FULL COLOUR THINKING

GRADUATE SCHOOL OF BUSINESS
UNIVERSITY OF CAPE TOWN

INFRASTRUCTURE FINANCE IN AFRICA THROUGH THE PUBLIC PRIVATE PARTNERSHIP (PPP): IS THE LEKKI-EPE TOLL ROAD (NIGERIA) ECONOMICALLY SUSTAINABLE?

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by

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I certify that except as noted above, the report is my own work and all references are accurately reported.

OJO, Temitope Olayinka

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LIST OF ACRONYMS

1. NPV – Net Present Value
2. PPP – Public Private Partnership
3. BCR – Benefit Cost Ratio
4. IRR – Internal Rate of Revenue
5. LCC – Lekki Concession Company Ltd
6. LASTMA – Lagos State Transport Management Authority
7. FRSC – Federal Road Safety Commission
8. LSPPPB – Lagos State Public Private Partnership Bureau
9. BOT – Built Own Transfer

CHAPTER ONE

BACKGROUND TO THE STUDY

1.1 INTRODUCTION

Organisation for Economic Cooperation and Development (OECD) estimated that the required global infrastructure investment will reach US$71 trillion by 2030 (Abadie, 2008). However, the growing infrastructure demand puts intense pressure on public budgets in countries with fiscal deficits (Foster, 2008).

Africa, in particular faces a US$31 billion annual gap (Foster and Briceno – Garmendia, 2009).World bank reports have conceded that current receipts, savings and central government transfer are insufficient to fund infrastructure in most developing countries (Foster, 2008) and many will be unable to finance large scale project alone (Suhombing, 2009).Nigeria estimated that it will need between $12billion to $51billion annually for the next 6years to meet its infrastructure demands (PM Network, 2011).The traditional institutional debt markets appear insufficient and inefficient as a long term finance source (Abadie, 2008).

Dirie (2005) asserted that financial resources for infrastructural development will remain scarce and that scope for closing the gap remains uncertain. However, developing countries cannot rely on donor support or traditional financing sources, hence, innovative solutions are required (Suhombing, 2009).

The needs for alternative finance for infrastructure create innovative finance like Public Private Partnership across the world, which is now gaining momentum in Africa. According to the department of transport, in the US (2004),PPP is an agreement between the private sector and the public sector where the private partner delivers a service or infrastructure asset that is, traditionally, provided by government, which comes with a wide range of contractual provision, characterised by their relatively long duration, the source of funding, the strategic role of the private sector throughout the life of the project and the significant transfer of risk from the

government to the private sector. (Hill, 2011).

Many developing countries cannot fund vital infrastructure development, thereby turning to large international firms as a source of funding through concession contracts such as Build-Own-Transfer (BOT), which presents a win-win solution for governments, private sector firms and the community at large, taking the infrastructure finance off the balance sheet of the government whilst bringing an added advantage of cost and resource efficiency to the project. (McCowan et al, 2004).

Infrastructure projects are complex, capital intensive, having long gestation periods and involve multiple risks to the project participants (Agrawal et al, 2011).BOT projects are by nature long-term investments involving complex organizational structures. Over the lifespan of these projects the legislative, political, social, market and economic environment could all change significantly.

There are many public benefits to transferring the risk infrastructure development to the private sector. Most importantly, the public gains an infrastructure asset, which can lead to growth and prosperity without taking on debt. Government can free up capital to pursue projects that have high social benefits but are otherwise unprofitable and, therefore, unattractive to private sector. Transferring risk also allows government to tap private expertise and can lead to efficiency gains. The private sector is driven to reduce costs and increase efficiencies in order to maximise profit.

PPPs are best suited to sectors and services that are open to competitive market pricing, using agreements with clearly articulated quality of service requirements. (Hill, 2011). PPP can be defined as private sector financiers of construction and operation of infrastructure projects, which would have been otherwise provided by the public sector. PPP structures are, typically, more complex than the traditional public procurement project and their complexity is due to the number of parties involved and the mechanism used to share the risk. (Agrawal et al, 2011).

PPP projects are characterised by non recourse or limited recourse financing, where lenders are

repaid from only the revenues. Concessionaire is a special purpose vehicle in which the sponsoring entities are not responsible for the repayments of loans. These projects have a capital cost during constructions and a low operating cost afterwards, which implies that the initial financing cost are very large compared to the total costs.

A mix of financial and contractual arrangements amongst the multiple parties including the commercial banks project sponsors, domestic and financial institutions and government agencies, makes it further complex.

In a BOT type of project, the concessionaire is responsible for financing and operating the project, BOT fashionable worldwide, especially in developing countries, to attract private capital to assist on developing public infrastructure. (Shenet al, 2004). Major risks that a project sponsor faces are: political, financial, constructional, operational and market risk. The risk can be broadly classified into (Merna and Smith, 1996):

(1) Elemental risk, comprising physical, design, construction, operation and maintenance, technology, finance and revenue generation risks and
(2) Global risks comprising political, legal, commercial and environmental risks

In finance BOT projects are highly leveraged and the repayment of loans and dividends on equity depends on projects earning only. The objective that BOT project sponsors try to achieve in structuring the debt financing are maximisation of long term debt, maximisation of fixed rate financing and minimisation of refinancing risk (Tiong and Alum, 1997).

PPP may offer opportunities for exploiting the comparative advantages of both the private sector dynamism, access to finance, knowledge of technologies, managerial efficiency and entrepreneurial spirit with the social responsibility, environmental awareness and job generation concerns of the public sector. They should not be treated and evaluated on their merits on a case-by-case basis and contemplated when the ingredients of effective collaboration (e.g. commitment, inter-dependence, individual excellence, communication and integrity) are found or

can be safely nurtured along the way.

Potential benefits of PPP include cost saving, risk sharing, improved levels of service or maintain existing levels of services, enhancement of revenues and more efficient implementation (Seemela, 2008). PPPs have the potential to introduce greater commercial discipline and this sustainability in developing and operating infrastructure services, as well as leverage in private finance into sectors where commercial realities allow.

PPPs can only ever be a supporting instrument within the context of much greater government spending on infrastructure development. PPPs and private finance will never be able to replace the need for government investment, in particular in less commercially viable infrastructure sectors, such as water and sanitation and rural roads.

A robust and continuous political commitment by the relevant governments and their institution to support PPP projects is one of the most critical elements on seeing more such projects developed (Antonio, 2007).

PPP, if properly formulated and managed, can provide a number of benefits to the public sector, such as alleviating the financial burden on the public sector due to rising infrastructure development costs allowing risks to be transferred from the public to private sector and increasing the value of money spent for infrastructure services by providing more efficient, lower cost and reliable services. (Kwak et al, 2009).

Numerous studies have attested that infrastructure plays a pivotal role.If infrastructure is not the engine, it is at least the wheel of economic activity (World Bank, 1994). Infrastructure investment is characterised by a high degree of asset specificity and large project specific in the financial market (Dailami et al, 1999).

