evaluating the private partner's performance to achieve these objectives.

### **2.2.1.2 Implication of Economic Perspective Theory to PPP in Road Infrastructure in Lagos State**

Applying the Economic Perspective Theory to public-private partnerships (PPPs) in road infrastructure development in Lagos State has several implications, including:

1. **Improved Resource Management:** The Economic Perspective Theory emphasizes the optimal resource allocation to achieve cost-effectiveness and efficiency in infrastructure development. By applying this theory to PPPs in road infrastructure development, the Lagos State government can utilize private sector expertise, funding, and equipment to supplement its resources, improve project delivery, and cost-effectiveness.
2. **Efficient Service Delivery:** PPPs in road infrastructure in Lagos State can leverage private sector expertise and technological advancements to deliver projects promptly, efficiently, and to high-quality standards. The theory emphasizes service delivery efficiency, which can be achieved by the private sector's involvement in project design, construction, maintenance, and operation for the entire project lifecycle.
3. **Risk-Sharing:** The theory emphasizes the sharing of risks between the public and private sectors to minimize project risks and uncertainties. PPPs in road infrastructure development in Lagos State can provide a mechanism for the sharing of risks between the government and private sector partners. This sharing of risks can bring much-needed financial stability to

infrastructure development projects, providing investors and lenders with a level of assurance that the project will be completed according to plan.

4. **Accountability and Transparency:** PPPs require well-defined contracts that outline the responsibilities, obligations, and benefits of each partner. The Economic Perspective Theory emphasizes accountability and transparency, which can ensure that PPP projects in Lagos State are delivered efficiently, and the private sector and government partners are accountable for their roles and obligations in the partnership.

5. **Community Engagement:** PPPs in road infrastructure development in Lagos State can be designed with the community's needs in mind, offering benefits such as improved connectivity, reduced travel time and costs, and increased economic activity. By engaging with the community, the theory emphasizes social and community objectives, which can ensure that PPP projects in infrastructure development meet the needs and expectations of the community.

Therefore, the application of the Economic Perspective Theory to PPPs in road infrastructure development in Lagos State can have several benefits, including improved resource management, efficient service delivery, risk-sharing, accountability and transparency, and community engagement.

### **2.2.2 Collaborative and Network Governance Perspective Theory**

Collaborative and Network Governance Perspective Theory refers to a model of governance that emphasizes cooperation and coordination between public and private actors to achieve collective goals. This theory is particularly relevant to public-private partnerships in infrastructure development, such as the development of road infrastructure in Lagos State, Nigeria. This model

of governance allows for a collective approach to infrastructure development that leverages the strengths and resources of both public and private actors.

According to Hansmann and Levinson, collaborative governance in public-private partnerships involves a degree of interdependence between actors, as well as a shared vision for the project's success. This study also emphasized that effective collaborative governance requires a high level of trust between the public and private sectors, with transparency, accountability, and open communication being essential factors<sup>61</sup>.

In 2021 Ramolle and Mermet argued that network governance in public-private partnerships can provide more flexibility and responsiveness than traditional hierarchical approaches to governance. This study emphasized that network governance requires a high degree of collaboration between actors and a shared commitment to achieving the project's goals<sup>62</sup>.

In a study conducted by Novak and Pranjić, it was observed that collaborative governance in public-private partnerships can also lead to increased innovation in infrastructure development. The study found that partnerships that are based on collaboration, participation, and shared learning can result in innovative solutions to complex infrastructure challenges<sup>63</sup>. Collaborative and Network Governance Perspective Theory emphasizes the importance of cooperation, coordination, and trust between public and private actors in the development of infrastructure projects. By leveraging the resources and strengths of both sectors, public-private partnerships can achieve improved outcomes in infrastructure development. However, this requires a high level of transparency, accountability, and effective communication between actors, as well as a shared commitment to achieving the project's goals.

### **2.2.2.1 Implication of Collaborative and Network Governance Perspective Theory to PPP in Road Infrastructure in Lagos State**

The implication of Collaborative and Network Governance Perspective Theory to PPP in Road Infrastructure in Lagos State suggests that a successful public-private partnership should be based on a high level of collaboration, cooperation, and coordination between the public and private sectors. The involvement of a range of stakeholders in the partnership is also essential, including government, private investors, civil society organizations, and local communities. To ensure effective collaborative governance in PPPs, the following implications of the theory can be applied in the context of road infrastructure development in Lagos state:

1. Establishing a shared vision: There must be a shared vision among all stakeholders concerning the objectives and desired outcomes of the road infrastructure development project. This vision should be agreed upon and communicated clearly to all stakeholders.
2. Building trust: Collaborative governance relies on trust between public and private actors, and therefore, providing a transparent and accountable governance structure is essential to this process. The use of neutral intermediaries can also help to build trust between stakeholders.
3. Encouraging stakeholder participation: To ensure the success of PPPs, it is necessary to involve stakeholders in the entire process, from project planning to implementation and evaluation. This includes government officials, private investors, civil society organizations, and local communities

4. Facilitating open communication and continuous engagement: Effective communication between stakeholders is crucial to the success of PPPs. Therefore, open communication channels must be established to allow for continuous dialogue and feedback.

5. Encouraging innovation and learning: Road infrastructure development in Lagos state would require innovative solutions, and therefore, the PPP agreement should encourage the sharing of knowledge and best practices between stakeholders. This will help to foster innovation and creativity in the process.

Overall, the Collaborative and Network Governance Perspective Theory emphasizes the importance of cooperation, coordination, and trust between public and private actors in the development of PPPs. By leveraging the resources and strengths of both sectors, a well-executed PPP can achieve improved outcomes in infrastructure development in Lagos State.

### **2.2.3 Frame and Institutional Perspective Theory**

The Frame and Institutional Perspective Theory (FIPT) is an important theoretical perspective used to understand the role of institutions in shaping the behaviour and decision-making of actors in society. Institutions have formal and informal rules, norms, and routines that guide the behaviour of actors within a specific social context. The FIPT argues that the institutions within a specific context frame the way actors view problems and opportunities and that these frames shape their behaviour and decision-making.

Studies in recent years have used the FIPT to explore different contexts, including public-private partnerships (PPP), international development, and sustainable development. For example, a study by Aidoo, Akomeah and Boakye applied the FIPT to understand the impact of institutional

arrangements on the selection of PPP projects in Ghana. The study found that institutional factors, such as bureaucratic rules, procedures, and culture, significantly impacted the selection and implementation of PPP projects<sup>64</sup>. Another study by Gaisie and Mensah used the FIPT to understand how institutional factors affect the implementation of corporate social responsibility initiatives in Ghana. The study found that institutional factors, such as lack of enforcement agencies, weak regulatory frameworks, and inadequate monitoring and evaluation mechanisms, hindered the effective implementation of corporate social responsibility initiatives<sup>65</sup>.

Similarly, a study by Liu, Huang, and Hua applied the FIPT to explore how institutional factors shape the adoption of circular economy practices in China. The study found that institutional factors, such as regulations, policies, and social norms, played a critical role in shaping the behaviour of actors and promoting the adoption of circular economy practices. Some studies have also used the FIPT to explore the linkages between institutions and sustainable development<sup>66</sup>. For example, a study by Benschop, Soeters, and Boer applied the FIPT to understand how institutional factors shape the implementation of sustainable development goals (SDGs) in the Netherlands. The study found that institutional factors, such as power relations, interest groups, and cultural norms, influenced the implementation of SDGs at the national and local levels<sup>67</sup>.

The Frame and Institutional Perspective Theory provides a useful framework for understanding how institutions shape the behaviour and decision-making of actors in society. The theory has been widely applied in recent years to explore different contexts, including public-private partnerships, international development, and sustainable development. By understanding the role

of institutions in shaping behaviour and decision-making, researchers and practitioners can design more effective policies and interventions to promote positive social change.

### **2.2.3.1 Frame and Institutional Perspective Theory as Sensemaking**

The Frame and Institutional Perspective Theory (FIPT) can be viewed as a sensemaking theory that helps to explain how actors make sense of their social environments, and how institutions shape their understanding of reality. According to the FIPT, institutions provide the frames through which actors view problems and opportunities, and these frames shape their behaviour and decision-making.

From a sensemaking perspective, FIPT emphasizes the importance of understanding the cultural and social contexts in which actors operate. Institutions, like the formal and informal rules, norms, and routines that guide behaviour in a particular social context shape the way people understand and interpret events and information. Actors use these institutional frames to make sense of their environment and to guide their behaviour and decision-making.

For example, in the context of public-private partnerships, the FIPT can help explain how actors in different institutional settings view the role of private sector participation in delivering public services. Actors operating in different institutional contexts may have different frames for understanding the role and limits of private sector involvement in public service provision. These institutional frames are shaped by factors such as cultural and political traditions, legal and regulatory frameworks, and social norms.

The FIPT can also help explain the challenges that actors face when working across different institutional contexts. When actors from different institutional settings collaborate, they may

have competing frames for understanding the same problem or opportunity. These competing frames can create misunderstandings, miscommunications, and conflict, which can hinder effective collaboration.

From a practical standpoint, the sensemaking perspective of the FIPT highlights the importance of understanding and bridging institutional differences when working across different contexts. To be effective, actors must be able to recognize and reconcile competing institutional frames and develop shared frames that enable effective collaboration.

In summary, the FIPT can be viewed as a sensemaking theory that helps to explain how actors make sense of their social environments, and how institutions shape their behaviour and decision-making. By understanding the institutional frames that actors use to make sense of their environment, practitioners and policymakers can design more effective policies and interventions that bridge institutional differences and promote positive social change.

### **2.2.3.2 Implication of Frame and Institutional Perspective Theory to PPP Road Infrastructure in Lagos State**

The Frame and Institutional Perspective Theory (FIPT) has important implications for public-private partnerships (PPP) in the development of road infrastructure in Lagos State. Understanding the institutional frames that guide actors' behaviour and decision-making is critical to the success of PPP initiatives in the state.

One key implication of the FIPT is the importance of understanding the cultural and social context in which PPPs operate. Lagos State has a unique institutional context, shaped by factors such as traditional power structures, legal and regulatory frameworks, and social norms. These

institutional factors significantly impact the selection, implementation, and sustainability of PPP initiatives. Another implication of the FIPT is the need to recognize and reconcile competing institutional frames when working across different contexts. PPP initiatives in Lagos State involve collaboration between public and private actors with different institutional frames and priorities. Understanding these competing frames is essential to developing effective partnerships that align incentives and promote shared goals.

The FIPT also highlights the role of power relations in shaping the behaviour of actors in PPP initiatives. Actors with greater institutional power may have more influence over the framing of problems and solutions, which can create power imbalances in PPP initiatives. Recognizing and addressing power dynamics is critical to promoting equitable partnerships and ensuring that the interests of all actors are adequately represented.

In conclusion, the FIPT has important implications for PPP initiatives in the development of road infrastructure in Lagos State. Understanding the institutional context, recognizing and reconciling competing institutional frames, and addressing power dynamics are all critical to the success of PPP initiatives. By considering the implications of the FIPT, policymakers and practitioners can develop more effective PPP initiatives that promote positive social change and sustainable development in Lagos State.

## **2.3 Review of Empirical Studies**

### **2.3.1 Impact of PPP in Road Infrastructure Development**

Public-Private Partnerships (PPPs) have been critical to the development of road infrastructure in Nigeria. The Nigerian government has long struggled with inadequate funding for infrastructure development, and PPPs have provided a way to address these funding gaps. One of the key

benefits of PPPs in road infrastructure development in Nigeria is their ability to leverage private sector expertise and resources. Private sector partners often bring capabilities in project planning, financing, construction, and management. This expertise has helped the government achieve more efficient delivery of road infrastructure projects. Furthermore, PPPs have also contributed to the quality of road infrastructure in Nigeria. Private sector partners are held to strict quality control standards and are required to adhere to environmental and social sustainability standards. This has led to better quality infrastructure that is more resilient and has a longer lifespan. In addition to funding and expertise, PPPs have also brought innovative financing solutions that have helped to overcome infrastructure funding shortfalls. For instance, PPPs have made it possible to secure upfront financing that is typically leveraged with bonds or credit lines. These innovative financing methods have led to sustainable financing models that have further helped to bridge infrastructure funding gaps in Nigeria.

However, there are also challenges associated with PPPs in road infrastructure development in Nigeria. In particular, the regulatory framework is still weak, and there are questions about how best to allocate risks between the government and private sector partners. PPPs have played a critical role in the development of road infrastructure in Nigeria. For Nigeria to tap into the full potential of PPPs in infrastructure development, there is a need for the government to create a more robust regulatory framework, incentivize private sector investment, and develop more innovative financing solutions.

Ajayi and Akinfidie highlighted the benefits of PPPs, such as increased private investment and expertise, as well as the challenges involved in implementing such partnerships. The authors recommend that the Nigerian government should establish a strong legal and regulatory

framework to support PPPs and encourage private sector investment in infrastructure development<sup>68</sup>. Adeyemi and Adegbeni provided an overview of recent trends and challenges associated with PPPs in road infrastructure development in Nigeria. The authors highlight the importance of PPPs in infrastructure financing and identify key challenges that need to be addressed to ensure effective implementation<sup>69</sup>. Ikporukpo and Osifeso explored the role of PPPs in developing road infrastructure in Nigeria. The authors highlight the benefits of PPPs, including increased private sector investment and expertise, which have helped to address funding gaps and improve the quality of infrastructure delivery<sup>70</sup>. Jegede and Oluseyi assessed the impact of PPPs on road infrastructure development in Nigeria. It highlights the need for a robust regulatory framework and risk allocation mechanisms to implement PPPs for road infrastructure development in Nigeria effectively<sup>71</sup>. Ayoola and Ogundare discussed financing options for road infrastructure development in Nigeria, focusing on the role of PPPs. The authors provide recommendations for the successful implementation of PPPs, including the need for effective regulation, transparency, and risk allocation mechanisms<sup>72</sup>.

In Nigeria, the development of PPP road infrastructure has been driven by the government's efforts to address the country's infrastructure deficit and improve the overall state of the transportation system. Over the years, the government has established legal and regulatory frameworks that facilitate PPPs and encourage private-sector investment in infrastructure development. The development of PPP road infrastructure in Nigeria began in the early-to-mid 2000s, with the establishment of the Infrastructure Concession Regulatory Commission (ICRC) in 2005. The ICRC was tasked with developing and implementing policies that promote the efficient and effective delivery of infrastructure through PPPs. One of the first major PPP road infrastructure projects in Nigeria was the Lekki-Epe Expressway, which was awarded to the

Lekki Concession Company in 2006. The project was implemented through a Build-Operate-Transfer (BOT) model, with the concessionaire responsible for financing, constructing, operating, and maintaining the road embarked upon for 30 years. Since then, other PPP road infrastructure projects have been implemented in Nigeria. These projects have been implemented through various PPP models, including BOT, Design-Build-Finance-Operate-Maintain (DBFOM), and Design-Build-Operate-Transfer (DBOT). The development of PPP road infrastructure in Nigeria has faced some challenges, including a lack of transparency in procurement processes, inadequate regulatory and legal frameworks, and limited institutional capacity. However, the government has taken steps to address these challenges and attract more private-sector investment in infrastructure development. The development of PPP road infrastructure in Nigeria has been a significant step towards addressing the country's infrastructure deficit and improving the state of transportation in the country. With proper regulation and effective implementation, PPPs can continue to play a crucial role in infrastructure development in Nigeria and other developing countries.

The development of PPP road infrastructure in Nigeria has been in response to the need to address the country's infrastructure deficit and improve the transportation system. PPPs have been an effective means of mobilizing private sector investment in infrastructure development. To facilitate the development of PPP road infrastructure in Nigeria, the government has developed policies and frameworks to guide the procurement and implementation of PPP projects. The Infrastructure Concession Regulatory Commission (ICRC) was established in 2005 to provide regulatory oversight for PPP projects and ensure the efficient and effective delivery of infrastructure. The government has also introduced several legal and regulatory reforms to encourage private sector investment in infrastructure development. For example, the Nigerian

Investment Promotion Commission Act (NIPC Act) provides incentives for foreign investors, including exemptions from taxes, repatriation of profits, and guarantees against expropriation. Another key development in the PPP road infrastructure sector in Nigeria is the establishment of public-private partnership units within ministries and departments responsible for infrastructure development. These units are responsible for identifying and developing PPP projects, engaging with stakeholders, and facilitating project implementation. PPP projects have been implemented in major economic hubs such as Lagos, Abuja, and Port Harcourt. Despite the progress made in the development of PPP road infrastructure in Nigeria, there are still challenges that need to be addressed. These challenges include inadequate regulatory and legal frameworks, corruption, capacity building, financing, and political instability. To ensure the effective and sustainable development of PPP road infrastructure in Nigeria, the government must address these challenges and provide an enabling environment for private sector investment in infrastructure development.

### **2.3.2 Challenges of PPP Road Infrastructure in Nigeria**

Despite the numerous benefits that public-private partnerships (PPPs) bring to the development of road infrastructure in Nigeria, several challenges need to be addressed. Some of the challenges of PPP road infrastructure in Nigeria include:

1. **Financing:** One major challenge in developing PPP road infrastructure in Nigeria is the availability of financing. Significant capital investment is often required for such projects, and private sector investors may be hesitant to finance such projects due to high risk, including political instability, regulatory challenges, and corruption<sup>73</sup>.

2. Legal and Regulatory Frameworks: Nigeria's legal and regulatory framework for PPPs is not comprehensive and does not address all aspects of PPP projects. This lack of clear guidelines can lead to delays in project implementation and difficulty in attracting private investors <sup>74</sup>.

3. Capacity Building: There is a lack of institutional capacity and expertise in Nigeria's government required to develop and implement PPP projects effectively. This often results in delays and inefficiencies in project execution, leading to increased costs and reduced project quality<sup>75</sup>.

4. Corruption: Nigeria has a history of corruption in government and public procurement processes. This can deter international investors and increase the cost of financing PPP projects<sup>76</sup>.

5. Political Stability: The political instability in Nigeria and frequent changes in government policies can discourage investors from committing to long-term projects. This instability can also lead to a lack of continuity in project implementation and delays in project delivery<sup>77</sup>.

6. Cost Recovery: PPP projects may face challenges in cost recovery due to economic challenges, including inflation and currency fluctuations, which can impact the ability of the government to pay its contractual obligations<sup>78</sup>.

Addressing these challenges requires strategic planning, improved institutional capacity, and better regulatory frameworks. The Nigerian government must provide adequate incentives to attract private investors, build institutional capacity, and enhance transparency and accountability in the procurement process.

### **2.3.3 Benefits of PPP**

Public-private partnerships (PPP) in infrastructure development have several benefits, including:

1. **Additional Financial Resources:** PPPs provide additional financial resources for infrastructure development, which can include investment from private finance, equity, and debt financing. This enables governments to invest in more infrastructure development projects than would have been possible if they relied only on public funds.
2. **Improved Cost-Effectiveness:** PPP projects can be executed more cost-effectively than traditional procurement methods. Private partners have incentives to complete projects on time, within budget, and to establish quality standards, reducing the costs of construction and maintenance.
3. **Efficient Operations and Maintenance:** Private sector partners with expertise in construction and management can bring advanced technology, better management practices, technical expertise, and innovative ideas to infrastructure development, leading to efficient operations and maintenance.
4. **Risk Sharing:** PPPs enable the apportionment of risks associated with infrastructure development between public and private partners, thus reducing the financial burden of the government and improving the project's chances of success.
5. **Improved Quality Infrastructure:** PPP projects can result in the delivery of high-quality infrastructure. Private sector partners with the technical capacity and expertise required to design, build, and operate infrastructure can deliver infrastructure that meets international standards, which enhances public service delivery and improves the standard of living for the people.

6. Innovation: PPPs can drive innovation by bringing new technologies and ideas into the infrastructure sector. Private partners are driven to find innovative solutions that save money, time, and resources, thus bringing new ideas and approaches that enhance service delivery.

These benefits show that PPP can provide more than just Finance for infrastructure development. PPP provides other benefits such as improved cost-effectiveness, efficient operations and maintenance, risk-sharing, innovation, and quality infrastructure.

#### **2.3.4 PPP Success Factors**

To achieve successful public-private partnerships (PPP), many factors must be considered by both the public and private partners. These include:

1. Clear Objectives and Alignment: A clear and well-defined strategic objective that aligns with each partner's mandate or corporate strategy, ensuring that they are working towards a common goal.

2. Legal and Regulatory Framework: PPP contracts should follow transparent, standardized, and established regimes that provide clear roles, responsibilities, and dispute resolution clauses.

3. Private Sector Expertise and Competence: Private sector partners should demonstrate the necessary expertise in the field of the proposed project, their level of competence, and their ability to operate, manage, and maintain the project successfully.

4. Sharing of Risks and Rewards: Sharing of risks and rewards between the public and private sector partners should be clear from the onset of the PPP contract, with the responsibilities and risk apportionment allocated appropriately.

5. Effective Communication and Coordination: Regular communication and coordination between the public and private sector partners are essential for a successful partnership. This entails effective communication mechanisms, ranging from day-to-day management to dispute resolution and problem-solving.

6. Adequate Project Preparation and Selection: With new opportunities requiring increasing upfront investment for adequate project preparation, it's important that each project is selected based on its financial viability and sustainability, both by the public and private sector partners.

7. Suitable Procurement Model: Appropriate procurement models, such as competitive bidding or unsolicited proposals, must be initiated to ensure project selection and implementation is done transparently.

8. Appropriate Financial Structuring: The financial structuring for the proposed project must be suitable and sustainable, taking into consideration the project's funding source and tenure, the financial market situation, and the financing capability and capacity of both partners.

These eight crucial success factors are essential in ensuring a successful public-private partnership (PPP) in infrastructure development. By prioritizing each of these factors, both the public and private sector partners can establish a workable framework to achieve shared goals, manage risks and rewards, apply agreed-upon contractual obligations, and establish an efficient and productive relationship.

Oksana Kharlamova conducted research on various aspects of public-private partnerships, including success factors. In one of her recent articles, "Key success factors of public-private partnership projects in Russia," published in 2021, she identifies factors that influence the

success of PPPs in Russia<sup>79</sup>. In her research, Kharlamova surveyed experts and analyzed case studies of PPP projects in different sectors, such as infrastructure, healthcare, and education. Based on her analysis, she identified five key success factors for PPP projects in Russia:

1. Strong government support: Kharlamova found that successful PPP projects in Russia had strong government support, particularly at the local level. The government played an important role in facilitating the agreements between private and public sector partners and ensured that the PPP projects were aligned with overall policy and development goals.

2. Clear legal framework: The existence of a clear legal framework, with well-established rules and regulations for PPP projects, was found to be important for the success of PPP projects in Russia. This helped to minimize disputes and ensured that contracts were enforceable.

3. Adequate risk-sharing mechanisms: Adequate risk-sharing mechanisms between public and private sector partners were found to be crucial for the success of PPP projects in Russia. This included the allocation of risks and rewards between the parties, as well as appropriate insurance and guarantees.

4. Appropriate financing models: Kharlamova found that successful PPP projects in Russia had appropriate financing models that were suitable for the project's specific needs. This included a combination of private and public funding and the use of debt and equity financing.

5. Effective project management: Finally, Kharlamova found that effective project management was essential for the success of PPP projects in Russia. This included regular monitoring and evaluation of project performance, managing stakeholder relationships, and ensuring that project objectives were achieved.

Kharlamova's research provides insight into the key success factors for PPP projects in the Russian context, which can inform the development of effective PPP policies and practices in the country<sup>79</sup>.

Mokoena conducted a review of existing literature and interviewed key stakeholders involved in PPP transport projects in South Africa. Based on her analysis, she identified six critical factors that influence the success of PPPs in the South African transport sector:

1. Clear and effective policy and legal frameworks: Mokoena found that clear and effective policy and legal frameworks were critical for the success of PPP projects. This included a clear understanding of the roles, responsibilities, and liabilities of both private and public partners.
2. Financial viability: Mokoena emphasized the importance of financial viability and sustainability of PPP projects. This included adequate financing arrangements, cost recovery mechanisms, and balanced risk-sharing.
3. Effective stakeholder engagement: Successful PPP projects in South Africa involved effective stakeholder engagement, including transparent and inclusive decision-making processes and participation of relevant stakeholders.
4. Robust project planning and management: Mokoena's research highlighted the need for robust project planning and management, including clear targets, timelines, and performance indicators. This also included effective project management structures and skilled project managers.

5. Efficient service delivery: Successful PPP projects in South Africa required efficient service delivery, including improved quality and reliability of transport services, and increased accessibility.

6. Social and environmental sustainability: Finally, Mokoena found that social and environmental sustainability was crucial for the success of PPPs in the South African transport sector. This included consideration of social and environmental impacts in project design and implementation, and compliance with relevant regulations and standards.

Mokoena's research provides valuable insights into the critical success factors for PPPs in the South African transport sector, which can inform the development of effective PPP policies and practices in the country<sup>80</sup>.

#### **2.3.4 Factors that Influence PPP Effectiveness**

PPP effectiveness refers to the degree to which a partnership between the public and private sectors achieves its objectives and delivers the desired outcomes efficiently, effectively, and sustainably. In other words, it refers to how well a PPP project meets its intended goals and benefits all stakeholders, including the public, the private sector partners, and end-users. The effectiveness of a PPP project can be measured against a variety of parameters, such as economic, social, environmental, and political dimensions. A successful PPP project delivers quality services, creates value, supports economic growth and sustainability, addresses social and environmental concerns, and meets the needs and expectations of all stakeholders.

Many factors influence PPP effectiveness, including:

1. Clear and transparent agreement: A clear and transparent agreement between the public and private partner is essential. The agreement should outline all the rights, obligations, and responsibilities of each party throughout the partnership.
2. Financial arrangements: The financial arrangements of the PPP project should be clear and ensure an equitable sharing of the financial risks and benefits between the public and private sectors. The financing model should be sustainable and not rely solely on subsidies or government guarantees.
3. Technical and managerial expertise: Partnerships often involve complex technical and managerial expertise. Therefore, adequate expertise in the relevant areas should be available at all levels of project management.
4. Effective communication and cooperation: Effective communication between the public and private partners is essential for the success of any PPP project. The communication should be frequent, transparent and keep all stakeholders informed about the project's progress, challenges, and risks.
5. Risk-sharing: Risk allocation and sharing should be clearly defined in the partnership agreement and should reflect the relative strengths and risks of the public and private partners.
6. Legal framework and regulatory policies: The legislative framework, regulatory policies, and governing laws should be clear and support the PPP project's smooth operations.

7. Political support and stability: Political support and stability are crucial for the success of PPP projects. Political instability and changes in the government can affect PPP projects and prevent their implementation.

PPP effectiveness is influenced by several factors, including clear and transparent agreements, equitable financial arrangements, technical expertise, effective communication and cooperation, defined risk-sharing, a supportive legal and regulatory framework, and political support and stability.

Tchamyou, Asongu, and Tchamyou investigated the complexities of the effect of public-private partnerships (PPPs) on productivity growth in African countries. The authors conducted a panel study using data from 44 African countries covering the period from 2005 to 2015. They found that PPPs have a positive effect on productivity growth in African countries, but the effect is sensitive to other factors such as regulatory quality, corruption levels, and human capital development. The authors also found that the positive impact of PPPs on productivity growth is higher in countries with better regulatory quality and less corruption. They recommended that African countries should improve their regulatory quality, reduce corruption levels, and invest in human capital development to enhance the effectiveness of PPPs in promoting productivity growth<sup>81</sup>.

Albalawi and Alrajhi explored the factors influencing the success of public-private partnerships (PPPs) in Saudi Arabia. The authors conducted a systematic review of the literature on PPPs in Saudi Arabia and analyzed 85 articles. They identified six significant factors that influence the success of PPPs, including clear and transparent agreements, effective project management, effective financing arrangements, political and legal stability, effective risk-sharing, and

stakeholder engagement. The authors found that the success of PPPs in Saudi Arabia is affected by the complex regulatory and legal environment, the lack of experience and expertise among stakeholders, and the difficulty in managing contractual relationships. The authors recommended that Saudi Arabia should improve its legal and regulatory framework for PPPs, develop adequate expertise among stakeholders, and enhance stakeholder engagement to increase the success of PPPs<sup>82</sup>.

Chen and Yahya-Zadeh conducted a literature review to identify the factors affecting the effectiveness of public-private partnerships (PPPs) in infrastructure development in developing countries. The authors analyzed 81 articles and identified several factors, including political, institutional and regulatory environment, risk allocation, financial arrangements, communication and coordination, technical expertise, and project management. The authors found that the political and regulatory environment is the most important factor that affects the effectiveness of PPPs in developing countries. They also found that the risk allocation and financial arrangements must be clear and transparent to attract private investment. The authors noted that qualified and experienced technical experts and project managers can mitigate risks and improve PPP effectiveness. Based on their findings, the authors recommended that developing countries should improve their political and regulatory environment, establish clear and transparent risk allocation and financial arrangements, enhance coordination and communication among stakeholders, and develop technical expertise and effective project management to enhance the effectiveness of PPPs in infrastructure development<sup>83</sup>.

### **2.3.5 Perceptions of Stakeholders on PPPs**

Stakeholders' perceptions of PPPs are likely to vary depending on their interests, expectations, and experiences. However, some common concerns that stakeholders may have concerning PPPs include:

1. Lack of transparency: stakeholders may be concerned about the lack of transparency in PPP arrangements, particularly concerning the allocation of risks and rewards, the selection of private partners, and project costs. They may feel that the process favours private interests over public interests and that there is a lack of accountability.

2. Impact on public services: stakeholders may be worried about the potential impact of PPPs on public services. They may be concerned that private partners may prioritize profit over service quality, leading to a decline in the quality of public services. Additionally, they may be worried that the fees and charges associated with PPP projects may be too high for some members of the public.

3. Social and environmental impact: stakeholders may be concerned about the social and environmental impact of PPP projects. They may feel that PPP projects may have negative effects on local communities, such as displacement or loss of public amenities. They may also be concerned about the environmental impact of the project.

4. Impact on public finances: stakeholders may be concerned about the financial impact of PPPs on public finances. They may feel that PPP projects represent an unnecessary burden on public finances and that public money should be used for other priorities. They may also be worried that the long-term costs of PPP projects may outweigh the short-term benefits.

Stakeholders' concerns about PPPs are likely to vary depending on the specific context of the project. Therefore, stakeholders need to engage in open and transparent communication throughout the project lifecycle to ensure that all concerns are adequately addressed.

Hampton and Loucks investigated the perceptions of public officials, private practitioners, and academics on public-private partnerships in the United States. The authors found that public officials generally have a positive view of PPPs, but they have concerns about risk allocation, transparency, and public engagement. Private practitioners tend to be more positive about PPPs and emphasize the advantages of private capital and efficiency. Academics tend to be more cautious about PPPs and highlight the need for rigorous evaluation and public accountability<sup>84</sup>.

Saad and Salway's study examined the perspectives of construction stakeholders in the United Arab Emirates on public-private partnership projects. The authors conducted face-to-face interviews with stakeholders from the government, private sector, and academia to explore their perceptions of the benefits and challenges of PPPs. The study found that most stakeholders had a positive perception of PPPs, particularly concerning their potential to improve the efficiency and quality of infrastructure projects. However, stakeholders also expressed concerns about the lack of transparency in PPP arrangements and the perceived bias towards the private sector. Additionally, stakeholders raised concerns about the lack of public consultation in the PPP process, which could lead to public opposition or legal challenges. They called for greater engagement and consultation with the public and civil society organizations to ensure that the interests of all stakeholders were adequately addressed. Finally, the study found that stakeholders highlighted the need for robust governance and monitoring mechanisms to ensure that PPP projects were effectively delivered and that public funds were properly allocated. The authors

recommended that PPP projects should be designed to balance the interests of all stakeholders and promote transparency and accountability<sup>85</sup>.

## **2.4 Conceptual Framework for Public-Private Partnership (PPP)**

Public-private partnership (PPP) for road infrastructure projects is a vital financing approach used globally to finance infrastructure projects which include financing, construction, operations, and management of infrastructure projects<sup>86</sup>. The PPP framework has been used in road infrastructure development to increase efficiency and overcome the challenges of traditional procurement methods. The PPP approach in road infrastructure development follows a suite of structured stages, beginning with the identification of potential projects and feasibility studies, procurement, the implementation of contracts and the management of operations during the contract period.

**Identification of potential projects:** The identification of potential projects is a fundamental step in attracting PPP opportunities. At this stage, the needs of the public sector are assessed with a thorough analysis of private sector participation before calling on the private sector for proposals. This stage ensures that the public sector understands project delivery versus the potential procurement method that will be used during the project development process.

**Feasibility Studies:** Feasibility studies are conducted to evaluate potential infrastructure projects and to determine the possibility of developing and operating them as PPPs. The feasibility study assesses the viability of the project, including environmental and social impacts, financial capacity, resource allocation, and risk management.

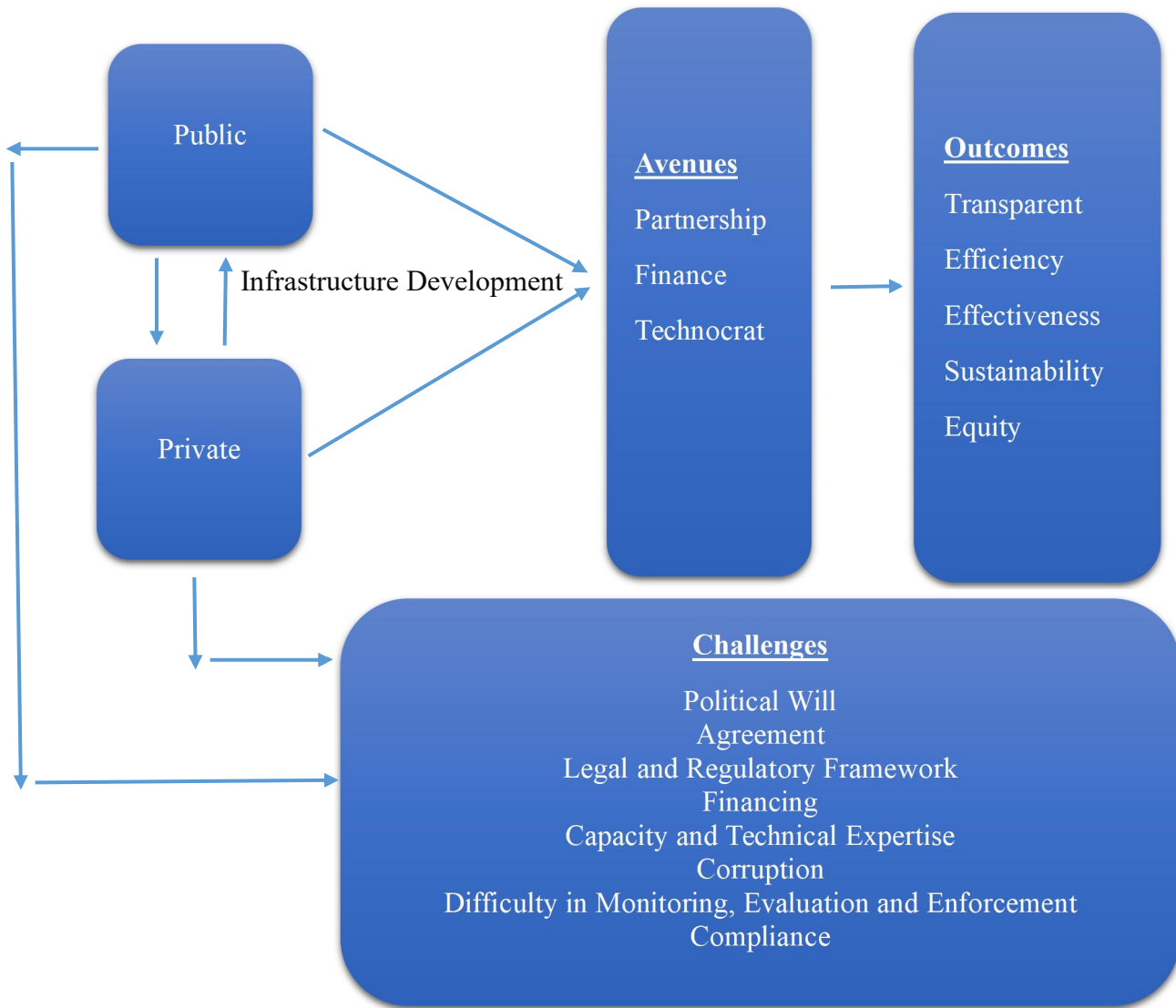
Procurement: The procurement stage of PPP in infrastructure development involves preparing solicitation documents, assessing proposals, selecting partners, and drafting and negotiating contracts. The procurement process should incorporate all standard procurement requirements, such as transparency, fairness, and clear communication channels.

Implementation: During the implementation phase, the PPP contract is executed, and construction and delivery of the infrastructure project begins. This period must have clear delivery objectives, track progress, and ensure the appropriate management of risk in the project development process.

Operations and Maintenance: Operations and maintenance involve ongoing management of the infrastructure project, ensuring service delivery, and improvement in the quality of the service provided to the public. During this phase, the private sector partner is responsible for the maintenance, operations, and risk management of the infrastructure project.

PPP in road infrastructure development can provide several benefits such as optimization of financing, improved infrastructure quality, and innovation, while minimizing exposure to risks<sup>87</sup>. During the process, the public sector should ensure transparency, and good governance practices in project planning, and execution. The PPP approach is vital in the development of road infrastructure. Private sector participation in road infrastructure development is crucial in addressing funding and expertise challenges encountered by the government. It helps to attract private investment, leverages the value derived from diverse financing options, and transfers risks associated with infrastructure development to the private partner. However, for successful PPP implementation, the public sector must ensure transparency and clear communication in the

procurement process, proper identification and management of risks, proper handling of disputes, and effective contract management.



**Fig. 2.1:** PPP Framework in Road Infrastructure Development  
**Source:** <sup>86</sup>

### 2.3.7 PPP and Infrastructural Development in Lagos State

Public-private partnerships (PPPs) have played a significant role in the infrastructural development of Lagos State, which is one of the fastest-growing cities in Africa. Lagos state, as the economic hub of Nigeria, has a high demand for the provision of adequate road infrastructure,

transportation, waste management, and housing development. PPPs have helped to attract private sector investment and expertise to fill the gaps in infrastructure financing and delivery. They have become increasingly important in Lagos State due to the limited resources of the government, growing population, and urgent demand for infrastructure services. PPPs have been instrumental in developing, expanding, and modernizing transport infrastructure systems such as roads, bridges, and railways, as well as water and sanitation projects. For instance, the Lekki-Epe Expressway project is a great example of a successful PPP infrastructure project in Lagos State. The project was a collaboration between the Lagos State Government and a private consortium led by Lekki Concession Company (LCC) to build and operate a 49-kilometer expressway linking the Lekki Peninsula to the rest of Lagos. The project has significantly eased traffic congestion, opened up new economic opportunities, and enhanced the quality of life for the residents in the area.

In addition, PPPs have also played a vital role in the development of affordable housing in Lagos State. The government has partnered with private developers to build and finance affordable housing schemes, including the Lagos Home Ownership Mortgage Scheme (Lagos HOMS), which has provided affordable housing for thousands of families in Lagos State. Overall, PPPs have been instrumental in stimulating infrastructural development in Lagos State, helping to bridge the infrastructure gap, enhance economic growth and create a better living environment for citizens. With continued partnerships between the government and the private sector, Lagos State can continue to attract investments that will help it achieve its infrastructural goals.

According to a report by Vanguard News in 2019, Lagos State Governor, Babajide Sanwo-Olu inaugurated a public-private partnership committee on infrastructure in Lagos, aimed at achieving infrastructural development across all sectors through strategic planning and implementation, with a focus on engaging private sector players<sup>88</sup>. Also in 2019, the Lagos State Government signed a Memorandum of Understanding (MoU) with a private sector consortium led by Credit Suisse, to finance and construct the \$2.2 billion Red Line Rail project, connecting the Agbado axis of the state to Marina. The project is expected to ease traffic gridlock in Lagos and promote economic growth<sup>89</sup>. In 2021, Lagos State launched the Lagos Blue Line Rail Project, a public-private partnership initiative aimed at improving the state's transportation infrastructure. The project, which cost \$2.4 billion, has been commissioned through a joint venture partnership between the Lagos State Government and a private consortium led by China Civil Engineering and Construction Company<sup>90</sup>.

Another example is the PPP that led to the construction of the Lekki Toll Road in Lagos, which has improved traffic flow and revenue generation for the Lagos State Government. The project, which was developed through a Build, Operate, and Transfer agreement between the Lekki Concession Company and the Lagos State Government, has provided an alternative transportation route and enhanced economic opportunities in the area<sup>91</sup>. In 2021, the Lagos State Government announced plans to develop a 1,000-hectare new city project in Lekki through a public-private partnership. The project, which will be developed in collaboration with a private consortium, will feature residential and commercial developments and will have the capacity to provide housing for over 150,000 people<sup>91</sup>.

## **2.4 Conceptual Models of PPP**

Public-private partnership (PPP) conceptual models are frameworks that provide a systematic understanding of PPPs. These models help stakeholders in the public and private sectors to understand how PPPs work, what types of PPP arrangements are possible, and how to select the most suitable PPP model for a given infrastructure project.

1. The "Four-Phase Model" developed by Grimsey and Lewis provides a structured framework for understanding the phases of a PPP project. The model identifies four distinct phases: the strategic phase, procurement phase, operational phase, and finalization phase. The strategic phase involves developing a strategic vision and business case for the PPP project. The objective is to establish a clear understanding of the project's objectives, risks, and benefits before proceeding to the procurement phase. The procurement phase involves selecting the private sector partner that will design, build, finance, and operate the project. This phase includes the preparation of a Request for Proposals (RFP) and the evaluation and selection of bidders. The operational phase is the period during which the private sector partner operates and maintains the project, typically lasting between 25 and 30 years. During this phase, the private sector partner earns revenue from the project to repay its investment and receives a return on its investment. The finalization phase is the handover of the project to the public sector at the end of the PPP contract. The objective is to ensure that the project is in an acceptable condition and that the public sector is ready to take over the project. The Grimsey and Lewis Four-Phase Model helps PPP stakeholders to understand the different stages of a PPP project and guides the actions required at each stage. By providing a structured framework, the model helps to ensure that PPP projects are planned and executed effectively and achieve their intended outcomes.

2. The "Risk Management Model" developed by Akintoye and Main provides a structured framework for identifying and managing risks in PPP projects. The model involves a systematic approach to risk management, which includes identifying risks, evaluating their likelihood and impact, and developing strategies to mitigate those risks. The risk management process involves several steps, including risk identification, risk analysis, risk evaluation, risk mitigation, and risk monitoring and control. During the risk identification phase, stakeholders systematically identify and catalogue potential risks that the PPP project may face. Risk analysis involves assessing and ranking the identified risks based on their likelihood and impact. Risk evaluation involves selecting the best course of action for managing each risk, based on its severity and the available resources. Risk mitigation strategies may include developing contingency plans, allocating resources to reduce or avoid risks, and transferring risks to insurance providers or other third-party organizations. The final stage of the risk management model involves monitoring and controlling risk. This stage involves continuously reviewing and updating the risk management plan to ensure it remains effective throughout the life of the PPP project. The Akintoye and Main Risk Management Model provides a systematic approach to managing risks in PPP projects. By identifying potential risks, evaluating their likelihood and impact, and developing strategies to mitigate those risks, project stakeholders can effectively manage risk and ensure the successful delivery of PPP projects.
3. The "Relationship Management Model" developed by Hodge and Greve focuses on managing the relationship between public and private actors in PPP projects. The model suggests that effective management of the relationship between public and private sector actors is a key success factor in PPP projects. The model proposes several key elements that

support effective relationship management, including communication, trust, collaboration, and shared objectives. Communication is critical to ensuring that information is shared openly and transparently between the public and private sectors. Trust and collaboration help build a solid foundation for long-term partnerships and successful project delivery. Finally, shared objectives align the goals of the public and private sectors and ensure that both parties are working toward the same objectives. The Hodge and Greve Relationship Management Model also recognizes that different types of PPPs require varying levels of relationship management. For instance, PPPs that involve complex and long-term contracts may require more intensive relationship management than shorter-term PPPs. The Hodge and Greve Relationship Management Model offers a structured and tailored approach to managing relationships between public and private sector actors in PPPs. By building trust and understanding, and working toward shared objectives, public and private sector actors can work together effectively in PPP projects and achieve their desired outcomes.

4. The "Value for Money Model" developed by HM Treasury is a framework for assessing the value for money of PPP projects. The objective of the model is to ensure that PPP projects deliver the best value for money for public sector clients and that the private sector is adequately rewarded for its investment. The model focuses on three key areas: cost, benefits, and risk assessment; benchmarking against alternative procurement options; and efficiency and effectiveness. The cost, benefits, and risks assessment involve evaluating the costs, benefits, and risks associated with the PPP project. This includes comparing the project costs to alternative procurement options and assessing the risks associated with the PPP contract. Benchmarking against alternative procurement options involves comparing the PPP project to alternative procurement options, such as traditional procurement or design and build

contracts, to determine if the PPP project represents the best value for money. Finally, efficiency and effectiveness focus on ensuring that the PPP project is delivered efficiently and effectively. This includes monitoring and evaluating project performance, ensuring that the project is delivered on time, and identifying opportunities to improve project delivery. The Value for Money Model provides a structured approach to assessing the value for money of PPP projects. By evaluating costs, benefits, and risks, benchmarking against alternative procurement options, and focusing on efficiency and effectiveness, public-sector clients and private sector partners can ensure that PPP projects are successful and deliver value for money.

## **2.5 Summary of Literature Reviewed**

The literature reviewed in this section focused on empirical studies related to the impact of public-private partnerships (PPPs) in road infrastructure development, factors that influence PPP effectiveness and success, and stakeholders' perceptions of PPPs. Several studies highlighted that PPPs are critical to road infrastructure development in Nigeria as they leverage private sector investment and expertise. PPPs have contributed to infrastructure quality, innovative financing, and sustainability. However, challenges such as weak regulatory frameworks and risk allocation mechanisms remain. Success factors identified for PPPs include clear objective alignment, legal and regulatory frameworks, adequate financial arrangements, effective communication and coordination, and appropriate risk-sharing mechanisms.

Factors influencing PPP effectiveness and success include clear and transparent agreements, sharing of risks and rewards, technical expertise, effective communication, political support, and an appropriate legal and regulatory framework. Stakeholders' perceptions of PPPs vary

depending on their interests and concerns, such as lack of transparency, impact on public services, social and environmental impact, and the impact on public finances. The studies emphasized the importance of effective governance, monitoring, and stakeholder engagement in PPP projects to ensure transparency, accountability, and public participation.

### Endnotes

- <sup>1</sup> O.A. Akinyemi & I.A. Adekunle. *Public Private Partnership (PPP) Approach to Infrastructure Development in Nigeria: Prospects and Challenges*. **Journal of Engineering and Applied Sciences**, 14 (5), 2019:1396-1401.
- <sup>2</sup> T.O. Akinbobola & E.A. Olanipekun. *Public-Private Partnership (PPP) as a Strategic Cost-effective Option for Infrastructural Development in Developing Countries*. **Journal of Engineering, Design and Technology**. 18(4), 2020: 898-915.
- <sup>3</sup> C. Nkemdirim, C. Ezeah & O. Effiong. *Exploring Public-Private Partnerships (PPPs) for Sustainable Infrastructure Development in Africa*. **Opportunities and challenges. Sustainability**. 12(21), 2020: 8857.
- <sup>4</sup> O.O. Adediran & S.I. Akintokun. *The Role of Public-Private Partnership in Facilities Management in Nigeria: Issues and Challenges*. **Journal of Engineering and Architecture** 9(2) 2021: 9-18.
- <sup>5</sup> O.F. Osideinde. & S.A Ojeka. *Enhancing Hospital Infrastructure Development through Public-Private Partnerships (PPPs) in Nigeria*. **Nursing & Health Sciences**. 24(1) 2022: 202-207.
- <sup>6</sup> E. Lobina. & D. Hall. *Reasserting the Public in Public-Private Partnerships*. **International Journal of Public Administration**. 42(1) 2019: 17-28.
- <sup>7</sup> O. Azfar & A. Anwar. *Public-Private Partnership in Infrastructure Development. A Review of Models and Practices*. **Journal of Public Affairs**. 20(3) 2020: e2030.
- <sup>8</sup> S.B. Mohammed & J.K Kiptanui. *Public-Private Partnership and Infrastructure Development in Developing Countries: The Role and Challenges*. **International Journal of Economics, Commerce and Management (IJEEM)**, 9(1) 2021.