In developing countries an essential requirement for economic growth and sustainable development is the provision of efficient, reliable and affordable infrastructure services, such as

only water and sanitation, power, transport and telecommunications. The availability of efficient infrastructure services for consumption purposes serve to improve household welfare, particularly among the poor. (Kirk et al, 2006)

World development report points out that productivity growth is higher in countries with an adequate and efficient supply of infrastructures services (World Bank, 1994). Lederman, Maloney and Serven (2005) have found that the efficient provision of infrastructure is crucial for the success of the trade liberalisation strategies aimed at optimal resources allocation and export growth. Access to infrastructure services on the other hand, has been found to play a significant role in helping reduce income in equality (Estache et al, 2002; Calderon and Chony, 2004)

1.2 STATEMENT OF PROBLEMS

In the light of the recent trends in infrastructure finance and development, the following are identify challenges and facts that will herald the study such as:

(1) Numerous studies found there is a correlation between infrastructure stock and economic growth in developed and developing countries.

(2) The challenge of population growth and urbanisation is creating pressure on public expenditure for expansion and maintenances of the existing infrastructure, particularly in the area of transportation, which cannot be met by the government.

(3) The traditional methods of financing infrastructure in Africa and funding from foreign donors cannot meet the infrastructure gaps.

(4) The government alone cannot continue to bear the burden to provide all entire infrastructure needed for economic growth in Africa. As such, Africa countries should follow other regions in term of innovative infrastructure finance, provide by PPP.

1.3 AIMS AND OBJECTIVES OF THE RESEARCH

The aims of the study could be highlighted as follows:

1. To review the existing academic literature on infrastructure finance, particularly in the area of road construction and the economic models adopted in the financing

process.

2. To determine whether the accruing benefits from the concession of Lekki-Epe Expressway out-weighed the cost of constructing the purported road.
3. To determine whether the inflows from toll Lekki-Epe expressway can economically sustain the cost over-run on the Lekki-Epe express road concession.

1.4 RELEVANCE OF THE RESEARCH

Knowing and understanding the economic sustainability of infrastructure finance of roads concession are important for the following reasons:

1. The study will also support the cry for innovative methods of financing infrastructures in Africa via the PPP.
2. The research will be of great importance to policy formulators, policy makers, State and Municipals authorities and private investors that are committed to the provision of infrastructure.
3. 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 Nigeria.
4. The study will create and encourage alternative means of financing infrastructure off the balance sheet, for the three tiers of government in Nigeria, and Africa in general.

1.5 RESEARCH SCOPE AND LIMITATIONS

The study is restricted to the PPP experience in Nigeria, with regards to the first toll road in the country.

The instrument of economic analysis adopted for the methodology is the cost benefits analysis, focusing on the Net Present Value (NPV) and internal rate of return (IRR) model, whilst the study did not consider the macro and micro economic cost and benefit analysis.

1.6 RESEARCH METHODOLOGY

3.1

FLOW DIAGRAM

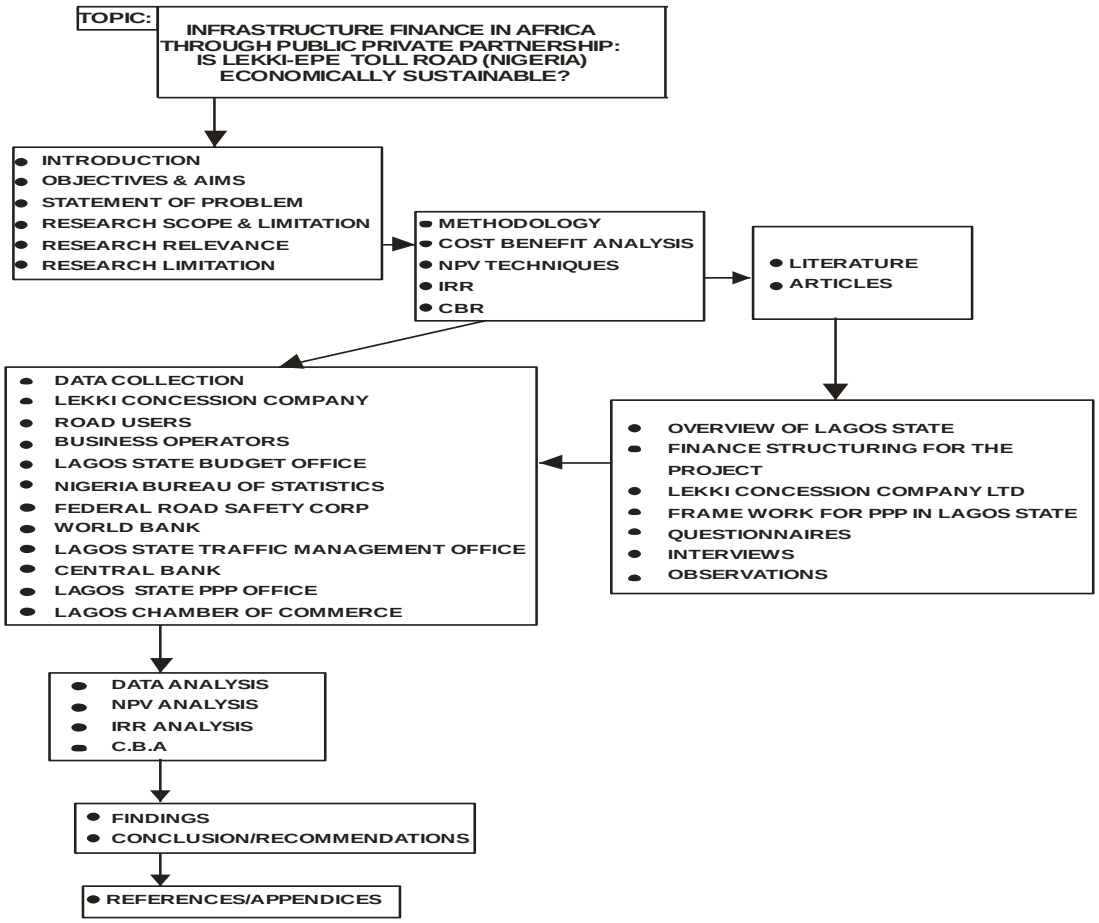


Table.1

Chapter one introduced the research topic, stating the objectives, limitation, relevance, methodology, and research question. Chapter two introduced the body of knowledge, in term of the literature review. Chapter three presented the methodology used in collecting the data, which is analysed in chapter four. The chapter basically presents the recommendations and conclusion.

The research methodology adopted in this study was designed in response to the research situation and research question. For ease of the reference, the research question can be stated

as follows;

- **Research Situation**: Infrastructural finance through the Public Private Partnership in Africa
- **Research Question**: Is the Lekki-Epe Expressway (Nigeria) Economically Sustainable?

Due to the nature of the data collected and the research question, quantitative method will be adopted by using the economic analysis tools suggested by Standish (2010), for similar projects. Economic analysis of projects with qualitative and quantitative data, such as the study that we are undertaking, can make use of evaluation techniques such as cost benefits analysis, micro economic cost and benefits analysis and micro economic analysis (Standish, 2010).

However, for this study, the specific methodology to be adopted is the cost benefits analysis because the main objective of the study is to determine the economic sustainability of Lekki-Epe express road. The cost benefit analysis is captured or performed through the Net Present Value (NPV) method, Cost Benefit Ratio (CBR) technique and the Internal Rate of Return (IRR) technique, comparing the project to the state of not doing the concession. The primary technique to be adopted in this research is the NPV and the IRR techniques because of the easy access to data and the time constraint.

NPV show the total value of future costs and benefits, reduced to a present day value. This is done by using a social discount rate as specified by the national treasury. The NPV is arrived at by deducting the yearly discounted cash flow from the discounted rate of the total cost or borrowed fund. When the NPV is positive, the project is considered economically viable, sustainable and profitable. However when the NPV is negative, the project is considered noteconomically sustainable. It is paramount to note that a project may have a negative NPV but may be of high social viability to the society, as against economic viability.

The Benefits Cost Ratio (BCR), measures the changes in benefits and cost that would result from an investment. BCRs are typically used when there are many competing alternatives

and project need to be funded from a limited set of resources. When the evaluated benefits of a project are higher than the project cost, then the BCR ratio will be greater than 1, implying that the project is economically viable and it is an economic asset, vice-versa. A higher BCR is good indicators that it would be possible to raise finance to implement the project. Also the same turn higher BCR implies that the project is less risky (Standish, 2010).

Finally, the IRR is the discount rate that returns a NPV to zero and shows the likely economic return to society of a project, in relation to other investment opportunities (Standish, 2010).

1.7 DATA COLLECTION

Primary data will be collected from questionnaires and interviews from road users, business operators in the environs, cutting across micro, small and mega business operators. Views of indigent inhabitants and other stakeholders in the vicinity will also be captured.

Questionnaires and interviewed will also be conducted with the operators of the concessionaire, members of the Lagos State Government, PPP office and the budget office

Secondary data will be captured from the World Bank database, particularly on the template for constructing the cash flow analysis. The National Bureau of Statistic will be the source data of the social discount rate, economic growth rate, interest rate amongst other.

Data will also be sourced from the Lagos State Budget office and Lekki Concession Company Ltd on the cost and the inflows which will help to construct the cash flow schedule.

The Lagos State Traffic Management Authority (LASTMA), Federal Road Safety Commission (FRSC) and the National Population Commission will provide data on the population growth, vehicle registration, vehicle counts, traffic statistics, and accident figures.

The Lagos State Chambers of Commerce will be the reference point on data on properties value, data and business migration; The Lagos State Inland Revenue and the Land Use Charge Office respectively will provide the platform to source for data on the revenue record in term of the economic activities in the neighborhood.

1.8 EXPECTED RESULT

The expected result is to affirm and corroborate earlier studies by Kirk, et al, (2006) World Bank, (1994), Lederman, et al, (2005), Ploeg and Casey (2006) and Hill, (2011) that there is a relationship between economic growth and sustainable development and the provision of efficient reliable and affordable infrastructure.

CHAPTER TWO

LITERATURE REVIEW

The purpose of this literature review is to develop a body of knowledge that is based on the current thinking and that is also relevant to the research topic.

2.1 PPP AS A TOOL FOR INFRASTRUCTURE FINANCE

Badu et al, (2012), studied the substantial infrastructure deficit in Ghana and the insufficient resources to meet this demand, which necessitate the need for innovative finance. Ghanaian government obliged local authorities to innovate revenue mobilisation and generate sufficient financial resources to meet infrastructure development targets.

The conclusion of the study by Badu et al, (2012), is that, in most African countries government prioritisation of funding flow for infrastructure projects remains weak, budget allocation cannot meet the growing demand for infrastructure needs, particularly in Ghana. Investment capacity challenge, implementation challenge and revenue mobilisation challenge are the three (3) critical factors that determine the success or failure of innovative finance for infrastructure delivery in Ghana, although there are other factors like absence of independent audits, diversion of funds, weak oversight and extensive use of funds for unauthorised expenditures.

Similarly, McCowan et al, (2002), suggest that many developing countries cannot fund vital infrastructure development, thereby turning to large international firms as a source of funding through concession. Contracts based on the build-own-transfer (BOT) principle which presents a win-win solution for governments, private sector firms and the community at large; take the infrastructure finance off the balance sheet of the government, whilst bringing an added advantage of cost and resource efficiency to the project. BOT projects are, by nature, long-term investments involving complex organisational structures. Over the lifespan of these projects the legislative, political, social, market and economic environment could all change significantly.

Samir, et al (2002), highlighted the key formation requirements of effective PPPs, including resource dependency, commitment symmetry, common goal symmetry, intensive communication, alignment of cooperation, learning capability and converging working cultures, while Kanter (1994) emphasises individual excellence importance, interdependence investment, information integration, institutionalisation and integrity as the key ingredients of effective collaboration.

2.2 CHALLENGES OF PPP

Jamali, (2004), in his study on PPP in Lebanon, showed that the challenges inherent in PPP arrangements arise from the notion of building new relationships between actors that have drastically different constituencies' interests along with divergent strategic and operational realities. PPPs are at high risk strategies; particularly at the level of implementation, but that the advantages and mutual benefits in case of success by far outweigh the risk involved.

In his conclusion, Jamali (2004), PPP may offer opportunities for exploiting the comparative advantages of the private sector-dynamism, access to finance, knowledge of technologies, managerial efficiency and entrepreneurial spirit with the social responsibility, environmental awareness and job generations concerns of the public sector they should not be treated as a panacea. PPP projects should be evaluated on their merits on a case-by-case basis and contemplate when the ingredients of effective collaboration (e.g. commitment interdependence, individual excellence, communication and integrity) are found or can be safely nurtured along the way.

Cheung et al, (2011) writing on the success of implementing PPP projects in Western Europe, the United States and the Australia, revealing that PPP has been an attractive alternative for procuring public work projects instead of the usual traditional methods with benefit like risk transfer, increase efficiency and innovation, private financing, governments around the world are keen to encourage PPP projects.

Cheung et al, (2011) however observed that a string of recent projects in Hong Kong linked with PPP received much opposition on whether PPPs have been heavily criticized for overly benefiting the private consortium. Although Hong Kong has not rejected PPP, local practitioners lack knowledge on how to assess the suitability of PPP projects and are reluctant to try. Therefore, an evaluation model for assessing the suitability of PPP projects is necessary.

2.3 BENEFITS OF PPP

Antoniou (2007), studies on PPP revealed that PPPs have the potential to introduce greater commercial discipline and thus sustainability, in that developing and operating infrastructure services as well as leverage in private finance into sectors where commercial realities allow. The research supported that a robust and continuous political commitment by the relevant governments and their institution to support PPP projects is one of the most critical elements in seeing more such projects developed.

2.4 APPROACHES TO ENCOURAGE PPP:

- Standardising PPP contracts and other relevant documentation, as well as share information and experience at an interregional level.
- Lack of sector specific information on demand and service usage pattern.
- Long term relationships with national and international investors.

The cornerstone of any PPP transaction is the transfer of some degree of risk from the public to the private sector. The transfer of the right kind and appropriate level of risk need to be managed by the parties best placed to manage them, (Antoniou, 2007).

Also, according to Hill (2011), there are many public benefits to transferring the risk infrastructure development to the private sector. Most importantly, the public gains an infrastructure asset, which can lead to growth and prosperity without taking on debt. Government can free up capital to pursue projects that have high social benefits, but are otherwise unprofitable and therefore, unattractive to private sector.

2.5 ROADS AND PPP

Ernst & Young (2008) transaction advisory services limited, conducted an independent evaluation of the net benefits arising for Sydney's networks of toll road, which was conducted by Tran Urban Limited, released in 2008, are:

(a) The gross state product increased from $1.6million in 1986 to $3.4million in 2020 (or 0.89% NSW GSP) by increasing real private consumption, real investment and overseas trade.
(b) Increasing employment from additional 100 jobs per annum in 1986 to 400 jobs per annum in 2020.