- 9 Z.A. Attah & K.A. Buba. *The Regulation of Public-Private Partnerships (PPP) for Infrastructure Development in Sub-Saharan Africa: The Challenges and the Way Forward*. **Journal of Business and Economics Review**. 7(2), 2022: 168-179.
- 10 A.T. Ojo & A.A. Adegaju. *Public-Private Partnerships for Sustainable Infrastructure Development in Nigeria: Opportunities, Challenges, and the Way Forward*. In **Strategy and Sustainability in Emerging Markets** (pp. 279-301). 2022: Palgrave Macmillan, Cham.
- 11 H.M. Almaraghy & M.R. Darwich. *Public-Private Partnership Models: A Review of Literature*. **Alexandria Engineering Journal**. 58(2), 2019: 683-691.
- 12 I. Al-Sadi & J. Al-Subhi. *Design-Build-Operate: An Innovative Delivery Method for Infrastructure Projects in Oman*. In **Advances in Civil Engineering and Building Materials**. (pp. 647-653). 2019: Springer, Singapore.
- 13 D.T. Nguyen & H.T. Nguyen. *The Role of Public-Private Partnership (PPP) in Vietnam's Infrastructure Development: Evidence from the Design-Build-Operate (DBO) Scheme*. **Journal of Asian Finance, Economics, and Business**. 7(11), 2020: 73-83.
- 14 Z.A. Ahmed & M. Yusup. *Design Build Operate (DBO): Prospects and Challenges of PPP in Developing Countries*. **International Journal of Construction Engineering and Management**. 8(4), 2019: 139-149.
- 15 C.C. Ekwueme. *An Assessment of Design-Build-Operate (DBO) Contracts for the Delivery of Road Infrastructure Projects in Nigeria*. **Journal of Infrastructure Development**. 13(1), 2021: 82-96.
- 16 X. Dong & K. Zhang. *Sustainability Assessment of Public-Private Partnership Projects: A review of methods and applications*. **Sustainability**. 13(3), 2021: 980.
- 17 R. Hejazi & P. Ashouri. *Public-Private Partnership in the Construction Industry: A Review of Challenges, Benefits, and Prospects*. **Journal of Construction Engineering and Management**. 146(1), 2020: 04019120.
- 18 M. Wang, Y. Liu, Q. Shen & L. Song. *The design of the risk allocation mechanism for build-transfer-operate (BTO) transportation projects in China*. **Transportation research part A: policy and practice**. 2019: 126, 38-53.
- 19 D. Zhang, X. Liu, & Z. Li. *A New Model of Build Transfer Operate (BTO) which Includes Long-Term Operation Contracts in China's Power Industry*. **Electric Power Systems Research**. 2020: 186, 106394.

- 20 Y.H. Chiu & P. Wang. *Challenges and Feasibility of Using Build-Transfer-Operate (BTO) for Water Supply Projects*. **Water**. 13(10), 2021: 1426.
- 21 A. Olejarz, A. Stachowiak, & R. Bednarek. *Public-Private Partnership as a Mechanism of Improving the Quality of Healthcare in Poland*. **Journal of Public Health**. 29(2), 2021: 261-270.
- 22 J. Sarkis & A. Mustafa. *Green Strategies in Supply Chain Management: Antecedents, Outcomes, and Future Directions of Hybrid and Tiered Architectures*. **Journal of Cleaner Production**. 2019: 207, 719-736.
- 23 P. Zhou & D. M. Pflugmann. *Build-Own-Operate-Transfer (BOOT) Model for Financing Renewable Energy Projects: The Case of China*. **Renewable Energy**. 139, 2019: 536-546.
- 24 K.T.N. Bui, H.T.T. Le & D.H. Nguyen. *Build-Own-Operate-Transfer Model for Financing Wastewater Treatment Facilities in Vietnam*. **Journal of Cleaner Production**. 249, 2020: 119412.
- 25 S.H.N. Tennakoon & J.Y. Ruwanpura. *Infrastructure Delivery Through Public-Private Partnerships in Developing Countries: Lessons from a Road Construction Project in Sri Lanka*. **Journal of Business Research**. 2021: 136, 20-35.
- 26 L.M. Mendoza & S.N. Kadarawar. *Private Participation in Infrastructure Provision: The Philippine Experience*. In **Public-Private Partnerships and Infrastructure Management** (pp. 31-46) 2022: Springer, Cham.
- 27 *Oxford Economics. Global Infrastructure Report*. Available at <https://www.oxfordeconomics.com/global-infrastructure-report-2019>.
- 28 J.D. Diaz, BCDA Inks Deal with Private Consortium for New Clark City Athletics Stadium. Rappler. Retrieved from <https://www.rappler.com/business/238235-bcda-private-consortium-deal-new-clark-city-athletics-stadium>. 2019,
- 29 *Bangkok Post. Expressway Projects Grind to a Halt*. *Bangkok Post*. Retrieved from <https://www.bangkokpost.com/business/1887489/expressway-projects-grind-to-a-halt>. 2020.

- 30 *Oslo municipality. Privatization and Public-Private Partnerships. Oslo Municipality.* Retrieved from <https://www.oslo.kommune.no/politics-and-administration/economy-taxes-and-administration/privatization-and-public-private-partnerships/> 2019.
- 31 *Naftemporiki. Agreement Signed for New Heraklion Airport Concession. Naftemporiki.* Retrieved from <https://www.naftemporiki.gr/finance/story/1661180/anakoinothike-i-symfonia-gia-tin-nea-enikiase-tou-aerodromiou-irakleiou>. 2020.
- 32 *Reuters. Brazil's Norte-Sul Railway Auction Attracts Nine Bidders. Reuters.* Retrieved from <https://www.reuters.com/article/us-brazil-railways-auction/brazils-norte-sul-railway-auction-attracts-nine-bidders-idUSKBN2BK0FN>. 2021.
- 33 *Ghana Web. Ikeja Waste-to-Energy Plant: The Genesis. Ghana Web.* Retrieved from <https://www.ghanaweb.com/GhanaHomePage/business/Ikeja-Waste-to-Energy-Plant-The-Genesis-862989>. 2020, February 6.
- 34 *Transport for NSW. Parramatta Light Rail. Transport for NSW.* Retrieved from <https://www.transport.nsw.gov.au/projects/current-projects/parramatta-light-rail>. 2021. Accessed Date, 16 May 2024.
- 35 *CNA. PUB Awards \$1.4 Billion Management Contract to Choke, Stantec, and SUEZ Consortium. CNA.* Retrieved from <https://www.channelnewsasia.com/news/singapore/pub-awards-1-4-billion-contract-choke-stantec-suez-15025812>. 2021, June 17.
- 36 *Memphis Flyer. City of Memphis Looks to Private Firm to Manage Public Parks. Memphis Flyer.* Retrieved from <https://www.memphisflyer.com/NewsBlog/archives/2020/09/03/city-of-memphis-looks-to-private-firm-to-manage-public-parks>. 2020, September 3.
- 37 A. Mishra, S. Hussain, A. Rastogi & M. Balakrishnan. *PPP Procurement Modalities in Highway Sector: A Comparative Study of India and USA. International Journal of Transportation Engineering and Technology.* 7(1), 2021: 1-10. Retrieved from <https://ijtet.com/archive/volume7issue1/Vol7Iss1p1-10.pdf>.
- 38 R. Cliff, *Paving the Way for Public-Private Partnerships: Washington State's Journey. The National Law Review.* Retrieved from <https://www.natlawreview.com/article/paving-way-public-private-partnerships-washington-states-journey>. 2019, April 11. Date Accessed, 16 May 2024.
- 39 P. Chalkley. *A Very Different Model: Delivering the Thames Tideway Tunnel. Institute of Quarrying.* Retrieved from <https://www.quarrying.org/iq-news/a-very-different-model-delivering-the-thames-tideway-tunnel>. 2019, February 14.
- 40 *Edmonton Valley Line LRT Team. Green Line LRT: Canadian Access to New Private Capital for Public Transit. Insight: Canada's Transportation Series.* Retrieved

from <https://www.railwayage.com/wpcontent/uploads/2024/02/RA%20Canada%20Transportation%20Report%20-%20GreenLine%20-%20Edmonton%20-%20FINAL.pdf>. 2024.

- 41 R. Haas, A. Rohl, & S. Vorbach. *Sydney Metro: New PPP Model for Large Transport Projects*. **Journal of Civil Engineering and Architecture**. 13(2), 164-172. doi: 10.17265/1934-7359/2019.02.008. 2019
- 42 I.O. Bildosola, A.A. Álvarez & D. G. Elzo. *Assessing the Lifecycle of a PPP Airport Transport Infrastructure*. **Sustainability**, 12(12), 2020: 5161. doi: 10.3390/su12125161.
- 43 E. J. Mwendera, B. Gumbo & A. E. Taigbenu. *Assessment of Financing Mechanisms for Rural Water Supply and Sanitation in South Africa*. **Water**, 11(5), 2019: 901. doi: 10.3390/w11050901
- 44 N. Siwarom, C. Kwanpracha & S. Komatatitdecha. *Public-Private Partnerships in Mass Rail Transit Projects: The Case of Suvarnabhumi Airport Rail Link Project*. **IOP Conference Series: Earth and Environmental Science**. 229(1), 2019: 012013. doi: 10.1088/1755-1315/229/1/012013
- 45 J. Ashworth, C. Liyanage & N. Silva. *The Private Finance Initiative and the Concession Route in Infrastructure Development*. **Engineering, Construction and Architectural Management**. 27(6), 2020: 1379-1395. doi: 10.1108/ECAM-04-2019-0257
- 46 M. Costa, A. Fernandes & C. O. Cruz. *Lessons Learnt from the Vasco da Gama Bridge Public-Private Partnership Project*. **International Journal of Construction Management**. 19(4), 2019: 328-338. doi: 10.1080/15623599.2018.1531442
- 47 Punch. *Lekki-Epe Expressway Concession Review*. *Punch Newspapers*. Retrieved from <https://punchng.com/tags/lekki-epe-expressway-concession-review/> Punch. (2019, November 6). Lekki-Epe Expressway Concession Review. *Punch Newspapers*. Retrieved from <https://punchng.com/tags/lekki-epe-expressway-concession-review/> 2019, November 6.
- 48 Africa Finance Corporation. *Abuja-Kaduna Rail Project: An Example of a Successful Public-Private Partnership*. *Africa Finance Corporation Blog*. Retrieved from <https://www.africafc.org/newsroom/blogs/abuja-kaduna-rail-project-an-example-successful-public-private-partnership>. 2019.
- 49 *The Guardian Nigeria*. *Lagos-Ibadan Expressway: Pathway to Development*. *The Guardian Nigeria*. Retrieved from <https://guardian.ng/features/lagos-ibadan-expressway-pathway-to-development/> 2021, June 26.
- 50 Business Day Nigeria. *The PPP Model and Nigeria's Renewable Energy Future*. *Business Day Nigeria*. Retrieved from <https://businessday.ng/energy/power/article/the-ppp-model-and-nigerias-renewable-energy-future/> 2019, May 22.

- <sup>51</sup> *P.M. News Nigeria. Ogun Inks School Construction, Management Deal with Private Partners. P.M. News Nigeria.* Retrieved from <https://pmnewsnigeria.com/2020/10/09/ogun-inks-school-construction-management-deal-with-private-partners/> 2020, October 9.
- <sup>52</sup> *Abuja Light Rail Project: A Case of Public-Private Partnership.* The Nation. Available at: <https://thenationonline.net/abuja-light-rail-project-a-case-of-public-private-partnership/> 2019.
- <sup>53</sup> *Lagos State PPP in Agriculture Policy.* Available at: <https://nairametrics.com/2017/08/22/lagos-state-ppp-in-agriculture-policy/> 2017, August 22.
- <sup>54</sup> *Private, Public Partnership to Revive Lagos Multi-Billion Naira Coconut Processing Plant. The Guardian Nigeria.* Available at: <https://guardian.ng/business-services/private-public-partnership-to-revive-lagos-multi-billion-naira-coconut-processing-plant/> 2019, November 14.
- <sup>55</sup> *Nigeria's Gas Master Plan and the Role of Public-Private Partnerships. Ventures Africa.* Available at: <https://venturesafrica.com/nigerias-gas-master-plan-and-the-role-of-public-private-partnerships/> 2019, October 22.
- <sup>56</sup> *Lagos Water Corporation Inaugurates \$270m Partnership with World Bank Group. African News Agency.* Available at: <https://africanewsagency.co.za/en/lagos-water-corporation-inaugurates-270m-partnership-with-world-bank-group/> 2021, May 21.
- <sup>57</sup> E. Léonard & Y. Surry. *Public-private Partnerships for Africa's Development: Prospects, challenges and opportunities. Journal of African Business.* 20(1), 2019: 1-8.
- <sup>58</sup> S. R. Folorunso & R. Ahmed. *Risk Allocation and Management Strategies in Public-Private Partnerships (PPPs). Journal of Engineering, Design and Technology.* 2020.
- <sup>59</sup> M. O. Nubi & U. L. Onyekwelu. *The Determinants of Public-Private Partnerships in Nigeria. Journal of Asian Business Strategy.* 10(2), 2020: 26-38.
- <sup>60</sup> S. S. Ali. *Assessing the Benefits of Public-Private Partnerships (PPPs) in the Construction Industry: An Overview. Journal of Construction Engineering and Management.* 147(9), 2021: 04021068.
- <sup>61</sup> R. Hansmann & M. Levinson. *Collaborative Governance in Public-Private Partnerships for Infrastructure Development: A Theoretical Perspective. Public Administration Review,* 79(1), 2019: 76-88. doi: 10.1111/puar.12943

- <sup>62</sup> J. Ramolle & L. Mermet. *Network Governance and Collaboration: Insights from a Public-Private Partnership in the Energy Sector*. **Public Management Review**. 23(9), 2021: 1249-1269. doi: 10.1080/14719037.2020.1756617
- <sup>63</sup> I. Novak & N. Pranjić. *Collaborative Governance in Public-Private Partnerships for Innovation: Case Study from the Infrastructure Sector*. **Technological Forecasting and Social Change**. 2022: 175, 121-131. doi: 10.1016/j.techfore.2021.121131
- <sup>64</sup> E. Aidoo, P. Akomeah & K. Boakye. *Assessing the Institutional Factors Affecting the Selection of Public-Private Partnership Projects in Ghana*. **Journal of Engineering, Design and Technology**. 17(5), 2019: 794-810. doi: 10.1108/JEDT-09-2018-0167
- <sup>65</sup> E. Gaisie & I. K. Mensah. *Framing Corporate Social Responsibility Initiatives in Developing Countries: The Role of Institutional factors*. **Business Strategy and Development**. 3(1), 2020: 83-96. doi: 10.1002/bsd2.100
- <sup>66</sup> J. Liu, Y. Huang & J. Huang. *The Role of Institutions in the Adoption of Circular Economy Practices: An empirical study in China*. **Journal of Cleaner Production**. 289, 2021:125624. doi: 10.1016/j.jclepro.2020.125624
- <sup>67</sup> N. Benschop, J. Soeters & H. Boer. *The Institutional Perspective on Sustainable Development Implementation in the Netherlands*. **Sustainability Science**. 17(1), 2022: 243-257. doi: 10.1007/s11625-021-00965-8
- <sup>68</sup> A. A. Ajayi & D.O. Akinfidie. *Public Private Partnership as a Tool for Infrastructural Development in Nigeria*. **International Journal of Management Studies and Social Science Research**. 4(6), 2019: pp. 9-16.
- <sup>69</sup> A.A. Adeyemi & A.O. Adegbemi. *Public-Private Partnership (PPP) in Road Infrastructure Development in Nigeria: An Overview of Recent Trends and Challenges*. **Journal of Building Performance**. 12(1), 2021: pp. 1-16.

- <sup>70</sup> C.O. Ikporukpo & A.S. Osifeso. *The Role of Public-Private Partnership in Developing Road Infrastructure in Nigeria*. **Journal of Infrastructure Development**. 12(1), 2020: pp. 11-23.
- <sup>71</sup> O. Jegede & J. Oluseyi. *Public-Private Partnership and Road Infrastructure Development in Nigeria*. **International Journal of Public Administration and Management Research**. 2(1), 2022: pp. 11-22.
- <sup>72</sup> K.M. Ayoola & B.D. Ogundare. *Financing Road Infrastructure Development in Nigeria: A Case for Public-Private Partnerships*. **Journal of Infrastructure and Sustainable Development**. 6(2), 2024: pp. 55-67.
- <sup>73</sup> Oxford Business Group. *Infrastructure Development and Public-Private Partnerships in Nigeria*. Retrieved from <https://oxfordbusinessgroup.com/overview/developing-nigerias-infrastructure-investment-continues-need-new-funding-modelsand>. 2019.
- <sup>74</sup> Infrastructure Concession Regulatory Commission (ICRC). *Building healthy Public-Private Partnerships in Nigeria's infrastructure development*. Retrieved from <https://icrc.gov.ng/index.php/news-events/press-publications/10-news/145-building-healthy-public-private-partnerships-in-nigeria-s-infrastructure-development>. 2020.
- <sup>75</sup> World Bank. *Nigeria Infrastructure Public-Private Partnership (PPP) Project Preparation Facility: Market Assessment Report*. Retrieved from <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/164291572146577205/nigeria-infrastructure-public-private-partnership-ppp-project-preparation-facility-market-assessment-report>. 2019.
- <sup>76</sup> C.O. Nwosu & E. Eze. *The Effect of Corruption on Public-Private-Partnerships in Nigeria's Infrastructure Development*. **International Journal of Social and Economic Research**. 11(1), 2021: 108-123. <https://doi.org/10.11648/j.ijsber.2021.1110>
- <sup>77</sup> African Development Bank. *Nigeria: Public-Private Partnerships and Development Finance Institutions – Status and Perspective*. Retrieved from <https://www.afdb.org/sites/default/files/documents/afdb-nigeria-ppp-publication-may%202020.pdf>. 2020.

- <sup>78</sup> Infrastructure Concession Regulatory Commission (ICRC). *Public Private Partnerships in Nigeria: The Real Challenges*. Retrieved from <https://icrc.gov.ng/index.php/news-events/press-publications/10-news/167-public-private-partnerships-in-nigeria-the-real-challenges>. 2021.
- <sup>79</sup> O. Kharlamova. *Key Success Factors of Public-Private Partnership Projects in Russia*. **Journal of Environmental Management and Tourism**. 12(1), 2021: 1-10. doi: 10.14505/jemt.v12.1(41).01.
- <sup>80</sup> M. Mokoena. *Critical Factors Influencing the Success of Public-Private Partnerships in the South African Transport Sector*. **Journal of Transport and Supply Chain Management**. 2020: 14, 1-13. doi: 10.4102/jtscm.v14i0.475.
- <sup>81</sup> V.S. Tchamyu, S.A. Asongu & N.P. Tchamyu. *Complexities in the Effects of Public-Private Partnerships on Productivity Growth in African Countries*. **International Journal of Public Administration**. 42(8), 2019: 704-718.
- <sup>82</sup> Y. Albalawi & M. Alrajhi. *Factors Influencing the Success of Public-Private Partnerships in Saudi Arabia*. **Journal of Urban Planning and Development**. 147(3), 2021: 05021005.
- <sup>83</sup> C. Chen & M. Yahya-Zadeh, M. *Factors Affecting the Effectiveness of PPPs in Infrastructure Development in Developing Countries: Evidence from the literature*. **Applied Sciences**. 11(7), 2021: 3181.
- <sup>84</sup> J.J. Hampton & D.P. Loucks. (2019). *Perceptions of Public-Private Partnerships in the United States*. **Journal of Infrastructure Systems**. 25(2), 2019: 04019003.
- <sup>85</sup> M.H.M Saad & A.A Salway. *Stakeholders' Perspectives on Public-Private Partnership Projects in Construction*. **Built Environment Project and Asset Management**, 11(1), 2021: 137-150.
- <sup>86</sup> Z. Liu, Q. & Dai. Studying the implementation of Public-Private Partnership in infrastructure projects. *Procedia Engineering*, 135, 2016: 297-304
- <sup>87</sup> E. Sorensen *Public-Private Partnerships (PPP) for Transportation and Development*. OECD, 2016.
- <sup>88</sup> *United Nations. Transforming our World: the 2030 Agenda for Sustainable Development*. Retrieved from <https://www.un.org/sustainabledevelopment/development-agenda/> 2015.

- <sup>89</sup> T. Oguntoyinbo "*Lagos Govt, Credit Suisse, Others Sign \$2.2 Billion Red Line Rail Project*", *Premium Times Nigeria*. Available at: <https://www.premiumtimesng.com/news/local-news/1401209-what-lekki-toll-gate.html>. Accessed on 9 September 2021. December 2, 2019.
- <sup>90</sup> "*Everything you need to know about Lekki Toll Gate*", *Legit.ng*, October 23, 2020. Available at: <https://www.legit.ng/1401209-what-lekki-toll-gate.html>. Accessed on 9 September 2021.
- <sup>91</sup> A. Odinaka "*Lagos Partners Orgland to Develop 1,000 Hectares of New City in Lekki*", *BusinessDay*. Available at: <https://businessday.ng/news/article/lagos-partners-orgland-to-develop-1000-hectares-of-new-city-in-lekki/>. Accessed on 9 September 2021. February 23, 2021.

## **Chapter Three**

### **Methodology**

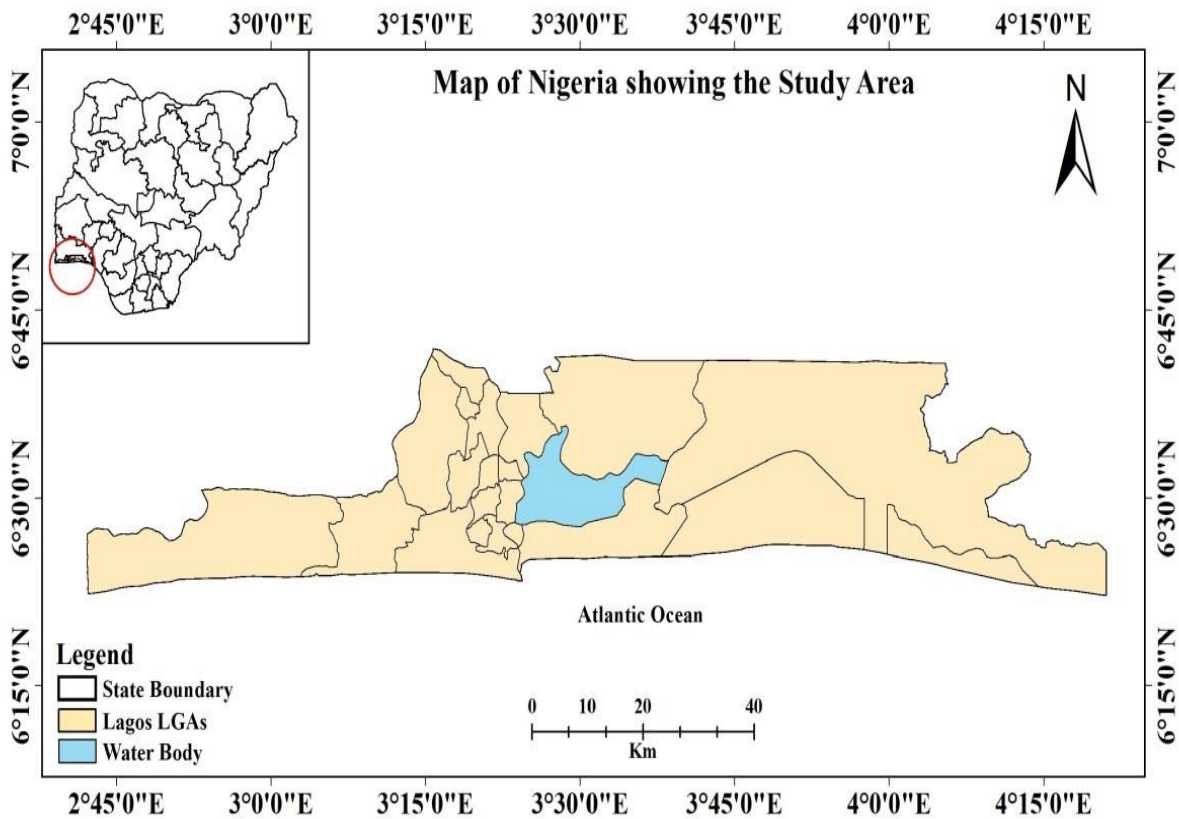
Methodology is a critical aspect of any research study that involves systematic collection, analysis, and interpretation of data to achieve specific research objectives. The use of proper research methodology is essential for ensuring that research findings are valid, reliable, and accurate. This chapter discussed the methodology used on the impact of public-private partnerships in the development of road infrastructure in some parts of Lagos State, Nigeria. The study elaborated on the research design, population for the study, sampling and sampling techniques, administration of instruments, validity of the instruments, reliability of the instruments, methods of data collection and data analysis techniques adopted in this study.

### **3.1 The Study Area**

#### **3.1.1 Location and Position of the Study Area**

Lagos State is a coastal city located in the Gulf of Guinea, along the Atlantic Ocean in southwest Nigeria. It has geographical coordinates of 6.5244° N, and 3.3792° E. Its geographical position makes it a hub for trade and commerce in West Africa. The city is bordered by Ogun State to the

north and east, the Republic of Benin to the west, and the Atlantic Ocean to the south. The city is characterized by a lagoon, islands, and many bridges that connect different parts of the metropolis. Despite its busy environment and urbanization, Lagos boasts of many natural and cultural attractions that draw visitors from all over the world.



**Fig. 3.1:** The Study Area: Lagos Nigeria.  
Source:<sup>1</sup>

### 3.1.2 Historical Background of the Study Area

Lagos State has a rich historical background that dates to the pre-colonial era. Before the arrival of the Europeans, the area that is now known as Lagos was inhabited by several indigenous peoples, including the Awori, the Ijebu, and the Egba groups. The area served as a major trading hub, attracting merchants from different parts of Africa and the Middle East. The Portuguese were the first Europeans to establish a settlement in Lagos in the 15th century. The settlement was used primarily as a trading post for European merchants involved in the transatlantic slave trade. Lagos later became a British colony in the 19th century, and it served as the capital of Nigeria before the capital was moved to Abuja in 1991.

Lagos State was created in 1967 from the former Western Region. It has since grown to become a major centre for trade and commerce in West Africa. With a population of over 20 million people, Lagos is the most populous city in Nigeria and the seventh most populous city in the world. The state is also the economic engine room of Nigeria, with a vibrant and diverse economy that includes manufacturing industries, trading, banking, media, entertainment, and technology. The historical background of Lagos State is essential in understanding the socio-economic development of the state. It shapes the current identity of the state and dictates the pace of development in the region. This historical context is essential in providing a framework for analyzing the impact of public-private partnerships in the development of road infrastructure in Lagos State.

The historical background of road infrastructure in Lagos State dates to the pre-colonial era when footpaths and dirt roads were the primary means of access across the location. During the colonial era, the road network in Lagos State was expanded to facilitate the transportation of people, goods, and services. The first concrete roads in Lagos State were constructed in the

1930s and 1940s, and these roads were primarily concentrated in the central part of Lagos Island. However, the lack of proper maintenance led to the gradual deterioration of these roads.

In the post-independence era, the Nigerian government prioritized the expansion and rehabilitation of the road network in Lagos State. In the 1970s, 1980s and 1990s, several major roads were constructed, including the Third Mainland Bridge, the Carter Bridge, and the Eko Bridge. These roads served as critical infrastructure that facilitated the growth of Lagos State as a commercial and economic hub. Despite the significant investments in road infrastructure, Lagos State still faces significant challenges in road construction and maintenance. The rapid pace of urbanization and population growth has put enormous pressure on road infrastructure, leading to traffic congestion, accidents, and a deterioration in road quality. Presently, the Lagos State government has embarked on some public-private partnership initiatives to address these challenges and improve the quality of road infrastructure in Lagos State. These initiatives include projects that involve the construction of new roads, the rehabilitation of existing roads, and the adoption of smarter transportation systems to improve traffic management and reduce congestion.

### **3.1.3 Population Growth of the Study Area**

Lagos State has experienced significant population growth over the past few decades, making it one of the fastest-growing cities in the world. According to the National Population Commission, Lagos State had a population of 7.9 million people in 2006, making it the most populous state in Nigeria at the time. However, the population has surged to over 20 million people, making Lagos State one of the most populous 20 cities in the world <sup>2</sup>.

The population growth of Lagos State can be attributed to many factors, including the influx of people from other parts of Nigeria and West Africa in search of economic opportunities. Lagos

State is viewed as an economic hub and gateway to West Africa, which has led to its fast-paced urbanization, and population growth. The population growth of Lagos State has put significant pressure on the region's resources, including road infrastructure, housing, and other basic amenities. It has also led to the emergence of informal settlements, slum communities, and a high poverty rate in the region. To address the challenges associated with population growth, the Lagos State government has embarked on many initiatives, including public-private partnerships aimed at improving infrastructure, affordable housing, and job creation. These initiatives aim to provide a better quality of life for residents and improve the economic opportunities available in Lagos State. As of 2021, the estimated population of Lagos State was over 20 million people, making it the most populous state in Nigeria and one of the most populous cities in the world. The population of Lagos State has more than doubled since the 2006 National Census, with an average annual population growth rate of about 2.5%. The high population growth rate poses significant challenges in terms of infrastructure, housing, transportation, and the provision of basic services to residents<sup>1</sup>.

According to the National Population Commission of Nigeria, the population projection of Lagos State is estimated to reach between 24 million and 27 million by 2025. The Lagos State Government also predicts that the population of the state will continue to grow due to the influx of people into the state in search of economic opportunities. However, the Lagos State Government has also embarked on several initiatives and policies aimed at reducing the impact of population growth and addressing the associated challenges in terms of infrastructure, housing, and service provision. Such initiatives include job creation, the promotion of education, and the development and expansion of affordable housing schemes and social amenities<sup>2</sup>.

### **3.2 Research Design**

The work adopted a case study research design in which the research was carried out to provide a comprehensive understanding of the content and provide a form of generalization of ideas or otherwise in relation to PPP and road infrastructure projects in Lagos, Nigeria.

### **3.2.1 Phase 1: Data Collection (Primary Data)**

Primary data was collected through various methods on the impact of public-private partnerships in the development of road infrastructure in some parts of Lagos State, Nigeria. For the primary data, information was collected through questionnaire administration, in-depth interviews, field observations and focus group discussions. Open and closed-end questionnaires were designed to cover the stated objectives and the research questions. The questionnaires administered also covered interviews and focus group discussions. The questionnaire was categorized into various sections which reflected the socio-economic characteristics of respondents, and the other sections that addressed the stated objectives of the study.

### **3.2.2 Phase 2: Literature Review (Secondary Data)**

In this phase, a comprehensive review of existing literature on the impact of public-private partnerships in the development of road infrastructure in Lagos State, Nigeria was carried out. This involved a review of relevant documents, reports, and publications. This phase also involves collecting information relevant to the study from Government Ministries in Lagos State, especially the Lagos State Ministry of Transportation, Lagos State Ministry of Works and Infrastructure, Lagos State Ministry of Physical Planning and Urban Development, Lagos State Ministry of Environment, Lagos State New Town Development Authority, Lagos State Ministry of Finance and Office of the Public-Private Partnership. Population data of Lagos State was sourced from the National Population Commission, Lagos State. Information on the events

around the development of road infrastructure and city development was sourced from the Lagos State Ministry of Works and Infrastructure. Information was also sourced from relevant stakeholders, financial institutions, and construction companies.

### 3.2.3 Phase 3: Spatial Data

To address objective one of the study, the Spatial data of trends in Lagos State Road infrastructure was analyzed using the base map of Lagos State and High-resolution imagery (drone imagery), on a scale of 1:150,000.

#### 3.2.3.1 Raster Data Sets

Spatial information was recorded in the form of a regular grid, organized as a set of rows and columns in raster data format. For this study, the following raster data sets have been acquired (Table 3.1):

**Table 3.1: Detailed Information on Satellites Images Used in this Study**

Satellite	Path/Row	Date of Acquisition	Spatial Resolution (m)	Source
Landsat Image TM	190/056 and 191/056	05/01/1994	28.5m	glovis.usgs/gov
Landsat Image ETM +	190/056 and 191/056	03/01/2004	28.5m	glovis.usgs/gov
Landsat Image ETM	190/056 and 191/056	08/12/2014	30m	glovis.usgs/gov
Landsat Image OLI	190/056 and 191/056	09/02/2024	30m	glovis.usgs/gov

**Source:** LAGIS Department Alausa, Lagos State

All the above multi-date images were sourced and downloaded from the archives of glovis.usgs.gov (global visualization viewer), on path 190-191, row 055-056. Landsat data sets were selected for this study because of their high suitability in conducting land use and land cover studies through their availability in many channels of the electromagnetic spectrum. Landsat data sets were highly consistent since they are from the same satellite system and have long coverage of areas for both dry and rainy seasons. With a ground-projected instantaneous field of view of 30 x 30 meters for the reflective bands of interest, land covers are more accurately classified. These images were resampled to conform their pixels and harmonize their varying spatial resolution.

### **3.3 Population for the study**

The population for the study on the impact of public-private partnership in the development of road infrastructure in some parts of Lagos State, Nigeria, included different categories of individuals and groups.

1. Government officials responsible for road infrastructure development in Lagos State, such as the Lagos State Ministry of Works and Infrastructure, Lagos State Public Works Corporation, Lagos State Urban Renewal Agency, Office of the Public-Private Partnerships, Ministry of Finance and all other ministries involved directly or indirectly with road infrastructure development in Lagos State.

2. Private investors involved in public-private partnership projects for road infrastructure in Lagos State, such as construction companies, financial institutions (Banks) and international development finance institutions.
3. Road users in Lagos State, such as commuters, transport companies, and logistics firms.
4. Residents of Lagos State, who stand to benefit from improved road infrastructure because of public-private partnership investments.

### **3.4 Sample and Sampling Technique**

To have an adequate representation of respondents for the study, the sample comprised a representative sample in the study area. The sample frames were categorized as follows

#### **3.4.1 Sample Frame 1**

The principal officers of the Government ministry directly in charge of infrastructure development and sustainability were selected using a random sampling method. Twenty per cent (20%) of the principal staff were randomly selected for in-depth interviews, and twenty per cent (20%) of the other staff were administered questionnaires. These government agencies were Lagos State Ministry of Transportation, Lagos State Ministry of Works and Infrastructure, Lagos State Ministry of Physical Planning and Urban Development, Lagos State Ministry of Environment, Lagos State New Town Development Authority and Lagos State Ministry of Finance. Table 3.2 shows the sample frame of ministry personnel selected for the study.

#### **3.4.2 Sample Frame 2**

From the Office of the Public-Private Partnership, seven (7) personnel who were heads of various units were selected using Convenience Sampling methods. A Focus Group Discussion

was conducted to gather data and other information based on the objectives of the study (Table 3.3).

### **3.4.3 Sample Frame 3**

The sample frame three (3) consisted of Banks and other financial institutions, Construction Companies and other Technical, Logistics and Allied Industries that partner with Lagos State on PPP Road Infrastructure. The names of the banks, Construction Companies and other establishments are in Tables 3.4, 3.5, 3.6 and 3.7. The total number of Principal Officers was determined and 50% were randomly selected for in-depth interviews. (Table 3.4, 3.5, 3.6 and 3.7).

### **3.4.4 Sample Frame 4**

A concessionaire was selected using the snowball sampling technique. This involved using referrals from the initial respondents from the government agencies to identify an individual to participate in the study.

### **3.4.5 Sample Frame 5**

The sample frame five (5) comprised commercial drivers and other allied transport workers in Lagos State. The commercial drivers were selected based on their recognized local unions and associations which were the National Union of Roads Transport Workers (NURTW) and the Road Transport Employees Association of Nigeria (RTEAN). Other Allied Transport Companies from different locations with PPP Road Infrastructure were selected. Also, their Motor Parks were selected from locations where PPP Roads were identified. The locations were Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge. Oniru Road Network, Mile 2-Oworonsoki, and Zenith Road Victoria Island. Tables 3.8 illustrate the locations of the parks and the number of sampled commercial drivers and other allied transport workers. Commercial drivers and other allied

transport workers were selected using the Convenience Sampling technique. This technique involves selecting individuals who are easily accessible and readily available to participate in the study, such as commercial drivers and other allied transport workers who were readily available at the time of visiting the parts and their offices.

### 3.4.6 Sample Frame 6

Shop/Business Owners and commuters from the same locations were selected by calculating the interval and the number of shops/business offices/residential households (Table 3.9 and 3.10). This was calculated by dividing the total number of shops/business offices on either side of the road by the number of shops/business offices sampled. Every 5<sup>th</sup> shop/business office was randomly selected. This is represented by the equation below.

$$K = \frac{\text{Total number of Shops/ Business Office/Households on either side of the road}}{\text{Number of Buildings Sampled}}$$

Where N = Total Number of Shops/ Business Offices on both sides of the road

n = The Number of Shops/ Business Offices to be sampled

K = Interval (Every 5<sup>th</sup> Shop/Business Office/Households)

The tables below show the template for how in-depth interviews, walking interviews, questionnaire administration and focus group discussions were carried out for the study.

**Table 3.2: Sample Frame for Government Ministries in Lagos State**

S/No	Government Ministries	Personnel		Sampled
		Principal Officers	Other Staff	Principal Officers
1.	Lagos State Ministry of Transportation	15	25	3
2.	Lagos State Ministry of Works and Infrastructure	12	38	3
3	Lagos State Ministry of Physical Planning and Urban Development	12	32	3

4	Lagos State Ministry of Environment	18	23	4
5	Lagos State New Town Development Authority	10	100	2
6	Lagos State Ministry of Finance	17	114	4
<b>Total</b>		<b>84</b>	<b>322</b>	<b>19</b>

**N.B.** Sample Size at 20% for Principal Officers

**Source:** *Author's Conceptualization, 2023.*

**Table 3.3: Sample Frame for the Office of the Public-Private Partnership Lagos State Government**

S/No	Government Agency	Personnel	Sample
1.	The office of the Public-Private Partnership Lagos State Government	7	7
<b>Total</b>		<b>7</b>	<b>7</b>

**Source:** *Author's Conceptualization, 2023.*

**Table 3.4: Sample Frame for Private Agencies Partnering with Lagos State Government on Road Infrastructure Development**

S/No	Private Agencies	Total Number	Sampled
1.	Banks and other Financial Institutions	10	5
2.	Construction Companies	1	4
3.	Other Establishments, Technical, Logistics and Allied Industries	11	5
<b>Total</b>		<b>22</b>	<b>14</b>

**N.B.** Sample Size at 50%

**Source:** *Author's Conceptualization, 2023.*

**Table 3.5: Names of Banks on PPP with Lagos State**

<b>No</b>	<b>Banks</b>
1	Africa Development Bank
2	First Bank Plc
3	United Bank for Africa
4	Access Bank
5	Standard Bank
6	Stanbic IBTC
7	Zenith Bank
8	First Inland Bank
9	Fidelity Bank
10	Access (Diamond) Bank

**Source:** *Author's Conceptualization, 2023.*

**Table 3.6: Construction Companies on PPP with Lagos State**

<b>No</b>	<b>Construction Companies</b>
1	Lekki Concession Company
2	Hi-Tech Construction
3	Larue Projects
4	China Construction Company CCC
5	Mota – Engil (Nig & Africa)
6	CCCC & CRBC consort
7	CGGC – CGC Joint Venture
8	CCECC & CRCCIG Consortium

Source: *Author's Conceptualization, 2023.*

**Table 3.7: Other Establishments on PPP with Lagos State**

No	Name of Establishment
1	Dangote Industries Limited
2	Lafarge Africa Plc
3	Unilever Nigeria Plc
4	Flour Mills Nigeria Pls
5	Nigeria Liquefied Gas Limited
6	China Road and Bridge Corporation Nigeria Limited
7	Asset Resource Managers (ARM)
8	Africa Infrastructure Investment Fund
9	BKS Global and African Consortium (Design Consultant
10	High-Point Rendel (Project Management)
11	Toll Infrastructure Services (Operational Management)

Source: *Field Work, 2023.*

**Table 3.8: Sample Frame for Allied Transport Workers and Commercial Drivers using PPP Roads in Lagos State**

PPP Case Study Road	Sampled Motor Parks	Number of Sampled Commercial Drivers	Transport Union or Company

Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Epe Motor Park	3	NURTW
	ABC Motors Park	1	ABC
	God is Good Motor Park	1	GIG
	Chisco Motor Park	1	CHISCO
	Young Shall Grow Motor Park	1	YSGM
		<b>7</b>	
Oniru Road Network	Oniru Motor Park	3	NURTW
	Eddyson Motor Park	1	EDDYSON
	Alfa Melaye Motor Park	2	RTEAN
	Lagos Island Motor Park	3	NURTW
	AK Motors	1	AK
		<b>10</b>	
Mile 2-Oworonsoki	Mile 2 Motor Park	3	NURTW
	Oyingbo Motor Park	3	RTEAN
	Olojo Drive Motor Park	2	NURTW
	Berger Motor Park	2	NURTW
		<b>10</b>	
Zenith Road Victoria Island	Obalende Motor Park	3	NURTW
	Oluwole Motor Park	2	RTEAN
		<b>5</b>	
<b>Total</b>		<b>32</b>	

Source: *Field Work, 2023.*

**Table 3.9: Sample Frame for Commuters using PPP Roads in Lagos State**

PPP Case Study Road	Sampled Streets	Number of Sampled Households

Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Admiralty Road	5
	Freedom Way	4
	Ajiran Road	5
	Chevron Drive	6
	Osapa London	4
	Ikate	8
	Il ado	5
	<b>37</b>	
Oniru Road Network	Prince Adelowo Adedeji Street	4
	Akin Ogunlewe Street	5
	Ajose Adeogun Street	4
	Samuel Manuwa Street	3
	Ahmadu Bello Way	5
	<b>21</b>	
Mile 2-Oworonsoki	Festac	5
	Cele	4
	Oshodi	3
	Anthony	4
	Ojota	4
	<b>20</b>	
Zenith Road Victoria Island	Adeola Odeku Street	5
	Akin Adesola Street	4
	Ahmed Onibudo Street	3
	Sanusi Fafunwa Street	3
	Tiamiyu Savage Street	3
	<b>18</b>	
<b>Total</b>		<b>96</b>

Source: Field Work, 2023.

**Table 3.10: Sample Frame for Shops and Business Owners along PPP Roads in Lagos State**

<b>PPP Case Study Road</b>	<b>Sampled Streets</b>	<b>Number of Sampled Roadside Businesses/Shops</b>
Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Admiralty Road	3
	Freedom Way	4
	Ajiran Road	3
	Chevron Drive	3
	Osapa London	3
	Ikate	4
	Idado	4
	<b>24</b>	
Oniru Road Network	Prince Adelowo Adedeji Street	4
	Akin Ogunlewe Street	4
	Ajose Adeogun Street	4
	Samuel Manuwa Street	2
	Ahmadu Bello Way	2
	<b>16</b>	
Mile 2-Oworonsoki	Julius Berger Drive	3
	Adetokunbo Ademola Street	3
	Queens Drive	2
	Isaac John Street	4
	Herbert Macaulay Way	3
	<b>15</b>	
Zenith Road Victoria Island	Adeola Odeku Street	2
	Akin Adesola Street	2
	Ahmed Onibudo Street	4
	Sanusi Fafunwa Street	2
	Tiamiyu Savage Street	2
	<b>12</b>	
<b>Total</b>		<b>67</b>

Source: *Field Work, 2023.*

**Table 3.11: Key Indicators to Evaluate the PPP Road Infrastructure in the Study Area**

<b>Key Performance Indicators (KPI) and Performance Measures (PM) Objectives</b>
--

Are the objectives specified in the contract SMART?  
To what extent have the objectives been achieved?  
Have/will user benefits be monitored?  
Have user benefits been as large as expected?

**Risk**

How much risks have been transferred to the private sector?  
Was risk allocation agreed upon quickly?

**Specifications (contract project)**

Are the deliverables specified clearly in the contract?  
Are the roles and responsibilities of different parties involved in the contract clearly defined?  
Are minimum standards for the condition of infrastructure and equipment specified in the contract?  
Are there any performance targets?  
Is the method of measuring performance targets clearly defined?  
Are there penalties for non-compliance?  
Does the contract have procedures for amendments, dispute resolution, or termination?  
Has the contract proceeded without renegotiations?  
Are there any guarantees specified in the contract?

**Tendering Process**

No. of bidders (negotiation vs. final)  
Time from tender notice to financial close  
Legal challenges to the outcome

**Construction Phase**

Was the project completed on time?  
Was the project completed within budget?  
Was the project completed according to the specifications and design?  
Are there any penalties for non-compliance?

**Operations**

Were the services specified in the contract delivered?

**Maintenance**

Are the deliverable standards for infrastructure and equipment being met?

**Monitoring and Evaluation**

Is there a formal monitoring procedure in place?

**Finance**

Was finance available when needed?  
Was the project cash flow sufficient for the expected payments to all parties?  
Did the project result in financial benefits to users (e.g. in terms of charges)?  
Has the financial outcome been equal to or better than expected for the private partner?

**Source:** *Field Work, 2023.*

### 3.5 Description of the Instruments

The instruments used for the study on the impact of public-private partnership (PPP) in the development of road infrastructure in Lagos State, Nigeria were:

*Questionnaires:* The study utilized questionnaires to collect data from various stakeholders involved in PPP road infrastructure development in Lagos State. The questionnaire consisted of closed-ended and open-ended questions designed to gather information on the effectiveness of PPP in the development of road infrastructure, the challenges encountered by stakeholders, and the benefits and drawbacks of PPP in road infrastructure development. The total number of questionnaires administered was 214. 19 questionnaires were administered to other staff of all the government ministries selected for the study, 32 questionnaires were administered to commercial drivers and allied transport workers, 96 questionnaires were administered to commuters using PPP road infrastructure in the selected areas, and 67 questionnaires were administered to shop and business owners in the selected areas where PPP road infrastructure was identified.

*Interviews:* The study employed the use of interviews as an instrument to gather more in-depth data on the perspectives of stakeholders involved in PPP infrastructure development. The interviews were conducted with private sector partners in banks and other financial institutions, construction companies, other establishments, technical, logistics and allied industries and a concessionaire involved in PPP projects in Lagos State. These interviews provided more detail on the challenges and opportunities of PPP in road infrastructure development.

*Focus group discussions:* The study also utilized focus group discussions to gather data and perspectives from personnel from the Office of the Public-Private Partnership in Lagos State. These discussions provided insights into the office perspectives on PPP projects using the Key

Indicators to Evaluate the PPP Road Infrastructure in the study area in Table 3.11 and how they have affected the development of road infrastructure in Lagos State.

Secondary data analysis: The study also analyzed existing literature and reports on PPP road infrastructure development in Lagos State to provide a broader understanding of the benefits, challenges, and impact of PPP on road infrastructure development in the region. These included previous studies, policy documents, and other relevant materials.

*Spatial Data:* Spatial data was used as part of the instruments for the study on the impact of public-private partnership (PPP) in the development of road infrastructure in Lagos State, Nigeria. Spatial data refers to geographic information that was mapped and analyzed with other data sources.

The instruments used in the study were designed to provide comprehensive insights into the effectiveness and impact of PPP in road infrastructure development in Lagos State, Nigeria. The use of multiple instruments allowed for a more diverse range of perspectives and provided a more comprehensive understanding of the topic.

### **3.6 Validity of the Research Instrument**

The questionnaire's (measurement instrument) face validity was checked to ensure it was appropriate for the study's intended purposes. The supervisor performed the task of facial validation of the measuring apparatus. Two (2) experts in the field at Lead City University in Ibadan, Oyo State, were provided with copies of the instrument for review and feedback to ensure that the questions adequately and appropriately probed topics related to the study's aims.

### **3.7 Reliability of the Research Instrument**

The researcher used the Internal Consistency reliability technique to establish the instrument's reliability. The same set of questionnaires was produced for personnel of selected Lagos State Ministries on the Impact of Public-Private Partnerships on the Development of Road Infrastructure. The same group of respondents answered, which means that the responses to the questionnaire were consistent across the group of respondents, indicating that the instrument was reliable.

### 3.8 Method of Data Collection

The methods of data collection used for the study are as follows:

- |      |               |   |                              |
|------|---------------|---|------------------------------|
| i.   | Social Survey | - | Questionnaire Administration |
|      |               | - | Field Observation            |
|      |               | - | In-depth Interview           |
|      |               | - | Focus Group Discussion       |
| ii.  | Spatial Data  | - | Satellite Imagery            |
| iii. | Others        | - | Population Data              |
|      |               | - | Publications                 |
|      |               | - | Documents                    |

### 3.9 Method of Data Analysis

The method of data analysis is a critical component of any research study, as it involves the systematic and rigorous examination of collected data to answer research questions and draw conclusions. In this study, qualitative and geographic information systems data analysis methods were used to analyze the data collected through questionnaires, interviews, focus group discussions, spatial data and secondary research. The method of data analysis for the study was as follows:

### **3.9.1 Objectives and Research Questions of the Study**

To analyze the stated objectives and the research questions for the study, descriptive and inferential statistics were used. Descriptive statistics were used to analyze the socio-economic characteristics of respondents. This involved using tables, charts, graphs, mean, median, mode and standard deviation to calculate the respondent's age, gender, socio-economic status and other relevant factors. Inferential statistics were used to analyze the impact of public-private partnership (PPP) in the development of road infrastructure in Lagos State. This involved using regression analysis and other analytical tools necessary for the impact of PPP and the relationship between various demographic, socioeconomic, environmental, and Key Indicators to Evaluate the PPP Road Infrastructure in the study area.

### **3.9.2 Interview and Focus Group Discussion**

The in-depth interview was conducted with government ministry officials, banks and financial institutions, construction companies, other establishments, technical, logistics and allied industries and the focus group discussions with the personnel of the office of the public-private partnership were analyzed using thematic analysis, which involves transcribing, coding and categorizing themes that emerged from the data.

### **3.9.3 Hypotheses**

Hypothesis 1: Public-private partnerships in road infrastructure development in Lagos State will significantly lead to improved road quality and maintenance. Correlation and Regression were used to establish the relationship between PPP investments and road quality indicators like smoothness, rideability, and safety.

Hypothesis 2: Public-private partnerships in road infrastructure development in Lagos State will lead to faster completion of road projects compared to solely government-led initiatives. comparative analysis was used to analyze the data collected.

Hypothesis 3: Public-private partnerships in road infrastructure development in Lagos State will lead to increased economic growth and development in the region. Regression analysis was used to analyze the data.

### **3.9.4 Satellite Imagery (Spatial Data)**

#### **Vector Data Set Generation**

Lagos state High-resolution imagery (drone imagery) for the whole of Lagos jurisdiction was acquired from the LAGIS Department. All the roads' networks were (Digitized) with the use of ArcGIS 10.8 Software.

#### **Digital Image Processing (DIP)**

The base map of Lagos State and High-resolution imagery (drone imagery) and multi-date satellite images of 1994, 2004, 2014 and 2024, covering the study area were the two forms of datasets acquired that were used for this study. After the acquisition of the various datasets required for this study, the datasets were digitally processed using the following methods:

#### **Scanning**

The base map of the study area was transformed into a raster format through scanning. The scanned images were imported into ArcMap 10.4.5 for registration and stored as TIFF format images. This was used as a reference source to identify features useful as ground control points for geo-referencing.

## **Georeferencing**

This was carried out in ArcMap 10.4.5 after the image registration to enhance accurate digitizing and give the true position of the features on the ground. GIS data files must have a real-world coordinate system (X, Y) if they are to have valid coverage. To make the image data valid in the real world, they were geo-referenced to the Universal Transverse Mercator Projection of the WGS84 coordinate system, zone 31N with Clarke 1880 Spheroid.

## **Digitizing**

On-screen digitizing of land use features was performed after geo-referencing to change the spatial features from raster data format to vector in the form of points, lines and areas. This was semantically represented as nodes, linear and polygon. Road features will be traced out as linear entities since they do not have definite shapes by making use of line features. The entire digitizing process will be achieved by creating layers for each feature. Using the acquired Landsat imagery, in-depth digital image processing involved resampling, sub-map creation and image enhancement.

## **Image Resampling**

The digital image analysis properly started by resampling Landsat TM 1994 with 28.5m spatial resolution, Landsat ETM+ 2004, 28.5m spatial resolution, Landsat ETM+ 2014, 30m spatial resolution and Landsat OLI 2024, 30m spatial resolution. This was carried out in an ArcGIS environment using the resampling tool, the varied spatial resolutions were converted to automatically adjust and equalize the varying datasets to harmonize the difference in their spatial resolution and correspond it with accurate data operations of 30m. The resampled images were imported to ERDAS for further processing.

### **Image Sub-Mapping**

Mapping out the sub-scene from the images was done using the “WINDOW” of ERDAS IMAGES, to extract the study area because the entire dataset was not utilized. The corners of the images were extracted using values that correspond to the extent of the study area from the top to the bottom. The sub-mapping also aided the accurate classification of the image data.

### **Image Enhancement**

Image enhancement through the composite was performed on the three select bands/channels from satellite images to aid visual interpretation by enhancing the images to a natural colour composite. Image enhancement is based on the ability to relate colours and patterns in the image to real-world features to aid accurate visualization. For Landsat TM 1994 with 28.5m spatial resolution, Landsat ETM+ 2004, 28.5m spatial resolution, Landsat ETM+ 2014, 30m spatial resolution, channel 3 were assigned to red plane, channels 4 to green and channels 5 to blue plane. While for Landsat OLI 2024, channel 4 was assigned to the red plane, channel 5 to the green plane and channel 6 to the blue plane. The combination of these channels produced the band combination of RGB. Real-world features were represented in the images using different colour domains, green for vegetation, blue for water bodies, red for settlements, and brown for bare soil/rock outcrop.

### **Endnotes**

- <sup>1</sup> World Population Review. (2021). *Lagos Population*. Retrieved from <https://worldpopulationreview.com/world-cities/lagos-population>, 2021. Date Accessed 16 May 2024.
- <sup>2</sup> National Population Commission, Nigeria. *Nigeria Demographic and Health Survey 2018: Final Report*. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF. Available at <https://dhsprogram.com/pubs/pdf/FR359/FR359.pdf>, 2019. Date Accessed, 16 May 2024.

## **Results and Discussion**

This chapter discussed the results of data analysis for the study. The focus was to analyze the trend and progress of road infrastructure development in Lagos State from 1966 to July 2024, to analyze the trends in public and private investment in road infrastructure in Lagos State within the same period and to identify the major prospects and problems of the public-private partnership PPP model in Lagos State, as well as evaluate urban outcomes of the PPP model in road infrastructure based on some indicators and to examine the perception of users of road infrastructure in the study area.

### **4.1 The Trend in Road Infrastructure Development in Lagos State (Pre- and Post-Post-Independence)**

The history of road infrastructure development in Lagos State can be traced back to the 19th century, during the colonial era. Lagos Island was the epicentre of commerce in the colonial era, and as a result, most of the early road construction focused on the island, which held historical and commercial significance<sup>1</sup>. As the population of Lagos State grew, the need for road infrastructure in other parts of the state increased. The colony's early road construction efforts were primarily limited to stone-paved roads, which were expensive and only limited to a few critical routes. However, road construction shifted to Macadam roads later in the 1800s, with the introduction of a new road-building method by John Loudon Macadam. The legal framework for road construction in Lagos State can be traced back to the General Orders policy adopted in 1912. Under this policy, citizens had the right to participate in road construction activities by providing labour, material, and financial support, while the government provided some assistance. Notable

road builders who contributed to road infrastructure development during this period include Telford, Macadam, and Penrose<sup>1</sup>.

The construction of the Carter Bridge was indeed a noteworthy milestone in the history of road infrastructure development in Lagos State. The bridge, which spans the Lagos Lagoon, was built to connect Lagos Island to the mainland. The construction of the bridge was a significant engineering feat in the early 1900s, and it stands as one of the earliest modern bridges in Lagos State. The Carter Bridge was named after Gilbert Thomas Carter, the Governor of the Lagos colony between 1891 and 1897. Carter was instrumental in extending the reach of the Lagos colony into the Yoruba hinterland, and the bridge's construction was seen as a symbol of British colonial power. The construction of the Carter Bridge was supervised by the renowned British engineer, Sir Ralph Freeman, who also oversaw the construction of the Sydney Harbour Bridge in Australia. The bridge's design was influenced by the Sydney Harbour Bridge, and it was built using steel trusses that spanned the Lagos Lagoon. The Bridge helped to ease transportation challenges faced by residents of Lagos Island and the mainland. It facilitated the flow of goods and services, as well as improved access to markets and other economic activities. Overall, it improved the state's transportation infrastructure and paved the way for the construction of other modern road bridges in Lagos State. The Carter Bridge's construction was a significant milestone in the history of road infrastructure development in Lagos State. The bridge's completion marked the beginning of a new phase in the state's transportation history, with the construction of modern road bridges and highways connecting the state's various parts soon after. The Carter Bridge remains one of the state's iconic landmarks, symbolizing the state's rich history and its commitment to transport infrastructure development.

The growth of road infrastructure in Lagos State gradually increased in the post-independence era. The Lagos-Ibadan Expressway, which is the gateway to Nigeria's interior, was constructed in 1978 and was followed by the construction of other major highways such as Apapa-Oshodi Expressway, Lekki-Epe Expressway, Awolowo Road, among others. Furthermore, the military government in the 1980s initiated infrastructure development programs that included road networks in Lagos State. The Lagos State government embarked on a massive road rehabilitation program in 1999, which included the construction of new roads and the rehabilitation of old ones. In recent times, the Lagos State government has been using public-private partnerships (PPPs) to foster the development of road infrastructure in the state. The construction of the Lekki Toll Road and the proposed Fourth Mainland Bridge are examples of PPPs in road infrastructure development in Lagos State. The trend of road infrastructure development in Lagos State spans over two centuries. The early road construction efforts were focused primarily on Lagos Island, while the post-independence era witnessed the construction of major highways that led to the development of a more extensive road network<sup>1</sup>.

During the Nigerian Civil War, which lasted from 1967 to 1970, there was a critical need for more road construction in Lagos State. The war led to the displacement of millions of people, who fled from the war-torn regions to safer areas, including Lagos State. The surge of internally displaced persons (IDPs) in Lagos State led to increased pressure on the state's infrastructure, including its road network. The state government had to prioritize road construction during this period to ensure the easy movement of people and goods. The construction of the Lagos-Ibadan Expressway, which commenced in 1972, was significant in facilitating the evacuation of IDPs and other movements across the state. The construction of other critical highways, such as the Oshodi-Apapa Expressway, which provided access to the port, was also crucial during this

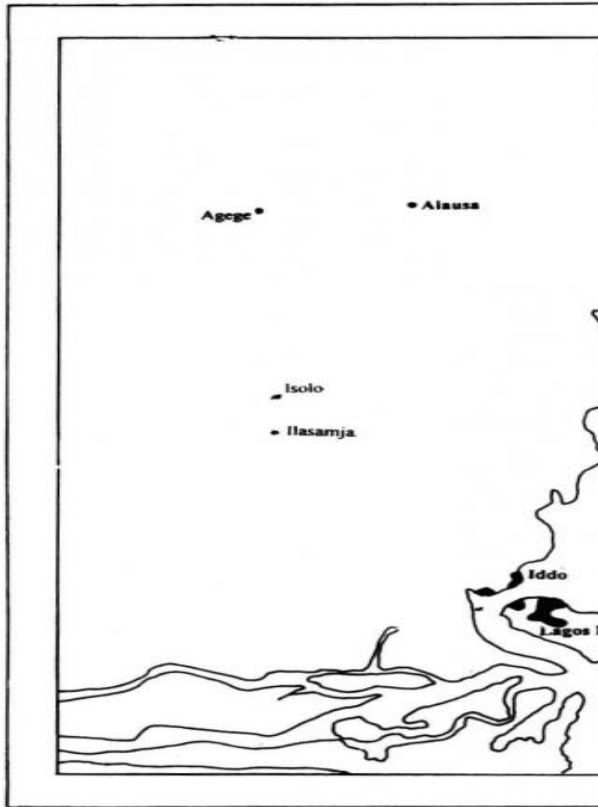
period. The state government had to allocate significant resources towards the development of road infrastructure to ensure that the state's economy continued to function despite the war. The need for more road construction was also highlighted during the reconstruction era after the war. The state government had to initiate various road rehabilitation projects to rebuild damaged roads and bridges and ease transportation challenges. The Nigerian Civil War placed significant pressure on Lagos State's infrastructure, including its road network. The need for more road construction was crucial in facilitating the movement of internally displaced persons, and the evacuation of goods and other essential supplies. The construction of critical highways, like the Lagos-Ibadan Expressway, was a testament to the federal government's commitment to keep the economy functional during a crisis<sup>2</sup>.

In recent years, the Lagos State government has made significant efforts to address the chronic issues of congestion and inadequate road networks. One of the primary approaches used by the state government has been the adoption of Public-Private Partnerships (PPPs). PPPs have been used to develop and implement several road infrastructure projects, including the construction of major bridges such as the Lekki-Ikoyi Link Bridge and the 1.4 km-long Cable Stayed Bridge in Ajah. These partnerships between the state government and private sector firms have ensured that quality infrastructure is delivered in a timely and cost-effective manner. Another initiative aimed at addressing the chronic issue of congestion is the introduction of Bus Rapid Transit (BRT) services. BRT services have been implemented in several parts of the metropolis, such as Ikorodu Road and the Mile 12 axis. The BRT services have improved travel times, reduced traffic congestion and contributed to the reduction of environmental pollution caused by vehicular emissions. Additionally, the federal government had constructed some road infrastructure projects aimed at improving connectivity within and outside the state. The Lagos-

Ibadan Expressway, the Lagos-Badagry Expressway and the Lagos-Abeokuta Expressway are among the major highways being constructed or rehabilitated. The use of technology has also been critical in addressing traffic congestion and management in Lagos State. The Lagos State Traffic Management Authority (LASTMA) has been equipped with Intelligent Transport Systems (ITS) to help monitor traffic flow and improve incident response times. The adoption of PPPs, the introduction of BRT services, road infrastructure projects and the use of technology have been significant initiatives taken by the Lagos State Government to address congestion and inadequate road networks. The government's continued investments in sustainable infrastructure projects will undoubtedly create new opportunities for economic development and improve the quality of life for Lagos State's residents.

The trend in Lagos State shows a strategic shift towards PPPs in road infrastructure development, reflecting a broader movement to engage the private sector in public works for mutual benefits and enhanced service delivery to the populace<sup>3</sup>. Figures 4.1, 4.2, 4.3 and 4.4 show the trend of road infrastructure development since 1850.

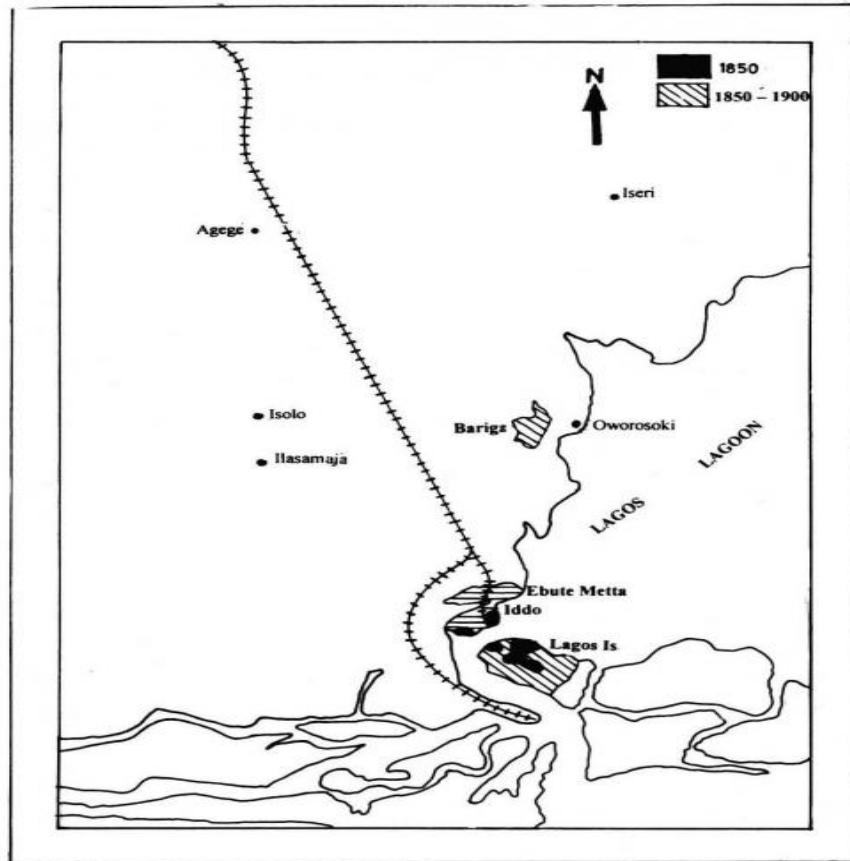
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**Fig 4.1:** Lagos State in 1850  
 Source: <sup>3</sup>

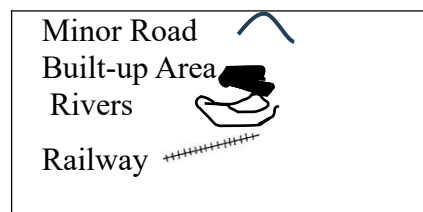


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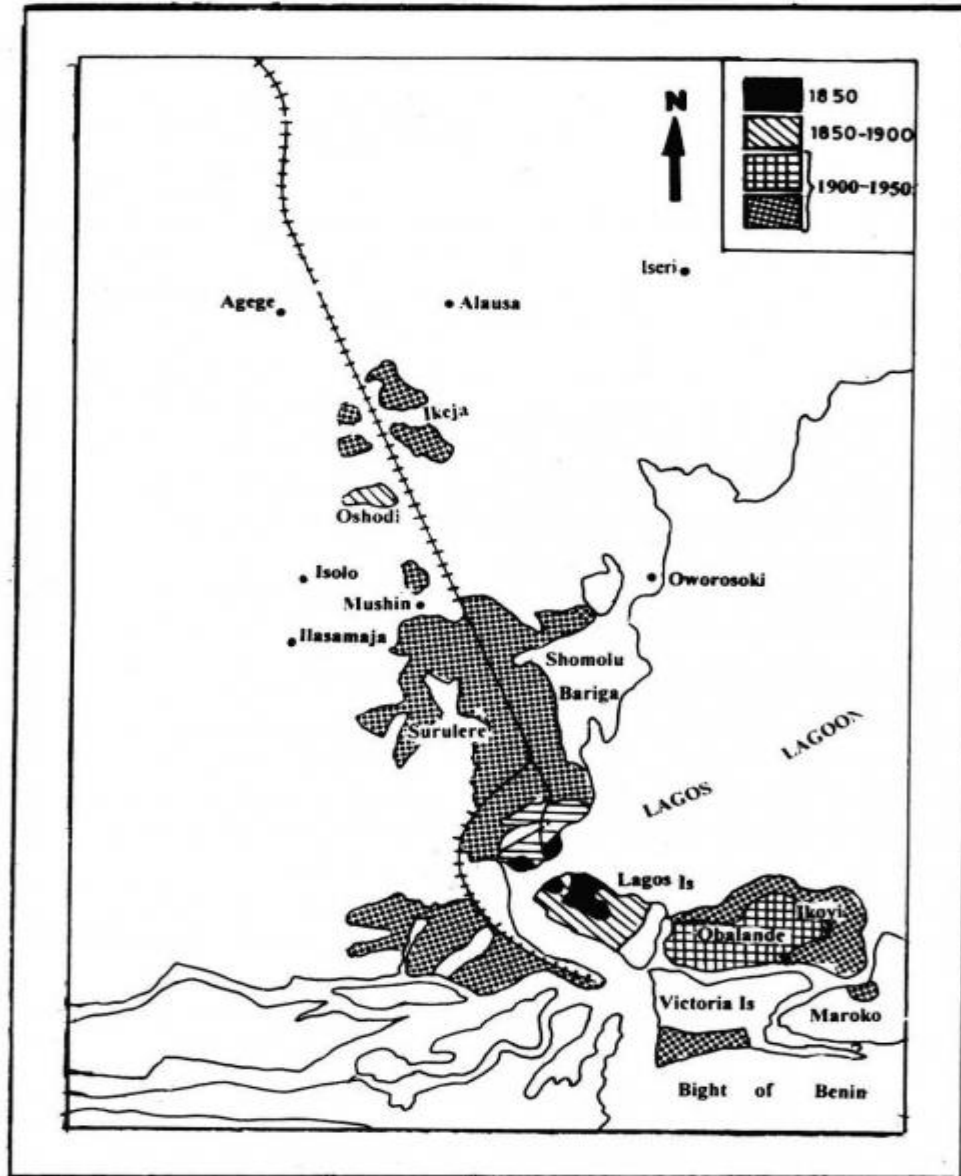


**Fig 4.2:** Lagos State in 1900

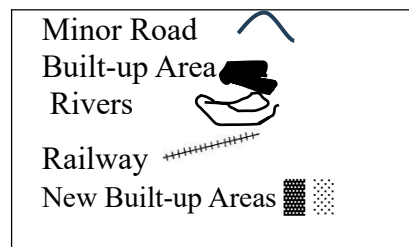
Source: <sup>3</sup>



Lead City University



**Fig 4.3:** Lagos State in 1950  
 Source: <sup>3</sup>



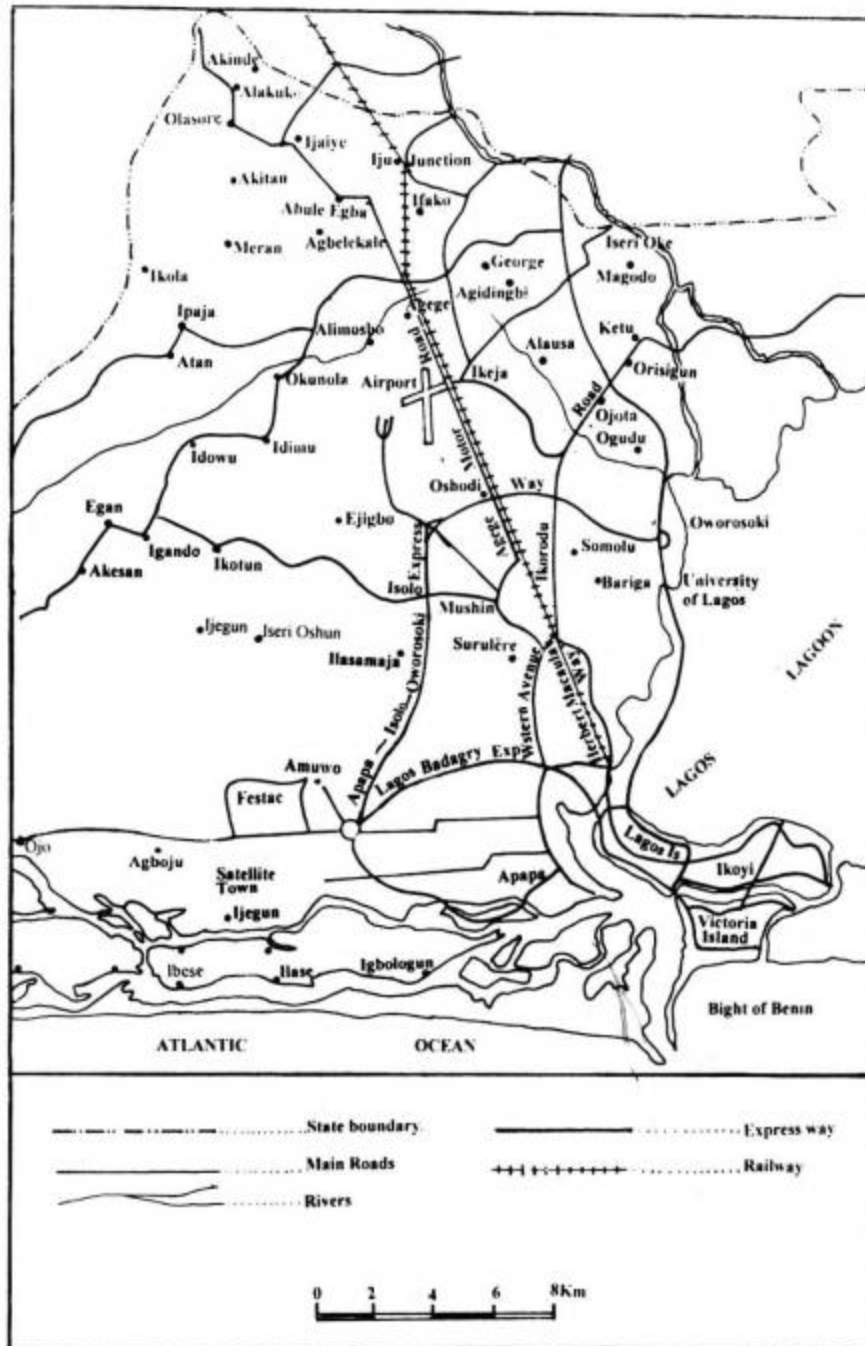


Fig. 4.4: Lagos State in 2000  
 Source: <sup>3</sup>

#### **4.1.1 Population Growth of Lagos State**

The population increase has been one of the most significant road construction drivers in Lagos State. Over the years, the city has experienced rapid urban growth, with its population increasing at an average annual rate between 3.44% and 3.7%, making it one of the fastest-growing cities globally<sup>4</sup>. The surge in the population has resulted in increased demand for transportation, housing, and other urban infrastructure, and the government has turned to the construction of new roads and improvements of existing routes to meet the population's needs. One of the most direct impacts of population growth on road infrastructure has been increased congestion. The heavy traffic experienced in many parts of Lagos State can be attributed to the rise in the human population. As a result, the state government has been expanding and constructing new roads to improve mobility, reduce congestion, and provide commuters with alternative routes.

Furthermore, the population increase has led to an expansion of the city's boundaries, with new communities springing up around its outskirts. The construction of new roads has been vital to open up these areas to economic activities and increasing access to markets. Some years back, the state government launched the "Eko Atlantic City" project; a new city being constructed on the ocean's shores, which will include a network of modern roads. Population growth has also fueled increased demand for commercial and residential real estate, which has resulted in new construction activities and a surge of property development in many areas previously considered rural. This development has led to the construction of new roads to open previously inaccessible areas, thereby creating new economic opportunities.

The rapid population growth in Lagos State has played a significant role in spurring road infrastructure development. The impact of the population rise on urban transportation demands has necessitated the construction of new roads and improvements to existing ones, while the government continues to explore innovative ways to deal with the challenges associated with managing a rapidly growing population. Road infrastructure development is critical to understanding how the city grows and develops, and the government and private sector stakeholders must plan and build roads in line with Lagos State's sustainable development goals.

Table 4.1 shows the population growth of Lagos State between 1966 and 2024. From Table 4.1, it can be deduced that the population of Lagos State has been increasing at astronomical rates since 1966.

**Table 4.1: Population Growth of Lagos State, 1966-2024**

<b>Lagos - Historical Population Data</b>		
<b>Year</b>	<b>Population</b>	<b>Growth Rate</b>
2024	16,536,000	3.70%
2023	15,946,000	3.63%
2022	15,388,000	3.54%
2021	14,862,000	3.44%
2020	14,368,000	3.34%
2019	13,904,000	3.28%
2018	13,463,000	3.23%
2017	13,042,000	3.23%
2016	12,634,000	3.23%
2015	12,239,000	3.23%
2014	11,856,000	3.22%
2013	11,486,000	3.23%
2012	11,127,000	3.24%
2011	10,778,000	3.23%
2010	10,441,000	3.22%
2009	10,115,000	3.22%
2008	9,799,000	3.23%
2007	9,492,000	3.23%
2006	9,195,000	3.79%
2005	8,859,000	3.99%
2004	8,519,000	4.02%
2003	8,190,000	4.00%
2002	7,875,000	4.00%

2001	7,572,000	4.00%
2000	7,281,000	4.01%
1999	7,000,000	4.00%
1998	6,731,000	4.02%
1997	6,471,000	3.99%
1996	6,223,000	4.01%
1995	5,983,000	4.02%
1994	5,752,000	4.00%
1993	5,531,000	4.01%
1992	5,318,000	4.95%
1991	5,067,000	6.36%
1990	4,764,000	6.36%
1989	4,479,000	6.34%
1988	4,212,000	6.36%
1987	3,960,000	6.37%
1986	3,723,000	6.37%
1985	3,500,000	6.35%
1984	3,291,000	6.37%
1983	3,094,000	6.36%
1982	2,909,000	6.32%
1981	2,736,000	6.38%
1980	2,572,000	6.37%
1979	2,418,000	6.33%
1978	2,274,000	6.36%
1977	2,138,000	6.37%
1976	2,010,000	6.35%
1975	1,890,000	6.36%
1974	1,777,000	6.34%
1973	1,671,000	6.37%
1972	1,571,000	6.36%
1971	1,477,000	4.46%
1970	1,414,000	4.51%
1969	1,353,000	4.48%
1968	1,295,000	4.52%
1967	1,239,000	4.47%
1966	1,186,000	4.49%

Source <sup>4</sup>

N.B: Estimates based on NPC 3.7% Annual Growth Rate

Table 4.1 provides information on the population growth of Lagos State from 1966 to 2024. The population data is estimated based on an annual growth rate of 3.7% by the National Population Commission (NPC).

At the time of the first recorded data in 1966, the population of Lagos State was 1,186,000. Over the years, the population has been increasing steadily. By 1970, the population had grown to 1,414,000 with a growth rate of 4.51%. This increase in population has been attributed to the urbanization of the state, in turn, attracting people from different parts of the country. Lagos State has been described as the fastest-growing city in Africa, with the population projected to reach 16,536,000 in 2024.

From 1966 to 1983, the growth rate of the population was over 6%, with evidence provided that the state was experiencing a high influx of migrants, drawn by the booming industrial sector and other economic opportunities. The growth rate decreased slightly in the 1990s, with the growth rate in 1998 and 1999 at 4.02% and 4.00% respectively. In 2012, the population of Lagos State was estimated to be around 11,127,000 with a growth rate of 3.24%.

The current population projection for 2024 stands at 16,536,000, with a growth rate of 3.70%. This projection indicates a significant change in the demographic and social structure of the state. With the continued increase in the population, it is expected that government policies will be implemented to ensure that the needs of the growing population are met.

The table provides a clear picture of the steady population growth rate of Lagos State since 1966, with the population projected to reach 16,536,000 in 2024. This data demonstrates the need for effective planning and management of the state's resources to address the challenges that come with urbanization and population growth<sup>4</sup>.

#### **4.1.2 The Trend in Road Infrastructure Development in Lagos State**

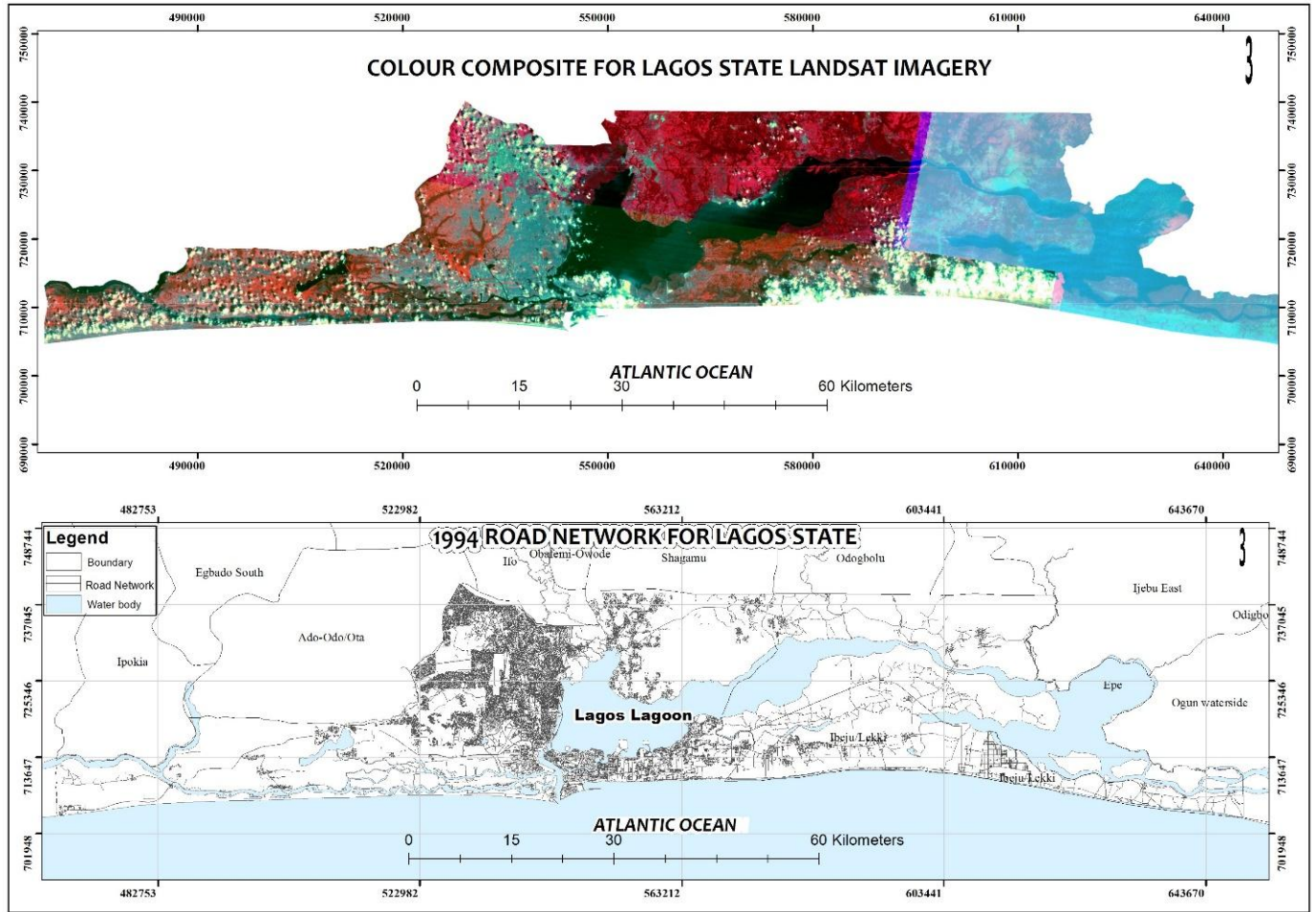
Satellite imagery analysis has become an invaluable tool in studying the evolution of road infrastructure in urban areas over time. In this analysis, we focused on Lagos State, a bustling metropolis in Nigeria, known for its rapid urbanization and infrastructure development. By harnessing the power of satellite imagery, the aim is to track the changes in road networks, identify patterns of growth, and assess the impact of urbanization on transportation infrastructure in Lagos State. This study provided valuable insights into the dynamics of urban development, planning, and the challenges faced in managing road infrastructure in a rapidly expanding city like Lagos.

Between 1966 and 1983, Lagos, Nigeria, witnessed significant changes in its road infrastructure. During this period, Lagos was transitioning from a colonial city to a postcolonial metropolis. Infrastructure development played a crucial role in shaping the city's growth and functionality. It encompasses buildings, transport networks, water resources, energy systems, and administrative frameworks<sup>4</sup>. While specific imagery from this era is scarce, some notable road projects like Pen-Cinema Flyover, a significant flyover and road works project, Lagos-Ogun Boundary Roads Phase II, Improvements along the Lagos-Ogun boundary, Lekki Oniru Traffic Circulation Projects, Network of 31 Roads in Ojokoro, expanding road connectivity, Aradagun-Epeme-Iworo-Ajido Roads, and Somolu Network of Roads<sup>4</sup>. The infrastructure developments during this period laid the groundwork for Lagos's urban transformation. They facilitated economic growth, improved mobility, and enhanced the quality of life for residents.

Four Phases of growth were identified in Road Infrastructure Development in Lagos State. Identification of phases which were at 10-year intervals was based solely on the availability of

materials required for the analysis. The phases were 1994, 2004, 2014 and 2024. This was analyzed using Satellite Imagery.

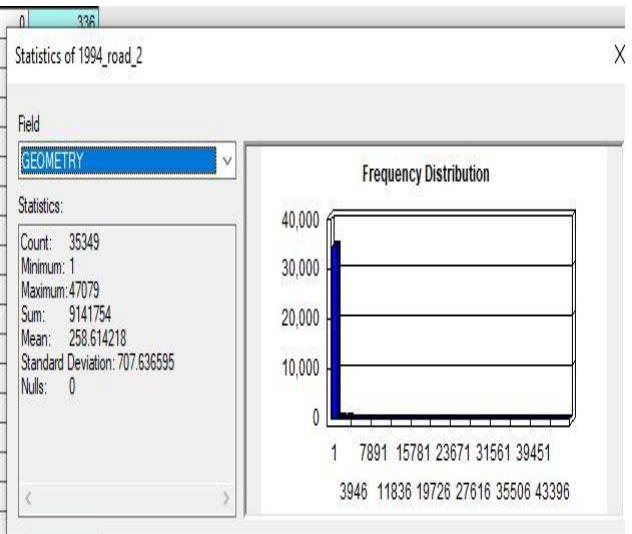
### 4.1.3 First Phase of Road Infrastructure Development in Lagos State, 1994



**Fig 4.5:** 1994 Road Network Map  
**Source:** Landsat Imagery TM 1994

**Table 4.2: Statistics of Road in 1994**

0	Polyline	4890340	Union Road		residential	0	0	0	336
1	Polyline	4890371	Jonathan Coker Road		unclassified	1	0	0	
2	Polyline	4904959	Isaac John Street		residential	0	0	0	
3	Polyline	4927234	Owode Street		residential	0	0	0	
4	Polyline	4927285	Social Club Road		residential	0	0	0	
5	Polyline	4928394	Olayiwola Street		tertiary	1	0	0	
6	Polyline	4928397	Olaniyi Street		residential	0	0	0	
7	Polyline	4928882	Adepebga Street		residential	0	0	0	
8	Polyline	4930359	Oba Aladejobi Street		residential	0	0	0	
9	Polyline	4930690	Harold Sodipo Crescent		residential	0	0	0	
10	Polyline	4931419	Oba Akinjobi Street		tertiary	0	0	0	
11	Polyline	4943015	Ajawa Street		residential	0	0	0	
12	Polyline	4943017	Babs Ladipo Street		tertiary	0	0	0	
13	Polyline	4945970	Beckley Estate Road		residential	0	0	0	
14	Polyline	4947214	Olaniyi Street		residential	0	0	0	
15	Polyline	4947218	Sanni Balogun Street		unclassified	0	0	0	
16	Polyline	4954988	Charity Road		tertiary	1	0	0	
17	Polyline	4954988	Charity Road		tertiary	1	0	0	
18	Polyline	4964443	Planking Street		residential	0	0	0	297
19	Polyline	4964444	Olade Tomori Street		residential	0	0	0	162
20	Polyline	4964446	Francis Oremeji Street		residential	0	0	0	220
21	Polyline	4992650	Anifowoshe Street		residential	0	0	0	171
22	Polyline	4992769	Agric Road		residential	0	0	0	1073
23	Polyline	5021957	Oladipo Bateye Street		residential	0	0	0	1169
24	Polyline	5046000	Ajanaku Street		residential	0	0	0	923
25	Polyline	5046928	Wamon Taofeek Avenue		residential	0	0	0	597
26	Polyline	5047032	Ile Ogbo Street		residential	0	0	0	133
27	Polyline	5133247	Apapa-Oworonshoki Expressway	F265	motorway	1	0	0	1517
28	Polyline	5150133	Ring Road	F264	motorway	1	0	0	477
29	Polyline	5150134	Ahmadu Bello Way	F263	motorway	1	0	0	355
30	Polyline	5150230	Osborne Road	F265	primary	1	0	100	948
31	Polyline	5150231	Alfred Rewane Road	F265	primary	1	0	0	281
32	Polyline	5150235	Ikoyi Club Road		secondary	1	0	0	428
33	Polyline	5150262	Falomo Bridge	F265	primary	1	1	0	970
34	Polyline	5150266	Karimu Kotun Street		tertiary	0	0	0	11
35	Polyline	5150267	Olosa Street		residential	1	0	0	438
36	Polyline	5150268	Adeola Odeku Street		secondary	1	0	0	1707
37	Polyline	5150272	Western Avenue	Western Avenue	motorway	1	1	80	278
38	Polyline	5153329	Apapa-Oworonshoki Expressway	F265	secondary	1	0	0	1105



Source: Landsat TM, 1994

It is unlikely that any Public-Private Partnership (PPP) roads existed in Lagos state in 1994. PPP arrangements for infrastructure projects, including roads, were not common in Nigeria until the 2000s, particularly after the passage of the Infrastructure Concession Regulatory Commission Act in 2005. At the time, the government was responsible for financing and implementing road infrastructure projects through traditional procurement methods. However, it is possible that some privately owned roads, such as those belonging to industrial parks or gated communities, existed in Lagos state in 1994.

Lagos state in 1994 had significant challenges with its road infrastructure. Many of the roads were poorly maintained and were riddled with potholes, which made commuting and transportation difficult. The situation was exacerbated by heavy traffic congestion, which often led to long hours of gridlock and delays. As a result, the government at the time embarked on a road rehabilitation and construction project to improve the road infrastructure of Lagos state. The project involved resurfacing and widening existing roads, as well as building new flyovers, bridges, and road networks. While some progress was made, challenges with funding and inadequate maintenance have continued to impact on the quality of road infrastructure in Lagos state over the years.

The major challenges with Lagos state's road infrastructure in 1994 can be attributed to a number of factors, including:

1. **Poor Maintenance:** Many of the roads were poorly maintained, with potholes, cracks, and erosion affecting their condition. This made it difficult for vehicles, especially commercial ones, to move freely and efficiently.

2. Heavy Traffic Congestion: The rapid increase in population and economic activity in Lagos state led to a corresponding increase in vehicular traffic, which often resulted in long hours of gridlock and delays.

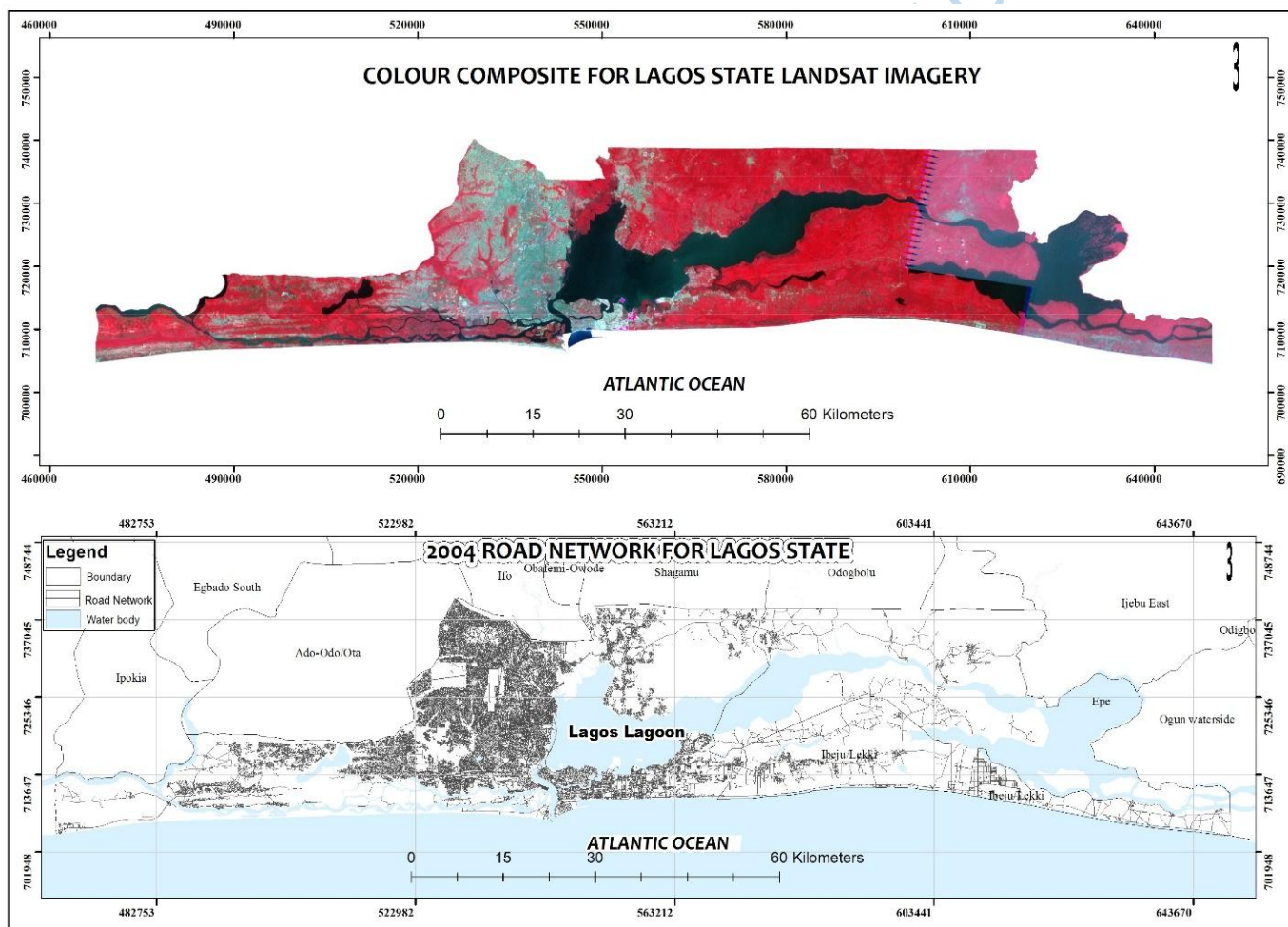
3. Limited Road Networks: The available road networks were insufficient to handle the volume of traffic, leading to traffic bottlenecks and congestion.

4. Inadequate Funding: Limited financial resources were allocated for the maintenance and construction of road infrastructure, making it difficult to address the challenges with the existing road networks and expand the road networks to meet the growing demand.

5. Poor Urban Planning: The rapid urbanization of Lagos state was not followed by proper urban planning, which led to poorly designed road networks and inadequate drainage systems, further exacerbating the problems with the road infrastructure.

Overall, these challenges significantly impacted the road infrastructure of Lagos state in 1994, leading to significant transportation difficulties for residents and businesses.