The direct benefits of the Sydney's toll road network (Ernst and Young, 2008) include, travel time savings, vehicle operating saving and reduced accidents and vehicle emission.

- Vehicle operating cost benefit is +20, travel time saving is by 19%, while accident reduction savings by 41%
- The environmental benefits associated with minimizing green house gas emission and noise is $1.1billion, representing 83% increase on initial assessment.
- The actual capital costs were 33% higher than forecast and actual operating and maintenance cost were 30% higher than the forecast which actually offset the additional benefits arising from the higher than forecast traffic flows.
- The study found that there are number of net external benefits that had not been accounted for due to the difficulty qualifying those benefits such as network benefits, economy wide benefits.

Gupta (2005), study on India transport system shows that roads are occupying a dominant position in India's transport system critical to economic growth and social development. Roads could be considered as an asset, having enormous value. The current replacement value of the existing network has been estimated to be equivalent to US$115billion shortages of resources affects road maintenance which is considered a non-plan activity creating a need for government to earmark road funds to ensure a stable flow of finances to support their road sectors. Innovative

finance via PPPs by means of build operation transfer basis is encouraged to construct and maintain roads in India also: which may also include toll based maintenance and performance based maintenance.

Biau et al, (2008) also in their study show that roads are Africa's dominant mode of transport and carry over 90% of traffic from 1964 to 2003.World Bank infrastructure projects generated a higher social rate of return in transport than in any other sectors. As highlighted by the OECD's African Economic Outlook (AEO) 2005 – 2006, improved transport infrastructure has already accelerated many African Countries progress towards reaching the millennium development goals.

Investment in transport infrastructure is a cornerstone for accelerating Africa's regional integration. Transport costs remain very high throughout Africa, averaging 14% of the value of exports compared to 8.6% for all developing countries and even over around 50% of export value for Africa's 15 landlocked countries. Without effective road infrastructure and coherent coordination of transport infrastructure policies across African borders, Africa's share of world trade may well stagnate at its current 2%. Poor transport infrastructure also render intra-continental trade more expensive than external trade.

The result of the study on Africa's transport according to Infrastructure Consortium for Africa annual report in 2006, show that 90% of investment in Africa's transport infrastructure currently rests on public investment and ODA. If private sector involvement is combined with government and business commitment to regulation, not only can it provide financial inputs – it can durably improve access, affordability, quality and fiscal cost of transportation as well.

Biau et al, (2008) further reiterated the three critical challenges affecting private sector involvement in road transport in Africa are:

(1) Creating an enabling environments for PPP success in Africa
(2) Coordinating governing bodies at all level for road infrastructure in Africa

(3) Ensuring that road infrastructure projects are genuinely suitable and inclusive, meeting the need of the African population.

Solutions to these challenges are:

(1) Creating a conducive legal and regulatory framework
(2) High standard of public and corporate governance.
(3) Access to finance private investor.
(4) Coordinating governing bodies at all levels for road development.
(5) Road maintenance inclusiveness.

2.6 PPP IN NIGERIA

Dada et al, (2012), accessed the critical success factors identified in an earlier study in some selected PPP projects from the perspectives of both the public and private sector through descriptive methods or tolls, which show that the ranking of stable political environment as the most important in this research. Public and private sector both ranked promising environment least meaning that PPP stakeholders are not moved by potentials of a country rather by existing favorable environment, (Dada et al, 2012).

Under economic viability both sectors rank long term demand for the product and services as the most important while limited competition from other projects was ranked least by both sectors. With respect to factors under reliable concessionaire consortium with adequate technical strength, the public sector ranked good relationship with host government authorities most important while to the private sector strong and capable project team is the most important success factor.

The result from the internal statistical analysis shows that the private and public sector from commercial perspectives are two different entities with their own definition of what is success on PPP projects. (Dada et al,2012).

Amade (2012), analysed the factors constraining the implementation of PPPs in the Nigerian

Construction Industry. The results of the analysis show that the dearth of transparency is the most critical and impeding factor constraining the implementation of PPPs projects in Nigeria. Other factors include inappropriate feasibility studies by contractors or consultants excessive risk associated with PPPs, forecasting errors, lack of support in political will, inability of the public sector to appreciate partnerships in a PPP environment, public opposition not enough due diligence, lengthy bidding processes, cost over.

Oyewobi et al, (2012) investigated the optimum conditions for PPPs to thrive in various infrastructure sectors in Nigeria by focusing on the health, education and housing sectors with a view to enhancing value for money. The findings submitted that private sector have the opportunities of accelerating infrastructure provision by making use of their project finance techniques and instruments as additional charges either on taxes or rate will only bring more hardship and negative impacts on the economy. The results also indicated that the optimum positive conditions for adopting PPPs in Nigeria is in its acceleration of development and benefit for local economics and social development.

Ilesanmi (2012), analysed the link between infrastructure development and sustainable housing through the comparative case studies of three housing sectors in Lagos Mega City by adopting a case study research approach which is a qualitative analysis in the methodology.

Findings from his study (Ilesanmi, 2012), showed that infrastructure provision was found to be generally not sustainable in the study areas in Lagos State. The study further established a link between infrastructure development and sustainable urban housing, using the case studies of three housing sectors of Lagos megacity sustaining the position that the sustainability of Lagos megacity is a challenge not only to the federal, state and local governments. The effective and efficient provision infrastructure development would not only contribute to improving citizens lives, but it will also help to attract investment. The study recommended the need to review the existing policy and institutional framework for housing, planning and infrastructure development that will accommodate the private sector participation in infrastructure development, in tandem with Infrastructure Concession Regulatory Commission (ICRC).

CHAPTER THREE

DATA COLLECTION

3.1 INTRODUCTION

The essence of this chapter is to look at the process of data collection, focusing on the available data that will support the research question.

3.2 DATA COLLECTION

The process of the data gathering involved the conversational interviews and the speeches and interview transcription.

3.2.1 The Conversational Interviews involved the use of structured questions that are relevant to the research question, which are generated in advance. These questions were presented to relevant stakeholders like the bankers of the project, the commuters, staffs of Lekki Concession Company Limited amongst others.

The interviews were developed in a loose way, in order to allow fluid expression of views by the interviewee. In the same view, there were lots of informal discussions with the staffs of the Lagos State Civil Service on the PPP business model.

3.2.2 The Speeches and Interview Transcription involved several speeches delivered at the International Infrastructure Finance seminars, lectures, and the reports from the Lagos State Economic Summits on different occasions, were also transcript. Some facts and data were captured and transferred from the website of LCC and the financial institution that participated in the project.

3.3 LAGOS STATE

Lagos State covers an area of about 3,577 square kilometer, with Atlantic waterfront measuring 182 kilometer. According to UN-Habitat, (2006), Lagos is the fastest growing megacity in the World, expanding at more than 5% in a year. The population estimate of Lagos as at 2005 is 16.86 million. It has a high urbanisation rate of 70:30, in terms of Urban: Rural distribution, sharing 27.4% of the Nigeria's urban population according to UN-Habitat, (2006).

According to Akabueze (2008), Lagos State is the second lead contributor to Nigeria's GDP in the year 2005, contributing 12% to the GDP. Also, Lagos State is the lead contributor in non-oil sector to Nigeria's GDP in 2005, with contribution that is equal to that of 13 states in Nigeria, contributing 19% in non-oil sector.

Lagos State account for over 65% of Nigeria's commercial industrial activities (over 40% of bank branch networks), 45% of national electricity consumption and 50% of petroleum consumption; Official statistics from the Lagos State Bureau of Statistic revealed that Lagos State generates over 60% of the total country's VAT earnings; over 70% of the total national cargo freight, generates over 50% of Nigeria's port revenues and harboring 60 million telephone subscribers. The solid waste generated in the state is 10,000 metric tons/day.

3.4 TRANSPORTATION IN LAGOS STATE

According to the Lagos State Traffic Management Authority (LASTMA), andAkabueze (2008), the estimated daily human traffic from Lagos Mainland to Island is 6 million. The vehicular population of cars was estimated at 1.5 million cars. The high vehicular density is estimatedat 222 per kilometer with road network of over 16,000km, and 75,000 buses capacity.

3.5 PROJECT DESCRIPTION

3.5.1 About the Lekki-Epe Toll Road

The Lagos State Government through PPP, concessioned for 30 years to LCC the road along Lekki-Epe axis, to solve the protracted traffic problem along the Lekki-Epe axis, as a result of population explosion in that area.The Lekki-Epe toll road concession is divided into two phases.

The phase I covers the 49.4 kilometer road that will see LCC expanding and upgrading the entire OzumbaMbadiwe avenue and Lekki-Epe expressway.The phase II will cover the construction of 20km coastal road with option of constructing the southern bypass.

LCC is to finance the project, operate and maintain the toll road and adjoining infrastructure which will be sustained through charging tolls.The existing 49.4km Lekki-Epe expressway is the only road linking Lekki to Epe and Victoria Island . Street lightings will be provided. The four lane dual carriage way will be expanded to six lanes in some places and toll plaza will be constructed along with other administrative structures. The estimated construction phase of the project will last 30months, but theearly phase (Falomo Bridge to Mobil House) will last only about 9months. The project started in third quarter of 2007.

3.6 ABOUT LEKKI CONCESSION COMPANY

LCC is the Special Project Vehicle created by the ARM Group, which has a broad based ambition to develop major infrastructure projects throughout Nigeria and West Africa, with the mission to provide high quality road infrastructure and related services along the Lekki Peninsular of Lagos, Nigeria.

Old Mutual of South Africa and Macquarie Bank through the African Infrastructure Investment Fund are major shareholders in LCC. LCC successfully secured N43.6Billion (US$370million) long term finance concession in Nigeria.

3.6.1 THE PROJECT FINANCE STRUCTURE

The Lekki-Epe toll road was financed through the offshore and onshore finance mechanism, with the Lagos State government providing the initial ₦5 billion mezzanine finance to kick start the project for the tenure of 20 years. Local banks in Nigeria, comprising of the United Bank for Africa Plc, First Bank of Nigeria Plc, Diamond Bank Plc, Zenith Bank Plc, Fidelity Bank Plc, and Zenith International Bank Plc, provided 27% of the fund, while Standard Bank provided 31% of the fund.

The African Development Bank provided a loan of $85 million (₦7.5 Billion), which was hedged in naira. The Federal Government of Nigeria provided a sovereign guarantee by an irrevocable standing payment order on behalf of Lagos State, which makes the interest rate attractive at 13%.

3.8.3 **Project Financing From Commercial Banks is Key**

Until the recent turmoil in global financial markets, the financing environment improved over the last 2½ years, making it possible to negotiate ground-breaking terms for the ₦43.6Bn Lekki Toll Road Concession long-term financing package

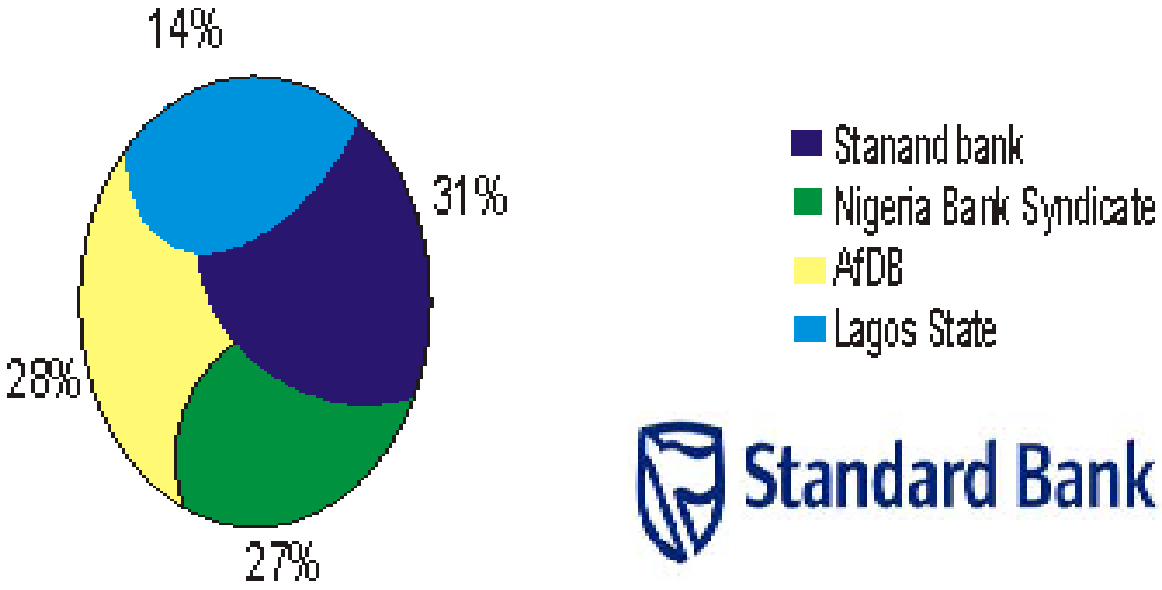
KEY CRITERIA	2½ YEARS AGO	AT FINANCIAL CLOSE
Sources of Finance	100% on-shore	On & Off-Shore
Lagos State Financing	None	₦5Bn Mezzanine Finance over 20 years
Senior Debt Tenor	5 years	12 – 15 years
Change in Senior Debt Margins	n/a	Over 300 bps lower
Interest Rates	Floating	Fixed & Floating
Federal Support Security	ISPO (Irrevocable Standing Payment Order)	Sovereign Guarantee
Foreign Currency Hegding	None	AfDB $85M (₦7.5Bn) Senior Loan hedged in Naira

SOURCE: LCC

Table.2

Summary of Lekki Financial Structure

Lender	Tenor	Coupon	Currency
Lagos State	20yrs	Mez	NGN
Nigerian Bank Syndicate	12yrs	Float	NGN
A+DB	15yrs	Float	USD/NGN
Standard Bank Plc	15yrs	Fixed	NGN



SOURCE: STANDARD BANK

Table.3

3.7 TRAFFIC COUNT

From the data collected from LASTMA, based on the traffic count conducted in February, 2011,for 3 (three) days, covering Friday, Saturday, and Sunday, from 1am to 12am.The traffic count encompasses, the traffic going in to the Lekki-Epe environ and coming out of the Lekki-Epe environ. The Friday traffic count was substituted for that of Monday to Thursday. The summation of the traffic count for that of Monday to Friday was added to that of Saturday and Sunday, in order to determine the total traffic for a week; which was used to project the monthly and annual traffic count by simply multiplying the total traffic count for the week by 52 weeks.