#### 4.1.4 Second Phase of Road Infrastructure Development in Lagos State, 2004

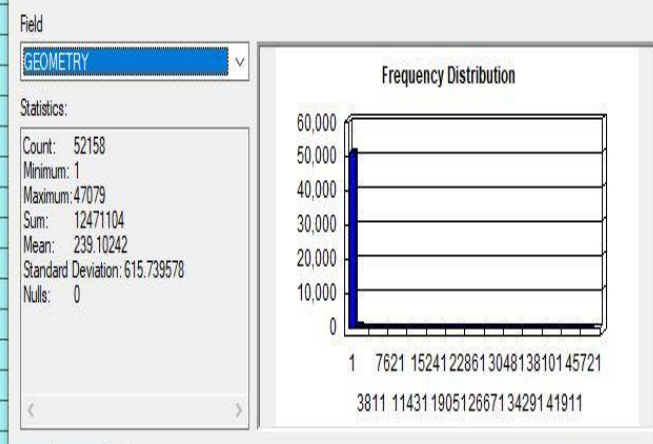


**Fig 4.6: 2004 Road Network Map**  
**Source: Landsat Imagery ETM+ 2004**

**Table 4.3: Statistics of Road in 2004**

63	Polyline	5199260	Meiran Road		secondary	1	0	0	548
64	Polyline	5199262	Command Secondary School Road		secondary	1	0	0	1272
65	Polyline	5199272	Mushin Road		secondary	0	0	0	1774
66	Polyline	5217450	Kosoko Street		tertiary	0	0	0	1
67	Polyline	5217453	Yakoyo Road		secondary	1	0	0	142
68	Polyline	5940374	Olaiyiwola Street		tertiary	0	0	0	469
69	Polyline	5940375	Babs Ogunwole Street		residential	0	0	0	367
70	Polyline	5940378	Abiodun Kuye Street		unclassified	1	0	0	178
71	Polyline	5997394	Odetunde Street		residential	0	0	0	178
72	Polyline	7650788	Oduduwa Street		residential	0	0	0	178
73	Polyline	7650790	Oduduwa Crescent		residential	0	0	0	178
74	Polyline	7650792	Adekunle Fajuyi Way		residential	0	0	0	178
75	Polyline	7650798	Works Road		residential	0	0	0	178
76	Polyline	7651396	Sowerimo Street		residential	0	0	0	178
77	Polyline	7651403	Remi Fani-Kayode Avenue		residential	0	0	0	178
78	Polyline	7652237	Salvation Road		residential	0	0	0	178
79	Polyline	8064698			residential	0	0	0	178
80	Polyline	8064720	Orishe Street		residential	0	0	0	178
81	Polyline	8064723	Oduyemi Street		residential	1	0	0	178
82	Polyline	8064741	Ogundana Street		residential	0	0	0	178
83	Polyline	8064742	Community Road		residential	0	0	0	178
84	Polyline	8064743	Folawewo Street		residential	0	0	0	178
85	Polyline	8064744	Bola Ajibola Street		residential	0	0	0	178
86	Polyline	8064745			residential	0	0	0	178
87	Polyline	8064804	Ikorodu Road	A1	motorway	1	0	0	178
88	Polyline	8064807	Adenibigbe Shitta Street		residential	0	0	0	382
89	Polyline	8064810	Western Avenue	A1	motorway	1	0	0	143
90	Polyline	8064832	Iya Oloye Crescent		residential	0	0	0	371
91	Polyline	8064833	Barnishile Street		residential	0	0	0	570
92	Polyline	8064836			unclassified	0	0	0	498
93	Polyline	8064879			residential	0	0	0	114
94	Polyline	8064880	Aina Eleko Lane		residential	0	0	0	177
95	Polyline	8064881	Idiroko Estate		residential	0	0	0	328
96	Polyline	8156468	Sobo Arobiolu Street		tertiary	0	0	0	550
97	Polyline	8156857	Akinsegun Street		residential	0	0	0	568
98	Polyline	8160805	Akin Adesola Street		primary	1	0	0	242
99	Polyline	8161019	Ojekunle Street		tertiary	1	0	0	1163
100	Polyline	8161447	Bishop Kale Close		residential	0	0	0	81
101	Polyline	8161501	Ayigbe Street		unclassified	0	0	0	420

Selection Statistics of 2004roads



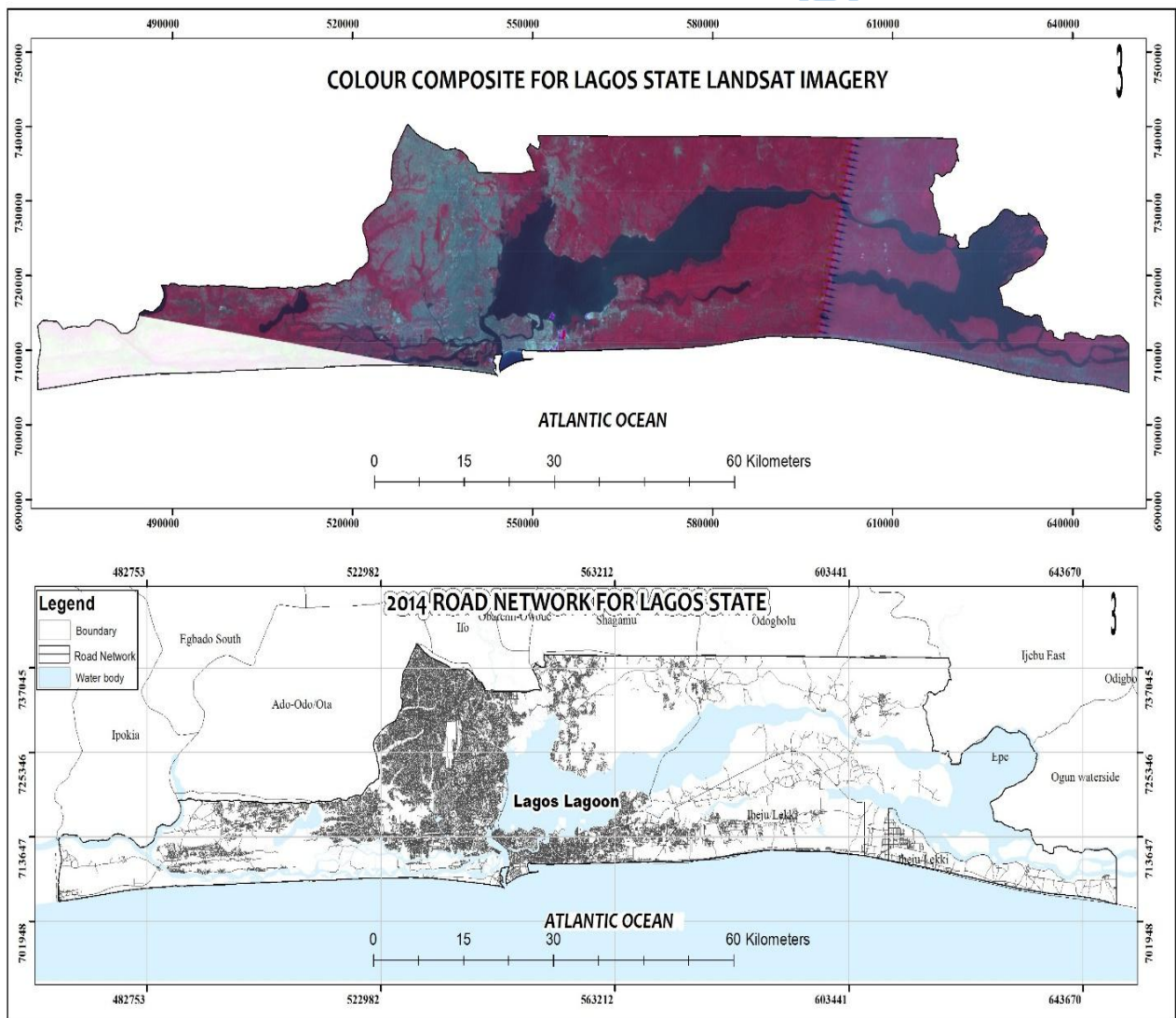
Source: Landsat Imagery ETM+ 2004

In 2004, Lagos State still faced significant challenges with its road infrastructure, although some progress had been made since 1994. The government has made efforts to rehabilitate and expand existing road networks, as well as construct new roads to support economic growth and urban development. However, some of the major challenges with road infrastructure in Lagos State in 2004 were:

1. **Traffic Congestion:** Lagos State continued to experience heavy traffic congestion, which was made worse by inadequate road networks, poor traffic management, and a high number of vehicles on the road.
2. **Poor Road Quality:** Although some roads had been rehabilitated, many roads in Lagos State were still in poor condition, with potholes, cracks, and other damage affecting their usability and safety.
3. **Insufficient Drainage Systems:** Heavy rainfall often led to flooding in several parts of Lagos State due to inadequate drainage systems, which affected the condition of roads and caused transportation difficulties.
4. **Inadequate Maintenance:** Some of the newly constructed roads were not properly maintained, leading to damage that required repair and rehabilitation.
5. **Overloading of Vehicles:** The excessive loading of commercial vehicles, particularly trucks and buses, often led to damage of roads, making them unsafe for commuting.

While Lagos State had made some improvements to its road infrastructure between 1994 and 2004, there were still significant challenges that needed to be addressed to ensure safe and efficient transportation.

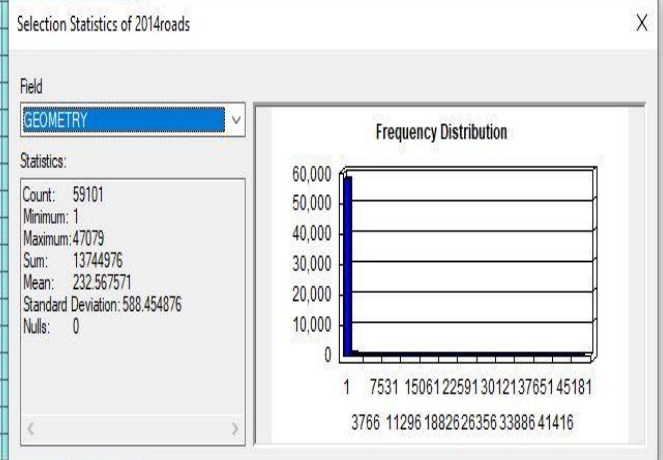
#### 4.1.5 Third Phase of Road Infrastructure Development in Lagos State, 2014



**Fig 4.7: 2014 Road Network Map**  
**Source: Landsat Imagery ETM+ 2014**

**Table 4.4: Statistics of Road in 2014**

1	Polyline	4890371	Jonathan Coker Road		unclassified	1	0	0	1102
2	Polyline	4904959	Isaac John Street		residential	0	0	0	1590
3	Polyline	4927234	Dwode Street		residential	0	0		
4	Polyline	4927285	Social Club Road		residential	0	0		
5	Polyline	4928394	Olayiwola Street		tertiary	1	0		
6	Polyline	4928397	Olaniyi Street		residential	0	0		
7	Polyline	4928882	Adepebga Street		residential	0	0		
8	Polyline	4930359	Oba Aladejobi Street		residential	0	0		
9	Polyline	4930690	Harold Sodipo Crescent		residential	0	0		
10	Polyline	4931419	Oba Akinjobi Street		tertiary	0	0		
11	Polyline	4943015	Ajawa Street		residential	0	0		
12	Polyline	4943017	Babs Ladipo Street		tertiary	0	0		
13	Polyline	4943473			residential	0	0		
14	Polyline	4945970	Beckley Estate Road		residential	0	0		
15	Polyline	4947214	Olaniyi Street		residential	0	0		
16	Polyline	4947218	Sanni Balogun Street		unclassified	0	0		
17	Polyline	4954986	Charity Road		tertiary	1	0		
18	Polyline	4954988	Charity Road		tertiary	1	0		
19	Polyline	4964443	Planking Street		residential	0	0		
20	Polyline	4964444	Olaide Tomori Street		residential	0	0	0	162
21	Polyline	4964446	Francis Oremoji Street		residential	0	0	0	220
22	Polyline	4992650	Anifowoshe Street		residential	0	0	0	171
23	Polyline	4992769	Agric Road		residential	0	0	0	1073
24	Polyline	5021957	Oladipo Bateye Street		residential	0	0	0	1169
25	Polyline	5046000	Ajanaku Street		residential	0	0	0	923
26	Polyline	5046928	Wamon Taofeek Avenue		residential	0	0	0	597
27	Polyline	5047032	Ile Ogbo Street		residential	0	0	0	133
28	Polyline	5133247	Apapa-Oworonshoki Expressway	F265	motorway	1	0	0	1517
29	Polyline	5150133	Ring Road	F264	motorway	1	0	0	477
30	Polyline	5150134	Ahmadu Bello Way	F263	motorway	1	0	0	355
31	Polyline	5150230	Osborne Road	F265	primary	1	0	100	948
32	Polyline	5150231	Alfred Rewane Road	F265	primary	1	0	0	281
33	Polyline	5150235	Ikoyi Club Road		secondary	1	0	0	428
34	Polyline	5150262	Falomo Bridge	F265	primary	1	1	0	970
35	Polyline	5150266	Karimu Kotun Street		tertiary	0	0	0	11
36	Polyline	5150267	Olosa Street		residential	1	0	0	438
37	Polyline	5150268	Adeola Odeku Street		secondary	1	0	0	1707
38	Polyline	5150272	Western Avenue	Western Avenue	motorway	1	1	80	278



**Source: Landsat ETM+ 2014**

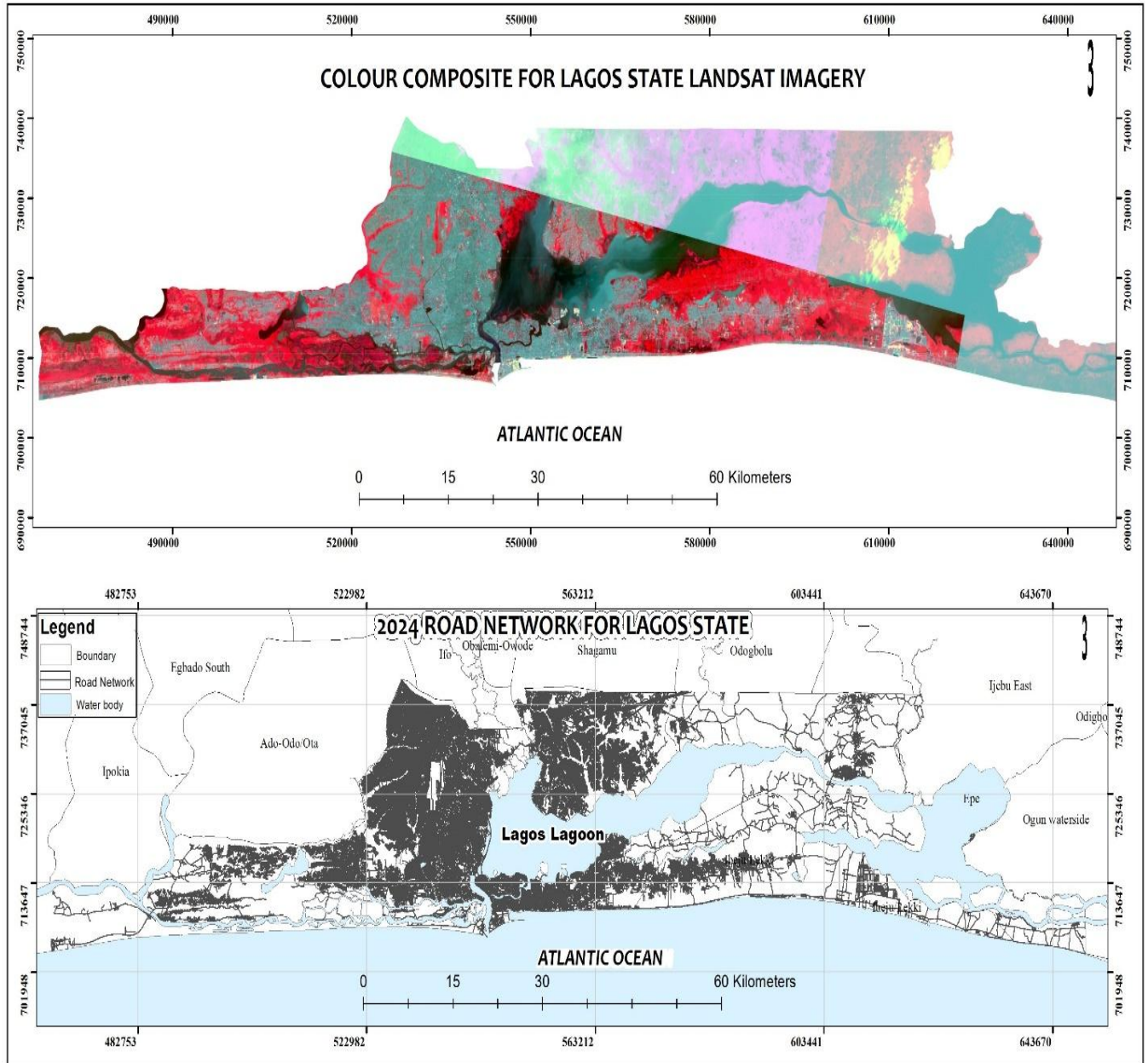
In 2014, Lagos State had made significant progress in its road infrastructure compared to a decade earlier. Several large-scale road projects were implemented, and there were many visible improvements in the condition of the road network. However, due to the rapid population growth and urbanization in Lagos State, several road challenges persisted. The road infrastructure condition in Lagos State in 2014 can be summarized as follows:

1. **Implementation of Road Projects:** Lagos State implemented several road projects around 2014. Some of these projects tackled congestion-related issues in the State, while others involved the construction of new roads. Four important roads constructed around this period are the Lekki-Epe Expressway, the Lekki-Ikoyi Link Bridge, the Ajah Flyover, and the Ikorodu Road Expansion Project.
2. **Congestion and Gridlocks:** Despite the measures taken to reduce congestion in the State, Lagos State still faced significant traffic congestion and gridlocks, which worsened during peak hours, leading to delays, increased travel times, and economic losses.
3. **Poor Road Quality:** Some portions of the road network in Lagos State still suffer from poor road quality, with potholes and cracks affecting their usability and safety.
4. **Drainage Issues:** During the rainy season, several parts of Lagos State experience flooding due to poor drainage systems, which often result in damaged roads and bridges.
5. **Overloading of vehicles:** Overloading of commercial vehicles remained a challenge, and the trucks navigating the State's roads often caused significant damage to the roads, leading to repair and rehabilitation requirements.

While Lagos State made great strides in its road infrastructure in 2014, there were still significant challenges to be addressed to ensure safe and efficient transportation in the State.

#### **4.1.6 Fourth Phase of Road Infrastructure Development in Lagos State, 2024**

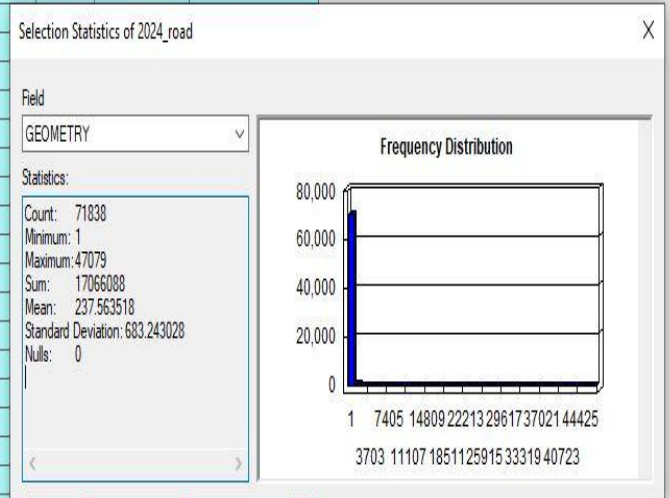
Lead City University Ibadan DO NOT COPY



**Fig 4.8: 2024 Road Network Map**  
**Source: Landsat Imagery OLI 2024**

**Table 4.5: Statistics of Road in 2024**

0	Polyline	4890340	Union Road		residential	0	0	0	336
1	Polyline	4890371	Jonathan Coker Road		unclassified	1	0	0	1102
2	Polyline	4904959	Isaac John Street		residential	0	0	0	1590
3	Polyline	4927234	Owode Street		residential	0	0	0	811
4	Polyline	4927285	Social Club Road		residential	0	0	0	540
5	Polyline	4928394	Olayiwola Street		tertiary	1	0	0	327
6	Polyline	4928397	Olaniyi Street		residential	0	0	0	377
7	Polyline	4928882	Adepegga Street		residential				
8	Polyline	4930359	Oba Aladejobi Street		residential				
9	Polyline	4930690	Harold Sodipo Crescent		residential				
10	Polyline	4931419	Oba Akinjobi Street		tertiary				
11	Polyline	4943015	Ajawa Street		residential				
12	Polyline	4943017	Babs Ladipo Street		tertiary				
13	Polyline	4943473			residential				
14	Polyline	4945970	Beckley Estate Road		residential				
15	Polyline	4947214	Olaniyi Street		residential				
16	Polyline	4947218	Sanni Balogun Street		unclassified				
17	Polyline	4954988	Charity Road		tertiary				
18	Polyline	4954988	Charity Road		tertiary				
19	Polyline	4964443	Planking Street		residential				
20	Polyline	4964444	Olaide Tomori Street		residential				
21	Polyline	4964446	Francis Oremeji Street		residential				
22	Polyline	4992650	Anifowoshe Street		residential				
23	Polyline	4992769	Agric Road		residential				
24	Polyline	5021957	Oladipo Bateye Street		residential	0	0	0	1169
25	Polyline	5046000	Ajanaku Street		residential	0	0	0	923
26	Polyline	5046928	Wamon Taofeek Avenue		residential	0	0	0	597
27	Polyline	5047032	Ile Ogbo Street		residential	0	0	0	133
28	Polyline	5133247	Apapa-Oworonshoki Expressway	F265	motorway	1	0	0	1517
29	Polyline	5150133	Ring Road	F264	motorway	1	0	0	477
30	Polyline	5150134	Ahmadu Bello Way	F263	motorway	1	0	0	355
31	Polyline	5150230	Osborne Road	F265	primary	1	0	100	948
32	Polyline	5150231	Alfred Rewane Road	F265	primary	1	0	0	281
33	Polyline	5150235	Ikoyi Club Road		secondary	1	0	0	428
34	Polyline	5150262	Falomo Bridge	F265	primary	1	1	0	970
35	Polyline	5150266	Karimu Kotun Street		tertiary	0	0	0	11
36	Polyline	5150267	Olosa Street		residential	1	0	0	438
37	Polyline	5150268	Adeola Odeku Street		secondary	1	0	0	1707
38	Polyline	5150272	Western Avenue	Western Avenue	motorway	1	1	80	278



**Source:** Landsat OLI 2024

By 2024, Lagos State would have invested in more robust road infrastructure through PPPs, leading to the following outcomes:

1. Infrastructure Expansion: PPPs could lead to the development of new infrastructure projects such as expressways, bridges, and flyovers. This expansion will help to reduce traffic congestion by providing alternative routes of travel that are safe and efficient.

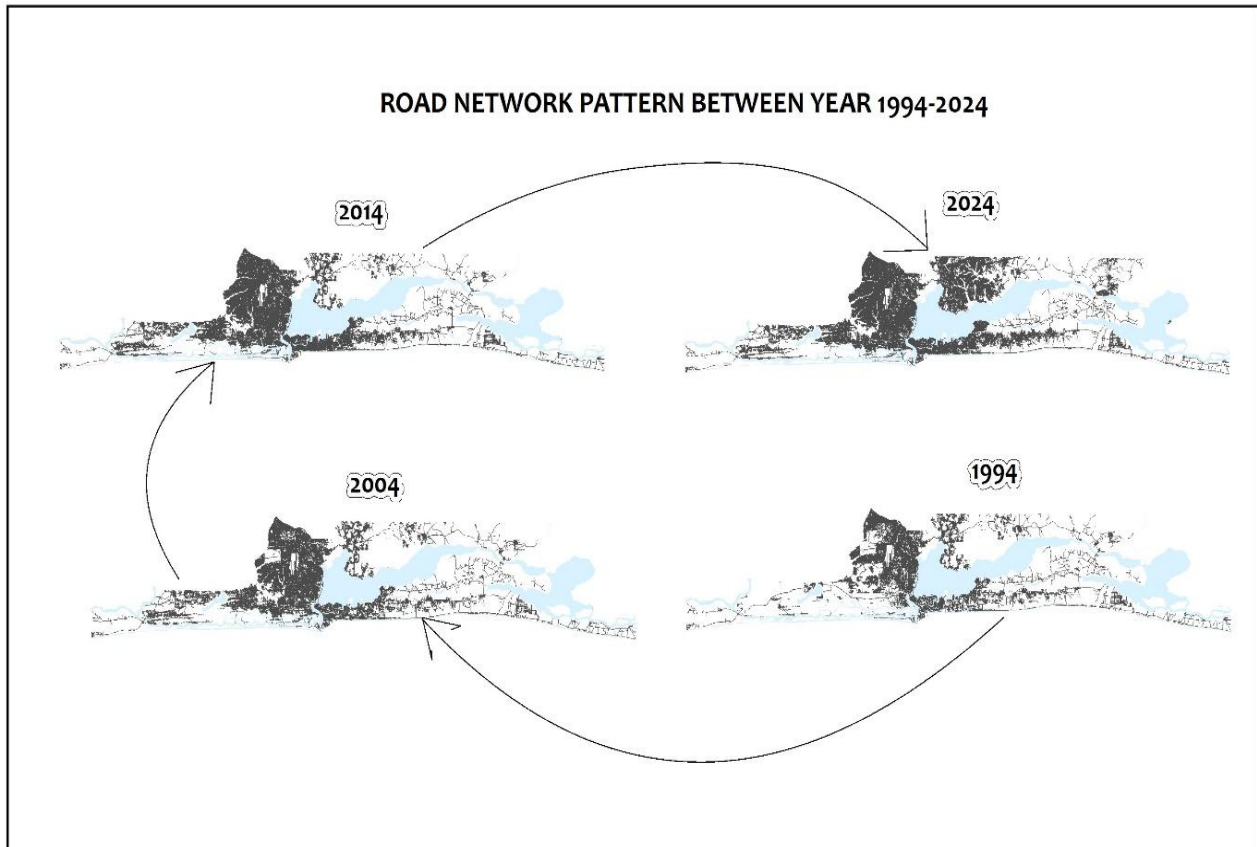
2. Robust Maintenance: PPPs could also lead to more robust maintenance of existing road networks. This maintenance will help reduce the incidence of potholes and cracks, making the roads safer and reducing the incidence of accidents.

3. Improved Drainage Systems: PPPs could also help address the drainage problems that cause flooding in Lagos State, leading to damage to the road network and barriers to efficient transportation.

4. Technology-Driven Traffic Management: The involvement of the private sector in road management through PPPs could enable the implementation of better traffic management systems that leverage technology to improve safety and traffic flow. For instance, the use of Intelligent Transportation Systems (ITS) could reduce traffic congestion and improve travel time reliability.

Lagos State successfully engages in PPPs for road infrastructure development and management, the road infrastructure condition in 2024 could see significant improvement in the quality of its transportation network.

#### 4.1.7 Road Network Pattern Between 1994 and 2024



**Fig 4.9:** Road Network Pattern between 1994 and 2024  
**Source:** Landsat Imagery

<b>YEARS</b>	<b>Count</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Sum</b>	<b>mean</b>	<b>Standard Deviation</b>	<b>Nulls</b>
1994	35349	1	47079	9141754	258.614218	707.636595	0
2004	52158	1	47079	12471104	239.10242	615.739578	0
2014	59101	1	47079	13744976	232.567571	588.454876	0
2024	71838	1	47079	17066088	237.563518	683.243028	0

**Table 4.5 a,b,c, and d: Statistics of Government Funded and PPP Roads in Lagos State Between 1994 and 2024**

**Source:** Landsat Imagery Statistics for 1994, 2004, 2014 and 2024

The table provides statistics on the number, range, and total length of government-funded and public-private partnership (PPP) roads in Lagos State, Nigeria, for the period between 1994 and 2024. The data were obtained using satellite imagery of the state taken in 1994 (Landsat TM), 2004 (Landsat ETM+), 2014 (Landsat ETM+), and 2024 (Landsat OLI).

The first column of the table shows the years for which the statistics were generated. The second column displays the count of roads identified in Lagos State for each of the four years. There were 35,349 roads identified in 1994, which increased to 51,158 by 2004, and then further increased to 59,101 in 2014. It is projected that the number of roads will rise to 71,838 by 2024. These roads comprised of residential, primary, secondary and tertiary roads.

The third and fourth columns show the minimum and maximum lengths of roads identified in Lagos State for each of the four years. The minimum length of a road for each year was one, while the maximum lengths for the four years were 47,079, indicating that the roads in Lagos State are diverse in length.

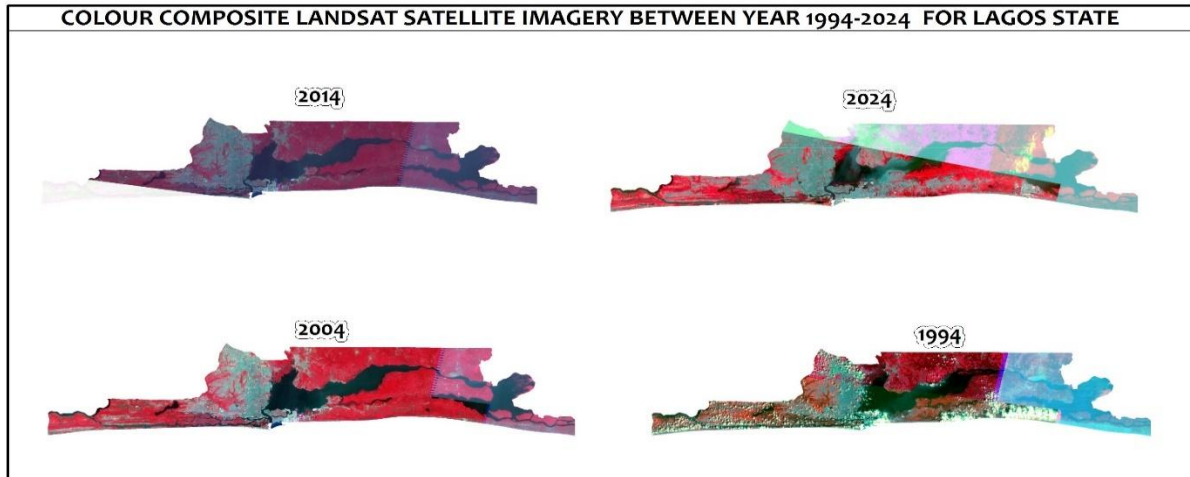
The fifth and sixth columns represent the total length and mean length of the identified roads in Lagos State for each of the four years. The total length of the roads recorded in the state was 9,141,754 meters in 1994, which increased to 12,471,104 meters by 2004. In 2014, the total

length was 13,744,976 meters before it rose to 17,066,088 meters in 2024. The mean length of the roads in Lagos State was 258.6 meters in 1994, and this declined slightly to 239.1 meters in 2004. However, in 2014, it slightly rose to 232.6 meters before increasing to 237.6 meters in 2024.

Finally, the seventh column represents the standard deviation of the data in each of the four years. The standard deviation indicates how variable the data is from the mean. The standard deviation values were 707.6 meters, 615.7 meters, 588.5 meters, and 683.2 meters in 1994, 2004, 2014, and 2024, respectively. The absence of nulls in the nulls column of the table indicates that there are no missing data for any of the four years.

In conclusion, the table shows that the number of identified roads in Lagos state increased over the years, and so did the total length, mean length, and standard deviation. This suggests an increase in development with more roads being constructed in the state.

#### 4.1.8 Colour Composite Landsat Satellite Imagery Between Year 1994 and 2024 for Lagos State



**Fig 4.10:** Colour Composite Landsat Satellite Imagery between years 1994-2024 for Lagos State

**Source:** Landsat Imagery

Satellite imagery is data obtained by capturing images of the Earth's surface from orbiting satellites. It provides a detailed view of the Earth's surface and allows for the mapping of different features, including vegetation, water bodies, built-up areas, and roads. The Landsat series of satellites have been used in this study to collect and provide high-quality satellite imagery for several years.

The composite colour to represent imagery colours from 1994 and 2024 were achieved by assigning specific colours to different features on the satellite imagery. In this context, four colours are assigned to different features, as follows:

1. Red colour for built-up areas: Built-up areas refer to places that are heavily urbanized with significant structures such as buildings, roads, and other infrastructure. Urban areas appear as red on satellite imagery because they reflect various wavelengths of light. In the Lagos State satellite imagery of 1994 and 2024, built-up areas were identified in red colour.

2. Blue colour for water bodies: Water bodies consist of oceans, rivers, and streams that appear blue on satellite imagery. Lagos State is located on the coast of Nigeria with several water bodies such as the Atlantic Ocean, lagoons, and rivers. The blue colour was used to represent water bodies in the satellite imagery of Lagos State.

3. Black colour for roads: The colour black can be used to represent roads in satellite imagery. Roads are one of the essential infrastructures in Lagos State, and they were easily identified in black colour on satellite imagery.

4. Green colour for vegetation: Vegetation or greenery is an essential aspect of satellite imagery and can be identified in the green colour. Lagos State has several parks and open spaces with vegetation, and this was depicted as green colour on satellite imagery.

The Landsat TM, Landsat ETM+, and Landsat OLI are different Landsat satellite missions that provide high-quality imagery. Composite colour images that combine the Landsat TM imagery of 1994 and Landsat OLI imagery of 2024 can be generated using various image processing software. The resulting image can help to identify changes in the landscape over the years, such

as urban expansion and vegetation loss. By mapping these changes, it is possible to make informed decisions on land use planning and environmental management.

#### **4.2 The Trends in Public and Private Investment in Road Infrastructure in Lagos State**

Public-Private Partnerships (PPP) have been a key strategy for infrastructure development in Lagos State. On 24 June 2011, the Lagos State Government passed into law the Public Private Partnership Law 2011 (PPP Law). The PPP Law, which is the State Government's latest attempt to further refine the legal framework for public-private partnerships, expressly abrogated the Lagos State Roads (Private Sector Participation) Authority Law 2007 (the PSP Law).

The first attempt of the Lagos State Government towards the creation of a legal framework for public-private partnerships was in 2005 with the enactment of the Lagos State Roads, Bridges, and Infrastructure (Private Sector Participation) Development Board Law (LSR Law). This was followed in 2007 by the PSP Law which repealed the LSR Law, and more recently by the PPP Law in 2011. A major feature of the PPP Law is that it establishes the Office of Public Private Partnerships (the Office), which is also the procuring entity for the Lagos State Public Procurement Law. The PPP Law establishes the office as a body corporate with perpetual succession and a common seal. The office is governed by the Public Private Partnership Governing Board comprising six members: the Chairman, the Director General and four other members, all appointed by the Governor of Lagos State. The PSP Law established the Lagos State Roads (Private Sector Participation) Authority with a larger board of twelve members, also appointed by the Governor. The primary objective of the office has been expanded under the PPP

Law, thus moving away from the major focus of the PSP Law, which was the development of road infrastructure and facilities, to a much wider spectrum involving almost every form of infrastructure conceivable. Under the PPP Law, the primary objective of the office is to develop public infrastructure or public assets and provide social amenities and other facilities through public private partnership in the state. Public infrastructure includes public facilities and amenities including roads, bridges, highways, rail lines, water transportation facilities, public water works, housing, electric power stations, hospitals, recreational parks, motor parks, waste disposal facilities, amusement centers and any other infrastructure or amenities for public use. The primary objective of the Office has been expanded under the PPP Law, thus moving away from the major focus of the PSP Law, which was the development of road infrastructure and facilities, to a much wider spectrum involving almost every form of infrastructure conceivable. Under the PPP Law, the primary objective of the office is to develop public infrastructure or public assets and provide social amenities and other facilities through public private partnership in the state. Public infrastructure is defined as including public facilities and amenities including roads, bridges, highways, rail lines, water transportation facilities, public water works, housing, electric power stations, hospitals, recreational parks, motor parks, waste disposal facilities, amusement centers and any other infrastructure or amenities for public use.

#### **4.2.1 Features of the PPP Law**

- i.* Expansion of the objectives and functions of the Office.
- ii.* Requirement for the Ratification of Concession Agreements by the House of Assembly before implementation.

- iii. Approval by the House of Assembly of sums to be charged as toll or user fees.
- iv. Appeal against the decision of the Office of the Lagos State Public Procurement Agency.
- v. Increase of fine payable upon conviction for the refusal to pay the service charge or toll to N100,000.00 or six months imprisonment.

The powers of the office include, amongst others, the power to grant concessions to private investors for the design, construction, operation, management, control, maintenance, rehabilitation and financing of public infrastructure or public assets in accordance with the Lagos State Public Procurement Law, negotiate with prospective private partners, inspect and monitor concessionaires to ensure compliance with the terms of any concession agreement, designate a public infrastructure or public asset as one to which a service charge, user fee or toll may be payable and to specify the condition for the use of such infrastructure or asset; approve the service charge, user fee or toll to be paid on any concessioned property.

#### **4.2.2 Procurement**

Under the PPP Law, one of the functions of the office is to initiate procurement of Public-Private Partnerships for the development of public infrastructure and public assets by conducting a pre-qualification process for private investors willing to enter public-private partnerships with the State based on requests for expressions of interest. The office is also responsible for determining the framework for the engagement of consultants, specialists, and advisers for public-private partnerships. All expressions of interest by private investors willing to enter public-private partnerships with the State are subsequently to be evaluated by the office which will issue a preferred mandate in accordance with the provisions of the Lagos State Public Procurement Law. The PPP Law also provides that the office shall be the procuring entity for the purpose of the

Lagos State Public Procurement Law and shall comply with the intendment of the Lagos State Public Procurement Law. The PPP Law also authorizes the office to carry out emergency procurements in accordance with the provisions of the Lagos State Public Procurement Law. It is important to note that hitherto, under Schedule 2 of the PSP Law, Procurement Procedures for Concession Agreements were amply set out.

However, with the coming into force of the PPP Law, instead of duplicity of provisions on procurement, the PPP Law simply requires compliance with the provisions of the Lagos State Public Procurement Law. Under the PPP Law, the Office is empowered to give letters of procurement, comfort, or undertakings in respect of any private partnership or concession agreement. However, in terms of guarantees, the PPP Law prohibits provisions on the requirement of financial guarantees from the State, Ministry, Department or Agency from being contained in any Public Private Partnership Agreement. Rather, only provisions for indemnities or undertakings which are given in the ordinary course of business may be included in a Public Private Partnership Agreement.

#### **4.2.3 Service Charges, User Fees, and Tolls**

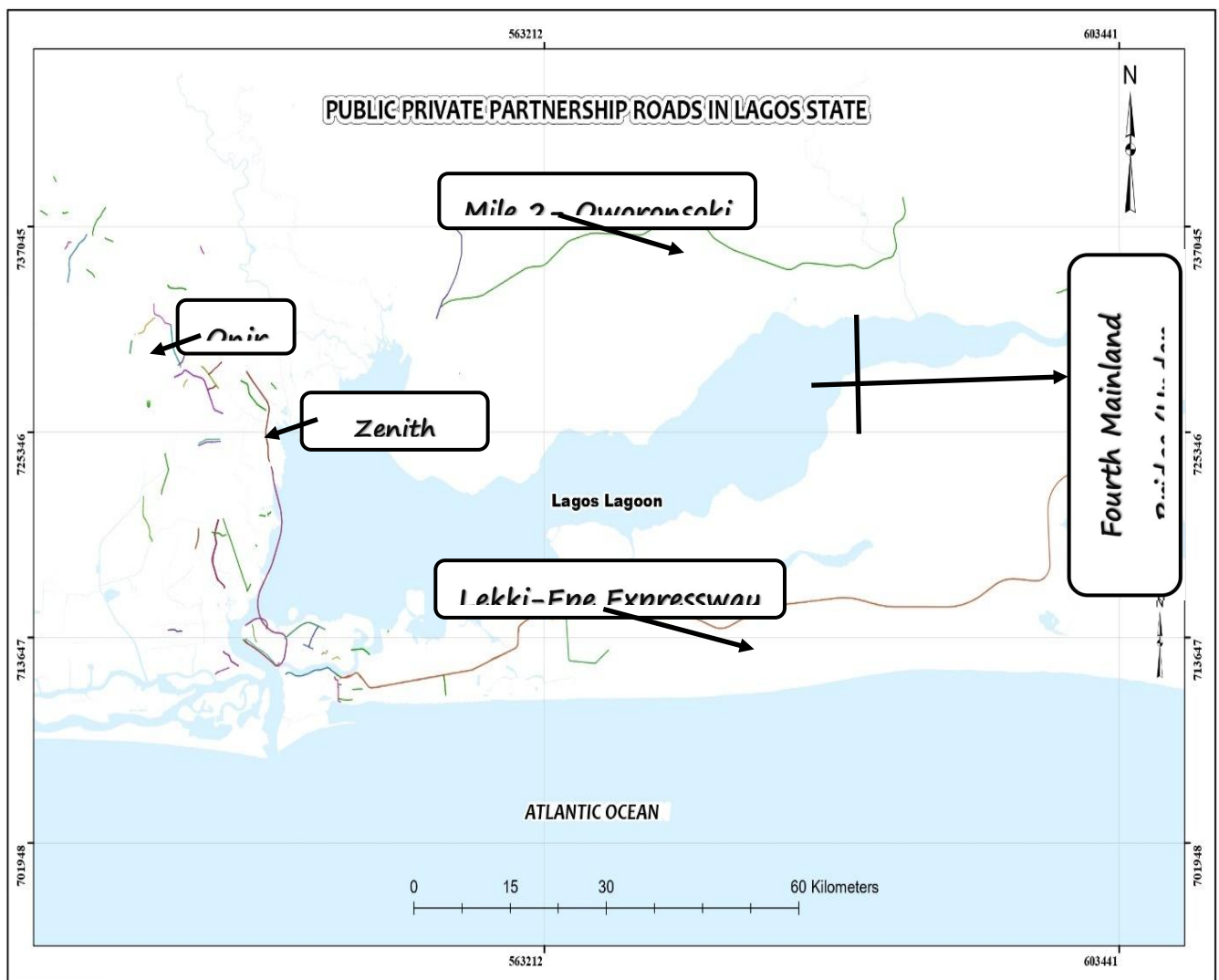
The office is empowered to specify the service charge, user fee or tolls payable to the concessionaire in respect of designated public infrastructure or public assets, and the conditions under which members of the public will access the use of public infrastructure or public assets. A concessionaire may also propose service charges, user fees or tolls for the approval of the office. Concession agreements executed in accordance with the PPP Law are deemed to constitute a valid service charge, user fee or toll regulation. Concession agreements are required to set out the procedure, circumstances, and formulae by which service charges, user fees or tolls to be

charged by the concessionaire shall be calculated, varied, or adjusted, and which provisions are to be observed and fully implemented. However, if such provisions are declared invalid, void or unenforceable, or where no provision is made in the concession agreement, the concessionaire has the right to make an application to the office from time to time for an adjustment or variation of the service charge, user fee or toll. The office is empowered to vary or adjust or require the adjustment of any service charge, user fee or toll charged by a concessionaire in accordance with the provisions of the PPP Law or as may have been agreed and incorporated into the concession agreement.

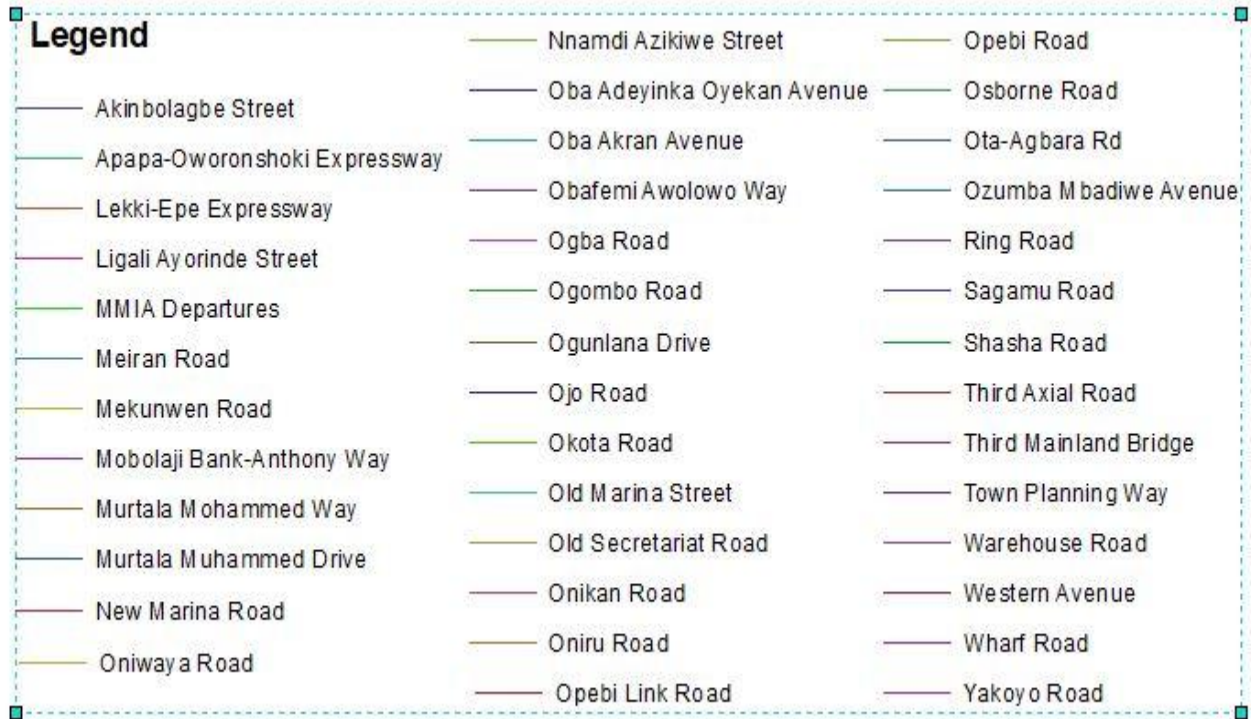
#### **4.2.4 House of Assembly**

A new introduction in the PPP Law is the provision of specific roles for the State House of Assembly in Private Public Partnerships. The House of Assembly is empowered to approve three important items under the PPP Law; concession agreements; designation of public infrastructure or public asset as user fee or toll generating assets; and approval of the amount to be charged as user fee or toll. In this vein, the PPP Law provides that all concession agreements entered by the office must be presented before the House of Assembly for ratification before implementation. Further, where the Board designates any public infrastructure or public asset, road, bridge or highway within the State as public infrastructure or public assets with respect to which user fee or toll shall be payable, such designation shall be subject to the approval of the House of Assembly. The House of Assembly is also empowered to approve the amount of money that may be charged by any private or public operator with respect to any public infrastructure, public asset, or amenity as toll or user fees prior to such charge being effective. The enactment of the PPP Law is evidence of the fact that Lagos State Government is fast recognizing the vast advantages of Public Private Partnership as an important and indispensable tool towards turning

Lagos State into a megacity. The requirement that the House of Assembly ratify or sanction all Concession Agreements though, may appear disadvantageous where the House refuses to sanction the concession. However, a positive affirmation of the concession by the House will show transparency on the part of the State Government and give comfort to the Concessionaires.



**Fig 4.11: Public-Private Roads in Lagos State**  
**Source: Landsat Imagery**



**Legend for Fig 4.11**

From Figure 4.6, there has been development of road infrastructure in Lagos State through PPP. The PPP (Public-Private Partnership) model in road infrastructure has been a critical aspect of Lagos State's development strategy over the years. Here is a timeline of the trend of PPP road infrastructure in Lagos State from 1994 to July 2024:

1994-1999: During this period, the Lagos State government awarded several road construction contracts through a traditional procurement method. Not much emphasis was placed on the PPP model at that time.

2000-2004: In 2002, the Lagos State Government established the Lagos State Public Private Partnership Office (PPP Office) to promote the PPP model in the State. The PPP office facilitated the construction of the Lekki-Epe Expressway under a BOT (Build-Operate-Transfer) agreement. The road was constructed by Lekki Concession Company Limited and was completed in 2011.

2005-2009: In 2005, the Lagos State Government established the Lagos Metropolitan Area Transport Authority (LAMATA) to facilitate the development of a sustainable transportation system in the state. LAMATA facilitated the construction of the BRT (Bus Rapid Transit) system, which was implemented under the PPP model<sup>5</sup>.

2010-2014: During this period, the Lagos State Government under Governor Babatunde Fashola prioritized infrastructure development in the State, with a focus on the PPP model. The government awarded many road construction and rehabilitation contracts through the PPP model, including the Lekki-Ikoyi which was constructed under a PPP model and completed in 2013.

2015-2019: The Lagos State Government under Governor Akinwunmi Ambode continued the trend of prioritizing infrastructure development, with a focus on the PPP model. During this period, the government awarded many road construction, rehabilitation, and maintenance contracts through PPP arrangements, such as the Pen Cinema Flyover in Agege and the construction of the Agege-Pen Cinema Bridge.

2020-2024: The Lagos State Government under Governor Babajide Sanwo-Olu has continued the trend of prioritizing infrastructure development with a focus on the PPP model. The government has initiated several projects, including the Fourth Mainland Bridge, which is being developed under a PPP model.

The trend of PPP road infrastructure in Lagos State has been on the rise since the early 2000s. From the construction of the Lekki-Epe Expressway to the ongoing Fourth Mainland Bridge project, the PPP model has been a major driver of infrastructure development in the State. The trend is expected to continue in the future, as the Lagos State Government sees the PPP model as a key driver of economic growth and development in the state.