The toll paid per cars is ₦1.20k per trip. For Four Wheels and Special Utility vehicles, the toll is ₦1.50k per trip, while commercial vehicles pay ₦1.00 per trip.

The table below shows the annual traffic projection for 30 years and projected income annually.

Years	Traffic Flow	Income Projection @ =N= 120
1	27,603,072	3,312,368,640
2	30,363,379	3,643,605,504
3	33,399,717	4,007,966,054
4	36,739,689	4,408,762,660
5	40,413,658	4,849,638,926
6	44,455,023	5,334,602,818
7	48,900,526	5,868,063,100
8	53,790,578	6,454,869,410
9	59,169,636	7,100,356,351
10	65,086,600	7,810,391,986
11	71,595,260	8,591,431,185
12	78,754,786	9,450,574,304
13	86,630,264	10,395,631,734
14	95,293,291	11,435,194,907
15	104,822,620	12,578,714,398
16	115,304,882	13,836,585,838
17	126,835,370	15,220,244,422
18	139,518,907	16,742,268,864
19	153,470,798	18,416,495,750
20	168,817,878	20,258,145,325
21	185,699,665	22,283,959,858
22	204,269,632	24,512,355,844
23	224,696,595	26,963,591,428
24	247,166,255	29,659,950,571
25	271,882,880	32,625,945,628
26	299,071,168	35,888,540,191
27	328,978,285	39,477,394,210
28	361,876,114	43,425,133,631
29	398,063,725	47,767,646,994
30	437,870,097	52,544,411,693
	4,540,540,352	₦544,864,842,222.04

SOURCE: LASTMA Table .4

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

The focus of this chapter is to analyze and interpret the data established in chapter three, in line with the adopted methodology by Standish (2010), in the chapter one, which is adopting the Cost Benefit Analysis, that consist of the Net Present Value (NPV) and the Internal Rate of Return (IRR) to unravel the research question.

4.1 ASSUMPTIONS AND FACTS

In order to conduct a thorough data analysis of the data collected with regards to the NPV and IRR, the followings facts and assumptions were extrapolated for careful consideration and justification:

1. The interest rate to be paid on the project loan is 13%. This is predicated on the fact that the monetary policy rate of the Central Bank of Nigeria is 12%. The average yield of bonds is 11.2% and the interbank rate is between 11%-12 %. Beside these facts, the Federal government of Nigeria provided a sovereign guarantee on the loan.
2. The Concession period of the road is for 30years, as stated in the concession agreement, which is exclusive of the initial construction period.
3. Facts from the LASTMA and commuters shows that the toll collection commenced in the year 2011.
4. Facts from the State government and literatures show that the commencement year of the concession is 2007.
5. The accounting format adopted for this project, allows the interest rate to be spread over a period of 30 years in the cash flow analysis.
6. The facts from the literatures, interviews with the bankers and staffs of LCC, indicates that the maintenance cost is inclusive of the project cost, likewise the professional fees of all the consultants to the project.
7. ₦ 1.20K is used as the average price for a toll trip; per vehicle, because there are more salon cars plying the route than any other types of vehicles. Although

special project vehicles pay ₦ 1.50K per trip and commercial vehicles pay ₦ 100K per trip

8. The total amount of loan borrowed for the project is ₦ 43.6 billion as stipulated by all the participating banks and from the records in the state government office.
9. The loan replacement commenced in the fourth year because of the 3 years moratorium period, as reflected in the contract papers. The project is not expected to generate revenue until the fourth year.
10. The total salaries and sundry expenses are estimated to be 15% of the total cost of construction being standard practice in cash flow analysis.
11. The traffic growth rate for Lekki-Epe corridor is estimated as 10percent per annum, due to the fact that the population growth rate in Lagos is 5% per annum but the population growth rate in Lekki-Epe Corridor is 10.6% per annum. The average families of 6 members always have about 2 vehicles. The commuters plying the route have no alternative, in term of rapid bus transit, light rail or sea transport, The toll road is the only road linking the Island unit the Mainland as such, the vehicular density is high, coupled with the fact that that Lekki-Epe corridors is tagged as the new Lagos that will habour, the proposed new airport, the Lekki Free trade zone, the new Lagos Sea port amongst others.

4.2 DATA ANALYSIS

The data collected in chapter three, such as the traffic count, the cost of borrowing, the structure of the finance coupled with the earlier assumptions, will form the basis of the analysis, using the adopted methodology which is IRR and NPV to answer the research question.

4.2.1 Internal Rate of Return (IRR).

This is the rate of return used in capital budgeting to measure and compare the profitability of investment. It is also called the discounted cash flow rate of return (DCFROR) or simply the rate of return (ROR). In simple terms, IRR of an investment is the interest rate at which the net present value of cost (Negative cash

flows) of the investment equals the net present value of the benefits (positive cash Flows) of the investment.

IRR is commonly used to evaluate the desirability and economic viability of investments projects. The higher a project's internal rate of return, the more desirable and viable it is to undertake the project, assuming all other factors are equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

IRR is an indicator of the efficiency, quality, or yield of an investment. An investment is considered acceptable if it's IRR is greater than an established minimum acceptable rate of return or cost of capital, that is an investment whose IRR exceeds it cost of capital add value for the company (that is, it is economically profitable and sustainable). The IRR equates the NPV to zero.

IRR could be calculated using the formula:

$$\mathrm{NPV} = \sum_{n=0}^{N} \frac{Cn}{(1+\mathrm{r})^{\mathrm{n}}} = 0$$

Figure.1

Where;

NPV= Net present value

r = Internal rate of return

n = Period

C_n= Cash Flow

N = total Number of Period

IRR is the discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero.

4.2.2 Net Present Value (NPV).

This is the difference amount between the sums of discounted cash inflows and cash outflows. It compares the present value of money today to the present value of money in the future, taking inflation and returns into account. In simple term, NPV is the sum of the present values (PVs) of the individual cash flows of the same entity. NPV measure the excess or shortfall of all cash flow in present value terms above the cost of funds.

NPV is the present value of net cash inflows generated by a project including salvage value, if any, less the initial investment on the project. It account for time value of money by using discounted cash inflows. To calculate the NPV, we subtract the initial investment on the project from the total present value of inflows to arrive at net present value.

Below is the formula for NPV when the cash flow is even;

$$NPV = \left[\frac{R_1}{(1+i)^1} + \frac{R_2}{(1+i)^2} + \frac{R_3}{(1+i)^3} + \right] \text{-initial investment}$$

Figure.2

Where:

i = the target rate of return per period

R_1= the net cash inflow during the first period

R_2= the net cash inflow during the send period

R_3= the net cash inflow during the third period and so-on

When cash flows are not even;

$$\boldsymbol{NPV} = R + \frac{1-(1+i)^n}{1} - Initial\ Investment$$

Figure.3

Where:

R = Net cash inflow expected to be received each period

i = the required rate of return

N = the number of periods during which the project is expected to operate and generate cash inflows.

The NPV show the total value of future costs and benefits, reduced to a present day value. This is done by using a social discount rate as specified by the national treasury.