#### **4.3 Prospects and Problems of the Public-Private Partnership PPP Model in Lagos State**

To analyze the prospects and problems of the Public-Private Partnership Model for Road Infrastructure in Lagos State, the Lagos State Government Ministries, and a Concessionaire, were sampled, and questionnaires were administered. The ministries are as follows:

Lagos State Ministries

1. Lagos State Ministry of Transportation
2. Lagos State Ministry of Works and Infrastructure
3. Lagos State Ministry of Physical Planning and Urban Development
4. Lagos State Ministry of Environment
5. Lagos State New Town Development Authority
6. Lagos State Ministry of Finance

A Concessionaire

**4.3.1 Socio-Economic Characteristics of Sampled Ministry Personnel and a Concessionaire**

**4.3.2 Distribution of Respondents by Gender**

Table 4.6 presents the gender distribution of respondents, with a total sample size of 20 respondents. Out of the 20 respondents, 13 are male, representing 65% of the sample, while 7 are female, representing 35%. The table divides the gender distribution into two categories: male and female. This means that the number of male respondents is more than twice the number of female respondents.

**Table 4.6: Distribution of Responses by Gender**

	<b>Frequency</b>	<b>Per cent</b>
<b>Male</b>	13	65.0
<b>Female</b>	7	35.0
<b>Total</b>	<b>20</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

### **4.3.3 Distribution of Respondents by Marital Status**

Table 4.7 presents the marital status of the respondents, with a total sample size of 20 respondents. Out of the 20 respondents, 14 are married, which represents 70% of the sample. Only one respondent (5%) is divorced, while three respondents (15%) are widowed. Two respondents, which represent 10% of the total sample, are single, while the rest are separated. This suggests that a significant number of respondents are married, which could indicate that married individuals are more interested in the topic or more willing to participate in the survey. The number of respondents who are single, divorced or widowed was relatively small, while those separated were also minimal.

**Table 4.7: Distribution of Respondents by Marital Status**

	<b>Frequency</b>	<b>Per cent</b>
<b>Married</b>	14	70.0
<b>Divorced</b>	1	5.0
<b>Widowed</b>	3	15.0
<b>Single</b>	2	10.0
<b>Separated</b>	0	0.0
<b>Total</b>	<b>20</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### **4.3.4 Distribution of Respondents by Highest Educational Qualification**

Table 4.8 presents the distribution of respondents by their level of educational qualification, with a total sample size of 20 respondents. Out of the 20 respondents, the highest proportion of individuals, which represent 40% of the sample, have a Bachelor's Degree. Following this, 30% of respondents hold a Master's degree, while 15% have a Higher National Diploma. Only 10% of respondents hold a Doctorate Degree, while the remaining 5% hold other professional qualifications. This suggests that a considerable proportion of respondents have attained a relatively high educational level, with close to two-thirds of the sample having at least a Bachelor's Degree or higher. However, the sample tends to be more skewed towards individuals

with a Bachelor's Degree, which could be an indication of potential bias towards a specific social class.

**Table 4.8: Distribution of Responses by Highest Educational Qualification**

	<b>Frequency</b>	<b>Per cent</b>
<b>Doctorate Degree</b>	2	10.0
<b>Master's Degree</b>	6	30.0
<b>Bachelor's Degree</b>	8	40.0
<b>Higher National Diploma</b>	3	15.0
<b>Other Professional Qualifications</b>	1	5.0
<b>Total</b>	<b>20</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### **4.3.5 Distribution of Responses by their Professional Engagement in the States PPP and Other Establishments**

Table 4.9 presents the distribution of responses by the respondents' professional engagements, with a total sample size of 20 respondents. Out of the 20 respondents, 19 respondents (95%) are engaged in the administration of government ministries. This suggests that the majority of the respondents work in the government sector and are likely to have knowledge and experience in the field. Additionally, one respondent (5%) is engaged in consultancy in a concessionaire establishment, which could suggest that some respondents have experience in the private sector. In summary, the table shows that most the respondents' professional engagements are in the

administration of government ministries, which highlights the importance of their insights and expertise in the study.

**Table 4.9: Distribution of Responses by Professional Engagement**

<b>Establishment</b>	<b>Professional Engagements</b>	<b>Frequency</b>	<b>Per cent</b>
Government Ministries	Administration	19	95.0
Concessionaire	Consultancy	1	5.0
<b>Total</b>		<b>20</b>	<b>100</b>

**Source:** Author's Field Survey, 2024.

#### **4.3.6 Distribution of Respondents According to Years of Experience**

Table 4.10 presents the distribution of respondents by their years of experience, with a total sample size of 20 respondents. Out of the 20 respondents, 9 respondents (45%) have 6-15 years of experience, while 10 respondents (50%) have 16 years and above experience. This suggests that the sample has a significant portion of individuals with extensive experience in their respective fields, which could provide valuable insights and expertise for the study. Only one respondent (5%) has 1-5 years of experience, which could suggest that the sample may be skewed towards respondents with more years of experience. In summary, the table shows that the majority of the sample has 16 years and above of experience and has acquired a substantial amount of professional experience over time, which could provide valuable insights into the study.

**Table 4.10: Respondents' Years of Experience**

Years of Experience	Frequency	Per cent
1 – 5 YEARS	1	5.0
6 – 15 YEARS	9	45.0
16 YEARS AND ABOVE	10	50.0
<b>TOTAL</b>	<b>20</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

This section adopted a quantitative approach, as the purpose was to investigate the prospects and problems faced by PPPs in improving the PPP Model for road infrastructure in Lagos State. Quantitative research is based on the measurement of quantity or amount. It applies to phenomena that can be expressed in terms of quantity<sup>1</sup>. A well-structured questionnaire was distributed to different ministries in Lagos State, and a concessionaire was sampled for the study. Amongst personnel such as civil engineers, project managers, finance managers, directors, quantity surveyors, field managers, and consultants who were involved in the PPP projects.

**Table 4.11: Mean Ranking of Prospect Factors of PPP Road Infrastructure Development Projects in Lagos State**

Prospects	Influential Index				Rank
	Clients	Consultants	Developers	Weighted Average	
Good governance	6.9	6.9	6.8	6.902	1
Protective policy against political risk	6.7	6.8	6.7	6.798	2
Appropriate risk allocation & risk sharing	6.7	6.6	6.6	6.687	3
Strong private consortium	6.6	6.5	6.5	6.567	4
Effective political stability	6.5	6.3	6.5	6.449	5
Favourable legal framework	6.4	6.3	6.3	6.393	6
Stable macro-economic environment	6.2	6.3	6.2	6.269	7
Effective project technical feasibility	6.2	6.1	6.0	6.162	8
Government involvement in providing a guarantee	6.1	6.0	6.0	6.063	9
Genuine commitment of parties	6.1	5.7	5.8	5.921	19
Government policy to promote long-term loan	5.9	5.6	5.8	5.804	11

Political support	5.6	5.5	5.8	5.608	12
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**Source:** Author's Field Survey, 2024

Table 4.11 presents the Mean Ranking of Prospect Factors of PPP Road Infrastructure Development Projects in Lagos State. The ranking is based on a weighted average of influential index scores across three stakeholder groups: ministry principal personnel and a concessionaire.

The first column lists the prospects (factors) that influence the success of PPP road infrastructure development projects in Lagos State. The second, third and fourth columns display the influential index scores for each prospect, as rated by the respondents respectively. The last column shows the Mean Ranking of each prospect, based on its weighted average influential index score.

From the results shown in Table 4.10, the influence index values for the 12 different prospect factors are presented ranging from 6.902 to 5.608 (average weighted). Factors, such as good governance, protective policy against political risk and appropriate risk allocation were found to be the first three (3) most prospects factors with an average weighted influence value of 6.902, 6.798, and 6.687 respectively.

Good governance is rated the most prospect factor (CSF) influencing the application of PPP concept in infrastructure development projects having an influence index of 6.902. This means that good governance is an important mechanism for PPP prospect, and this can only be achieved by providing sound economic policies and an administrative platform that attract private sector to participate in public project<sup>9</sup>. This also indicated that good governance is perceived to be critical to the success of PPP road infrastructure development projects in Lagos State by the stakeholders.

Protective policy against political risks is the second most critical of the prospect factors (6.798) of PPP in Lagos State. This shows that it is relatively important to note that private sectors incentives in PPP business can also be said to be associated with an adequate risk protection policy. Where government cannot guarantee appropriate policy for long term loan and protection, the possibility to have available funds to finance projects will always be unlikely. Therefore, government has the responsibility in providing protective policy capable of mitigating political risks in PPP projects.

Appropriate risk allocation and sharing has been rated third with an influence index value of 6.687. This demonstrates that a clear balance of sharing of responsibility in policy decision and control in PPP contract is of paramount importance in PPP success. Apparently, the objective is to transfer risks to where they can best be managed. Risk allocation between the public and private sector is central to implementation of PPP system of project procurement. Indeed, it is the fundamental principles of PPP implementation<sup>10</sup>.

Strong private consortium as a factor influencing PPP success has influenced index value of 6.567 (average weighted). Being the fourth in the overall ranking, translates that the need to have a consortium of strong private companies for a successful PPP project is necessary. In the UK for instance, most of PPP projects are won by strong and well-established construction firms<sup>9</sup>. In Lagos State, however, private sector participation in infrastructure development has a long history. Many PPP projects have been facilitated by indigenous private companies<sup>11</sup> or a consortium of some financial institutions and construction companies<sup>12</sup>.

Effective political stability is rated at 6.449 influence index value thereby making it the fifth in terms of importance. This indicates that consistent political changes and discontinuity of policies

may result in project abandonment, poor governance, insecurity, and lack of both transparency and accountability. Since the creation of Lagos State, different governments, both military and civilian have administered the state. These have impacted so much on the socio-economic development of the state. Therefore, unless a stable political administration was obtained, there would always be fear in the involvement of private participation to procure public facilities in the state.

A favourable Legal framework is rated the sixth most important factor with an influence index value of 6.393. An enabling regulatory legal framework is quite essential in PPP arrangement and perhaps one of the most critical elements as revealed in this analysis. This emphasizes the importance of enabling law for PPPs to operate, unlike in the UK where PPPs lack specific laws to operate <sup>9</sup>. The establishment of the ICRC Act 2005 is a favourable legal framework for PPP arrangement at the federal level of government in Nigeria. Other similar examples could be found in Lagos State where the state roads, bridges and highway infrastructure development board laws are being applied. Others include Cross River state, River's state and the FCT, Abuja. Effective Project Technical Feasibility is found to be the eighth most prospect factor (6.162) of PPP contracts. It is important to note that procuring PPP projects requires intensive study and analysis to be able to verify whether it can deliver value for money or not. This is therefore more indicative of the apparent necessity for the government to be adequately poised in providing an astute operational framework for such deals.

Genuine Commitment of Parties involved in PPP contract has influenced index value of 5.921 and is found to be the tenth factor influencing PPP success prospect in Lagos State. Lack of contracting mindset and distrust between public and private partners could affect the success of

PPP projects. Although there were no official reports on cases of conflicting interests between public and private parties in any of the few PPP projects in the state to date except the Lekki Toll Plaza that was re-purchased by the Lagos State Government, it is however believed that issues such as lack of transparency and accountability as well as influence of corruption are serious problems that can result to loss of contracting mindset and distrust between PPP project parties. Therefore, unless government commitment in the fight against corruption continues to yield positive results, there will be limited genuine commitment and trust of the public and private parties in PPP contracts.

Appropriate policy to promote long-term loans is a critical factor for successful PPP projects in Lagos State having an overall weighted value of 5.804. The government must therefore enact appropriate policies that would encourage and promote long-term loans. This largely constitutes a huge hindrance to private sector participation. Political support and attitude towards private sector partners is the least prospect with an influenced index value of 5.608. It may be argued that given the recognized potential role of PPP, there should not be a wide infrastructural deficit in the state. Political will and support of the government towards project implementation is an important factor for successful PPP.

In summary, the Mean Ranking provides a useful summary of the stakeholder's perceptions of the most and least influential prospect factors in PPP road infrastructure development projects in Lagos State. The results can help policymakers focus their efforts and resources on the most critical prospect factors in PPP road infrastructure development projects.

**Table 4.12: Problems of PPP Road Infrastructure Development in Lagos State**

Problems	Influential Index				Rank
	Clients	Consultants	Developers	Weighted Average	
<b>Political Problems</b>					
Political Instability	6.8	6.7	6.6	6.700	1
Poor Public Decision-Making Process.	6.7	6.5	6.4	6.533	2
Social Unrest	6.3	6.6	6.5	6.467	3
Inconsistency of Government Policies	6.2	6.4	6.4	6.333	4
Corruption	6.5	6.4	6.2	6.267	5
<b>Economic Problems</b>					
Imbalance of Supply and Demand	6.6	6.5	6.8	6.633	1
Weak Infrastructures	6.4	6.4	6.8	5.533	2
Financial Attraction of Project to Investors	6.7	6.6	6.2	6.500	3
Payment by End Users	6.6	6.4	6.2	6.433	4
<b>Legal Problems</b>					
Fear of Change in Tax Regulation	6.7	6.6	6.5	6.600	1
Fear of Industrial Regulatory Change	6.5	6.7	6.4	6.533	2
Inadequate Security Legislation of PPP Contract	6.8	6.2	6.4	6.467	3

Financial Attraction of Project to Investors	6.6	6.3	6.2	6.400	4
Unclear Legislation on Lease and Franchising	6.5	6.2	6.4	6.367	5
Unclear PPP Contract Enforceability	6.2	6.4	6.3	6.300	6
<b>Technical/ Other Problems</b>					
Inexperience of Government in Handling PPP Transaction	6.8	6.7	6.5	6.567	1
Inadequate PPP expertise	6.6	6.5	6.3	6.467	2
Lack of Public Awareness	6.7	6.2	6.4	6.433	3
High Level of Bureaucracy	6.3	6.8	6.3	6.367	4
Poor tendering process and award mechanism	6.2	6.3	6.5	6.333	5
Non-tradition of private Provision of public service	6.4	6.1	6.3	6.267	6

**Source:** Authors' Conceptualization, 2024

Table 4.12 presents the Problems of PPP Road Infrastructure Development in Lagos State with the Mean Rank based on a weighted average of influential index scores rated by the respondents. The table is segmented into four categories: Political Problems, Economic Problems, Legal Problems, and Technical/Other Problems.

The Table showed an analysis on the perception of respondents on the 21 identified problems of PPP road infrastructure development in Lagos State. Political Problems, Economic Problems, Legal Problems, and Technical/Other Problems in order of ranking. The results of the political Problem were presented and included political instability as the most influential problem 1<sup>st</sup> (ranked 1); followed by a poor public decision and making process (ranked 2); social unrest 3<sup>rd</sup> (ranked 3); inconsistency of government policies (ranked 4); corruption (ranked 5

Political instability is the most influential problem, with a Mean Rank of 1 (based on a weighted average of 6.7 among clients, 6.6 among consultants, and 6.6 among developers). This indicates that political instability is perceived as the most challenging problem of PPP road infrastructure development in Lagos State. Other top-ranked problems in this category include poor public decision-making processes and social unrest, each with Mean Ranks of 2 and 3, respectively.

Among the Economic Problems, the imbalance of supply and demand is ranked as the most influential problem, with a Mean Rank of 1 (based on a weighted average of 6.6 among clients, 6.5 among consultants, and 6.8 among developers). Weak infrastructures are ranked as the second most influential problem. Fear of change in tax regulation is ranked as the most influential problem in the Legal Problems category, with a Mean Rank of 1 (based on a weighted average of 6.7 among clients, 6.6 among consultants, and 6.5 among developers). Inadequate security legislation of PPP contracts and fear of industrial regulatory change are ranked as the second and third most influential problems in this category.

In the Technical/Other Problems category, the inexperience of the government in handling PPP transactions is perceived as the most influential problem, with a Mean Rank of 1 (based on a weighted average of 6.8 among clients, 6.7 among consultants, and 6.5 among developers). Inadequate PPP expertise and lack of public awareness are ranked as the second and third most influential problems in this category.

In summary, the table highlights the most influential problems of PPP road infrastructure development in Lagos State. These problems are perceived to be significant challenges to the development of PPP projects and require appropriate measures to address them.

#### **4.4 Urban Outcomes of the PPP Model in Road Infrastructure Based on Some Indicators.**

The data collection process was initiated by meetings, in-depth interviews, and discussions with the head of the establishment whose staff, contractors, and consultants sampled. Our discussions included a discussion on the impact of Public-Private Partnerships in the development of road infrastructure in Lagos State. This was with an emphasis on how successful and developed

economies around the world have utilized the concept and focused on the elements that were found to be the ingredients of success in those countries.

#### **4.4.1 Socio-Economic Characteristics of Respondents**

The sample size was determined by the G\*Power software, and it included people who were males, females, married, single, and who may have rendered services to the office of the Public Private Partnerships of Lagos State in the following areas: construction, accounting and finance, engineering, legal, technical consultancy, marketing, human resources, and other relevant capacities that facilitate the process of utilizing the PPP concept road infrastructure development in the state. The people included in the sample from these groups were people who, by their official positions and establishment, were judged to possess knowledge and experience at a level that would enable them to meaningfully contribute to the study. Having covered the above groups above, there was an adequate representation of the population in the sample. The people were personnel in the office of the Public-Private Partnership (PPP Office), Construction Companies, Allied Industries, and Banks.

The establishments are as follows:

1. The Office of the Public-Private Partnership Lagos State
2. Construction Companies
  - i. Lekki Concession Company
  - ii. Hi-Tech Construction
  - iii. Larue Projects
  - iv. China Construction Company CCC
  - v. Mota – Engil (Nig & Africa)

- vi. CCCC & CRBC Consort
- vii. CGGC – CGC Joint Venture
- viii. CCECC & CRCCIG Consortium

### 3. Allied Industries

- i. Dangote Industries Limited
- ii. Lafarge Africa Plc
- iii. Unilever Nigeria Plc
- iv. Flour Mills Nigeria Pls
- v. Nigeria Liquefied Gas Limited
- vi. China Road and Bridge Corporation Nigeria Limited
- vii. Asset Resource Managers (ARM)
- viii. Africa Infrastructure Investment Fund
- ix. BKS Global and African Consortium (Design Consultant
- x. High-Point Rendel (Project Management)
- xi. Toll Infrastructure Services (Operational Management)

### 4. Banks

- i. Africa Development Bank
- ii. First Bank Plc
- iii. United Bank for Africa
- iv. Access Bank
- v. Standard Bank
- vi. Stanbic IBTC Bank
- vii. Zenith Bank

- viii. First Inland Bank
- ix. Fidelity Bank
- x. Access (Diamond) Bank

To describe the main features of the data collected to show the emergence of patterns, a measure of central tendency or a measure of spread can be adopted <sup>1</sup>. This is necessary to visualize what the data shows, to enable a simpler interpretation of it.

#### 4.4.2 Distribution of Respondents by Gender

The table presents the Gender Distribution of the respondents who participated in the study. The total sample size was 21 respondents.

Out of the 21 respondents, 15 (71.4%) are male, while 6 (28.6%) are female. This indicates that most of the respondents in the study are male. Gender distribution is commonly used to assess the representativeness of a sample, especially in studies that aim to gather data on gender-specific issues. The gender disparity observed in this study could reflect the gender composition of the population involved. The Gender Distribution table provides essential information on the sample's composition in terms of gender.

**Table 4.13: Distribution of Respondents by Gender**

	<b>Frequency</b>	<b>Per cent</b>
<b>Male</b>	15	71.4
<b>Female</b>	6	28.6
<b>Total</b>	<b>21</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### **4.4.3 Distribution of Respondents by Marital Status**

The table presents the Marital Status of the respondents who participated in the study. The total sample size is 21 respondents. Out of the 21 respondents, 16 (76.1%) are married, 1 (4.8%) are divorced, 2 (9.5%) are widowed, 1 (4.8%) is single, and 1 (4.8%) is separated. This indicates that the majority of the respondents in the study are married. Marital status is a demographic variable commonly used to describe the socio-economic status of individuals and to assess the implications of marital status on various factors such as health, income, and social integration. The marital status of the respondents is important in the context of the study as it can affect their views, attitudes, and behaviours related to the topic being investigated. The majority of the respondents are married, and this information will be important in interpreting the findings of the study, depending on the topic under investigation.

**Table 4.14: Distribution of Respondents by Marital Status**

	<b>Frequency</b>	<b>Per cent</b>
<b>Married</b>	16	76.1
<b>Divorced</b>	1	4.8
<b>Widowed</b>	2	9.5
<b>Single</b>	1	4.8
<b>Separated</b>	1	4.8
<b>Total</b>	<b>21</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### 4.4.4 Distribution of Respondents by Highest Educational Qualification

The table presents the Highest Qualifications of the respondents who participated in the study. The total sample size is 21 respondents. Out of the 21 respondents, 8 (38.1%) have a Master's Degree, 7 (33.3%) have a Bachelor's Degree, 4 (19.0%) have a Higher National Diploma, and 2 (9.5%) have a Doctorate Degree. This indicates that the majority of the respondents in the study have a post-secondary education, with the most common highest qualification being a Master's Degree. The highest qualifications of the respondents are important in the context of the study as they can affect their views, attitudes, and behaviours related to the topic being investigated. The table also shows the frequency and percentage of respondents with various levels of education, which could be useful in assessing the representativeness of the sample and detecting potential biases associated with education levels.

**Table 4.15: Distribution of Responses by Highest Educational Qualification**

	<b>Frequency</b>	<b>Per cent</b>
<b>Doctorate Degree</b>	2	9.5
<b>Master's Degree</b>	8	38.1
<b>Bachelor's Degree</b>	7	33.3
<b>Higher National Diploma</b>	4	19.0
<b>Total</b>	<b>21</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### 4.4.5 Distribution of Responses by their Professional Engagement in the States PPP and Other Establishments

Table 4.16 presents the Distribution of Responses by Professional Engagement and Establishment for the respondents who participated in a study. The sample size is 21 respondents. The table showed that the study investigated respondents' professional engagement in different establishments, namely PPP offices, Construction Companies, Allied Companies, and Banks. The professional engagements of the respondents were categorized into Administration, Legal, Consultancy and Marketing; Engineering, Technical and Construction; Engineering and Technical; and Human Resources, Accounting, and Finance. The table showed that out of the 21 respondents, 7 (33.3%) are engaged in Administration, Legal, Consultancy and Marketing in PPP offices. 4 (19.0%) are in Engineering, Technical and Construction in Construction Companies. 5 (23.8%) are in Engineering and Technical in Allied Companies, while another 5 (23.8%) are in Human Resources, Accounting, and Finance in Banks. The Distribution of Responses helped in understanding how professionals are engaged across different establishments. This information was useful in identifying potential areas for collaboration and partnerships between different sectors, particularly where there are overlaps in the areas of expertise.

**Table 4.16: Distribution of Respondents by Professional Engagement**

<b>Establishment</b>	<b>Professional Engagements</b>	<b>Frequency</b>	<b>Per cent</b>
PPP Office	Administration, Legal, Consultancy and Marketing	7	33.3
Construction Companies	Engineering, Technical and Construction	4	19.0
Allied Companies	Engineering and Technical	5	23.8
Banks	Human Resources, Accounting and Finance	5	23.8
<b>Total</b>		<b>21</b>	<b>100</b>

**Source:** Author's Field Survey, 2024.

#### **4.4.6 Distribution of Respondents According to Years of Experience**

Table 4.17 presents the Distribution of Respondents According to Years of Experience who participated in a study. The total sample size is 21 respondents. The table showed that the respondents were categorized into three groups based on their years of experience, namely 1-5 years, 6-15 years, and 16 years and above. The table indicated that out of the 21 respondents, 4 (19.0%) have 1-5 years of experience, 8 (38.1%) have 6-15 years of experience, and 9 (42.9%) have 16 years and above of experience. The distribution of respondents according to Years of Experience table provided insights into the level of experience of the respondents in the study. This information was useful in interpreting the findings of the study, particularly in assessing the potential impact of experience on the variables being studied. In addition, the table's percentage column indicated the proportion of the sample in each category, which was useful in assessing the representativeness of the sample and detecting potential biases associated with years of experience.

**Table 4.17: Distribution of Respondents According to Years of Experience**

<b>Years of Experience</b>	<b>Frequency</b>	<b>Per cent</b>
1 – 5 YEARS	4	19.0
6 – 15 YEARS	8	38.1
16 YEARS AND ABOVE	9	42.9
<b>TOTAL</b>	<b>21</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### **4.4.7 Key Indicators to Evaluate the PPP Model for Road Infrastructure Development in Lagos State**

Indicators to evaluate the PPP (Public-Private Partnership) Model for Road Infrastructure Development in Lagos State referred to specific measures used to determine the success or progress of the PPP model in road infrastructure development in the state. These indicators provide relevant information and data that gave key stakeholders an overview of the PPP's performance in different areas of infrastructure development. Performance indicators can be either quantitative or qualitative, and they are used to evaluate investment mobilization, road quality, travel time reduction, maintenance and sustainability, safety and security, stakeholder satisfaction, accountability, and transparency in PPP roads. They serve as parameters for measuring the effectiveness, efficiency, and transparency of the PPP model in road infrastructure development in Lagos State.

To analyze the key indicators to evaluate the PPP road infrastructure development in Lagos State, the development of key performance indicators and performance measures from a case study approach was used which involves using systematic process to identify and measure the success of the project, process, or system. Key performance indicators (KPIs) and performance measures are metrics and standards used to measure the effectiveness, efficiency, and success of the project or process. They provide quantitative and qualitative information that helps evaluate whether the project is meeting its intended goals, objectives, and aims.

A case study approach refers to analyzing a particular case, context, or situation to understand the specific performance indicators and measures that are relevant to the problem being addressed<sup>8</sup>. This involves identifying the key objectives of the project, determining the performance indicators required to track progress toward achieving these objectives, identifying the performance measures that align with each performance indicator, and developing a plan to collect and analyze data related to the performance indicators and measures<sup>8</sup>.

By using a case study approach to develop KPIs and performance measures, organizations or establishments can measure the success of a project or process accurately and make informed decisions based on available data. Having a well-defined set of KPIs and performance measures helps to improve transparency, accountability, and efficiency in project management and decision-making<sup>9</sup>. To analyze Key Indicators to evaluate the PPP road infrastructure development in Lagos State, using key performance indicators and performance measures, Lekki-Epe Expressway and Lekki Ikoyi Link Bridge, Mile 2- Oworonsoki, Oniru Road Network, Zenith Road in Victoria Island and Fourth Mainland Bridge (Under Construction) were used as case studies.

The terms performance measure and performance indicators were used interchangeably in the findings. Distinguishing these terms provides useful clarification. Performance measures (PMs) are ‘markers or signs of things to measure but which may not be directly, fully, or easily measured. A PM is one of the several measurable values that contribute to the understanding and quantification of an indicator. PMs are quantitative measures of capacities, processes, or outcomes relevant to the assessment of a performance indicator. Performance indicators (or Key Performance Indicators – KPIs), on the other hand, are not ‘direct measures of quality; rather, they are flags to alert users to possible opportunities for improvement’. Such types of indicators are extremely important to an organization in achieving its strategic goals, objectives, vision, and values that, if not implemented properly, would likely result in a significant decrease in performance.

The categories developed were identified as KPIs and the codes developed within them were identified as PMs to define the success criteria of a project. The different categories, codes and Likert scale developed are given in Table 4.17 below. Different questions needed different sets of

values to gauge success, thus, three predefined Likert scales and a dichotomous choice (Yes or No) were used accordingly. As per the table, altogether, 9 KPIs and 19 performance measures were developed during the Qualitative Content Analysis (QCA) process. Then, a Performance Measurement System (PMS) which consists of set of metrics was used to quantify efficiency and effectiveness which involves the measurement of outcomes and results for the assessment of success. Two measurement approaches were used to analyze the performance of these case studies. The first approach used evaluated the degree and number of successful and failed PMs to show different levels of success in projects. In this approach, the weighting used for the performance measures was considered equal. The second approach was used to weigh the PMs, and then evaluate overall performance. A focus group was conducted to refine the selection of KPIs, PMs and the Likert scale. The focus group included personnel of the PPP office. 7 members were present during the discussions, and they all had in-depth knowledge and experiences with PPP road infrastructure development in Lagos State.

#### **4.4.8 Case Studies of PPP Road Infrastructure Development in Lagos State**

##### **4.4.8.1 Lekki -Epe Expressway and Lekki Ikoyi Link Bridge**

The Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge are Public-Private Partnership (PPP) road projects in Lagos State, Nigeria. The Lekki-Epe Expressway is a tolled, 49km dual-carriageway that runs from Victoria Island in Lagos, through Lekki and Ajah and ends at Epe.

The project was executed under a Build-Operate-Transfer (BOT) agreement between the Lagos State Government and Lekki Concession Company Limited (LCC), a private consortium of investors. The Lekki-Epe Expressway project was aimed at delivering a world-class infrastructure that provides seamless transportation and enhances the socio-economic development of the area. The road was equipped with several facilities and features including dedicated pedestrian walkways, bus lanes, street lighting, and landscaping, among others.

The Lekki-Ikoyi Link Bridge, on the other hand, is a tolled cable-stayed bridge that crosses the Lagos Lagoon, connecting Ikoyi to the Lekki Peninsula. The bridge is 1.36km long and was designed and commissioned by the Lagos State Government in partnership with private investors. The Lekki-Ikoyi Link Bridge is also operated and maintained by Lekki Concession Company Limited (LCC), the same consortium responsible for the Lekki-Epe Expressway. The Lekki-Ikoyi Link Bridge was equipped with state-of-the-art safety features and provides an alternative route for commuters, easing the traffic congestion along other road corridors in Lagos State. Both the Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge have significantly impacted transportation and economic growth in Lagos State, serving as a model for PPP road projects in Nigeria.



**Plate 4.1:** Lekki-Ikoyi Link Bridge  
**Source:** Authors Field work, 2024



**Plate 4.2:** Lekki-Ikoyi Link Bridge  
**Source:** Authors Field work, 2024



**Plate 4.3:** Lekki-Epe Expressway  
**Source:** Authors Field work, 2024



**Plate 4.4:** Lekki-Epe Expressway  
**Source:** Authors Field work, 2024

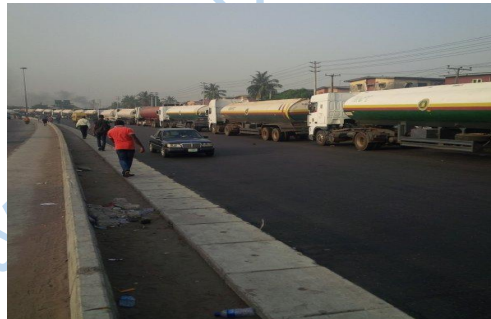
#### 4.4.8.2 Mile 2- Oworonsoki

The Mile 2-Oworonsoki Expressway in Lagos, Nigeria is a public-private partnership (PPP) road project developed to provide a high-quality transportation infrastructure that contributes to the economic development of the region. The PPP Road project was part of the Lagos State Government Reform Project (LSGRP) II, aimed at easing traffic congestion and improving transportation infrastructure in Lagos State. The PPP project was initiated in 2007 to finance, design, construct, operate, and maintain the Mile 2-Oworonsoki Expressway for a period of 25 years. The project was awarded to the Lekki Concession Company Limited (LCC), the same company responsible for the development of the Lekki-Epe Expressway and the Lekki Toll Plaza. LCC is a special-purpose vehicle established by the Lagos State Government to undertake the development of PPP road projects. The PPP agreement stands as one of the earliest successful PPP projects in Nigeria, helping to establish a framework for future PPP projects in the country. It provided an innovative and sustainable financing model which allowed the project to be completed within time and budget while meeting the desired quality standards.

Under the terms of the agreement, LCC was responsible for financing, designing, and constructing the expressway and installing related infrastructure. After the construction phase, LCC would operate and maintain the expressway for the rest of the concession period. LCC's return on investment would be from the revenue generated from the toll collection. The PPP project provided an efficient transportation infrastructure that has significantly reduced travel time and transportation costs in Lagos State, thereby enhancing economic development in the region. The success of this project has helped establish the use of PPP models for the development of critical infrastructure in Nigeria and has contributed to the evolution of the country's infrastructure finance sector.



**Plate 4.5:** Mile 2-Oworonsoki  
**Source:** Authors Field work, 2024



**Plate 4.6:** Mile 2- Oworonsoki  
**Source:** Authors Field Work, 2024

#### **4.4.8.3 Oniru Road Network**

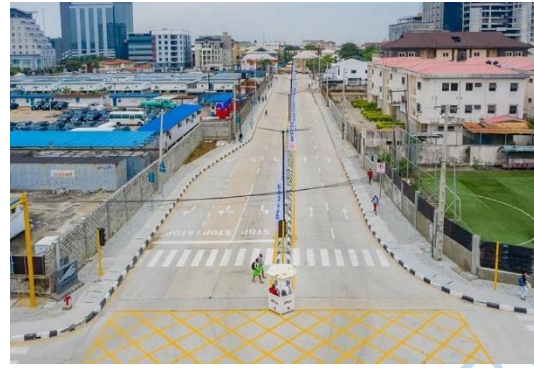
The Oniru Road Network PPP Road Project is a public-private partnership (PPP) project initiated by the Lagos State Government to develop an efficient and sustainable transportation infrastructure in the Oniru/Victoria Island area of Lagos, Nigeria. The project was aimed at easing traffic congestion, reducing travel time, and improving the overall transportation system

in the area, thereby contributing to economic development in the region. The PPP project was initiated in 2017, with the Lagos State Government partnering with the private sector to finance, design, construct, operate, and maintain the road network for a 15-year concession period. The project was awarded to Messrs. Build Well Plants & Equipment Industries Limited and involves the rehabilitation and upgrading of the existing road infrastructure, provision of road furniture and intelligent transport systems, construction of pedestrian walkways, streetlights and the planting of trees to provide green space.

Under the terms of the agreement, the private sector partner was responsible for financing the road infrastructure, designing, and constructing the project, and providing maintenance services for the concession period. The government, on the other hand, provides policy and regulatory frameworks, as well as financial guarantees to incentivize the private sector's investment in the infrastructure. The PPP project is expected to improve transportation efficiency, reduce travel time, and enhance the area's overall aesthetic and environmental quality. The adoption of intelligent transport systems and pedestrian walkways also promotes safe travel and accessibility. Furthermore, the project is expected to unlock the economic potential in the area, boost tourism, and catalyze the development of both the public and private sectors in the region. The successful implementation of the Oniru Road Network PPP Project further reinforced the value of the PPP model in financing the critical infrastructure needs of Lagos State and Nigeria as a whole. It is anticipated that the adoption of the PPP model in infrastructure development will contribute significantly to Nigeria's economic development and long-term growth prospects.



**Plate 4.7: Oniru Road Network**  
**Source:** Authors Field Work, 2024.



**Plate 4.8: Oniru Road Network**  
**Source:** Authors' Field Work, 2024

#### **4.4.8.4 Zenith Road Victoria Island**

The Zenith Road Victoria Island PPP Road Project was a public-private partnership (PPP) project initiated by the Lagos State Government to develop an efficient and sustainable transportation infrastructure in the Victoria Island area of Lagos, Nigeria. The project was aimed at easing traffic congestion, reducing travel time, and improving the overall transportation system in the area, thereby contributing to economic development in the region. The PPP project was initiated in 2017, with the Lagos State Government partnering with the private sector to finance, design, construct, operate, and maintain the road network for a 15-year concession period. The project was awarded to Messrs. AG-Dangote Construction Company Limited and involves the upgrade and expansion of the existing road network, as well as the construction of new roads to improve accessibility and connectivity. Under the terms of the agreement, the private sector partner was responsible for financing the road infrastructure, designing, and constructing the project, and providing maintenance services for the concession period. The government provides policy and regulatory frameworks, as well as financial guarantees and overall guidance and supervision in the implementation of the project.

The PPP project is expected to improve transportation efficiency, reduce travel time, and enhance the area's overall aesthetic and environmental quality. The construction of new roads was expected to unlock economic potential in the area, boost tourism, and catalyze the development of both the public and private sectors in the region. The project would also create job opportunities during the construction stage and provide a source of revenue for the private sector partner during the concession period. The successful implementation of the Zenith Road Victoria Island PPP Road Project will further reinforce the value of the PPP model in financing the critical infrastructure needs of Lagos State and Nigeria as a whole. It was anticipated that the adoption of the PPP model in infrastructure development would contribute significantly to Nigeria's economic development and long-term growth prospects.



**Plate 4.9:** Zenith Road VI  
**Source:** Authors Field Work, 2024



**Plate 4.10:** Zenith Road, VI  
**Source:** Authors Field Work, 2024

#### **4.4.8.5 Fourth Mainland Bridge (Under Construction)**

The Fourth Mainland Bridge PPP Road Project is a proposed public-private partnership (PPP) project initiated by the Lagos State Government to develop an efficient and sustainable transportation infrastructure in the Lagos metropolitan area of Nigeria. The project is aimed at easing traffic congestion and gridlocks, reducing travel time, and improving the overall transportation system in the region, thereby contributing to economic development. The project

was first announced in 2008, but progress has been slow due to challenges in securing funding and addressing environmental concerns. However, in 2020, the Lagos State Government signed a Memorandum of Understanding with a consortium of private sector investors comprising United Arab Emirates-based firms, Sidewalk Infrastructure Partners LLC, and NLE Works. The agreement ensures the completion of the feasibility study, social and environmental impact assessments, and other preparations for the project.

The proposed Fourth Mainland Bridge is expected to be a 37.4-kilometre-long bridge and expressway that would connect Lagos Island, Ikoyi, Lekki, Ajah and Ikorodu, as well as serve as an alternate route to the Lagos-Ibadan Expressway and the Third Mainland Bridge. The project is expected to involve the construction of eight interchanges to facilitate traffic movement and relieve existing overburdened arterial routes. The bridge is proposed to have two legs, with the first leg starting from Oyingbo to Adeniji Adele Phase 1 and the second leg starting from the Abraham Adesanya Roundabout in Ajah to the Lagos-Ibadan Expressway. Under the terms of the PPP agreement, the private sector consortium will finance, design, construct, operate, and maintain the bridge and expressway for a concession period of 25 to 30 years. The government provides policy and regulatory frameworks, as well as the land required for the project, while the private sector partner is responsible for securing construction financing and taking on all construction risks.

The successful implementation of the Fourth Mainland Bridge PPP Road Project will not only improve transportation efficiency and reduce travel time in Lagos but also unlock economic potential in the region. The adoption of the PPP model in infrastructure development, especially in the road sector, will contribute significantly to Nigeria's economic development and long-term

growth prospects. The project will also create job opportunities during the construction stage and provide sustainable economic benefits to Lagos State during the concession period.



**Plate 4.11:** Fourth Mainland Bridge (Conceptual Design)  
**Source:** Authors Field Work, 2024



**Plate 4.12:** Fourth Mainland Bridge (Conceptual Design)  
**Source:** Authors Field Work, 2024

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**Table 4.18: Key Performance Indicators (KPI) and Performance Measures (PM).**

<p><b>Key Performance Indicators (KPI) and Performance Measures (PM) Objectives</b></p>	<p><b>Code</b> KPI-1</p>
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Are the objectives specified in the contract SMART?	PM-1
To what extent have the objectives been achieved?	PM-2
Have/will user benefits be monitored?	PM-3
Have user benefits been as large as expected?	PM-4
<b>Risk</b>	KPI-2
How much risks have been transferred to the private sector?	PM-5
Was risk allocation agreed upon quickly?	PM-6
<b>Specifications (contract project)</b>	KPI-3
Are the deliverables specified clearly in the contract?	PM7
Are the roles and responsibilities of different parties involved in the contract clearly defined?	PM-8
Are minimum standards for the condition of infrastructure and equipment specified in the contract?	PM-9
Are there any performance targets?	PM-10
Is the method of measuring performance targets clearly defined?	PM-11
Are there penalties for non-compliance?	PM-12
Does the contract have procedures for amendments, dispute resolution, or termination?	PM-13
Has the contract proceeded without renegotiations?	PM-14
Are there any guarantees specified in the contract?	PM-15
<b>Tendering Process</b>	KPI-4
No. of bidders (negotiation vs. final)	PM-16
Time from tender notice to financial close	PM-17
Legal challenges to the outcome	PM-18
<b>Construction Phase</b>	KPI-5
Was the project completed on time?	PM-19
Was the project completed within budget?	PM-20
Was the project completed according to the specifications and design?	PM-21
Are there any penalties for non-compliance?	PM-22
<b>Operations</b>	KPI-6
Were the services specified in the contract delivered?	PM-23
<b>Maintenance</b>	KPI-7
Are the deliverable standards for infrastructure and equipment being met?	PM-24
<b>Monitoring and Evaluation</b>	KPI-8
Is there a formal monitoring procedure in place?	PM-25
<b>Finance</b>	KPI-9
Was finance available when needed?	PM-26
Was the project cash flow sufficient for the expected payments to all parties?	PM-27
Did the project result in financial benefits to users (e.g. in terms of charges)?	PM-28
Has the financial outcome been equal to or better than expected for the private partner?	PM-29

**Source:** Author's Field Survey, 2024

Having identified KPIs and PMs, the next step was then to identify the success criteria and two approaches were used:

- 1) Initial evaluation calculating the percentage of success for each KPI/PM based on Likert values, as shown in Table 4.18

**Table 4.19: Initial Evaluation of Case Studies**

KPIs	Performance Measures	Likert Scale	Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge	Mile 2-Oworonsoki	Oniru Road Network	Zenith Road VI	Fourth Mainland Bridge (Under Construction)	Average score (%)
Objectives	Are the objectives specified in the contract SMART?	1 to 5	5	5	4	5	...	85%
	Have user benefits been as large as expected?	-2 to 2	1	2	2	2	...	83%

**Source:** Author’s Field Survey, 2024

Table 4.19 provides an Initial Evaluation of Case Studies for Key Performance Indicators (KPIs) in five different road infrastructure projects: Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge, Mile 2-Oworonsoki, Oniru Road Network, Zenith Road VI, and Fourth Mainland Bridge (Under Construction). The table showed two KPIs, the Performance Measures for each KPI, the Likert Scale rating system used for evaluation, the ratings for each project on the Performance Measures, and the average score for each KPI across the five projects.

The first KPI in the table is Objectives, which evaluates whether the objectives specified in the contract are Specific, Measurable, Achievable, Realistic, and Time-bound (SMART). The table shows that there is one Performance Measure evaluated under this KPI, and the Likert Scale rating system ranges from 1 to 5. The ratings for each project show that the Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge project, Mile 2-Oworonsoki project, Zenith Road VI project, and Fourth Mainland Bridge project all scored 5 on the Performance Measure, indicating

that their objectives are fully SMART. The Oniru Road Network project scored 4, suggesting that there is some room for improvement in ensuring that this project's objectives are fully SMART.

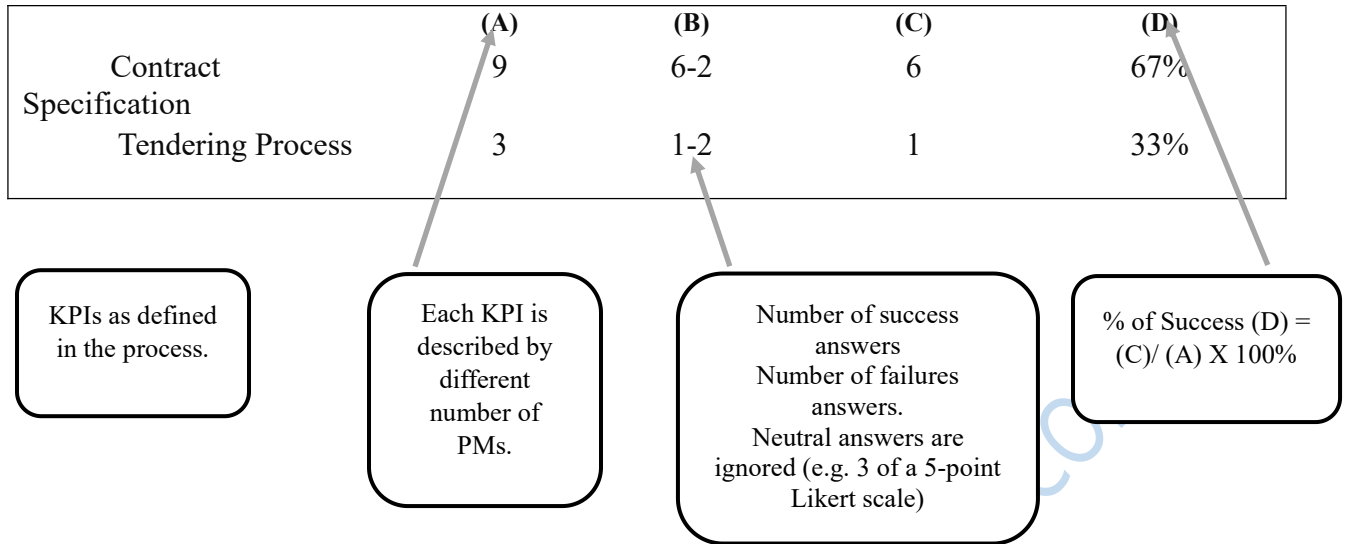
The Average Score for this KPI across the five projects is 85%.

The second KPI in the table is user benefits achieved compared to expectations. The table showed that there is also one Performance Measure evaluated under this KPI, and the Likert Scale rating system ranges from -2 to 2. The ratings for each project showed that the Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge project, Mile 2-Oworonsoki project, Oniru Road Network project, Zenith Road VI project, and Fourth Mainland Bridge project all scored 1 or higher, indicating that the project's user benefits have been at least satisfactory. The Average Score for this KPI across the five projects is 83%.

The Initial Evaluation of Case Studies table provides essential information on project performance for two KPIs. These KPIs are Objectives and user benefits achieved compared to expectations. The table's format allows for easy comparison of Performance Measures, project ratings, and average scores across the five different projects, enabling stakeholders to evaluate and compare project effectiveness and identify areas for improvement.

**Table 4.20: Enhanced Evaluation of the Success Criteria**

Category/KPI	No. of PMs under each	Score (Success Factor)	No. of Success Factors	Percentage of Success
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**Source:** Author's Field Survey, 2024

The Enhanced Evaluation of the Success Criteria table provides a detailed breakdown of two Key Performance Indicator (KPI) categories: Contract Specification and Tendering Process. Table 4.19 summarized the total number of Performance Measures (PMs) evaluated under each category, the number of Success Factors, and the associated scores. The table also showed the percentage of success achieved for each KPI category. The first KPI category, Contract Specification, involves nine PMs evaluated. The table shows that out of the nine PMs evaluated, six Success Factors were identified (A). The score for this category of KPI is 6 out of 9 (B), indicating that Contract Specification was successful in meeting the defined criteria to a significant extent. The percentage of success (D) for this KPI is 67%.

Under the Tendering Process KPI category, the table shows that three PMs were evaluated, and only one Success Factor was identified (A). This resulted in an overall score of 1 out of 3 (B). The percentage of success (D) for this KPI category is 33%, reflecting the need for improvement in the tendering process. The Enhanced Evaluation of the Success Criteria table's format provides valuable insights for project managers and stakeholders. The table's format helps to compare the

number of PMs evaluated under each KPI, the number of identified Success Factors, and the overall score and percentage of success. The Contract Specification category had a relatively high success rate with room for improvement, as evidenced by the identified Success Factors that did not meet the defined criteria. On the other hand, the Tendering Process category had a low success rate, highlighting the critical need for improvement in the tendering process to increase project success.

The Enhanced Evaluation of the Success Criteria table is a useful resource for assessing KPI effectiveness and identifying critical areas in need of improvement. It shows the specific areas that contribute to the overall success of a particular KPI category. Consequently, stakeholders can use this information to make informed decisions and implement changes to enhance project performance.

**Table 4.21: Assessment of Level of Performance of PPP Road Infrastructure Development**

Performance Level Rating (L) 1 – Very Poor, 2 – Poor, Good, 4 - Excellent		Weighted Score (WS) = (L x W)						Total WS for each PM	Overall Level of Performance PM
Mean Zones	Weight (W)	Performance Measures (PM)	Lekki-Epe Expressway + Lekki- Ikoyi Link Bridge	Mile 2- Oworonsoki	Oniru Road Network	Zenith Road VI	Fourth Mainland Bridge (Under Construction)		
WS <sub>A</sub> < 4.28 to > 5	4	PM-12	12	20	-	20	-	144	55%
		PM-23	20	-	-	20	-	204	78%
WS <sub>B</sub> < 4.01 to >4.28	3	PM-3	15	-	-	12	-	96	49%
		PM-7	12	12	12	15	-	159	82%
Total WS per Case (X)			219	186	96	265			
Overall Level of Performance per Case (%)			68	58	30	83			

**Source:** Author's Field Survey, 2024

The Assessment of Level of Performance of Public-Private Partnership (PPP) Road Infrastructure Development table is a tool for measuring the performance of different infrastructure projects. The table evaluated five road infrastructure projects: Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge, Mile 2-Oworonsoki, Oniru Road Network, Zenith Road VI, and Fourth Mainland Bridge (Under Construction). The table evaluated each project based on their weighted score and overall level of performance for each performance measure. The table comprised four sections. The first section outlines the Performance Level Rating (L), ranging

from 1 to 4, indicating Very Poor, Poor, Good, and Excellent. The Weight (W) for each Mean Zone follows, which is the importance assigned to each element.

The second section provides the Performance Measures (PM) evaluated across the different projects. The third section shows the ratings for each project on each Performance Measure. The fourth section displays the Weighted Score (WS) calculated for each project by multiplying the rating by the weight assigned to the Mean Zone. The Overall Level of Performance (percentage) for each PM was also listed in the table. The overall score is calculated by summing all the Weighted Scores for each case (X) and dividing it by the total weight for the entire project.

The table assessed the projects based on their performance on each Performance Measure and their Overall Level of Performance. The Overall Level of Performance is a percentage calculated based on the total weighted score number divided by the total weight for the entire project.

The table showed that for PM-12 (WSA), the Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge project scored 12 out of 20, while Mile 2-Oworonsoki scored 20 out of 20. For PM-23 (WSA), Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge and Zenith Road VI both scored 20 out of 20. The Overall Level of Performance for PM-12 and PM-23 for Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge was 55% and 78% respectively.

For PM-3 (WSB), the Mile 2-Oworonsoki project scored 15 out of 20, while Lekki-Epe Expressway + Lekki-Ikoyi and Zenith Road VI scored 12 out of 20. The Overall Level of Performance for PM-3 for Mile 2-Oworonsoki was 49%, and for Lekki-Epe Expressway + Lekki-Ikoyi and Zenith Road VI, it was 82%.

The table's format makes it easy to compare the overall performance of each of the projects included in the evaluation, as well as the performance of each project across different Performance Measures. The Assessment of Level of Performance of PPP Road Infrastructure Development table provides valuable insights for project managers and stakeholders, offering a snapshot comparison of different infrastructure projects' performance in clear and concise terms.

**Table 4.22: Project Level of Performance and Ranking**

**Weighting Approach**

No. PM	Score (%)	Position
PM-8	88%	1
PM-18	88%	2
PM-9	85%	3
PM-15	85%	4
PM-21	85%	5
PM-7	82%	6
PM-23	78%	7
PM-24	78%	8
PM-6	77%	9
PM-26	77%	10
PM-19	68%	11
PM-1	66%	12
PM-28	66%	13
PM-10	63%	14
PM-11	63%	15
PM-13	63%	16
PM-17	63%	17
PM-20	63%	18
PM-25	63%	19
PM-27	63%	20
PM-22	58%	21
PM-14	57%	22
PM-12	55%	23
PM-29	54%	24
PM-16	51%	25
PM-3	49%	26
PM-4	43%	27
PM-2	40%	28
PM-5	28%	29

**Direct Score Approach**

Score (%)	Position
85%	1
85%	2
83%	5
85%	3
85%	4
77%	6
77%	7
75%	9
71%	10
71%	11
62%	12
60%	13
58%	14
54%	17
56%	18
54%	19
54%	20
54%	21
56%	15
56%	16
54%	22
46%	24
52%	23
48%	25
77%	8
46%	26
37%	27
37%	28
27%	29

61%

Average	66%
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Source: Author’s Field Survey, 2024

**Weighting Approach**

Project	Lagos State Location	Score (%)	Position
Lekki-Epe Expressway + Lekki-Ikoyi Link Bridge	Lekki	92%	1
Mile 2-Oworonsoki	Oworonsoki	87%	2
Oniru Road Network	Oniru	83%	3
Zenith Road VI	Victoria Island	79%	4
Fourth Mainland Bridge (Under Construction)	Across Lagos Lagoon	78%	5

Average
---------

66%
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**Direct Score Approach**

Score (%)	Position
97%	1
76%	4
83%	2
72%	5
83%	3

61%
-----

Excellent

Good

Poor

V. Poor

Source: Author’s Field Survey, 2024

The Project Level of Performance and Ranking table provided two different approaches, the Weighting Approach and the Direct Score Approach, to rank the performance of various performance measures (PM) in each project. The table lists the number of PMs evaluated, the score received for each PM (in percentage), and the corresponding position assigned to each PM based on their score. In the Weighting Approach, the PMs are given different weights,

reflecting their relative importance to the project. The PMs are scored based on the weight assigned to each of them. The scores are then summarized and ranked based on their percentage scores, with the highest percentage scores receiving the top ranking. The table shows that PM-8 and PM-18 attained the highest ranking with a score of 88%, followed by PM-9, PM-15, and PM-21 with a score of 85%. PM-7, PM-23, PM-24, PM-6, and PM-26 follow closely with a score of 82% and 78%, respectively. For the Weighting Approach, PM-5 recorded the lowest score, with a score of 28%. The rank for each PM is also listed, with PM-8 and PM-18 occupying the first and second positions, respectively.

The Direct Score Approach evaluates each PM's score based on a straightforward scoring method without considering the weight assigned to each PM. The PMs are ranked based on their percentage scores. The Direct Score Approach ranking in the table shows that PM-8 and PM-18 maintain the highest ranking with a score of 85%, followed by PM-9, PM-15, and PM-21 with a score of 83%. PM-7, PM-23, PM-24, and PM-6 record the next ranking with a score of 77% and 75%, respectively, while PM-5 attained the lowest ranking with a score of 27%.

In general, the Project Level of Performance and Ranking table presented useful information to stakeholders by indicating the ranking of PMs based on the Weighting Approach and the Direct Score Approach. The comparison between the two approaches revealed the impact of weights assigned to different PMs on the overall ranking of the project's level of performance.

It also provides insights into which PMs require more attention based on their respective rankings. Project managers can use this information to focus on specific PMs, improve performance, and enhance the project's overall success rate and ultimately achieve their goals.

With regards to the level of success of Performance Measures, PM-8 (assigning clear roles and responsibilities) and PM-18 (legal challenges to outcome faced during the tendering process) overall have been successfully achieved/fulfilled in most of the projects with a success score of 88%. PM-9 (minimum standards for the condition of infrastructure and equipment are specified in the contract), PM-15 (guarantees are specified in the contract), and PM-21 (the project is completed according to specifications) are also not far off with a percentage score of 85%, and PM-7 (deliverables are specified) with 82%, which are all excellent. In contrast, the lowest scored PM across all projects is PM-5 (transfer of risks to the private sector) with a percentage score of 28%. This may raise questions about the lack of risk allocations in PPP road projects. Although there are many studies on risks and risk allocation, the performance results highlight that the area of 'risk' needs further investigation in PPP road projects.

Considering the performance of the overall KPIs, KPI-3 (contract specifications) is the highest performing KPI in most of the projects, meaning that many PPP projects do have clear deliverables, specifications and roles and responsibilities specified in the contract. Within KPI-3, the only weakness is the lack of specifications of performance targets and penalties for non-compliance in many PPP contracts. Perhaps the reason for this could be, that since PPP projects form the basis for a long-term relationship between the private and public sector, specifying penalties may be deemed to jeopardize the 'trust' factor and the coordination and collaboration between the two parties. KPI-1 (objectives) seems to be the lowest performing KPI in many of the projects due to a lack of specification of SMART objectives (specific, measurable, achievable, relevant, and time-bound) and failure to achieve the project's objectives and user's benefit. Taking all the above, of the 5 projects tested, there

are 04 projects with a very high percentage of success except the Fourth Mainland Bridge which is under construction. First, it is the Lekki-Epe Expressway, Lekki-Ikoyi Link Bridge in Lekki, which has gone through renegotiation, after which the government had to buy back the project. Secondly, Mile 2- Oworonsoki, which is one of the road projects under PPP has enhanced mobility on the part of the users. Third Oniru Road Network. And the last one is Zenith Road in Victoria Island.

#### **4.5 Perception of Users of PPP Road Infrastructure in the Study Area**

Data collected from the field were analyzed and discussed in this section in a manner that aims to combine relevance to the inquiry and make a reasonable finding from the result. The importance of analyzing raw data cannot be relegated to the background. For this study, certain questions were asked to create a logical basis on which reasonable inferences were drawn. The questions were designed to generate sufficient quality information on PPP road infrastructure development and the impact on road users and business owners in the study area using descriptive statistics. The descriptive statistics include frequencies, percentages, pie charts and bar charts. The section analyzed and explained data collected from road users such as transport workers/commercial drivers, commuters and business owners along those PPP roads sampled for the study.

**Commuters:** Commuters are individuals who regularly travel from one place to another, typically from their homes to their workplaces or schools. They travel by various modes of

transportation, including cars, buses and trains. Commuters travel daily or regularly, often following a set schedule. They are urban or rural residents, and their commuting patterns can be influenced by factors such as proximity to work or school, availability of transportation options, and traffic or weather conditions. The term "commuter" typically refers to individuals who travel between two distinct locations, as opposed to those who travel within a single location or area.

**Transport Workers:** Transport workers are individuals who are employed in the transportation industry. This includes a wide range of occupations, such as drivers, conductors, mechanics, ticket sellers, customer service representatives, and administrative staff. Transport workers are employed in many different sectors, including air, sea, and land transportation. They work for private companies, government agencies, or non-profit organizations. Their responsibilities vary widely, depending on their specific position, but they all play a critical role in ensuring the safe and efficient movement of people and goods. The transportation industry is crucial to the global economy and serves as a backbone of modern society, with transport workers playing a pivotal role in its success.

**Business Owners:** Business owners along a PPP road include a diverse range of individuals and companies that have different occupations, income levels, and business interests. PPP roads create opportunities for business owners to set up their operations and benefit from enhanced infrastructure, better transport networks, and increased access to customers. Some examples of business owners along PPP roads include:

1. **Retailers and Wholesalers:** Business owners who specialize in the sale and distribution of goods, such as retail shops, supermarkets, and wholesalers, benefit from the enhanced transportation infrastructure within the area. They take advantage of the increased flow of people and goods passing through the PPP road, potentially leading to higher sales volumes and revenue.

2. Service Providers: Business owners that provide services such as healthcare, education, and financial services also benefit from the increased accessibility brought about by PPP road projects. The improved transportation and infrastructure facilitate the movement of people to and from their establishments, leading to increased patronage and exposure.

3. Publishers and Media Outlets: Business owners involved in the publishing and media industry, such as radio and television stations, also benefit from the improved telecommunications infrastructure that often accompanies PPP road projects. This has improved the reach and audience of their content, as well as facilitated the distribution of their products and services.

4. Real Estate Developers: Property owners and real estate developers also benefit from the increased business opportunities arising from PPP road projects. The improved transportation and infrastructure make their properties more accessible and attractive, leading to higher demand and property values.

Business owners along PPP roads come from various industries, backgrounds, and sectors, and benefit from the improved infrastructure and transport networks that come with these kinds of projects.

#### **4.5.1 Perception of Commuters on PPP Road Infrastructure in the Study Area**

Residential Streets were randomly selected from the Cases Studies PPP Road sampled for the study. The areas were:

1. Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge
2. Oniru Road Network
3. Mile2- Oworonsoki Road
4. Zenith Road Victoria Island

## 5. The Fourth Mainland Bridge \*(Under Construction)

### **Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge**

Lekki-Epe and Lekki-Ikoyi Link Bridge are two significant areas in Lagos, Nigeria, well known for their luxurious residential streets and commercial centres. Here are some popular residential streets in Lekki-Epe and Lekki-Ikoyi Link Bridge

1. Admiralty Road: Admiralty Road is located in the heart of Lekki Phase 1 and is home to several luxurious buildings and gated estates. The road is known for its exclusivity, and it is home to several celebrities, wealthy individuals and government officials.
2. Freedom Way: Freedom Way is also a popular residential street located in Lekki Phase 1. It is home to several high-end apartment buildings, gated communities, and commercial offices. Freedom Way is known for its recreational facilities, shopping centres and easy accessibility.
3. Ajiran Road: Ajiran Road is located at the end of Lekki Phase 1, and it is known for its several exclusive gated communities, apartments, townhouses, and individual houses with modern designs.
4. Chevron Drive: Chevron Drive is a major road in Lekki that is home to several luxury estates, modern apartments, and detached duplexes. Chevron Drive is known for its well-organized layout and accessibility to several social amenities.
5. Osapa London: Osapa London is situated off the Lekki-Epe Expressway and is a major residential street in the area. It offers residents access to several amenities, including supermarkets, hospitals, and schools, and a variety of housing options.
6. Ikate: Ikate is located along the Lekki-Ajah expressway and is home to several residential estates and housing developments. The area is known for its serenity, proximity to the ocean, and access to various social amenities.

7. **Idado:** Idado is located north of Lekki Phase 1 and is a popular residential street that offers residents a wide range of housing options, from apartments to duplexes, and semi-detached houses. It is near several schools, hospitals, and supermarkets, making it a convenient location for families.

### **Oniru Road Network**

Oniru Road Network is a well-organized residential area in Victoria Island, Lagos, Nigeria. The area is known for its luxurious properties, home to several high-net-worth individuals, expatriates, and corporate executives. Here are some popular residential streets in Oniru Road Network:

1. **Prince Adelowo Adedeji Street:** Prince Adelowo Adedeji Street is a popular residential street located in the heart of Oniru Road Network. It is home to several luxurious apartments, duplexes, and townhouses that provide easy access to social amenities such as Shopping Centers, Parks, Gyms and Schools.
2. **Akin Ogunlewe Street:** Akin Ogunlewe Street is another popular residential street located in Oniru Road Network. The street is known for its luxurious apartment buildings and townhouses, making it a preferred choice for expatriates and high-net-worth individuals.
3. **Ajose Adeogun Street:** Ajose Adeogun Street is a popular commercial street located in Victoria Island that provides easy access to several luxurious apartments and gated estates in Oniru Road Network. Various commercial establishments surround this street, ranging from 5-star hotels to international headquarters of major corporations.

4. Samuel Manuwa Street: Samuel Manuwa Street is a quiet and scenic residential street located in Oniru Road Network. It is home to several modern apartments and duplexes, known for their luxurious finish and serene environment.

5. Ahmadu Bello Way: Ahmadu Bello Way is a major road that provides easy access to Oniru Road Network, Victoria Island, and other places in Lagos State. Along its stretch, several high-end apartment buildings are offering various commodities such as exclusive workout gyms, rooftop pools, and state-of-the-art facilities.

### **Mile 2 – Oworonsoki**

Mile 2-Oworonsoki Road is a major road that connects the Mile 2 area of Lagos to Oworonsoki, a suburb located across the Lagos Lagoon. The area is known for its residential streets providing access to comfortable living options. Here are some popular residential streets in Mile 2-Oworonsoki Road:

1. Festac: Festac is a residential area located along the Mile 2-Oworonsoki Road in Lagos, Nigeria. The area is situated between Mile 2 and Amuwo-Odofin, and it is known for its serene and peaceful environment. Festac is one of the largest residential estates in Nigeria, and it was developed in the 1970s to provide housing for the participants of the Second World Black and African Festival of Arts and Culture (FESTAC) held in Lagos in 1977

2. Cele: Cele is a bustling community situated along Mile 2-Oworonsoki Road in Lagos, Nigeria. It is located between Ijesha and Barracks Bus Stop along the Oshodi-Apapa Expressway. The area is known for its vibrant markets and commercial activities, making it one of the busiest and most densely populated areas in Lagos. Cele has a mix of residential and commercial areas, with many low and medium-density housing units, shops, and businesses.

3. Oshodi: Oshodi is a bustling neighbourhood situated and it is one of the busiest and most densely populated areas in Lagos, known for its vibrant markets, transport terminal, and commercial activities. Oshodi is home to a mix of residential, commercial, and industrial areas.

4. Anthony: Anthony is a residential and commercial area. It is located between the communities of Maryland and Gbagada, and it is known for its bustling commercial activities and serene residential areas. Anthony is primarily a residential area, with many low, medium, and high-density housing units.

5. Ojota: Ojota is a bustling residential and commercial area situated along the Mile 2-Oworonsoki Road in Lagos, Nigeria. It is located between the communities of Ketu and Maryland, and it is known for its vibrant markets, transport terminals, and entertainment venues. Ojota is primarily a residential area, with many low, medium, and high-density housing units

### **Zenith Road Victoria Island**

Zenith Road is a well-structured road located in the heart of Victoria Island, Lagos, Nigeria. The roadhouses several high-end residential apartments, hotels, and corporate offices with easy access to commercial activities and social amenities. Here are some popular residential streets in Zenith Road, Victoria Island:

1. Adeola Odeku Street: Adeola Odeku Street is one of the most popular residential streets in Victoria Island and is situated off Zenith Road. It houses several high-end residential apartments and townhouses known for their modern design and luxurious finishes that offer ample space for family living.

2. Akin Adesola Street: Akin Adesola Street is a popular residential and business district located in the heart of Victoria Island. The area includes several luxurious apartments, gated estates, and

commercial businesses, offering ideal living conditions for professionals and families looking for luxury in a busy city like Lagos.

3. Ahmed Onibudo Street: Ahmed Onibudo Street is a quiet residential street located off Victoria Island. It houses several luxurious apartments, offering comfortable and serene living within the bustling city.

4. Sanusi Fafunwa Street: Sanusi Fafunwa Street is a major road connecting Victoria Island to Lagos Island. The street is home to different residential apartments and gated estates that offer various living options, ranging from townhouses to luxury apartments.

5. Tihamiyu Savage Street: Tihamiyu Savage is another residential street located off Zenith Road, Victoria Island. It houses several high-end apartment buildings and provides easy access to social amenities such as shopping centers, parks, and restaurants.

#### **The Fourth Mainland Bridge (Under Construction)**

Fourth Mainland Bridge is a proposed bridge in Lagos, Nigeria, connecting Lagos Island to the mainland. It is one of the biggest projects to be undertaken in Lagos and is expected to have a significant impact on the city's infrastructure development. The bridge is not yet in existence, but here are some potential residential streets in the area based on the proposed route:

1. Ikorodu Road: Ikorodu Road is one of the busiest roads in Lagos and is expected to provide easy access to the proposed Fourth Mainland Bridge. The area around Ikorodu Road is already home to several residential developments, providing ideal living conditions for professionals and families.

2. Onikoyi Estate: Onikoyi Estate is a high-end, gated community located across the Lagos Lagoon and situated off the proposed Fourth Mainland Bridge. The estate houses several luxurious homes and provides amenities like 24-hour security, swimming pools, and landscaped gardens.

3. Lagos-Ibadan Expressway: The Lagos-Ibadan Expressway is another major road that will have easy access to the proposed Fourth Mainland Bridge. The expressway offers access to multiple residential areas, including Mowe, Ibafo, and Magboro, providing affordable housing options for individuals and families.

4. Banana Island: Banana Island is a high-end enclave nestled in the heart of Lagos and is expected to have easy access to the proposed Fourth Mainland Bridge. The area is known for its luxurious apartments, offering breathtaking views of the lagoon and a serene environment to boot.

5. Oworonshoki: Oworonshoki is a popular area on the Lagos mainland, situated close to the proposed site of the Fourth Mainland Bridge. The area is home to several high-density residential developments, providing affordable housing options for individuals and families.

The construction of the Fourth Mainland Bridge in Lagos is set to open up new residential areas, providing a variety of living options for housing seekers. The area will combine affordable and upscale living conditions, making it an attractive location for individuals and families to reside.

**Table 4.23: Sampled Commuters for the study**

<b>PPP Case Study Road</b>	<b>Sampled Streets</b>	<b>Number of Sampled Households</b>
----------------------------	------------------------	-------------------------------------

Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Admiralty Road	5
	Freedom Way	4
	Ajiran Road	5
	Chevron Drive	6
	Osapa London	4
	Ikate	8
	Idado	5
	<b>37</b>	
Oniru Road Network	Prince Adelowo Adedeji Street	4
	Akin Ogunlewe Street	5
	Ajose Adeogun Street	4
	Samuel Manuwa Street	3
	Ahmadu Bello Way	5
	<b>21</b>	
Mile 2-Oworonsoki	Festac	5
	Cele	4
	Oshodi	3
	Anthony	4
	Ojota	4
	<b>20</b>	
Zenith Road Victoria Island	Adeola Odeku Street	5
	Akin Adesola Street	4
	Ahmed Onibudo Street	3
	Sanusi Fafunwa Street	3
	Tiamiyu Savage Street	3
	<b>18</b>	
<b>Total</b>		<b>96</b>

Source: Authors Field Survey, 2024

## 4.5.2 Socio-Economic Characteristics of Respondents (Commuters)

### 4.5.2.1 Gender Distribution of Respondents

This section discusses the respondent's socio-economic characteristics in the study area. The results obtained are presented as follows. In Table 4.24, 67 of the respondents which is (69.8%) of the total respondents were male while 29 of the respondents which is (30.2%) of the respondents were female. This shows that male respondents were more than the female respondents.

**Table 4.24: Distribution of Responses by Gender**

	<b>Frequency</b>	<b>Per cent</b>
<b>Male</b>	67	69.8
<b>Female</b>	29	30.2
<b>Total</b>	<b>96</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### 4.5.2.2 Age Distribution of Respondents

Table 4.25 indicated that 19 (19.8%) of the sampled population were between the ages of 30-44 years. About 25 (26.0%) fell between the ages of 45 to 60, and 52 (54.2%) of the respondents were 60 years of age and above.

**Table 4.25: Distribution of Responses by Age**

<b>Age</b>	<b>Frequency</b>	<b>Per cent</b>
30-44	19	19.8
45-60	25	26.0
61 Years and above	52	54.2
	<b>96</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

#### 4.5.2.3 Marital Status of Respondents

Table 4.26 indicated that 72 (75%) of the respondents were married, while 5 (5.2%) were divorced. Respondents who were widowed were 8 (8.3), only 2 (2.1%) were still single and 9 (9.4%) were separated. The illustration was shown in figure 4.17. The marital characteristics showed that most of the commuters sampled for the study were of married class.

**Table 4.26: Distribution of Respondents by Marital Status**

	<b>Frequency</b>	<b>Percent</b>
<b>Married</b>	72	75
<b>Divorced</b>	5	5.2
<b>Widowed</b>	8	8.3
<b>Single</b>	2	2.1
<b>Separated</b>	9	9.4
<b>Total</b>	<b>96</b>	<b>100</b>

**Source:** Author's Field Survey, 2024.

#### 4.5.2.4 Distribution of Respondents by Highest Educational Qualification

16.6% of the respondents were doctorate degree holders, 21% were Master ‘s degree holders, 39.5% were bachelor ‘s degree holders, 11.5% had a Higher National Diploma as their highest educational qualification, 5.2% had Ordinary National Diploma and 6.2% of the respondents had Nigeria Certificate in Education. None of the respondents are without formal education. The mode is First Degree holders.

**Table 4.27: Distribution of Responses by Highest Educational Qualification**

	<b>Frequency</b>	<b>Percent</b>
<b>Doctorate Degree</b>	16	16.6
<b>Master’s Degree</b>	20	21
<b>Bachelor’s Degree</b>	38	39.5
<b>Higher National Diploma</b>	11	11.5
<b>Ordinary National Diploma</b>	5	5.2
<b>Nigeria Certificate in Education</b>	6	6.2
<b>No Formal Education</b>	0	0.0
<b>Total</b>	<b>96</b>	<b>100</b>

**Source:** Author’s Field Survey, 2024

#### **4.5.3 Commuters’ Perception on Travelling along the Route (PPP Road)**

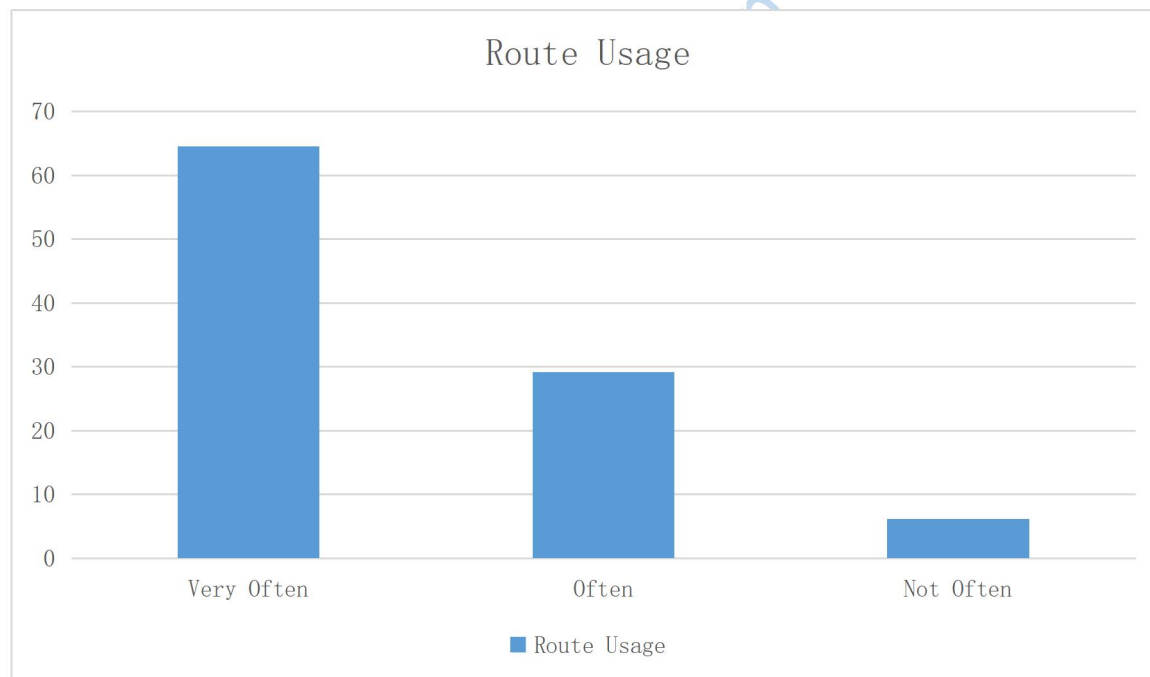
Table 4.28 showed that 62 of the respondents which is (64.6%) out of 96 respondents uses the PPP road sample for the study very often, 28 of the respondents which is (29.2%) uses the road often while 6 of the respondents which is (6.2%) uses the road not often. Those that does not use the road often said they work outside the area so they come home during holidays or festive periods. One of the respondents is a principal or a Canadian School and since he has been posted

to Abuja branch of the school he only comes home during holidays or festive periods, which reduces the frequency of him using the road often. This is illustrated in figure 4.12.

**Table 4.28: Frequency of Route Usage**

How often do you travel along the Route	Frequency	Percentage
Very Often	62	64.6
Often	28	29.2
Not Often	6	6.2
<b>Total</b>	<b>96</b>	<b>100</b>

**Source:** Author's Field Survey, 2024



**Fig 4.12: Route Usage of Respondents**

**Source:** Author's Field Survey, 2024.

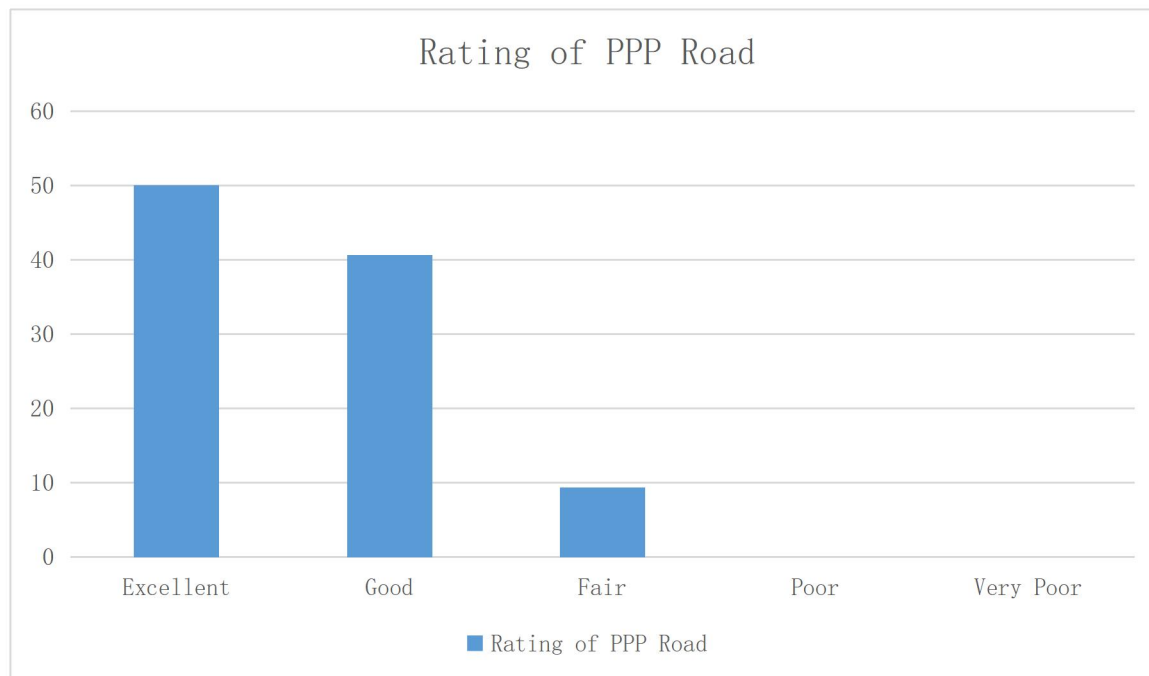
#### 4.5.4 Commuters' Perception of Rating of PPP Road Infrastructure in the Area

Table 4.29 shows the respondents' views on the state of road transport infrastructure in the selected PPP Road sampled for the study. 48 respondents (50%) of the 96 sampled said PPP road infrastructure in the area is Excellent, 39 (40.6%) agreed that the PPP roads are good, 9 (9.4%) agreed that the PPP roads are fair, 0 which represents 0% agreed this infrastructure is poor, while 0 which represent 0% agreed it is very poor. This was illustrated in Figure 4.13. This response showed that PPP roads in the area are very good and are of good quality.

**Table 4.29: State of PPP Road Infrastructure in the Study Area**

<b>How can you rate the State of PPP Road Transport Infrastructure in the Study Area?</b>		
	<b>Frequency</b>	<b>Percentage</b>
<b>Excellent</b>	48	50
<b>Good</b>	39	40.6
<b>Fair</b>	9	9.4
<b>Poor</b>	0	0
<b>very poor</b>	0	0
<b>Total</b>	<b>96</b>	<b>100</b>

**Source:** Author's Field Survey, 2024



**Fig 4.13:** Respondents' Rating of PPP Road

**Source:** Author's Field Survey, 2024.

#### 4.5.5 Commuters' Perception of Challenges of PPP Road Infrastructure in the Area

Table 4.30 shows the ranking of the challenges facing selected PPP road transport infrastructure in Lagos State using the mean and the relative importance index of the correspondents. This implies the challenges are in the following order from the least to the top; inadequate parking space followed by traffic congestion, environmental pollution, poorly maintained roads, flooding, and accidents.

**Table 4.30: The Challenges of PPP Road Infrastructure Development in the Selected PPP Roads in Lagos state (Ranked with Mean).**

Challenges of PPP Road Infrastructure in the Selected Areas		Mean	Relative Importance Index RII	Rank
1	Mishap (Accident)	1.74	0.4350	1
2	Submerging Flood	1.62	0.4050	2
3	Maintenance Level	1.61	0.4025	3
4	Poor environmental quality	1.55	0.3875	4
5	Traffic overcrowdings	1.51	0.3775	5
6	Poor parking facility	1.45	0.3625	6

**Source:** Author's Field Survey, 2024

#### **4.5.6 Commuters' Perception of PPP Road Infrastructure Furniture in the Selected Areas**

Road Infrastructure Furniture refers to the physical elements installed on or along roadways to aid mobility, safety, and communication. It includes a variety of items such as traffic signals, road signs, lane dividers, barriers, speed bumps, and bollards. Road Infrastructure Furniture serves to regulate traffic flow, prevent accidents, and enhance the overall user experience on roads.

In addition to the items mentioned above, Road Infrastructure Furniture can also include street furniture such as benches, streetlamps, and bus stops. These types of structures often serve a dual purpose in providing functionality and aesthetic appeal to the roadside environment.

Effective Road Infrastructure Furniture planning and design can make a significant difference in the safety and efficiency of roads. For example, clear and well-placed road signage helps drivers navigate efficiently and reduces the chances of accidents resulting from confusion or lack of direction. Similarly, properly placed barriers and lane dividers can help prevent road accidents

and ensure smooth traffic flow. Road Infrastructure Furniture plays a crucial role in ensuring the safety, mobility, and aesthetic quality of roads and their surrounding environments.

Table 4.29 identifies the availability of PPP road infrastructural furniture's along the selected PPP Roads. The results showed that Road Signs, Speed Limit, Pedestrian Crossings, Traffic Lights Road Markings, Streetlights, Bus Shelters, and Road Humps were available all through. Only the Lekki-Ikoyi Link Bridge has Toll Gate Plaza, although the operation had since stopped due to some unmet agreement between the government and the private sector handling the project, so the government had to re-buy the facility. Guardrails were not available in Oniru, Mile 2-Oworonsoki and Zenith Road, Road Humps are not available in Zenith Road too. This revealed that most of the road infrastructure furniture is available for the PPP roads except for a few ones.

**Table 4.31: Identification of PPP Road Infrastructure Furniture in the Selected PPP Roads**

	Road Furniture	Selected PPP Road			
		Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Oniru Road Network	Mike2-Oworonsoki	Zenith Road VI
1	Road Signs	√	√	√	√
2	Speed Limit	√	√	√	√
3	Pedestrian Crossing	√	√	√	√
4	Traffic Lights	√	0	√	√
5	Road Markings	√	√	√	√
6	Streetlights	√	√	√	√
7	Guardrails	√	0	0	0
8	Barriers	√	0	0	√
9	Bus Shelters	√	√	√	√
10	Toll Gates	√	0	0	0
11	Bollards	0	√	√	√
12	Road Humps	√	√	√	0
13	Drainage	√	√	√	√

**Source:** Author's Field Survey, 2024

Key: √ = Available; 0 = Not Available

#### **4.5.7 Commuters' Perception on the Condition of PPP Road Infrastructure Furniture in the Selected Areas**

Table 4.30 assessed the condition of the road infrastructural furniture's in the selected PPP Roads in the study area, which shows that the Road Signs, Speed Limit Sign, Pedestrian Crossings, Traffic Lights, Road Mailing, Streetlights, Barriers, Bus Shelters, Bollards, Road Humps and

Drainage were good in most of the PPP road selected for the study except in Mile 2- Oworonsoki Road Network that have experienced fair condition in some of these road infrastructure furniture. But overall, the road infrastructure furniture in the PPP Roads selected is in good condition. This shows that PPP roads are well designed, and well concessioned and maintenance packages are all in the contractual agreement because this is a public and private partnership infrastructure. By implication, this has a positive impact on road infrastructure and commuters, especially in the area of mobility and so on.

**Table 4.32: The condition of PPP Road Infrastructure Furniture in the Study Area**

Condition of Road Furniture	Selected PPP Road			
	Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Oniru Road Network	Mike2-Oworonsoki	Zenith Road VI
1 Road Signs	G	G	G	G
2 Speed Limit	G	G	G	G
3 Pedestrian Crossing	G	G	F	G
4 Traffic Lights	G	NA	F	G
5 Road Markings	G	G	F	G
6 Streetlights	G	G	F	G
7 Guardrails	G	G	F	NA
8 Barriers	G	NA	NA	G
9 Bus Shelters	G	G	G	G
10 Toll Gates	NU	NA	NA	NA
11 Bollards	G	G	NA	G
12 Road Humps	G	G	G	NA
13 Drainage	G	G	F	G

**Source:** Author's Field Survey, 2024

Key: G = Good; F = Fair; NA = Not Available

#### **4.5.8 Perception of PPP Road Users (Transport Workers)**

Transport workers and commercial drivers are vital stakeholders in the transport industry and are likely to be significantly impacted using PPP road infrastructure. PPPs are increasingly being used to fund the development, operation, and maintenance of road infrastructure. The perception of transport workers and commercial drivers regarding PPP road infrastructure can either be positive or negative depending on several factors. The impact of PPP road infrastructure on transport workers and commercial drivers will depend on the specific PPP agreement, the quality of the road infrastructure, and the pricing scheme put in place. Since transport workers and commercial drivers are critical stakeholders in the transport industry, effective consultation and engagement throughout the PPP process are necessary to address their concerns and maximize the positive impact of PPP road infrastructure on the economy.

**Table 4.33: Sampled Transport Workers for the Study**

<b>PPP Case Study Road</b>	<b>Sampled Motor Parks</b>	<b>Number of Sampled Commercial Drivers</b>	<b>Transport Union or Company</b>
Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Epe Motor Park	3	NURTW
	ABC Motors Park	1	ABC
	God is Good Motor Park	1	GIG
	Chisco Motor Park	1	CHISCO
	Young Shall Grow Motor Park	1	YSGM
		<b>7</b>	
Oniru Road Network	Oniru Motor Park	3	NURTW
	Eddyson Motor Park	1	EDDYSON
	Alfa Melaye Motor Park	2	RTEAN
	Lagos Island Motor Park	3	NURTW
	AK Motors	1	AK
		<b>10</b>	
Mile 2-Oworonsoki	Mile 2 Motor Park	3	NURTW
	Oyingbo Motor Park	3	RTEAN
	Olojo Drive Motor Park	2	NURTW
	Berger Motor Park	2	NURTW
		<b>10</b>	
Zenith Road Victoria Island	Obalende Motor Park	3	NURTW
	Oluwole Motor Park	2	RTEAN
		<b>5</b>	
<b>Total</b>		<b>32</b>	

**Source:** Author's Field Survey, 2024

#### **4.5.8.1 Perceived Impact of PPP Road Infrastructure on the Services of Transport Workers and Commercial Drivers in the Motor Parks of the Study Area.**

32 Transport Workers and Commercial Drivers representing a 99% response rate were recruited for this survey with the mean age of respondents being  $44.0 \pm 10.3$  years with the majority, 82.7%, being married and only 50.0% or more of the respondents having secondary and/or post-secondary school education. More than 50% of the respondents have spent 16 years or more on the job while 90% of the respondents have no formal driving school experience. This is illustrated in Table 4.32 and Table 4.33.

**Table 4.34: Socio-Economic Characteristics of Respondents (N = 32)**

<b>Variable</b>	<b>Percentage (%)</b>
<b>Age (years)(n=32)</b>	
≤30	10.3
31-50	67.9
51-60	14.6
≥61	7.2
Mean ± SD	44.0 ± 10.3
<b>Marital Status</b>	
Single	9.5
Married	82.7
Other	7.8
<b>Religion</b>	
Christian	40.3
Islam	52.8
Traditionalist	5.2
Other	1.7
<b>Educational Status</b>	
None	19.0
Primary	31.0
Secondary	41.9
Post-secondary	8.1
<b>Ethnicity</b>	
Yoruba	76.1
Igbo	2.4
Hausa	0.7
Others	20.9

**Source:** Author's Field Survey, 2024

**Table 4.35: Professional Driving Experience of Respondents**

<b>Years of Experience</b>	<b>Frequency</b>	<b>Percent</b>
1 – 5 YEARS	2	6.3
6 – 15 YEARS	14	43.8
16 YEARS AND ABOVE	16	50.0
<b>TOTAL</b>	<b>32</b>	<b>100</b>

**Source:** Author’s Field Survey, 2024

#### **4.5.8.2 Impact of PPP Road Infrastructure on the Services of Transport Workers and Commercial Drivers in the Motor Parks of the Study Area.**

A 5-point Linkert scale was adopted to analyze the impact of PPP Road Infrastructure in the study area, which gave a wider range of possible scores and increased statistical analyses that are available to researcher<sup>1</sup>. The 5-point scales were transformed to Mean Item Scores abbreviated as (MIS) for each of the challenges faced by PPPs whilst implementing projects. The computation of the mean item score (MIS) was calculated from the total of all weighted responses and then related to the total responses on a particular aspect. The formula in Eq. (1) was used to rank the impact of PPP road construction based on the frequency of occurrences as identified by participants (Transport Workers and Commercial Drivers).

Public-private partnerships (PPPs) for road infrastructure are a collaborative procurement method that combines the strengths of both the public and private sectors. The prospects of PPPs in road infrastructure are generally positive, as they can lead to improved efficiency, innovation, and financial savings over traditional public works models.

The **MEAN ITEM SCORE (MIS)** is a statistical measure that is used to evaluate the performance and challenges of PPP projects. It involves calculating the average score of a set of items, which could be various performance indicators or responses from a survey assessing the success of PPPs.

$$MIS = \frac{1n1 + 2n2 + 3n3 + 4n4 + 5n5}{\Sigma N} \quad (1)$$

Where:

n1 = number of respondents strongly disagree

n2 = number of respondents for disagree

n3 = number of respondents for neutral

n4 = number of respondents for agree

n5 = number of respondents strongly agree

N = Total number of respondents

**Table 4.36: Impact of the PPP Road Infrastructure in Lagos State**

<b>Impact of PPP Road</b>	<b>Mean</b>	<b>Std</b>	<b>Rank</b>
Road Quality and Safety	4,90	0,995	1
Reduced Travel Time and Operating Costs	4,89	0,985	2
Increased Income	4,83	0,958	3
Job Creation	4,81	1,208	4
New Technologies	4,78	1,147	5
Access to Improved and Modern Road Infrastructure	4,76	0,964	6
Reduced congestion on the Road	4,74	0,924	7
Faster Delivery of Services	4,71	1,047	8

**Source:** Authors' Conceptualization, 2024.

Respondents were asked to rank the impact of PPPs Road Infrastructure in Lagos State. The respondent ranked first Road Quality and Safety with an MIS = 4,90 and STD = 0,995; followed by Reduced Travel Time and Operating Costs and was ranked 2nd with an MIS = 4,89 and STD= 0,985; Increased Income was ranked 3rd with an MIS = 4,83 and STD = 0,958; Job Creation was ranked 4th with an MIS = 4,81 and STD =1,208; New Technologies was ranked 5th with an MIS = 4,78 and STD=1,147; Access to Improved and Modern Road Infrastructure was ranked 6th with an MIS = 4,76 and STD = 0,964; Reduced congestion on the Road was ranked 7th with an MIS = 4,74 and STD=0,924; and Faster Delivery of Services was ranked 8th with an MIS = 4,71 and 1,047.

The findings are the impact of PPP Road Infrastructure on the services of Transport Workers and Commercial Drivers in Lagos State. In addition, Road Quality and Safety, Reduced Travel Time and Operating Costs, and Increased Income s were ranked the highest. The findings revealed that the Transport Workers and Commercial Drivers at large need more PPP Road Infrastructure. Moreover, the government needs to increase the PPP project pipeline and policies don't have to change due to political shifting or leadership. The government needs to streamline the implementation of PPP to reduce the time it takes to complete project planning and ease the regulatory regime so that it is less cumbersome for both the private and public sectors.

#### **4.5.9 Perception of PPP Road Users (Shops and Business Owners)**

The perception of Public-Private Partnership (PPP) road infrastructure on roadside shops and business owners could be both positive and negative, depending on the specific PPP agreement and the state of the existing road infrastructure. Effective consultation and engagement with

roadside shops and business owners throughout the PPP process are necessary to address their concerns and ensure a positive impact of PPP road infrastructure on society and the economy.

**Table 4.37: Sampled Shops and Business Owners**

PPP Case Study Road	Sampled Streets	Number of Sampled Roadside Businesses/Shops

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Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Admiralty Road	3
	Freedom Way	4
	Ajiran Road	3
	Chevron Drive	3
	Osapa London	3
	Ikate	4
	Idado	4
	<b>24</b>	
Oniru Road Network	Prince Adelowo Adedeji Street	4
	Akin Ogunlewe Street	4
	Ajose Adeogun Street	4
	Samuel Manuwa Street	2
	Ahmadu Bello Way	2
	<b>16</b>	
Mile 2-Oworonsoki	Julius Berger Drive	3
	Adetokunbo Ademola Street	3
	Queens Drive	2
	Isaac John Street	4
	Herbert Macaulay Way	3
	<b>15</b>	
Zenith Road Victoria Island	Adeola Odeku Street	2
	Akin Adesola Street	2
	Ahmed Onibudo Street	4
	Sanusi Fafunwa Street	2
	Tiamiyu Savage Street	2
	<b>12</b>	
<b>Total</b>		<b>67</b>

**Source:** Authors' Conceptualization, 2024

#### 4.5.9.1 Socio-Economic Characteristics of Respondents (Shop and Business Owners)

The characteristics of the categorized residential fragments were analyzed from both secondary and primary data (household surveys). This was to give a general view of the socio-economic

status of the two fragments by assessing their education level, employment status and family income.

### Gender

73% percent of respondents were female, and 26.9% were male. This showed that we have more female shop and business along the PPP road than males.

**Table 4.38: Distribution of Respondents by Gender**

	Frequency	Percent
<b>Male</b>	49	73.1
<b>Female</b>	18	26.9
<b>Total</b>	<b>67</b>	<b>100</b>

Source: Author's Field Survey, 2024

### Education level

In this study, the highest level of education attained by shop and business owners is shown in Table 4.36. The analysis revealed that majority of the respondents had attained tertiary education with the highest percentage of 62.6%. However, 16.4% had secondary education, 12% obtained primary education and 95 had no formal education.

**Table 4.39: Educational Qualifications of Respondents (Shop and Business Owners)**

	Frequency	Percent
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<b>Primary Education</b>	8	12
<b>Secondary Education</b>	11	16.4
<b>Tertiary Education</b>	42	62.6
<b>No Formal Education</b>	6	9
<b>Total</b>	<b>67</b>	<b>100</b>

**Source:** Authors' Conceptualization, 2024

### **Marital Status**

Among the respondents, 53.7% were married, 5.9% were widowed, 27% were single, and 13.4% were parents. This showed that we have more married shops and business owners than others in all the shops sampled along the PPP Roads the study.

**Table 4.40: Distribution of Respondents by Marital Status**

	<b>Frequency</b>	<b>Percent</b>
<b>Married</b>	36	53.7
<b>Widowed</b>	4	5.9
<b>Single</b>	18	27
<b>Single Parents</b>	9	13.4
<b>Total</b>	<b>67</b>	<b>100</b>

**Source:** Author's Field Survey, 2024

### **Years in Business**

Table 4.41 shows that most shops and business owners have been on their business between 6-15 years (70.1%), while those in the business from 16 years and above were 18% and those in the business between 1-5 years were 11.9%. these results showed that shops and business were increasing around the period PPP roads were constructed.

**Table 4.41: Distribution of Respondents According to Years in Business**

Years of Experience	Frequency	Percent
1 – 5 YEARS	8	11.9
6 – 15 YEARS	47	70.1
16 YEARS AND ABOVE	12	18.0
<b>TOTAL</b>	<b>67</b>	<b>100</b>

**Source:** Author’s Field Survey, 2024

#### **Business Type**

46.3% of the respondents were engaged in selling goods along the PPP roads selected for the study, 35.8% were engaged in service providers business, like telecommunications, digital TV sales, microfinance activities and so on, and 17.9% of the respondents were engaged in another business-like eatery, bar and so on. This is illustrated in figure 4.22.