4.3 INTERPRETATION OF ANALYSIS

4.3.1 Traffic Analysis

The toll plaza consists of 6 Lanes for incoming and outgoing vehicles. The normal saloon vehicles pay N 1.20K Per trip as toll. The special utility vehicles pay N2.50k per trip as toll. From the data collected from LASTMA on the traffic count, total vehicular count on the road regardless of the type of vehicle is 84, 431 vehicles. The record of the of Friday was substitute for that of Monday to Thursday because, Monday to Friday has similarity of been workings days whilst majority of the commuters are workers transit from their homes to office and office to their homes as such the estimated traffic for Mondays to Fridays is put at 422,155 vehicles.

The total traffic count as documented by LASTMA on Saturday, 14th Jun 2011 was also put at 72,517 vehicles. The total weekly traffic is now put at 575,064 vehicles by adding all the daily traffics from Monday to Sunday. Invariably the annual traffic count for 2011 could be estimated by multiply of the total weekly traffic count of 575,064 by the total which is 52 weeks. Therefore the estimated annual vehicle traffic count for the year 2011 is put at 27,603,072 vehicles .The annual traffic growth rate is estimated at 10 percent, because the Lagos State

annual population growth rate is put at 5%, while the annual population growth rate of Lekki-Epe corridor is put at 10.10%. An average family has minimum of 2 vehicles because of the poor public transport system, coupled with the fact that there is no transportation alternatives like light rail sea transportation and the public rapid transportation system is the Lekki- Epe corridor.

4.3.2 Cash Flow Analysis

The cash flow analysis expresses the inflows or the revenues received, or that is expected to be received throughout the project cycle, which is the income from the tolls. It is expected that toll is the only mean by which the loan collected could be repaid back to the bank. The estimated inflows yearly from the project is arrived at by multiply the total annual vehicular traffic, which was 27,603,072 in the year 2011 by N1.20K which is the average amount pay as toll per trip. The annual total vehicular count is growing annually at 10% which is the annual traffic growth rate throughout the period of the concession. The outflow comprises of the salaries, the interest rate payment on the borrowed fund over the 30 years of the concession period.

However, the cash flow is discounted at a rate of 13% to bring the future value of the cash flow to the present value. The net cash flow is arrived at by deducting the yearly out flow from the yearly inflow.

The cash flow analysis makes it easy for us to determine the NPV and the IRR.

S/N	1	2	3	4	5	6
YEAR	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
INFLOW						
Income				3,312,368,640	3,643,605,504	4,007,966,054
Total inflow(A)				3,312,368,640	3,643,605,504	4,007,966,054
OUTFLOW						
Salaries	218,000,000	218,000,000	218,000,000	218,000,000	218,000,000	218,000,000
Capital Repayment				1,614,814,815	1,614,814,815	1,614,814,815
Interest Rate				377,866,667	377,866,667	377,866,667
Total Outflow(B)	218,000,000	218,000,000	218,000,000	2,210,681,482	2,210,681,482	2,210,681,482
Net Cash Flow(A-B)	**218,000,000**	**218,000,000**	**218,000,000**	**1,101,687,158**	**1,432,924,022**	**1,797,284,573**
DCF@13%	0.885	0.7831	0.693	0.6133	0.5428	0.4803
PV of Net Cash Flow	(192,930,000.00)	(170,715,800.00)	(151,074,000.00)	(675,664,734.21)	777,791,159.32	863,235,780.28

Table.5

S/N	7	8	9	10	11
YEAR	**2014**	**2015**	**2016**	**2017**	**2018**
INFLOW					
Income	4,408,762,660	4,849,638,926	5,334,602,881	5,868,063,100	6,454,869,410
Total inflow(A)	4,408,762,660	4,849,638,926	5,334,602,881	5,868,063,100	6,454,869,410
OUTFLOW					
Salaries	218,000,000	218,000,000	218,000,000	218,000,000	218,000,000
Capital Repayment	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815
Interest Rate	377,866,667	377,866,667	377,866,667	377,866,667	377,866,667
Total Outflow(B)	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482
Net Cash Flow(A-B)	**2,198,081,178**	**2,638,957,444**	**3,123,921,337**	**3,657,381,619**	**4,244,187,929**
DCF@13%	0.4251	0.3762	0.3329	0.2946	0.2606
PV of Net Cash Flow	934,404,308.84	992,775,790.49	1,039,953,413.00	1,077,464,624.8	1,106,035,374.19

Table.6

S/N	12	13	14	15	16
YEAR	**2019**	**2020**	**2021**	**2022**	**2023**
INFLOW					
Income	7,100,356,351	7,810,391,986	8,591,431,185	9,450,574,304	10,395,631,734
Total inflow(A)	7,100,356,351	7,810,391,986	8,591,431,185	9,450,574,304	10,395,631,734
OUTFLOW					
Salaries	218,000,000	218,000,000	218,000,000	218,000,000	218,000,000
Capital Repayment	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815
Interest Rate	377,866,667	377,866,667	377,866,667	377,866,667	377,866,667
Total Outflow(B)	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482
Net Cash Flow(A-B)	**4,889,674,870**	**5,599,710,505**	**6,380,749,703**	**7,239,892,822**	**8,184,950,252**
DCF@13%	0.2327	0.2042	0.1807	0.1599	0.1415
PV of Net Cash Flow	1,128,047,992.42	1,143,460,885.07	1,153,001,471.41	1,157,658,862.22	1,158,170,460.70

Table.7

S/N	17	18	19	20	21
YEAR	**2024**	**2025**	**2026**	**2027**	**2028**
INFLOW					
Income	11,435,194,907	12,578,714,398	13,836,585,838	15,220,244,422	16,740,268,864
Total inflow(A)	11,435,194,907	12,578,714,398	13,836,585,838	15,220,244,422	16,740,268,864
OUTFLOW					
Salaries	218,000,000	218,000,000	218,000,000	218,000,000	218,000,000
Capital Repayment	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815
Interest Rate	377,866,667	377,866,667	377,866,667	377,866,667	377,866,667
Total Outflow(B)	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482
Net Cash	**9,224,513,426**	**10,368,032,916**	**11,625,904,356**	**13,009,562,940**	**14,531,587,382**

Flow(A-B)					
DCF@13%	0.1252	0.1105	0.0981	0.0868	0.0768
PV of Net Cash Flow	1,154,909,080.89	1,145,667,637.26	1,140,501,217.34	1,129,330,063.19	1,116,025,910.95

Table.8

S/N	22	23	24	25	26
YEAR	**2029**	**2030**	**2031**	**2032**	**2033**
INFLOW					
Income	18,416,495,750	20,258,145,325	22,283,959,858	24,512,355,844	26,963,591,428
Total inflow(A)	18,416,495,750	20,258,145,325	22,283,959,858	24,512,355,844	26,963,591,428
OUTFLOW					
Salaries	218,000,000	218,000,000	218,000,000	218,000,000	218,000,000
Capital Repayment	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815
Interest Rate	377,866,667	377,866,667	377,866,667	377,866,667	377,866,667
Total Outflow(B)	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482
Net Cash Flow(A-B)	**16,205,814,269**	**18,047,463,844**	**20,073,278,376**	**22,301,674,362**	**24,752,909,946**
DCF@13%	0.068	0.0601	0.0532	0.0471	0.0417
PV of Net Cash Flow	1,101,995,370.26	1,084,652,577.00	1,067,898,409.61	1,050,408,862.44	1,032,196,344.76