**Table 4.42 Distribution of Respondents by Business Engagement**

Business	Business Engagements	Frequency	Percent
Shops	Selling of Goods	31	46.3
Cooperate Offices	Services Providers	24	35.8
Others	Eatery, Bar etc.	12	17.9
<b>Total</b>		<b>67</b>	<b>100</b>

**Source:** Author’s Field Survey, 2024.

#### **4.5.9.2 Perceived Impact of PPP Road Infrastructure on Shops and Business Owners along the PPP Roads**

PPP or public-private partnership road infrastructure projects can have a range of impacts on shops and business owners. Some of these impacts can be positive, while others may be negative. Here are some potential impacts that PPP road infrastructure projects could have on shops and business owners like, increased access to customers, enhanced security, improved aesthetics of the area and job creation. Table 4.40 revealed the results from this study which compared the anticipated and actual impacts of selected PPP roads on shops and business owners along the roads. The comparison aimed at identifying which impacts materialized and in which fragment and verify if the anticipated mitigation measures were implemented to the latter. The actual impacts are assessed for the period during construction and after road expansion.

**Table 4.43: Impacts of PPP Road Infrastructure on Shops and Business Owners**

Dimension	Anticipated Impacts (Positive)	Actual impacts (Performance)			
		Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge	Oniru Road Network	Mile 2-Oworonsoki	Zenith Bank Road VI
Accessibility	Easier Access to Social Amenities Enhanced Accessibility	Easier access to basic facilities and services Access roads have led to improved accessibility to both motorized and Non-Motorised Users (NMU) Connection to other neighbourhoods through access roads from the bypass			
Security	Reduced vehicle operating costs, commuter travel time and costs enhanced security.	Enhanced security from streetlights and police patrols			
Safety	Enhanced non-motorist traffic safety. (wider Pedestrian and cyclist paths)	Walking lane for pedestrians			
Employment Opportunities	Generated employment opportunities	More Job opportunities during the construction phase and after			
Improved Business	Improved Commerce	Improved business & market base			
Improved Welfare	Indirect impact which was not anticipated	Increased number of registered welfare groups			
Landscaping	Landscaped road environment	Improved drainage system & increased green space			

**Source:** Authors' Field Work, 2024.

## 4.6 Hypotheses

A research hypothesis is a statement that presents the expected relationship between two or more variables. It is an assumption that the researcher plans to test through empirical data to either confirm or reject. The following hypotheses are formulated for the study.

**Hypothesis 1:** Public-private partnerships in road infrastructure development in Lagos State will lead to improved road quality and maintenance.

**Hypothesis 2:** Public-private partnerships in road infrastructure development in Lagos State will lead to faster completion of road projects compared to solely government-led initiatives.

**Hypothesis 3:** Public-private partnerships in road infrastructure development in Lagos State will lead to increased economic growth and development in the region.

### Hypothesis One

**H<sub>01</sub>** Public-private partnerships in road infrastructure development in Lagos State will not significantly affect road quality and maintenance.

#### ANOVA<sup>a</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1070.816	5	214.163	19745.010	.000 <sup>b</sup>
1 Residual	3.406	314	.011		
Total	1074.222	319			

A. Dependent Variable: PPP Road Infrastructure

B. Predictors: Road Quality and Maintenance, Faster Completion of Road Projects, Economic Growth and Development

Model		Unstandardized		Standardized	t	Sig.
		Coefficients				
		B	Std. Error	Coefficients Beta		
1	(Constant)	.237	.087		2.735	.007
	Road Quality and Maintenance	.506	.035	.810	14.548	.000
	Faster Completion of Road	.459	.022	.665	20.614	.000
	Economic Growth and Development	.550	.014	.854	39.474	.000

a. Dependent Variable: PPP Road Infrastructure

**Source:** Author's Conceptualization, 2024.

### Interpretation

The Pearson R having a value of .998 showed to a large extent, the positive change or improvement in road quality and maintenance as a dependent variable. The empirical analysis of the respondents' responses in the study confirmed the rejection of the null hypothesis in preference to the alternative hypothesis and therefore affirmed that there is a relationship between the PPP road infrastructure and road quality and maintenance in Lagos State. At the level of significance 0.05, the F statistics is 19745.070 with a p-value of 0.000 less than 0.05 which means we reject the null hypothesis and accept the alternate which means that Public-private partnerships in road infrastructure development in Lagos State have significantly affected road quality and maintenance.

## Hypothesis Two

**H<sub>02</sub>** Public-private partnerships in road infrastructure development in Lagos State will not significantly lead to faster completion of road projects compared to solely government-led initiatives.

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	764.167	5	152.833	1150.256	.000 <sup>b</sup>
	Residual	41.721	314	.133		
	Total	805.887	319			

a. Dependent Variable: PPP Road Infrastructure

b. Predictors: Road Quality and Maintenance, Faster Completion of Road Projects, Economic Growth and Development

**Source:** Author's Conceptualization, 2024.

## Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.171	.303		3.867	.000
	Road Quality and Maintenance	1.273	.122	2.351	10.444	.000
	Faster Completion of Road	.142	.078	.237	1.821	.070
	Economic Growth and Development	.174	.049	.312	3.566	.000

a. Dependent Variable: PPP Road Infrastructure

Source: Author's Conceptualization, 2024.

### Interpretation

A value of 0.974 in the table above indicated the existence of a strong positive correlation between PPP Road Infrastructure and faster completion of road projects in Lagos State. This therefore showed that as all these other independent sub variables were taken proper care of, faster delivery of PPP procured projects also improved. Further from the table above, the R Square value of 0.948 indicated that PPP independent sub-variables impacted faster completion of road projects at a rate of 94.8%. This therefore confirmed the rejection of the null hypothesis for the alternative hypothesis that there exists a relationship between PPP Road Infrastructure and faster completion of road projects in Lagos State. At the level of significance 0.05, the F-statistic of 1159.256 while the p-value is 0.000 less than 0.05. We therefore reject the null hypothesis and accept the alternative hypothesis which means that PPP Road Infrastructure will significantly influence the faster completion of road projects in Lagos State.

### Hypothesis Three

**H<sub>03</sub>** Public-private partnerships in road infrastructure development in Lagos State will not significantly lead to increased economic growth and development in the region.

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	645.167	5	129.033	971.132	.000 <sup>b</sup>
	Residual	41.721	314	.133		
	Total	686.888	319			

a. Dependent Variable: PPP Road Infrastructure

b. Predictors: Road Quality and Maintenance, Faster Completion of Road Projects, Economic Growth and Development

Source: Author's Conceptualization, 2024.

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
1 (Constant)	1.171	.303		3.867	.000
Road Quality and Maintenance	1.273	.122	2.546	10.444	.000
Faster Completion of Road	.858	.078	1.553	10.999	.000
Economic Growth and Development	.826	.049	1.605	16.953	.000

**a. Dependent Variable: PPP Road Infrastructure**

Source: Author's Conceptualization, 2024.

The correlation value between all the variables entered into the analysis both independent and dependent showed 0.969 which when converted to a percentage was 96.9% meaning that as PPP Road Infrastructure are considered then there is a strong possibility of having economic growth and development. These results in rejection of the null hypothesis and therefore establish that PPP Road Infrastructure has a strong and significant relationship with Economic growth and development in Lagos State. With the level of significance of 0.05, the F-statistics is 971.132

while the p-value is 0.05, we therefore reject the null hypothesis and accept the alternative which means that PPP Road Infrastructure will significantly affect the level of economic growth and development in Lagos State. In consideration of the three independent sub-variables of PPP, it was established that they are quite significant on the dependent variable of the study in that road quality and maintenance ( $p < 0.05$ ;  $r = 0.998$  and  $R = 0.996$ ); faster completion of road ( $p < 0.05$ ;  $r = 0.974$  and  $R^2 = 0.939$ ) and economic growth and development ( $p < 0.05$ ;  $r = 0.969$  and  $R^2 = 0.939$ ) all have significant influence and contribute to PPP Road Infrastructure in Lagos State.

#### **4.7 Discussion of Findings with Existing Literature**

The study on the Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria has revealed significant findings that relate to previous research on the subject. The objectives of the study were to analyze the trend and progress of road infrastructure development in Lagos State from 1966 to 2024, analyze the trend in public and private investment in road infrastructure, identify the major prospects and problems of the public-private partnership PPP model, evaluate urban outcomes of the PPP model based on some indicators, and examine the perception of users of PPP road infrastructure in the study area. The study hypothesized that public-private partnerships in road infrastructure development in Lagos State will lead to improved road quality and maintenance, faster completion of road projects compared to solely government-led initiatives and increased economic growth and development in the region.

The analysis of the trend and progress of road infrastructure development in Lagos State from 1966 to 2024 reveals that there has been a significant increase in the length of roads, which has resulted in ease of movement and reduced traffic congestion. The study also found that there has

been an increase in the private sector's involvement in road infrastructure development in Lagos State, which has contributed significantly to the development of the road network.

Regarding the major prospects and problems of the public-private partnership PPP model in Lagos State, the study found that inadequate legal framework, insufficient budgetary allocation, and poor political will are major problems that hinder the effective implementation of PPP in road infrastructure development. On the other hand, the study also identified the prospects of PPP, such as improved service delivery, access to private sector funding, and value for money.

The evaluation of urban outcomes of the PPP model based on some indicators reveals that the PPP model has led to improved road quality and maintenance, which has resulted in the reduction of road accidents and travel time. The study also found that the PPP model has led to economic growth and development, as it has attracted foreign investment, created employment, and provided efficient transportation infrastructure for businesses.

Regarding users' perception of PPP road infrastructure in the study area, the study found that most of the respondents have a positive perception of the PPP model in road infrastructure development. The respondents stated that the PPP model has improved road quality and maintenance, provided efficient transportation, and reduced travel time and expenses.

The findings of this study align with previous research on the subject. For instance, Alabi and Olumide found that the PPP model has led to improved road quality and maintenance, enhanced service delivery, and created job opportunities<sup>13</sup>. Similarly, Gazzaz and Saimum found that PPP in road infrastructure development has resulted in the reduction of travel time, reduced travel expenses, and economic growth<sup>14</sup>.

Kabir and Ayedun-Aluma found that public-private partnerships in the Nigerian road sector have led to significant improvements in road infrastructure, including faster completion of projects, improved road quality, and increased access to private-sector financing. They also found that the PPP model has contributed to economic growth and development in Nigeria<sup>15</sup>.

Another study by Chinyio and Olomolaiye on the impact of public-private partnerships in infrastructure development in Nigeria found that PPP has resulted in improved quality of road infrastructure, faster completion of projects, and increased access to funding. They also found that PPP has contributed to job creation and economic growth in Nigeria<sup>16</sup>.

Similarly, a study by Eluwa et al. on the impact of public-private partnerships on road infrastructure development in Nigeria found that PPP has provided adequate and quality road infrastructure, increased access to funding, and reduced travel time and expenses. They also found that PPP has resulted in economic growth and development in Nigeria<sup>17</sup>.

These studies confirmed that public-private partnerships in road infrastructure development in Lagos State and Nigeria have led to significant improvements in road quality and maintenance, faster completion of projects, increased economic growth, and development.

In conclusion, the study on the Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria has generated significant findings, which relate to previous research on the subject. The study has shown that the PPP model in road infrastructure development has led to improved road quality, faster completion of projects, increased economic growth, and development. The study has also identified major prospects and problems of PPP and highlighted the perception of users of PPP road infrastructure in the study area. The study recommends that the government should provide an enabling legal framework, increase

budgetary allocation, and encourage public-private partnerships in road infrastructure development.

#### Endnotes

- <sup>1</sup> A. Akintola, M. Beck, & M. Kumaraswamy. *Public Private Partnerships*. Routledge, 2020.
- <sup>2</sup> F.O. Babatunde, C. Aigbavboa, W.D. Thwala, O. Akinradewo, & O. A. Oguntona.. “*Institutional Evaluation of Public and Private Partnerships Relevant Contributions to Housing Delivery System.*” **AHFE International**, January 2022, <https://doi.org/10.54941/ahfe1002374>.
- <sup>3</sup> S. O. Babatunde, D. Ekundayo, C. Udejaja, & U. O. Abubakar. “*An Investigation into the Sustainability Practices in PPP Infrastructure Projects: A Case of Nigeria.*” **Smart and Sustainable Built Environment** ahead-of-print, no. ahead-of-print, 2020 <https://doi.org/10.1108/sasbe-04-2020-0048>.
- <sup>4</sup> S. O. Babatunde, D. Ekundayo, C. Udejaja, & U. O. Abubaka “*Stakeholder Perceptions of Drivers For, and Barriers To, the Incorporation of Sustainability in PPP Infrastructure Projects in Nigeria.*” **Open House International** 45, no. 4 (August): 373–86, 2020 <https://doi.org/10.1108/ohi-05-2020-0037>.
- <sup>5</sup> D. U. Lawal, A. Balogun, I. R. Abubakar, & Y.A. Aina. “*Transformative Urban Governance: Confronting Urbanization Challenges with Geospatial Technologies in Lagos, Nigeria.*” **GeoJournal** 85, no. April 2019. <https://doi.org/10.1007/s10708-019-10009-1>.

- 6 C. F. Demeke, & K.J. Neeraj “*Enabling Successful Application of PPPs in New (Inexperienced) Markets: Implications of PPPs’ Success and Failure in Toll Roads.*” **Journal of Legal Affairs and Dispute Resolution in Engineering and Construction** 12, no. 4, 2020: 05020015. [https://doi.org/10.1061/\(asce\)la.1943-4170.0000434](https://doi.org/10.1061/(asce)la.1943-4170.0000434).
- 7 A. Opawole, & G. O.Jagboro. “*Compensation Mechanisms for Minimizing Private Party Risks in Concession-Based Public-Private Partnership Contracts.*” **International Journal of Building Pathology and Adaptation** 36, no. 1 (April): 93–120, 2018: <https://doi.org/10.1108/ijbpa-09-2017-0041>.
- 8 R. Osei-Kyei, & A.P. C. Chan. *Best International Practices of Public-Private Partnership: Insights from Developed and Developing Economies*. Singapore: Springer, 2021.
- 9 B. A. Oshodi “*Effectiveness of Public Private Partnership Models on Housing Delivery: A Study of Three Selected Housing Agencies in Lagos State, Nigeria.*” **SSRN, Electronic Journal**. <https://doi.org/10.2139/ssrn.3358700>, 2018.
- 10 C. Toriola, L. Olalekan, H. Alaka, M. Agbali, W.A. Adeniran, C. Pathirage, & L. Oyedele. 2020. “*Marginalization of End-User Stakeholder’s in Public Private Partnership Road Projects in Nigeria.*” **International Journal of Construction Management**, May, 1–10, 2020: <https://doi.org/10.1080/15623599.2020.1766189>.
- 11 Osei-Kyei, Robert, and Albert P.C. Chan. “*Public Sector’s Perspective on Implementing Public-Private Partnership (PPP) Policy in Ghana and Hong Kong.*” Edited by Michael Pitt. **Journal of Facilities Management**, March 2018: <https://doi.org/10.1108/jfm-06-2017-0026>.
- 12 R. Osei-Kyei, A.P.C. Chan, Y. Yao, & K.M. Mazher. “*Conflict Prevention Measures for Public-Private Partnerships in Developing Countries.*” **Journal of Financial Management of Property and Construction** 24, no. 1 (April): 39–57, 2019: <https://doi.org/10.1108/jfm-06-2018-0032>.
- 13 O. Alabi & A.E. Olumide. *The Impact of Public-Private Partnership on Road Infrastructure Development in Nigeria*. **International Journal of Engineering and Advanced Technology (IJEAT)**, 8(6), 2018: 1493-1505.
- 14 T. Gazzaz & S.M. Saimum. *Public-Private Partnership in Road Infrastructure Development in Nigeria: Opportunities, challenges and prospects*. **Journal of Economics and Sustainable Development**, 6(10), 2015:33-40.

- <sup>15</sup> M.A. Kabir & A.S. Ayedun-Aluma. *Public-Private Partnership in Nigerian Road Sector: Prospects and Challenges*. **Journal of Sustainable Development**, 12(3),2019: 133-146.
- <sup>16</sup> E.A. Chinyio & P.P. Olomolaiye. *Public-Private Partnership in Infrastructure Delivery: Case Studies from Nigeria*. Routledge, 2018.
- <sup>17</sup> E. Eluwa, A.E. Oke I.A. & Oke. *Exploring the Concepts of Public-Private Partnership: A Review of Literature*. **International Journal of Information, Business and Management**, 9(1), 2017: 77-95.

## **Chapter Five**

### **Conclusion**

#### **5.1 Summary of Findings**

The study analyzed the impact of public-private partnership in the development of road infrastructure in some parts of Lagos State, Nigeria by analyzing the trend and progress of road infrastructure development in Lagos State from 1966 to 2024. This involved processing and analyzing satellite imagery for 1994, 2004, 2014 and 2024 road infrastructure for Lagos State using supervised Image classification. Second, the study described and analyzed the trend of road infrastructure development in Lagos State Nigeria over the years. It is evident from the classified satellite imagery especially between 1994 and 2004 that the road infrastructure was growing. Although most roads were faced with heavy traffic congestion, poor maintenance, inadequate funding, poor urban planning, and limited road network. In 2014 and 2024 satellite

imagery and road infrastructure were shown to be expanding since some of the land that could have been used for other purposes had already been used for the construction of roads.

The study also examined the trend in public-private investment in road infrastructure development in Lagos State. The conditions and inadequate funding on the part of the government gave room for public-private partnerships in road infrastructure in Lagos State. Over the years, public-private investment in road infrastructure development in Lagos State has increased, and this trend is expected to continue as the government recognizes the significant role the private sector can play in infrastructure financing, implementation, and management. The use of PPP models, diversification of financing options, the involvement of multilateral agencies, and the introduction of incentives for private sector involvement is very essential in driving investment in road infrastructure development in Lagos State.

The study identified major prospects and problems of the public-private partnership PPP model in Lagos State and was based upon some influential index that can measure the prospects and problems of the PPP Model in Lagos state. The study findings showed that the prospects of the PPP Model were based on good governance, protective policy against political risk, appropriate risk allocation and risk sharing like the issue of the Lekki-Ikoyi Link Bridge which was re-buy by the Lagos State Government. A strong private consortium, effective political stability, favourable legal framework, stable macro-economic environment, effective project technical feasibility, government involvement in providing guarantee, genuine commitment of parties, government policy to promote long-term loan and political support. Ppp Model also has its attendant problems which vary from political problems which were political instability, poor public decision-making policies, inconsistency of government policies and corruption. Economic problems which are imbalanced supply and demand, weak infrastructure, financial attraction of

projects to investors and payment by end users. There are legal problems too which are fear of change in tax regulation, fear of industrial regulatory change, Inadequate security legislation of PPP contract, unclear legislation on lease and franchising, and unclear PPP contract enforceability. Technical and other problems are the inexperience of the government in handling PPP transactions, inadequate PPP expertise, lack of public awareness, high level of bureaucracy, Poor tendering process and award mechanism, and non-tradition of private Provision of public service.

The study also evaluated the outcomes of the PPP Model in road infrastructure based on some indicators which range from objectives, risk, specifications, tendering process, construction, operation, maintenance, monitoring, evaluation, and finance. These indicators were measured using the Key Performance Indicators (KPI) and Performance Measures (PM) that PM-8 (assigning clear roles and responsibilities) and PM-18 (legal challenges to outcome faced during the tendering process) overall have been successfully achieved/fulfilled in most of the projects with a success score of 88%.

The study also examined the perception of users of PPP road infrastructure in the study area. The users identified in the work were commuters, transport workers of allied transport companies' commercial drivers who belonged to the National Union of Road Transport Workers NURTW and Road Transport Employees Association of Nigeria RTEAN, and shops/business owners along the PPP roads. The findings from the fieldwork showed that these road users, despite identifying the challenges faced by bad roads, have been able to ascertain that PPP road infrastructure has a great impact on their day-to-day activities especially in the areas of accessibility, security, safety, employment opportunities, improved business, improved welfare, and landscaping.

Three hypotheses were formulated for this study.

**Hypothesis 1:** Public-private partnerships in road infrastructure development in Lagos State will lead to improved road quality and maintenance. The null hypothesis was rejected, and the alternate hypothesis was accepted which means that Public-private partnerships in road infrastructure development in Lagos State have significantly affected road quality and maintenance.

**Hypothesis 2:** Public-private partnerships in road infrastructure development in Lagos State will lead to faster completion of road projects compared to solely government-led initiatives. The null hypothesis was rejected, and the alternative hypothesis was accepted which means that PPP Road Infrastructure will significantly influence the faster completion of road projects in Lagos State.

**Hypothesis 3:** Public-private partnerships in road infrastructure development in Lagos State will lead to increased economic growth and development in the region. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted which means that PPP Road Infrastructure will significantly affect the level of economic growth and development in Lagos State

## **5.2 Conclusion**

The impact of public-private partnership (PPP) in the development of road infrastructure in Lagos State, Nigeria, has been significant. Over the years, PPP models have been utilized to address the challenges faced by the government in the development of road infrastructure. This has been achieved through the involvement of the private sector in financing, implementing, and managing road infrastructure projects.

PPP models have been particularly effective in developing major road infrastructure projects such as the Lekki-Epe Expressway and Lekki-Ikoyi Link Bridge, Oniru road network, Mile 2-Oworonsoki, Zenith Road VI Fourth mainland bridge (under construction) and so on. These projects have significantly eased traffic congestion, improved access to and from key economic centers, and enhanced the state's transportation network.

The involvement of multilateral agencies such as the World Bank, Zenith Bank, African Development Bank and so on in funding and implementing road infrastructure projects has also significantly contributed to the impact of PPPs in Lagos State. Their involvement has provided the necessary funding, technical support, and expertise required for the successful implementation of major road infrastructure projects.

PPP has also provided alternative financing options beyond traditional bank financing, including equity financing, bonds, and private placements, thereby increasing the financing options available for road infrastructure development.

Public Private Partnership has had a positive impact on road infrastructure development in Lagos State. The increased involvement of the private sector, the use of alternative financing options, and the support of multilateral agencies have all contributed to the success of PPP in road infrastructure development. Going forward, PPPs will continue to play an essential role in the development of road infrastructure in Lagos State as the government leverages private sector expertise, technical know-how, and financing to address the state's infrastructure challenges.

Public-private partnership (PPP) has had significant impacts on the road infrastructure of Lagos State, Nigeria, in several ways:

1. Improved Road Network: PPPs have facilitated the development of the road network in Lagos State, resulting in an increase in the number of roads and improved access to and from key economic centers. This has led to significant improvements in the transportation network of the state.

2. Enhanced Traffic Management: The use of PPPs in the development of road infrastructure has enabled better traffic management in Lagos State. Major road infrastructure projects such as the Lekki-Epe Expressway and Apapa-Oshodi Expressway have significantly reduced travel time, thereby improving traffic flow and reducing congestion.

3. Increased Private Sector Participation: PPPs have encouraged increased private sector participation in road infrastructure development in Lagos State. This has contributed to the successful development of several major road infrastructure projects, such as toll roads and flyovers.

4. Infrastructure Maintenance: PPP models have facilitated the maintenance of road infrastructure in Lagos State. Private investors involved in the PPP projects are responsible for maintaining the infrastructure, ensuring that they are always in good condition.

5. Employment Opportunities: PPPs have resulted in the creation of employment opportunities for residents of Lagos State. The development of road infrastructure projects has created jobs for engineers, construction workers, and other personnel involved in the implementation, maintenance, and management of the infrastructure.

In conclusion, PPPs have had significant impacts on the road infrastructure of Lagos State in terms of improving road networks, enhancing traffic management, increasing private sector participation in the development of infrastructure, facilitating infrastructure maintenance, and

creating employment opportunities. With the continued involvement of the private sector and the adoption of appropriate policy and regulatory frameworks, PPPs will continue to play a vital role in the development of road infrastructure in Lagos State.

### **5.3 Recommendations**

Based on the impact of public-private partnerships (PPPs) in the development of road infrastructure in Lagos State, Nigeria, the following recommendations can be made

1. **Government and Private Sector Collaboration:** There is a need for continued collaboration and cooperation between the government and the private sector to ensure the successful execution of PPP projects. Both parties should come together to design, finance, implement, and manage quality infrastructure projects that meet international standards.
2. **Improved Policy and Regulations:** The government should develop and implement appropriate policy and regulatory frameworks to guide the PPP procurement process, guarantee the successful implementation of infrastructure projects, and provide clear guidelines for the engagement of private partners in PPP projects.
3. **Increased Transparency and Accountability:** The government must ensure that PPP procurement processes are transparent and accountable, with a focus on value for money and the welfare of citizens. The public should be informed of the terms of PPP agreements and the benefits accruing from the development of infrastructure projects.
4. **Multilateral Agency Support:** The Nigerian government should continue to seek and secure the support of multilateral agencies and other development partners to finance and implement

infrastructure projects where PPP models are to be used to ensure quality implementation of projects.

5. Maintenance of Infrastructure: The government should work with private partners to define and implement a clear maintenance plan for the infrastructure to ensure that the PPP projects' benefits are sustained for the long term.

PPPs have played a critical role in the development of road infrastructure in Lagos State, Nigeria, leading to improved road networks, better traffic management, increased private sector participation, infrastructure maintenance, and employment opportunities. The continued engagement of the government and private sector is crucial to ensure that the impact of PPP is sustained and scaled up. In general, appropriate policy and regulatory frameworks, transparency, accountability, maintenance, and multilateral agency support are essential to sustain the overall impact of PPP in Lagos.

Improved policy and regulations can facilitate the development of successful PPP projects for road infrastructure in Lagos in several ways:

1. Clear and Comprehensive Legal Framework: The government must develop a clear and comprehensive legal framework for PPPs that promotes transparency and accountability in the procurement process and ensures the successful implementation of infrastructure projects. Such regulations should include provisions for dispute resolution, risk management, and protection of stakeholders' rights.

2. Alignment with National Development Goals: PPP projects for road infrastructure must be aligned with national development goals, including visions of economic growth and social

welfare. This alignment will guide the identification, design, and management of the projects, ensuring they yield needed benefits for the state and citizens.

3. Defined Risk Allocation: The government should define and allocate project risks between the public and private sectors, ensuring that each partner bears risk appropriately. Clear institutional and governance structures should align with the expected services.

4. Flexible Financing Mechanisms: PPP projects must have access to flexible financing mechanisms that allow private partners to obtain funding at reasonable rates. This drive would make PPP not turn to huge risks, setting sustainable financing goals while considering the long-term benefits.

5. Monitoring and Evaluation: The government must establish a robust monitoring and evaluation framework to assess the performance of PPP projects and ensure that they meet the desired objectives. Monitoring and evaluation frameworks would allow public policy objectives to drive the feasibility and viability of PPPs and help ensure accountability, transparency, and fiscal responsibility.

Improved policies and regulations for PPPs facilitate a favourable operating environment for private businesses alongside developed templates on which government agencies can determine business practices. As such, PPPs would boost confidence and spur additional investments in Lagos's infrastructure and beyond.

Flexible financing mechanisms can help private partners to acquire funding for Lagos' PPP projects by providing them with easier access to capital and lowering the cost of financing. Some of the ways that flexible financing mechanisms can facilitate funding include:

1. **Lower Cost of Capital:** Flexible financing mechanisms, such as low-interest rates, can reduce the cost of capital for private partners, helping to increase their financial resources for infrastructure development projects. This drives and fosters acquisitions and allows operating flexibility.
2. **Reduced Payment Risks:** Some flexible financing mechanisms reduce the risks associated with payment for private partners by providing guarantees on the repayment of loans. Guarantees assure that the investors' money will be paid as expected, resulting in smoother project delivery.
3. **Innovative Financing Mechanisms:** Alternative financing mechanisms, such as equity financing and revenue-sharing agreements, can help to provide private partners with access to necessary funding for infrastructure development projects. This approach allows borrowers to use other means outside of borrowing to raise capital.
4. **Public-Private Partnership Platforms:** PPP platforms act as intermediaries between public and private sectors, allowing private partners access to infrastructure projects and financial resources to participate in these projects. The platforms provide private partners with design development financing, transaction advisory services, and management guidance.
5. **Multinational Support:** International financial institutions can provide financial and technical assistance to support PPP projects through flexible financing mechanisms, such as project loans and financing guarantees. This support can significantly reduce the financial burden on private partners and help to ensure the successful implementation of infrastructure projects.

Flexible financing mechanisms can help private partners to acquire funding for Lagos' PPP projects reasonably. The Nigerian State can use flexible financing to attract quality private partners to fund infrastructure projects by providing easier and more predictable access to timely

and cost-effective financing and serving as intermediaries. Therefore, the government should work with private partners to leverage alternative financing mechanisms, and multilateral institutions should support the development of infrastructure projects with adequate working capital, continuing resources for maintenance and sustainability.

PPP (Public-Private Partnership) platforms can help private partners in Lagos' infrastructure development projects in several ways, as discussed below:

1. Project Identification: The PPP platform can identify infrastructure development projects that match the private sector's capabilities and interests, ensuring that the projects meet both public and private sector needs. This eases the struggle for private companies to identify worthwhile projects.

2. Design Development Financing: PPP platforms can provide support to private partners at the design and development phase of infrastructure development projects. The platform can assist private partners in drafting the initial plan, conducting feasibility studies, and developing a business case for the project. This assistance results in better project planning and greater investor confidence.

3. Transaction Advisory Services: The platform can offer transaction advisory services to support private partners during the procurement process of infrastructure development projects. This support includes offering bid and contract management guidance, legal, and financial consultancy services.

4. Risk Sharing: PPP platforms can help to distribute project risks between the public and private sectors. It does this by designing risk-sharing and risk mitigation mechanisms such as insurance, guarantees, and performance bonds, reducing investors' exposure to risk.

5. Improving Project Implementation: PPP platforms provide regulatory oversight and manage the project's implementation, ensuring that the procurement process is transparent, and that the project delivers the agreed-on quality and service standards.

6. Performance-based Contracting: PPP platform encourages the adoption of performance-based contracting techniques, allowing private companies' benefits to manifest in a more transitional approach. This encourages better performance and drives accountability for achieving targets.

PPP platforms provide important support services to private partners in infrastructure development projects. By offering advisory and analytical services, ensuring risk mitigation, and promoting innovation through flexible financing mechanisms, private partners can confidently invest in infrastructure development projects in Lagos. The PPP platform creates an enabling environment to trigger collaboration between the public and private sectors, providing a shared platform for investment in Lagos.

#### **5.4 Contribution to Knowledge**

The impact of public-private partnership (PPP) on the development of the road infrastructure in Lagos State, Nigeria, is a relevant subject for fostering sustainable economic development in Nigeria. Previous studies have identified the benefits of implementing PPP in infrastructure development, but research is limited in the context of transportation infrastructure development. This contribution aimed to add to the knowledge of PPP in Nigeria by analyzing the impact of PPP on the development of road infrastructure in Lagos State.

First, the study undertakes a comprehensive review of the literature to synthesize the current state of knowledge on PPP in infrastructure development, with a particular focus on road infrastructure in Lagos State. This review explored the drivers and factors that motivate private

sector participation in infrastructure development, including the regulatory environment, financing models, risk allocation, and contractual arrangements. The literature review also identified challenges that could impede PPP project delivery and explored strategies to mitigate those challenges.

The study adopted a mixed methods approach to achieving its objectives, combining quantitative and qualitative analysis. This approach involved collecting data through surveys, interviews, and document analysis to document, analyze and evaluate the impact of PPP in the development of road infrastructure in Lagos State. The survey targeted road users and analyzed their perception of road infrastructure development in Lagos State and the extent to which PPP is contributing to achieving an improved road network. Interviews were conducted with relevant stakeholders, including representatives from the public sector, the private sector, civil society organizations, and international organizations. Qualitative data were analyzed using thematic analysis, and quantitative data were analyzed using descriptive statistics.

The research findings have been able to contribute to knowledge by:

1. Providing empirical evidence on the impact of PPP on the development of road infrastructure in Lagos State.
2. Exploring the impact of PPP on the level of investment, quality of infrastructure, and economic growth.
3. Identifying the factors that drive the successful implementation of PPP projects, as well as the challenges that need to be addressed to ensure their success.

The research has been able to add to the knowledge on PPP in Nigeria and provide valuable insights into the impact of PPP on the road infrastructure development in Lagos State. The

research findings will be useful to policymakers, practitioners, and stakeholders involved in infrastructure development planning and implementation in Lagos State and beyond. The results of the study will contribute to the country's development agenda and support the achievement of the sustainable development goals.

### **5.5 Suggestion for Further Studies**

The contribution to knowledge on the impact of public-private partnership (PPP) in the development of road infrastructure in Lagos State, Nigeria, provides insights that can inform future research in the field. Based on the previous study, several areas require further investigation to expand the knowledge on PPP and road infrastructure development in Nigeria. Some areas of interest for further research include:

1. **Comparative Studies:** Future studies could compare the impact of PPP in road infrastructure development between Lagos State and other states in Nigeria. This comparison can identify any differences and similarities in the implementation of PPP and the impact of such projects on road infrastructure development in other states.
2. **Impact Assessment:** Future studies could focus on evaluating the impact of PPP projects in road infrastructure development in Lagos State by analyzing the economic, social, and environmental effects on the people. Such a study will provide a robust assessment of the impact of PPP projects on the livelihoods of citizens.
3. **Risk Assessment:** PPP projects typically involve the sharing of risks between the public and private sectors. Future research could focus on assessing the level of risk sharing in PPP projects and identify the factors that explain successful risk management.

4. Financing Strategies: Financing is a major component of PPP projects, and several models exist for financing infrastructure projects. Future research could examine the financing strategies deployed in PPP projects in Lagos and assess the effectiveness of such strategies.

5. Governance Framework: Governance plays a crucial role in PPP projects' management, and it's critical to the projects' success. Future research could focus on the governance frameworks and mechanisms that support PPP projects in Lagos and identify which frameworks work best for infrastructure development.

6. Evaluation of Contract Models: Future studies could evaluate the legal and contractual frameworks applied in PPP projects in Lagos, examining the suitability of these models to sustain development initiatives.

In conclusion, further studies can extend the knowledge of PPP in road infrastructure development in Lagos State to achieve sustainable transportation infrastructure development in Nigeria. These areas of interest for further research can provide various perspectives that can support a comprehensive understanding of PPP in the road infrastructure development sector in Lagos State. Therefore, researchers can explore these and other areas to foster a better understanding of PPP in road infrastructure development in Nigeria.

## Bibliography

### Books

Akintola A., Beck M. & Kumaraswamy M. *Public-Private Partnerships*. Routledge, 2020.

Sorensen, E. *Public-Private Partnerships (PPP) for Transportation and Infrastructure Development*. OECD, 2016.

### Journals

Adediran O.O. & Akintokun S.I. *The Role of Public-Private Partnership in Facilities Management in Nigeria: Issues and Challenges*. **Journal of Engineering and Architecture** 9(2) 2021: 9-18

- Adelakun O. & Ayodeji R.A. *Public-Private Partnership in Road Infrastructure Development in Nigeria: Challenges and Prospects*. **International Journal of Civil Engineering and Technology**, 11(2), 2020: 307-316.
- Adeyemi A., Ibrahim O. & Ojumah T. *Critical Success Factors for Public-Private Partnerships in Nigerian Infrastructure Projects*. **Journal of Construction Business and Management**, 3(1), 2019:10-17.
- Adeyemi A.A. & Adegbemi A.O. *Public-Private Partnership (PPP) in Road Infrastructure Development in Nigeria: An Overview of Recent Trends and Challenges*. **Journal of Building Performance**. 12(1), 2021: pp. 1-16.
- Ahmed Z.A. & Yusup M. *Design Build Operate (DBO): Prospects and Challenges of PPP in Developing Countries*. **International Journal of Construction Engineering and Management**. 8(4), 2019: 139-149.
- Ajayi A.A. & Akinfidie D.O. *Public Private Partnership as a Tool for Infrastructural Development in Nigeria*. **International Journal of Management Studies and Social Science Research**. 4(6), 2019: pp. 9-16.
- Akinyemi O.A. & Adekunle I.A. *Public Private Partnership (PPP) Approach to Infrastructure Development in Nigeria: Prospects and Challenges*. **Journal of Engineering and Applied Sciences**, 14 (5), 2019:1396-1401.
- Akinbobola T.O. & Olanipekun E.A. *Public-Private Partnership (PPP) as a Strategic Cost-effective Option for Infrastructural Development in Developing Countries*. **Journal of Engineering, Design and Technology**. 18(4), 2020: 898-915.
- Alabi O. & Olumide A.E. *The Impact of Public-Private Partnership on Road Infrastructure Development in Nigeria*. **International Journal of Engineering and Advanced Technology (IJEAT)**, 8(6), 2018: 1493-1505.
- Almaraghy H.M. & Darwich M.R. *Public-Private Partnership Models: A Review of Literature*. **Alexandria Engineering Journal**. 58(2), 2019: 683-691.
- Al-Sadi I. & Al-Subhi J. *Design-Build-Operate: An Innovative Delivery Method for Infrastructure Projects in Oman*. In **Advances in Civil Engineering and Building Materials**. (pp. 647- 653). 2019: Springer, Singapore.
- Ali S.S. *Assessing the Benefits of Public-Private Partnerships (PPPs) in the Construction Industry: An Overview*. **Journal of Construction Engineering and Management**. 147(9), 2021: 04021068.
- Albalawi Y. & Alrajhi M. *Factors Influencing the Success of Public-Private Partnerships in Saudi Arabia*. **Journal of Urban Planning and Development**. 147(3), 2021.

- Aidoo E., Akomeah P. & Boakye K. *Assessing the Institutional Factors Affecting the Selection of Public-Private Partnership Projects in Ghana.* **Journal of Engineering, Design and Technology.** 17(5), 2019: 794-810.
- Ashworth J., Liyanage C. & Silva N. *The Private Finance Initiative and the Concession Route in Infrastructure Development.* **Engineering, Construction and Architectural Management.** 27(6), 2020: 1379-1395.
- Attah Z.A. & Buba K.A. *The Regulation of Public-Private Partnerships (PPP) for Infrastructure Development in Sub-Saharan Africa: The Challenges and the Way Forward.* **Journal of Business and Economics Review.** 7(2), 2022: 168-179.
- Ayoola K.M & Ogundare B.D. *Financing Road Infrastructure Development in Nigeria: A Case for Public-Private Partnerships.* **Journal of Infrastructure and Sustainable Development.** 6(2), 2024: pp. 55-67.
- Azfar O. & Anwar A. *Public-Private Partnership in Infrastructure Development. A Review of Models and Practices.* **Journal of Public Affairs.** 20(3) 2020: e2030.
- Babatunde F.O., Aigbavboa C., Thwala W.D., Akinradewo O. & O. A. Oguntona O.A. *“Institutional Evaluation of Public and Private Partnerships Relevant Contributions to Housing Delivery System.”* **AHFE International**, January 2022, <https://doi.org/10.54941/ahfe1002374>.
- Babatunde S.O, Ekundayo D., Udejaja C. & Abubakar U.O. *“An Investigation into the Sustainability Practices in PPP Infrastructure Projects: A Case of Nigeria.”* **Smart and Sustainable Built Environment** ahead-of-print, no. ahead-of-print, 2020 <https://doi.org/10.1108/sasbe-04-2020-0048>.
- Babatunde S.O., Ekundayo D., Udejaja C. & Abubaka U.O. *“Stakeholder Perceptions of Drivers For, and Barriers To, the Incorporation of Sustainability in PPP Infrastructure Projects in Nigeria.”* **Open House International** 45, no. 4 (August): 373–86, 2020 <https://doi.org/10.1108/ohi-05-2020-0037>.
- Benschop N., Soeters J. & Boer H. *The Institutional Perspective on Sustainable Development Implementation in the Netherlands.* **Sustainability Science.** 17(1), 2022: 243-257.
- Bildosola I.O, Álvarez A.A. & Elzo D.G. *Assessing the Lifecycle of a PPP Airport Transport Infrastructure.* **Sustainability**, 12(12), 2020: 5161.

- Bui K.T.N, Le H.T.T. & Nguyen D.H. *Build–Own–Operate–Transfer Model for Financing Wastewater Treatment Facilities in Vietnam*. **Journal of Cleaner Production**. 249, 2020: 119412.
- Chen C. & Yahya-Zadeh, M. *Factors Affecting the Effectiveness of PPPs in Infrastructure Development in Developing Countries: Evidence from the literature*. **Applied Sciences**. 11(7), 2021: 3181.
- Chinyio E.A. & Olomolaiye P.P. *Public-Private Partnership in Infrastructure Delivery: Case Studies from Nigeria*. Routledge, 2018.
- Chiu Y.H. & Wang P. *Challenges and Feasibility of Using Build-Transfer-Operate (BTO) for Water Supply Projects*. **Water**. 13(10), 2021: 1426.
- Costa M., Fernandes A. & Cruz C.O. *Lessons Learnt from the Vasco da Gama Bridge Public-Private Partnership Project*. **International Journal of Construction Management**. 19(4), 2019: 328-338. doi: 10.1080/15623599.2018.1531442.
- Demeke C.F. & Neeraj K.J. “*Enabling Successful Application of PPPs in New (Inexperienced) Markets: Implications of PPPs’ Success and Failure in Toll Roads*.” **Journal of Legal Affairs and Dispute Resolution in Engineering and Construction** 12, no. 4, 2020: 05020015. [https://doi.org/10.1061/\(asce\)la.1943-4170.0000434](https://doi.org/10.1061/(asce)la.1943-4170.0000434).
- Dong X. & Zhang K. *Sustainability Assessment of Public-Private Partnership Projects: A review of methods and applications*. **Sustainability**. 13(3), 2021: 980.
- Eluwa E., Oke A.E. & Oke I.A. *Exploring the Concepts of Public-Private Partnership: A Review of Literature*. **International Journal of Information, Business and Management**, 9(1), 2017: 77-95.
- Ekwueme C.C. *An Assessment of Design-Build-Operate (DBO) Contracts for the Delivery of Road Infrastructure Projects in Nigeria*. **Journal of Infrastructure Development**. 13(1), 2021: 82-96.
- Folorunso S.R. & Ahmed R. *Risk Allocation and Management Strategies in Public-Private Partnerships (PPPs)*. **Journal of Engineering, Design and Technology**. 2020.
- Gbadegesin T.O. & Adeleye O.E. *Public-Private Partnership and Sustainable Infrastructural Development in Nigeria: A Review*. **European Journal of Sustainable Development Research**, 3(4), 2019:46-61.
- Gaisie E. & Mensah I.K. *Framing Corporate Social Responsibility Initiatives in Developing Countries: The Role of Institutional Factors*. **Business Strategy and Development**. 3(1), 2020: 83-96. doi: 10.1002/bsd2.100.

- Gazzaz T. & Saimum S.M. *Public-Private Partnership in Road Infrastructure Development in Nigeria: Opportunities, challenges and prospects*. **Journal of Economics and Sustainable Development**, 6(10), 2015:33-40.
- Haas R. Rohl A. & Orbach S. *Sydney Metro: New PPP Model for Large Transport Projects*. **Journal of Civil Engineering and Architecture**. 13(2), 164-172. doi: 10.17265/1934-7359/2019.02.008. 2019.
- Hansmann R. & Levinson M. *Collaborative Governance in Public-Private Partnerships for Infrastructure Development: A Theoretical Perspective*. **Public Administration Review**, 79(1), 2019: 76-88. doi: 10.1111/puar.12943.
- Hampton J.J. & Loucks D.P. *Perceptions of Public-Private Partnerships in the United States*. **Journal of Infrastructure Systems**. 25(2), 2019: 04019003.
- Hejazi R. & Ashouri P. *Public-Private Partnership in the Construction Industry: A Review of Challenges, Benefits, and Prospects*. **Journal of Construction Engineering and Management**. 146(1), 2020: 04019120.
- Idowu O.J. & Aina, O. *Public-Private Partnerships as an Alternative Financing Model for Infrastructure Development in Emerging Economies: A Case Study of Nigeria*. **International Journal of Energy Economics and Policy**, 10(5), 2020: 203-211.
- Ikporukpo C.O. & Osifeso A.S. *The Role of Public-Private Partnership in Developing Road Infrastructure in Nigeria*. **Journal of Infrastructure Development**. 12(1), 2020: pp. 11-23.
- Jegede O. & Oluseyi J. *Public-Private Partnership and Road Infrastructure Development in Nigeria*. **International Journal of Public Administration and Management Research**. 2(1), 2022: pp. 11-22.
- Kabir M.A. & Ayedun-Aluma A.S. *Public-Private Partnership in Nigerian Road Sector: Prospects and Challenges*. **Journal of Sustainable Development**, 12(3),2019: 133-146.
- Kharlamova O. *Key Success Factors of Public-Private Partnership Projects in Russia*. **Journal of Environmental Management and Tourism**. 12(1), 2021: 1-10. doi: 10.14505/jemt.v12.1(41).01.
- Lawal, D.U. Balogun A., Abubakar I.R., & Aina Y.A. “*Transformative Urban Governance: Confronting Urbanization Challenges with Geospatial Technologies in Lagos, Nigeria.*” **GeoJournal** 85, no. April 2019. <https://doi.org/10.1007/s10708-019-10009-1>.
- Léonard E. & Surry Y. *Public-private Partnerships for Africa's Development: Prospects, challenges and opportunities*. **Journal of African Business**. 20(1), 2019: 1-8

- Liu J., Huang Y. & Huang J. *The Role of Institutions in the Adoption of Circular Economy Practices: An empirical study in China.* **Journal of Cleaner Production.** 289, 2021:125624. doi: 10.1016/j.jclepro.2020.125624.
- Liu, Z. & Dai, Q. *Studying the Implementation of Public-Private Partnership in Infrastructure projects.* **Procedia Engineering**, 135, 2016: 297-304.
- Lobina E. & Hall D. *Reasserting the Public in Public-Private Partnerships.* **International Journal of Public Administration.** 42(1) 2019: 17-28.
- Mendoza L.M. & Kadarawar S.N. *Private Participation in Infrastructure Provision: The Philippine Experience.* In **Public-Private Partnerships and Infrastructure Management Springer, Cham**, pp. 31-46, 2022.
- Mwendera E.J, Gumbo B. & Taigbenu A.E. *Assessment of Financing Mechanisms for Rural Water Supply and Sanitation in South Africa.* **Water**, 11(5), 2019: 901. doi: 10.3390/w11050901.
- Mohammed S.B & Kiptanui J.K. *Public-Private Partnership and Infrastructure Development in Developing Countries: The Role and Challenges.* **International Journal of Economics, Commerce and Management (IJECM)**, 9(1) 2021.
- Mishra A., Hussain S., Rastogi A. & Balakrishnan M. *PPP Procurement Modalities in Highway Sector: A Comparative Study of India and USA.* **International Journal of Transportation Engineering and Technology.** 7(1), 2021: 1-10. Retrieved from <https://ijtet.com/archive/volume7issue1/Vol7Iss1p1-10.pdf>.
- Mokoena M. *Critical Factors Influencing the Success of Public-Private Partnerships in the South African Transport Sector.* **Journal of Transport and Supply Chain Management.** 2020: 14, 1-13. doi: 10.4102/jtscm.v14i0.475.
- Nguyen D.T. & Nguyen H.T. *The Role of Public-Private Partnership (PPP) in Vietnam's Infrastructure Development: Evidence from the Design-Build-Operate (DBO) Scheme.* **Journal of Asian Finance, Economics, and Business.** 7(11), 2020: 73-83.
- Nkemdirim C., Ezeah C. & Effiong O. *Exploring Public-Private Partnerships (PPPs) for Sustainable Infrastructure Development in Africa.* **Opportunities and challenges. Sustainability.** 12(21), 2020: 8857.
- Novak I. & Pranjić N. *Collaborative Governance in Public-Private Partnerships for Innovation: Case Study from the Infrastructure Sector.* **Technological Forecasting and Social Change.** 2022: 175, 121-131. doi: 10.1016/j.techfore.2021.121131.
- Nwokolo F.N. *Public-Private Partnership: An Essential Tool for Infrastructure Development in Nigeria.* **Journal of Construction Project Management and Innovation**, 9(1), 2019:2103-2116.

- Nubi M.O. & Onyekwelu U.L. *The Determinants of Public-Private Partnerships in Nigeria*. **Journal of Asian Business Strategy**. 10(2), 2020: 26-38.
- Nwosu C.O. & Eze E. *The Effect of Corruption on Public-Private-Partnerships in Nigeria's Infrastructure Development*. **International Journal of Social and Economic Research**. 11(1), 2021: 108-123. <https://doi.org/10.11648/j.ijssber.2021.1110>
- Oke A.E. & Kuye O.L. *Public-Private Partnership in Infrastructure Development: An Empirical Study of Lagos State*. **Journal of Public Administration and Governance**,11(1), 2021:167-179.
- Ogunyemi D.R. & Afolabi A.O. *Evaluating the Importance of Public-Private Partnership (PPP) in Infrastructure Development in Nigeria*. **International Journal of Civil Engineering and Technology**, 11(4), 2020:10-18.
- Ojo T.A. & Adekunle M.A. *Public-Private Partnerships for Infrastructure Development in Nigeria: A Systematic Review*. **Journal of Cleaner Production**, 232, 2019: 657-673.
- Ojo A.T. & Adegaju A.A. *Public-Private Partnerships for Sustainable Infrastructure Development in Nigeria: Opportunities, Challenges, and the Way Forward*. In **Strategy and Sustainability in Emerging Markets** (pp. 279-301). 2022: Palgrave Macmillan, Cham.
- Olorunsogo, O. K. *The Role of Public-Private Partnership in Infrastructure Development in Nigeria*. **Journal of Economics and Sustainable Development**, 11(4), 2020:201-208.
- Olejarz A., Stachowiak A. & Bednarek R. (2021). *Public-Private Partnership as a Mechanism of Improving the Quality of Healthcare in Poland*. **Journal of Public Health**. 29(2), 2021: 261-270.
- Oluwaseun O. & Falode A. *Evaluating the Potential of Public-Private Partnerships (PPPs) in Road Infrastructure Development: Evidence from Lagos State, Nigeria*. **International Journal of Transportation Engineering and Technology**, 7(1), 2021:32- 47.
- Ojikutu R.K., Olufowobi O.O. & Orogun G.K. *Public-Private Partnership in Road Infrastructure Delivery in Lagos State, Nigeria*. **Journal of Construction Project Management and Innovation**, 8(1), 2018:1933-1953.
- Osideinde O.F. & Ojeka S.A. *Enhancing Hospital Infrastructure Development through Public-Private Partnerships (PPPs) in Nigeria*. **Nursing & Health Sciences**. 24(1) 2022: 202-207.
- Osei-Kyei R. & Chan A.P.C. *Best International Practices of Public-Private Partnership: Insights from Developed and Developing Economies*. Singapore: Springer, 2021.
- Osei-Kyei R., Robert, and Albert P.C. Chan. "Public Sector's Perspective on Implementing

- Public-Private Partnership (PPP) Policy in Ghana and Hong Kong.*” Edited by Michael Pitt. **Journal of Facilities Management**, March 2018: <https://doi.org/10.1108/jfm-06-2017-0026>.
- Osei-Kyei R., Chan A.P.C, Yao Y., & Mazher K.M. “*Conflict Prevention Measures for Public–Private Partnerships in Developing Countries.*” **Journal of Financial Management of Property and Construction** 24, (1), 2019, 39–57, <https://doi.org/10.1108/jfmpc-06-2018-0032>.
- Oshodi B.A. “*Effectiveness of Public Private Partnership Models on Housing Delivery: A Study of Three Selected Housing Agencies in Lagos State, Nigeria.*” **SSRN, Electronic Journal**. <https://doi.org/10.2139/ssrn.3358700>, 2018.
- Opawole A. & Jagboro G.O. “*Compensation Mechanisms for Minimizing Private Party Risks in Concession-Based Public-Private Partnership Contracts.*” **International Journal of Building Pathology and Adaptation** 36, (1), 2018, 93–120, <https://doi.org/10.1108/ijbpa-09-2017-0041>.
- Peter D.S. *Benefits and Challenges of Public-Private Partnership in Infrastructure Development in Nigeria.* **International Journal of Innovative Technology and Exploring Engineering**, 9(4), 2020:1506-1511.
- Ramolle J. & Mermet L. *Network Governance and Collaboration: Insights from a Public-Private Partnership in the Energy Sector.* **Public Management Review**. 23(9), 2021: 1249-1269. doi: 10.1080/14719037.2020.1756617
- Saad M.H.M. & Salway A.A. *Stakeholders’ Perspectives on Public–Private Partnership Projects in Construction.* **Built Environment Project and Asset Management**, 11(1), 2021: 137- 150.
- Shakantu W.M. *The Role of Public-Private Partnerships (PPPs) in Road Infrastructure Development: A Case Study of Lagos State, Nigeria.* **International Journal of Scientific and Research Publications**, 11(5), 2021:788-793.
- Sarkis J. & Mustafa A. *Green Strategies in Supply Chain Management: Antecedents, Outcomes, and Future Directions of Hybrid and Tiered Architectures.* **Journal of Cleaner Production**. 2019: 207, 719-736.
- Siwarom N., Kwanpracha C. & Komatitdecha S. *Public-Private Partnerships in Mass Rail Transit Projects: The Case of Suvarnabhumi Airport Rail Link Project.* IOP Conference Series: **Earth and Environmental Science**. 229(1), 2019: 012013. doi: 10.1088/1755-1315/229/1/012013

- Tchamyou V.S., Asongu S.A. & Tchamyou N.P. *Complexities in the Effects of Public-Private Partnerships on Productivity Growth in African Countries*. **International Journal of Public Administration**. 42(8), 2019: 704-718.
- Tennakoon S.H.N. & Ruwanpura J.Y. *Infrastructure Delivery Through Public-Private Partnerships in Developing Countries: Lessons from a Road Construction Project in Sri Lanka*. **Journal of Business Research**. 2021: 136, 20-35.
- Toriola C., Olalekan L., Alaka H., Agbali M., Adeniran W.A., Pathirage C. & Oyedele L. "Marginalization of End-User Stakeholder's in Public Private Partnership Road Projects in Nigeria." **International Journal of Construction Management**, May, 1–10, 2020: <https://doi.org/10.1080/15623599.2020.1766189>.
- Wang M., Liu Y., Shen Q. & Song L. *The design of the risk allocation mechanism for build-transfer-operate (BTO) transportation projects in China*. **Transportation research part A: policy and practice**. 2019: 126, 38-53.
- Zhang D., Liu X., & Li. Z. *A New Model of Build Transfer Operate (BTO) which Includes Long-Term Operation Contracts in China's Power Industry*. **Electric Power Systems Research**. 2020: 186, 106394.
- Zhou P. & Pflugmann D.M. *Build-Own-Operate-Transfer (BOOT) Model for Financing Renewable Energy Projects: The Case of China*. **Renewable Energy**. 139, 2019: 536-546.

### Online Sources

- African Development Bank. *Initiative for Risk Mitigation in Africa (IRMA)*. Retrieved from <https://www.afdb.org/en/initiative-risk-mitigation-africa-irma> 2021.
- Africa Finance Corporation. *Abuja-Kaduna Rail Project: An Example of a Successful Public-Private Partnership*. *Africa Finance Corporation Blog*. Retrieved from <https://www.africafc.org/newsroom/blogs/abuja-kaduna-rail-project-an-example-successful-public-private-partnership>. 2019.
- African Development Bank. *Nigeria: Public-Private Partnerships and Development Finance Institutions – Status and Perspective*. Retrieved from <https://www.afdb.org/sites/default/files/documents/afdb-nigeria-ppp-publication-may%202020.pdf>. 2020.
- Bangkok Post*. *Expressway Projects Grind to a Halt*. *Bangkok Post*. Retrieved from <https://www.bangkokpost.com/business/1887489/expressway-projects-grind-to-a-halt>. 2020.

- Chalkley P. *A Very Different Model: Delivering the Thames Tideway Tunnel*. Institute of Quarrying. Retrieved from <https://www.quarrying.org/iq-news/a-very-different-model-delivering-the-thames-tideway-tunnel>. 2019, February 14.
- CNA. *PUB Awards \$1.4 Billion Management Contract to Choke, Stantec, and SUEZ Consortium*. CNA. Retrieved from <https://www.channelnewsasia.com/news/singapore/pub-awards-1-4-billion-contract-choke-stantec-suez-15025812>. 2021, June 17.
- Diaz J.D. BCDA Inks Deal with Private Consortium for New Clark City Athletics Stadium. Rappler. Retrieved from <https://www.rappler.com/business/238235-bcda-Private-Consortium-Deal-New-Clark-City-Athletics-stadium>. 2019.
- Edmonton Valley Line LRT Team. *Green Line LRT: Canadian Access to New Private Capital for Public Transit*. InSight: Canada's Transportation Series. Retrieved from <https://www.railwayage.com/wpcontent/uploads/2024/02/RA%20Canada%20Transportation%20Report%20-%20GreenLine%20-%20Edmonton%20-%20FINAL.pdf>. 2024.
- "Everything you need to know about Lekki Toll Gate", Legit.ng, October 23, 2020. Available at: <https://www.legit.ng/1401209-what-lekki-toll-gate.html>.
- Ghana Web. *Ikeja Waste-to-Energy Plant: The Genesis*. Ghana Web. Retrieved from <https://www.ghanaweb.com/GhanaHomePage/business/Ikeja-Waste-to-Energy-Plant-The-Genesis-862989>. 2020, February 6.
- Infrastructure Concession Regulatory Commission (ICRC). *Building healthy Public-Private Partnerships in Nigeria's infrastructure development*. Retrieved from <https://icrc.gov.ng/index.php/news-events/press-publications/10-news/145-building-healthy-public-private-partnerships-in-nigeria-s-infrastructure-development>. 2020.
- Infrastructure Concession Regulatory Commission (ICRC). *Public Private Partnerships in Nigeria: The Real Challenges*. Retrieved from <https://icrc.gov.ng/index.php/news-events/press-publications/10-news/167-public-private-partnerships-in-nigeria-the-real-challenges>. 2021.
- Memphis Flyer. *City of Memphis Looks to Private Firm to Manage Public Parks*. Memphis Flyer. Retrieved from <https://www.memphisflyer.com/NewsBlog/archives/2020/09/03/city-of-memphis-looks-to-private-firm-to-manage-public-parks>. 2020, September 3.
- National Population Commission, Nigeria. *Nigeria Demographic and Health Survey 2018: Final Report*. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF. Available at <https://dhsprogram.com/pubs/pdf/FR359/FR359.pdf>, 2019.
- Naftemporiki. *Agreement Signed for New Heraklion Airport Concession*. Naftemporiki. Retrieved from <https://www.naftemporiki.gr/finance/story/1661180/anakoinothike-i-symfonia-gia-tin-ne-enikiase-tou-aerodromiou-irakleiou>. 2020.

*Nigeria's Gas Master Plan and the Role of Public-Private Partnerships. Ventures Africa.* Available at: <https://venturesafrica.com/nigerias-gas-master-plan-and-the-role-of-public-private-partnerships/> 2019, October 22.

Odinaka A. *"Lagos Partners Orgland to Develop 1,000 Hectares of New City in Lekki"*, *BusinessDay*. Available at: <https://businessday.ng/news/article/lagos-partners-orgland-to-develop-1000-hectares-of-new-city-in-lekki/>. Accessed on 9 September 2021. February 23, 2021.

Oguntoyinbo T. *"Lagos Govt, Credit Suisse, Others Sign \$2.2 Billion Red Line Rail Project"*, *Premium Times Nigeria*. Available at: <https://www.premiumtimesng.com/regional/ssouth-west/364421-lagos-govt-credit-suisse-others-sign-2-2-billion-red-line-rail-project.html>.

*Oslo municipality. Privatization and Public-Private Partnerships. Oslo Municipality.* Retrieved from <https://www.oslo.kommune.no/politics-and-administration/economy-taxes-and-administration/privatization-and-public-private-partnerships/> 2019.

*Oxford Economics. Global Infrastructure Report.* Available at <https://www.oxfordeconomics.com/global-infrastructure-report-2019>.

Oxford Business Group. *Infrastructure Development and Public-Private Partnerships in Nigeria.* Retrieved from <https://oxfordbusinessgroup.com/overview/developing-nigerias-infrastructure-investment-continues-need-new-funding-modelsand>. 2019.

*Reuters. Brazil's Norte-Sul Railway Auction Attracts Nine Bidders. Reuters.* Retrieved from <https://www.reuters.com/article/us-brazil-railways-auction/brazils-norte-sul-railway-auction-attracts-nine-bidders-idUSKBN2BK0FN>. 2021.

*Transport for NSW. Parramatta Light Rail. Transport for NSW.* Retrieved from <https://www.transport.nsw.gov.au/projects/current-projects/parramatta-light-rail>. 2021.

*United Nations. Transforming our World: the 2030 Agenda for Sustainable Development.* Retrieved from <https://www.un.org/sustainabledevelopment/development-agenda/> 2015.

World Bank Group. *Public-Private Partnerships (PPPs).* Retrieved from <https://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships-ppps>, 2019.

World Bank. *Nigeria Infrastructure Public-Private Partnership (PPP) Project Preparation Facility: Market Assessment Report.* Retrieved from <https://documents.worldbank.org/en/publication/documentsreports/documentdetail/164291572146577205/nigeria-infrastructure-public-private-partnership-ppp-project-preparation-facility-market-assessment-report>. 2019.

World Population Review. (2021). *Lagos Population.* Retrieved from <https://worldpopulationreview.com/world-cities/lagos-population>, 2021.

## Newspapers

- Adunola S. *Lagos to Partner Private Sector*. The Guardian Newspaper, Nigeria, February 2024, <https://guardian.ng/business-services/nigeria-to-partner-private-sector/2024>.
- Bhandari S. *The PPP Model and Nigeria's Renewable Energy Future*. Business Day Nigeria, 2019, <https://businessday.ng/energy/power/article/the-ppp-model-and-nigerias-renewable-energy-future/2019>.
- Editorial Board. *Lagos-Ibadan Expressway: Pathway to Development*. The Guardian Nigeria <https://guardian.ng/features/lagos-ibadan-expressway-pathway-to-development/> 2021.
- Editorial Board. *Ogun Inks School Construction, Management Deal with Private Partners*. P.M. News Nigeria, 2020. <https://pmnewsnigeria.com/2020/10/09/ogun-inks-school-construction-management-deal-with-private-partners/2020>.
- Editorial Board. *Abuja Light Rail Project: A Case of Public-Private Partnership*. The Nation, 2019 <https://thenationonlineng.net/abuja-light-rail-project-a-case-of-public-private-partnership/2019>.
- Editorial Board. *Lagos State PPP in Agriculture Policy*. Nairametrics, 2017, <https://nairametrics.com/2017/08/22/lagos-state-ppp-in-agriculture-policy/> 2017.
- Editorial Board. *Private, Public Partnership to Revive Lagos Multi-Billion Naira Coconut Processing Plant*. The Guardian Nigeria, 2019, <https://guardian.ng/business-services/private-public-partnership-to-revive-lagos-multi-billion-naira-coconut-processing-plant/2019>.
- Editorial Board. *Lagos Water Corporation Inaugurates \$270m Partnership with World Bank Group*. African News Agency, 2021, <https://africanewsagency.co.za/en/lagos-water-corporation-inaugurates-270m-partnership-with-world-bank-group/> 2021, May 21.
- George O. *Lagos PPP office refreshes for greater impact*. The Nation Newspaper, Nigeria, June 2021, <https://thenationonlineng.net/lagos-and-the-ppp-option6/2021>.
- NAN. *FG, Lagos Government Plan PPP for Reconstruction of Eko Bridge*. The Guardian Newspaper, Nigeria, 2022, <https://guardian.ng/business-services/fg-Lagos-Government-Plan-PPP-for-Reconstruction-of-Eko-Bridge/2022>
- Oyeleke S. *Fashola Seeks Senate's Approval on Lagos-Ibadan Expressway, Others' PPPs*. The Punch Newspaper, Nigeria, 2021, <https://punchng.com/fashola-seeks-senates-approval-on-Lagos-Ibadan-expressways-others-ppps/2021>.

Oyero K. *Lekki-Epe Expressway Concession Review*. Punch Newspapers Nigeria, 2019, <https://punchng.com/tags/lekki-epe-expressway-concession-review/Punch/2019>.

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## Appendix I



**Lead City University Ibadan, Oyo State  
Faculty of Environmental Design and Management  
Department of Urban and Regional Planning  
Programme: Land Administration**

**Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria**  
**Structured Questions for Concessionaires**

**Section A: General Information**

Please provide the following information about yourself:

1. Your Name \_\_\_\_\_
2. Your Position \_\_\_\_\_
3. Your Company Name \_\_\_\_\_
4. Years of Operation \_\_\_\_\_
5. What type of Concession? \_\_\_\_\_
6. Operational Base \_\_\_\_\_

**Section B: Structured Questions for In-depth Interview**

7. What concession have you worked on?

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8. What categories of experts or professionals do you employ in your service?

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9. What value do you add to road infrastructure in Lagos?

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10. How do you raise funds? Locally or Externally

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11. What are the challenges you face or how difficult is it to raise funds?

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12. How do you manage risk or uncertainty associated with your service?

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13. In your experience, what improvement will you recommend for PPP Model in Nigeria?

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14. How do you measure or evaluate your service delivery?

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**Appendix II**



**Lead City University Ibadan, Oyo State  
Faculty of Environmental Design and Management**

**Department of Urban and Regional Planning**  
**Programme: Land Administration**  
**Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria**  
**Structured Questions for Construction Companies and Consultancy Firms**

This questionnaire is designed to collect data from construction companies and consultancy firms who are involved in public-private partnership (PPP) projects for road infrastructure in Lagos State. The data collected will be used only for academic purposes and will not be shared with any third party. Please answer all the questions as honestly and accurately as possible.

**Section A: General Information**

Please provide some basic information about yourself and your company.

1. Name of Company/Firms? \_\_\_\_\_
2. Specify the nature of the business (Construction or Consultancy)
3. How long has your organization been in business?
4. How many PPP road projects has your company/firm participated in in Lagos State or elsewhere? \_\_\_\_\_
5. Please specify \_\_\_\_\_

**Section B: PPP Pre-requisite**

Please rate your level of agreement with the following statements about your experience with PPP projects for road infrastructure in Lagos State or elsewhere. Use the following scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

7. My company has adequate knowledge and skills to participate in PPP projects for road infrastructure. \_\_\_\_\_
8. My company has clear and well-defined roles and responsibilities in PPP projects for road infrastructure. \_\_\_\_\_
9. My company has effective communication and coordination with the public sector and other private partners in PPP projects for road infrastructure. \_\_\_\_\_
10. My company has fair and transparent bidding and contracting processes in PPP projects for road infrastructure. \_\_\_\_\_
11. My company has sufficient financial and technical resources to deliver PPP projects for road infrastructure. \_\_\_\_\_

**Section C: PPP Performance**

12. Will you recommend the PPP Model for road infrastructure development in Lagos State? If so, give reasons.

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**Section D: PPP Challenges and Opportunities**

Please identify the main challenges and opportunities your company faces in PPP road projects in Lagos State.

- 18. What are the constraints that your company has experienced in the implementation of PPP Models in Lagos State
- 19. What are your recommendations to ameliorate the challenges?
- 20. How do you think PPP projects can be improved for the development of road infrastructure in Lagos state?
  1. Provide more information and awareness to the public.
  2. Strengthen the legal and regulatory framework.
  3. Simplify the procurement and contracting process.
  4. Enhance collaboration and communication among stakeholders.
  5. Monitor and evaluate the performance and outcomes.
  6. Address the social and environmental impacts.
  7. Other (please specify)

**N.B.** Multiple choices can be selected.

- 21. What are the main opportunities your company sees in PPP projects for road infrastructure in Lagos State? \_\_\_\_\_

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**Appendix III**



**Lead City University Ibadan, Oyo State  
Faculty of Environmental Design and Management  
Department of Urban and Regional Planning**

**Programme: Land Administration**  
**Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria**

**Structured Questions Interview for Infrastructure Concession Regulatory Commission  
ICRC**

**Section A: General Information**

1. Please enumerate the functions of ICRC

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2. What has been ICRC's experience as regards PPP intervention in the development of road infrastructure in Lagos State and elsewhere in Nigeria?

**Section B: Suggestions and Recommendations for PPP in Road Infrastructure Development**

Please answer the following open-ended questions in your own words.

3. How many PPP road infrastructure projects have your commission been able to regulate in Lagos State?

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4. What are the main benefits of PPP in road infrastructure development in Lagos State or elsewhere?

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5. What are some suggestions or recommendations to improve PPP in road infrastructure development in Lagos State?

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6. How does the ICRC facilitate and regulate public-private partnership (PPP) projects in the road infrastructure sector?

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7. How do you regulate the performance and impact of PPP projects on road infrastructure development in Lagos State or elsewhere in Nigeria?

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8. What are the best practices and lessons learned from PPP projects on road infrastructure development in Lagos State or elsewhere in Nigeria?

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9. How do you ensure transparency, accountability, and stakeholder participation in PPP projects on road infrastructure development in Lagos State or elsewhere in Nigeria?

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10. What are the current and future plans of the ICRC for PPP projects on road infrastructure development in Lagos State or elsewhere in Nigeria?

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11. How do you collaborate and coordinate with other relevant agencies and partners in PPP projects on road infrastructure development in Lagos State or elsewhere in Nigeria?

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12. How do you address the legal, regulatory, and institutional challenges in PPP projects on road infrastructure development in Lagos State or elsewhere in Nigeria?

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13. Has there been a failed PPP road project? If yes what are the reasons?

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**Section E: Key Indicators to Evaluate the PPP in Lagos State**

1. Have the following indicators been met? Please write Yes or No  
 Key Indicators to Evaluate the PPP in the Study Area

Number	Z
1.	1. Project Efficiency <input type="checkbox"/> 2. Impact on the User <input type="checkbox"/> 3. Direct Business and Organizational Success 4. Preparing for the Future <input type="checkbox"/>
2.	1. Meeting Planning Goals <input type="checkbox"/> <input type="checkbox"/> 2. Contractor Benefits <input type="checkbox"/>
3.	1. Meeting Design Goals <input type="checkbox"/>  2. Benefits to the Development Organization <input type="checkbox"/> 3. Benefits to the (host communities) Defence and National Infrastructure

Number	PPP Success Indicators: Measurement
1	1. Acceptable Quality of Project <input type="checkbox"/> 2. Quality Public Service <input type="checkbox"/> 3. Budget Discipline <input type="checkbox"/> 4. On-time or Earlier Project Completion <input type="checkbox"/> 5. Satisfying the Need for Public Facilities <input type="checkbox"/> 6. Provide Timely and More Convenient Service for Society <input type="checkbox"/> 7. Solving the Problem of Public Sector Budget Constraints 8. Life-Cycle cost reduction 9. Introducing Business and Profit Generating Skills to the <input type="checkbox"/> 10. Public Sector <input type="checkbox"/> 11. Transferring Risk to the Private Sector <input type="checkbox"/>

	12. Making Profit from Public Service		
	13. Promoting Local Economic Development		<input type="checkbox"/>
	14. Improving Technology Level or Gaining Technology	Transfer	<input type="checkbox"/>
	15. Public Sector can Acquire Additional Facilities/Services		<input type="checkbox"/>
	beyond requirements from the private sector		<input type="checkbox"/>

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**Appendix IV**



**Lead City University Ibadan, Oyo State**  
**Faculty of Environmental Design and Management**  
**Department of Urban and Regional Planning**  
**Programme: Land Administration**  
**Impact of public-private partnership in the Development of Road Infrastructure in Lagos State, Nigeria**  
**Structured Questions for Focus Group Discussion: The Office of the Public-Private Partnership Lagos State Government**

Questionnaire on the Impact of Public-Private Partnerships in the Development of Road Infrastructure in Lagos State, Nigeria

**Introduction**

This questionnaire is part of a research project that aims to assess the impact of public-private partnership (PPP) on road infrastructure development in Lagos State, Nigeria. PPP is a model of cooperation between the public and private sectors to provide public infrastructure or services. The Lagos State Government has adopted PPP as a strategy to address the road infrastructure challenges in the state.

The questionnaire is designed to collect information from personnel involved in PPP projects in the Lagos State PPP Office. The information will be used for academic purposes only and will be treated with confidentiality.

Please answer the questions as honestly and accurately as possible. Thank you for your cooperation.

**Section A: General Information**

Please provide some basic information about yourself.

1. Your name \_\_\_\_\_
2. Position \_\_\_\_\_
3. Please state your experience in PPP road projects in Lagos State

**Section B: PPP Projects**

Please answer the following questions about the PPP projects that you have been involved in or are familiar with.

6. How many PPP road projects have you been involved in or are familiar with in Lagos State?
  - o None
  - o 1

- 2
  - 3
  - 4
  - 5 or more
7. Please list the names of the PPP road projects that you have been involved in or are familiar with in Lagos State.
- Project 1:
  - Project 2:
  - Project 3:
  - Project 4:
  - Project 5:
8. For each PPP road project that you have listed, please indicate the following information:
- Project name:
  - Project duration (in years):
  - Project cost (in Naira):
  - Project scope (e.g., construction, rehabilitation, maintenance, operation, etc.):
  - Project status (e.g., completed, ongoing, terminated, etc.):
  - Project partners (e.g., public sector, private sector, multilateral agencies, etc.):

### Section C: PPP Impact

Please answer the following questions about the impact of PPP on the development of road infrastructure in Lagos State. Please use the following scale to indicate your level of agreement or disagreement with each statement.

- Strongly agree.
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree.

9. PPP has improved the quality of road infrastructure in Lagos State.

10. PPP has increased the quantity of road infrastructure in Lagos State.

11. PPP has reduced the cost of road infrastructure in Lagos State.

12. PPP has enhanced the efficiency of road infrastructure in Lagos State.

13. PPP has increased the accessibility of road infrastructure in Lagos State.

14. PPP has improved the safety of road infrastructure in Lagos State.

15. PPP has increased the sustainability of road infrastructure in Lagos State.

16. PPP has increased the accountability of road infrastructure in Lagos State.

17. PPP has increased the innovation of road infrastructure in Lagos State.
18. PPP has increased the stakeholder satisfaction of road infrastructure in Lagos State.

#### **Section D: PPP Challenges**

Please answer the following questions about the challenges of PPP in the development of road infrastructure in Lagos State. Please use the following scale to indicate how frequently you have encountered each challenge.

- Always
- Often
- Sometimes
- Rarely
- Never

19. Inadequate knowledge in Lagos State/elsewhere in Nigeria
20. Lack of clear legal and regulatory framework for PPP road projects.
21. Lack of political support and commitment for PPP road projects.
22. Lack of technical and managerial capacity for PPP road projects.
23. Lack of transparency and accountability for PPP road projects.
24. Lack of public awareness and acceptance of PPP road projects.
25. Lack of effective communication and coordination among PPP stakeholders.
26. Lack of risk identification and allocation for PPP road projects.
27. Lack of dispute resolution and arbitration mechanisms for PPP road projects.
28. Lack of monitoring and evaluation systems for PPP road projects.

#### **Section E: Key Indicators to Evaluate the PPP in Lagos State**

2. Have the following indicators been met?
3. Have the following indicators been met? Please write Yes or No

Number	PPP Success Indicators: Dimension
1.	5. Project Efficiency <input type="checkbox"/> 6. Impact on the User <input type="checkbox"/> 7. Direct Business and Organizational Success 8. Preparing for the Future <input type="checkbox"/>
2.	3. Meeting Planning Goals <input type="checkbox"/> <input type="checkbox"/> 4. Contractor Benefits <input type="checkbox"/>
3.	4. Meeting Design Goals <input type="checkbox"/>  5. Benefits to the Development Organization <input type="checkbox"/> 6. Benefits to the (host communities) Defence and National Infrastructure <input type="checkbox"/>

Number	PPP Success Indicators: Measurement
1	1. Acceptable Quality of Project <input type="checkbox"/> 2. Quality Public Service <input type="checkbox"/> 3. Budget Discipline <input type="checkbox"/> 4. On-time or Earlier Project Completion <input type="checkbox"/> 5. Satisfying the Need for Public Facilities <input type="checkbox"/> 6. Provide Timely and More Convenient Service for Society <input type="checkbox"/> 7. Solving the Problem of Public Sector Budget Constraints 8. Life-Cycle cost reduction 9. Introducing Business and Profit Generating Skills to the <input type="checkbox"/> 10. Public Sector <input type="checkbox"/> 11. Transferring Risk to the Private Sector <input type="checkbox"/> 12. Making Profit from Public Service <input type="checkbox"/> 13. Promoting Local Economic Development <input type="checkbox"/>
	14. Improving Technology Level or Gaining Technology Transfer <input type="checkbox"/> 15. Public Sector can Acquire Additional Facilities/Services <input type="checkbox"/> beyond requirements from the private sector



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## Appendix V



**Lead City University Ibadan, Oyo State**  
**Faculty of Environmental Design and Management**  
**Department of Urban and Regional Planning**  
**Programme: Land Administration**  
**Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria**  
**Structured questions for Lagos Road Users**

Questionnaire for road users on the impact of public-private partnership (PPP) on the development of road infrastructure in Lagos state.

### Section A: General Background

1. Name \_\_\_\_\_
2. Age \_\_\_\_\_
3. Residential Location \_\_\_\_\_
4. Occupation/Profession \_\_\_\_\_
5. Position at Place of Work \_\_\_\_\_

### Section B: PPP Projects

6. Are you aware of PPP projects on the development of road infrastructure in Lagos state?
  - Very aware
  - Somewhat aware
  - Not very aware
  - Not aware at all
7. Which route do you use most in Lagos State?
8. How satisfied are you with the current condition of the roads in Lagos state?
  - Very satisfied
  - Satisfied
  - Neutral
  - Dissatisfied
  - Very dissatisfied
9. Which is your most regular route? Is it a PPP road?

10. How do you rate the quality of the following aspects of the roads along that route in Lagos state?

Each aspect can be rated on a scale of 1 (very poor) to 5 (excellent)

- Safety \_\_\_\_\_
- Smoothness \_\_\_\_\_
- Cleanliness \_\_\_\_\_
- Signage \_\_\_\_\_
- Lighting \_\_\_\_\_
- Facilities \_\_\_\_\_
- Traffic management

11. How do you perceive the impact of PPP projects on the development of road infrastructure in Lagos state?

- Very positive
- Positive
- Neutral
- Negative
- Very negative

12. What are the main benefits of PPP projects for the development of road infrastructure in Lagos state?

- Faster delivery of projects
- Improved quality of roads
- Reduced cost for the government
- Increased revenue for the private sector
- Enhanced innovation and technology
- Better risk allocation and management
- Other (please specify)
- Multiple choices can be selected.

## Appendix VI



**Lead City University Ibadan, Oyo State  
Faculty of Environmental design and management  
Department of urban and regional planning  
Programme: land administration**

**Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria**

**Questionnaire for Lagos State Government Ministries**

### Introduction

This questionnaire is designed to collect data on the impact of public-private partnership (PPP) on road infrastructure development in Lagos State, Nigeria. The data will be used for academic research purposes only and will be treated with confidentiality. Your participation is voluntary, and you can withdraw at any time. Please answer the questions as honestly and accurately as possible. I appreciate your cooperation.

### Section A: General Information

Please provide the following information about yourself.

1. Your Name \_\_\_\_\_
2. Your Ministry \_\_\_\_\_
3. Your Position \_\_\_\_\_
4. Gender?
  - Male
  - Female
  - Prefer not to say.
5. Has your Ministry been involved in PPP road infrastructure Projects? If yes, in what capacity?  
\_\_\_\_\_  
\_\_\_\_\_

6. Has your ministry been involved in the PPP Road Infrastructure Project? If yes, in what capacity?  
\_\_\_\_\_  
\_\_\_\_\_

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**Section B: Knowledge of PPP**

Please indicate your level of agreement or disagreement with the following statements, using a 5-point Likert scale, where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly agree.

6. I am familiar with the concept and practice of PPP.

- 1
- 2
- 3
- 4
- 5

7. Mention one or more PPP Projects that you know.

---

8. I have participated in or witnessed any PPP project in Lagos State.

- 1
- 2
- 3
- 4
- 5

9. PPP is an effective way of delivering road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

10. PPP enhances the quality and efficiency of road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

11. PPP reduces the cost and risk of road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

12. PPP improves the accessibility and connectivity of road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

13. PPP fosters innovation and creativity in road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

14. PPP promotes accountability and transparency in road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

15. PPP increases public satisfaction and confidence in road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

16. PPP faces challenges and limitations in road infrastructure in Lagos State.

- 1
- 2
- 3
- 4
- 5

### Section C: Open-ended Questions

Please answer the following questions in your own words.

16. Has your ministry been involved in PPP projects in the past?

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17. What do you think is the applicability of PPP Projects in Lagos State?

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18. What are the challenges or limitations of PPP in road infrastructure in Lagos State?

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19. How can PPP be improved or optimized in road infrastructure in Lagos State?

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20. Do you have any suggestions or recommendations for future PPP projects in road infrastructure in Lagos State?

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21. Do you have any other comments or feedback on PPP in road infrastructure in Lagos State?

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Thank you.

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## Appendix VII



**Lead City University Ibadan, Oyo State**  
**Faculty of Environmental Design and Management**  
**Department of Urban and Regional Planning**  
**Programme: Land Administration**  
**Impact of Public-Private Partnership in the Development of Road Infrastructure in Lagos State, Nigeria**  
**Structured Questions Interview for Banks**

Questionnaire for Bank Officials on the Impact of PPP in the Development of Road Infrastructure in Lagos State

### Introduction

Thank you for participating in this survey. The purpose of this survey is to assess the impact of public-private partnership (PPP) in the development of road infrastructure in Lagos State. Your responses will help us understand the benefits and challenges of PPP and provide recommendations for improving the PPP framework and practice in Lagos State.

Please answer the questions as honestly and accurately as possible.

### Section 1: General Information

1. Your name? \_\_\_\_\_
2. Which Bank are you working for? \_\_\_\_\_
3. Gender?
  - Male
  - Female
  - Other
  - Prefer not to say
6. What is your position in the bank? \_\_\_\_\_
7. How long have you been working in the bank? \_\_\_\_\_

8. Which department or unit do you work in? \_\_\_\_\_

9. How often do you deal with PPP projects in your work?

- Never
- Rarely
- Sometimes
- Often
- Always

## **Section 2: Knowledge and Perception of PPP**

10. How familiar are you with the concept and practice of PPP in road infrastructure?

- Not at all familiar
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

11. How do you rate the importance of PPP in the development of road infrastructure in Lagos State?

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

12. How do you rate the performance of PPP in the development of road infrastructure in Lagos State?

- Very poor
- Poor
- Fair
- Good
- Excellent

13. What are the main benefits of PPP in the development of road infrastructure in Lagos State?

(Select all that apply)

- Improved service quality
- Reduced costs
- Increased efficiency
- Risk sharing
- Innovation
- Other (please specify)

14. What are the main challenges of PPP in the development of road infrastructure in Lagos State?

(Select all that apply)

- Complex legal and regulatory frameworks

- High transaction costs
- Political and social risks
- Environmental and social impacts
- Capacity constraints
- Other (please specify)

15. How satisfied are you with the current PPP framework and practice in Nigeria?

- Very dissatisfied
- Dissatisfied
- Neutral
- Satisfied
- Very satisfied

16. What are the main areas that need improvement in the PPP framework and practice in Nigeria as they relate to your bank? (Select all that apply)

- Policy and Strategy
- Legal and regulatory environment
- Institutional arrangements
- Project identification and preparation
- Project procurement and selection
- Project implementation and monitoring
- Project evaluation and feedback
- Other (please specify)

### **Section 3: Impact of PPP on Bank Performance**

17. How do PPP projects affect the profitability of your bank?

- Negatively
- No effect
- Positively
- Don't know

18. How do PPP projects affect the liquidity of your bank?

- Negatively
- No effect
- Positively
- Don't know

19. How do PPP projects affect the risk exposure of your bank?

- Negatively
- No effect
- Positively
- Don't know

20. How do PPP projects affect the reputation of your bank?

- Negatively

- No effect
- Positively
- Don't know

21. How do PPP projects affect the social responsibility of your bank?

- Negatively
- No effect
- Positively
- Don't know

**Section 4: Suggestions and Recommendations**

22. What are the main factors that influence your bank's decision to participate in PPP projects?

(Select all that apply)

- Expected return
- Project Feasibility
- Project risk
- Government support
- Market demand
- Social impact
- Other (please specify)

23. What are the main challenges that your bank faces in participating in PPP projects? (Select all that apply)

- Lack of information
- Lack of expertise
- Lack of funding
- Lack of incentives
- Lack of coordination
- Lack of trust
- Other (please specify)

24. What are the main suggestions or recommendations that you have for improving the PPP framework and practice in Nigeria? (Please write in the space below)

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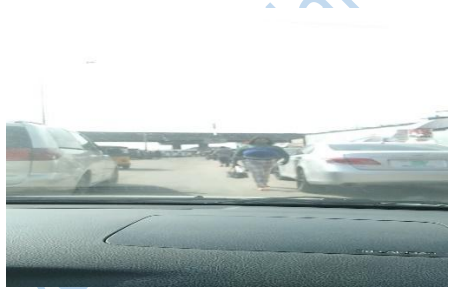
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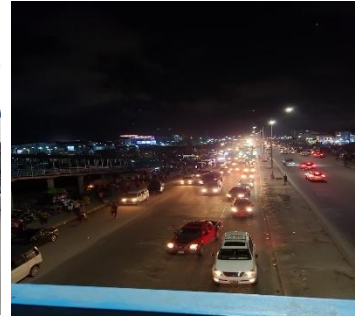
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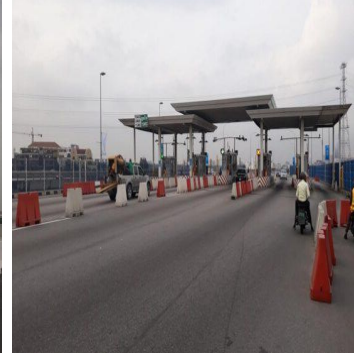
**Appendix VIII**  
**Lekki-Epe, Ikoyi Link Bridge**





**Lekki-Epe**



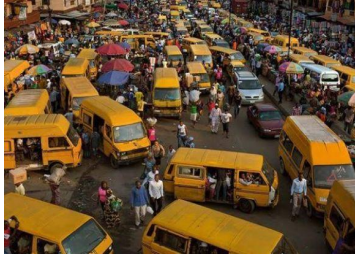


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**Lekki-Epe**

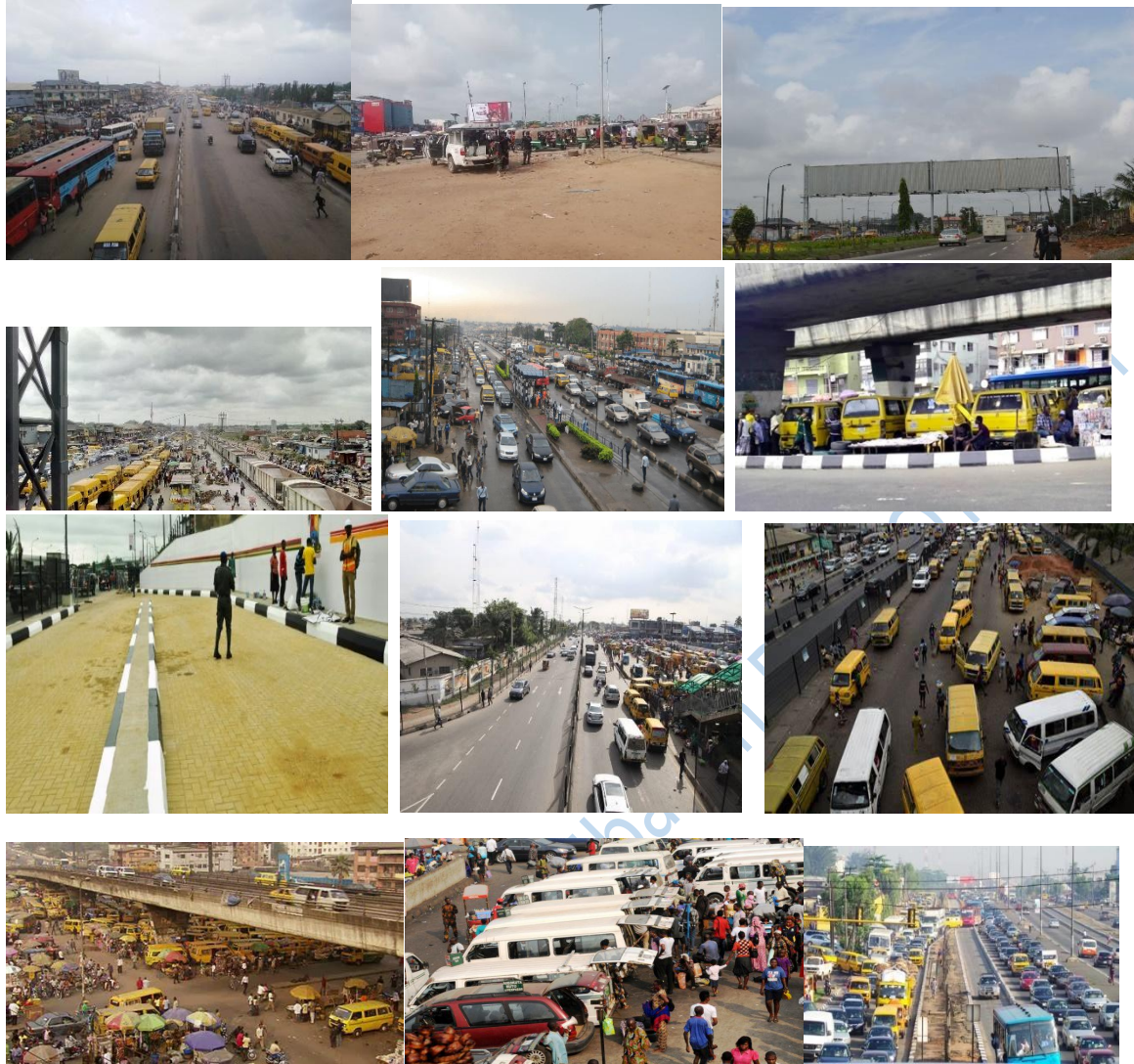


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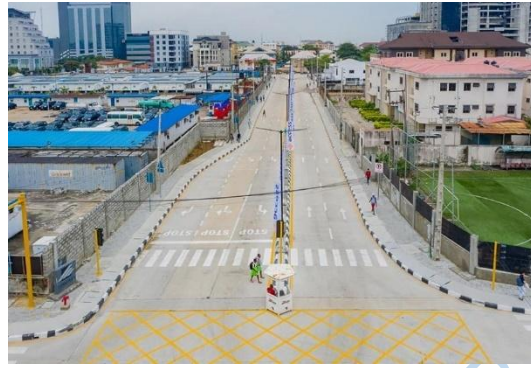


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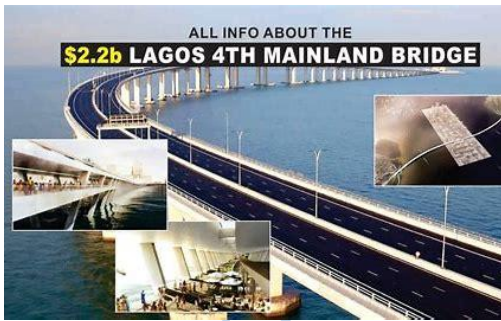
**Mile 2 – Oworonsoki**



**Zenith Road Victoria Island**



### Fourth Mainland Bridge (Conceptual Design)

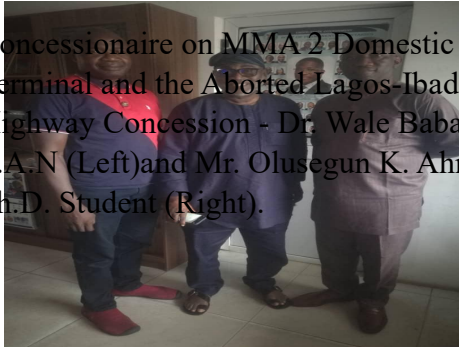


In-Depth Interview with a Concessionaire, and Government Ministry Officials



Concessionaire on MMA 2 Domestic Terminal and the Aborted Lagos-Ibadan Highway Concession - Dr. Wale Babalola S.A.N (Left) and Mr. Olusegun K. Ahmadu, Ph.D. Student (Right).

Special Adviser to Hon. Commissioner for Infrastructure, Lagos State, Engr. Tokunbo Oyenuga (Left). Mr. Olusegun K. Ahmadu, Ph.D. Student (Middle). Director in charge of PPP, Lagos State, Engr. Tokunbo Ajanaku (Right).



Director in charge of PPP, Lagos State, Engr. Tokunbo Ajanaku (Left) and Mr. Olusegun K. Ahmadu, Ph.D. Student (Right).



Mr. Ade Onibokun, representative of company (right). Mr. Peter Ganiyu (middle). Mr. Olusegun K. Ahmadu (Ph.D. Student) (Left).

## Bio-data

### A. Personal Data

Matric No:	LCU/PG/002552
Session:	2023-2024
Faculty & Dept:	Environmental Design & Management. Dept: Urban & Regional Planning
Course of Study:	PhD Land Administration
Qualification in view:	PhD Land Administration
Name:	Olusegun Kayode <b>AHMADU</b>
Sex:	Male
Date of Birth:	3rd December 1955
Nationality:	Nigerian
Home Address:	47A, Pariola Street, Ogudu GRA, Lagos, Nigeria.
State of Origin:	Oyo State
Local Government Area	Oyo East Local Government Area
Marital Status:	Married
Religion:	Muslim
Health Status:	Good
Full Name of Next of Kin:	Mrs. Titilayomi <b>AHMADU</b>
Telephone No. & Address of Next of Kin:	08060245616. 47A, Pariola Street, Ogudu GRA, Lagos, Nigeria.

### B. Educational Background with Dates

Master in Business Administration, University of Ibadan	1986
Bachelor's Degree in Estate Management, Obafemi Awolowo University, Ile-Ife	1979
West African School Certificate, Olivet Baptist High School, Olivet Heights, Oyo	1973

### C. Professional Courses with Dates

Computer Appreciation, Institute of Personnel Management	1994
Staff Appraisal, Institute of Personnel Management	1994
Strategic Marketing, Lagos Business School	1995
Finance for Non-Finance Managers, Lagos Business School	1996

Strategic Marketing Management Programme, Lagos Business School	1997
Effective Project Management, Lagos Business School	1998
Economics for Business Executives, Lagos Business School	1999

**D. Working Experience**

World Bank Development Unit  
 Onakanmi & Partners, Ibadan, Oyo State

Metropolitan Trust Limited, Ibadan  
 Honeywell Enterprises Limited, Ibadan  
 Honeywell Construction Co Limited, Apapa, Lagos  
 Skyview Estates Limited, Victoria Island, Lagos  
 Pivot Engineering Company Limited, Ogba, Lagos  
 Honeywell Group Limited, Victoria Island, Lagos  
 SPRINTS Engineering Limited, Ikeja, Lagos  
 STALLION Construction Company Limited, Ikeja, Lagos

**E. Membership**

Associate Member, Nigeria Institute of Estate Surveyors & Valuers

**F. Partnerships**

Chairman, Project Implementation Committee of MMA2 in partnership with Bi-Courtney Aviation Services 2005 – 2007  
 Chairman, Project Implementation Committee of Lagos-Ibadan Expressway in collaboration with Bi-Courtney Highway Services Limited 2010-2012  
 Consultant to Hammer & Foresters Global Limited on Real Estate Development 2010 - Date

**G. Publications**

- AHMADU**, Olusegun and **OLOUKOI** Grace (2024). Assessment of the Prospect and Problem of Public-Private Partnership PPP Model in Lagos State. Journal of the Association of Pragmatic Teachers, University of Uyo, Nigeria. (in Press).
- AHMADU**, Olusegun and **OLOUKOI** Grace (2024). Procedure and Outcomes of Public-Private Partnership PPP in the Development of Road Infrastructure in Lagos State. Imperial Journal of Education, Science and Technology of the Colleges of Education Academic Staff Union (in Press).

**H. Referees**



### **The University Compliance Certification**

This is to certify that this Thesis written by Olusegun Kayode AHMADU with Matric No LCU/PG/002552 in the Department of Urban and Regional Planning, Faculty of Environmental Design and Management, Lead City University, Ibadan is in full compliance with the approved University format and style.

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Signature

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Date



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