Table.9

S/N	27	28	29	30	
YEAR	**2034**	**2035**	**2036**	**2037**	**TOTAL**
INFLOW					
Income	29,659,950,571	32,625,945,628	35,888,540,191	39,477,394,210	401,127,649,905
Total inflow(A)	29,659,950,571	32,625,945,628	35,888,540,191	39,477,394,210	401,127,649,905
OUTFLOW					

Salaries	218,000,000	218,000,000	218,000,000	218,000,000	6,540,000,000
Capital Repayment	1,614,814,815	1,614,814,815	1,614,814,815	1,614,814,815	43,600,000,000
Interest Rate	377,866,667	377,866,667	377,866,667	377,866,667	10,202,400,000
Total Outflow(B)	2,210,681,482	2,210,681,482	2,210,681,482	2,210,681,482	60,342,400,000
Net Cash Flow(A-B)	**27,449,269,089**	**30,415,264,146**	**33,677,858,709**	**37,266,712,733**	**340,785,249,905**
DCF@13%	0.0369	0.0326	0.0289	0.0256	0.0256
PV of Net Cash Flow	1,012,878,029.38	991,537,611.16	973,290,116.69	954,027,845.96	8,724,102,397.57

Table.10

4.3.3 The Net Present Value Analysis

The NPV is arrived at after the summation of the present value of income from the project for the 30 years period less the borrowed fund of **~~₦~~43.6Billion, which** is a positive NPV of **~~₦~~8,992,050,386.**

Years	Cashflow	DCF@13%	PV
0	(43,600,000,000)	1	(43,600,000,000)
1	-	0.885	-
2	-	0.7831	-
3	-	0.693	-
2011	4,408,762,660	0.6133	2,703,894,139
2012	4,849,638,926	0.5428	2,632,384,009
2013	5,334,602,818	0.4803	2,562,209,734
2014	5,868,063,100	0.4251	2,494,513,624

2015	6,454,869,410	0.3762	2,428,321,872
2016	7,100,356,351	0.3329	2,363,708,629
2017	7,810,391,986	0.2946	2,300,941,479
2018	8,591,431,185	0.2606	2,238,926,967
2019	9,450,574,304	0.2307	2,180,247,492
2020	10,395,631,734	0.2042	2,122,788,000
2021	11,435,194,907	0.1807	2,066,339,720
2022	12,578,714,398	0.1599	2,011,336,432
2023	13,836,585,838	0.1415	1,957,876,896
2024	15,220,244,422	0.1252	1,905,574,602
2025	16,742,268,864	0.1105	1,850,020,709
2026	18,416,495,750	0.0981	1,806,658,233
2027	20,258,145,325	0.0868	1,758,407,014
2028	22,283,959,858	0.0768	1,711,408,117
2029	24,512,355,844	0.068	1,666,840,197
2030	26,963,591,428	0.0601	1,620,511,845
2031	29,659,950,571	0.0532	1,577,909,370
2032	32,625,945,628	0.0471	1,536,682,039
2033	35,888,540,191	0.0417	1,496,552,126
2034	39,477,394,210	0.0369	1,456,715,846
2035	43,425,133,631	0.0326	1,415,659,356
2036	47,767,646,994	0.0289	1,380,484,998
2037		0.0256	

52,544,411,693	1,345,136,939
544,864,842,222	8,992,050,386

Table.11

Decision: The management should accept the project because it has positive NPV

4.3.4 The Internal Rate of Return (IRR)

Thirteen (13) percent and Seventeen (17) percent were used respectively as the discounted rate, to discount the cash flows for over a period of 30years at the end of the day.The IRR was calculated using the following formula:

$$\boldsymbol{IRR} = LR + \frac{NPVlr}{NPVlr - (NPVhr)} \times (HR - LR)$$

Figure.4

Where:

IRR= internal rate of return

LR = lower rate

HR= higher rate

NPVlr= net present value of the lower rate.

Years	Cashflow	DCF@13%	PV	DCF@17%	PV
0	(43,600,000,000)	1	(43,600,000,000)	1	(43,600,000,000)
1	-	0.885	-	0.8547	-
2	-	0.7831	-	0.7305	-
3	-	0.693	-	0.6244	-

2011	4,408,762,660	0.6133	2,703,894,139	0.5337	2,352,956,632
2012	4,849,638,926	0.5428	2,632,384,009	0.4561	2,211,920,314
2013	5,334,602,818	0.4803	2,562,209,734	0.3898	2,079,428,179
2014	5,868,063,100	0.4251	2,494,513,624	0.3332	1,955,238,625
2015	6,454,869,410	0.3762	2,428,321,872	0.2848	1,838,346,808
2016	7,100,356,351	0.3329	2,363,708,629	0.2434	1,728,226,736
2017	7,810,391,986	0.2946	2,300,941,479	0.208	1,624,561,533
2018	8,591,431,185	0.2606	2,238,926,967	0.1778	1,527,556,465
2019	9,450,574,304	0.2307	2,180,247,492	0.1519	1,435,542,237
2020	10,395,631,734	0.2042	2,122,788,000	0.1299	1,350,392,562
2021	11,435,194,907	0.1807	2,066,339,720	0.111	1,269,306,635
2022	12,578,714,398	0.1599	2,011,336,432	0.0949	1,193,719,996
2023	13,836,585,838	0.1415	1,957,876,896	0.0811	1,122,147,111
2024	15,220,244,422	0.1252	1,905,574,602	0.0693	1,054,762,938
2025	16,742,268,864	0.1105	1,850,020,709	0.0592	991,142,317
2026	18,416,495,750	0.0981	1,806,658,233	0.0506	931,874,685
2027	20,258,145,325	0.0868	1,758,407,014	0.0433	877,177,693
2028	22,283,959,858	0.0768	1,711,408,117	0.037	824,506,515
2029	24,512,355,844	0.068	1,666,840,197	0.0316	774,590,445
2030	26,963,591,428	0.0601	1,620,511,845	0.027	728,016,969
2031	29,659,950,571	0.0532	1,577,909,370	0.0231	685,144,858
2032	32,625,945,628	0.0471	1,536,682,039	0.0197	642,731,129
2033		0.0417		0.0169	

	35,888,540,191		1,496,552,126		606,516,329
2034	39,477,394,210	0.0369	1,456,715,846	0.0144	568,474,477
2035	43,425,133,631	0.0326	1,415,659,356	0.0123	534,129,144
2036	47,767,646,994	0.0289	1,380,484,998	0.0105	501,560,293
2037	52,544,411,693	0.0256	1,345,136,939	0.009	472,899,705
	544,864,842,222		8,992,050,386		(11,717,128,672)

Table.12

IRR = 13 + 8,992,050,386 / (8,992,050,386 - (11,717,128,672)) * (17 - 13)

13 + 8,992,050,386 / 8,992,050,386 +11,717,128,672 * 4

13 + 8,992,050,386 / 20709179058 * 0.04

13 + 0.43

13 + 0.0172

13 + 0.017

IRR = 13.02%

- The IRR of the project (Lekki-Epe expressway) is 13.02.

4.3.5 The Cost Benefit Analysis

The control measure is the position when the government decide to construct the road without any toll in place, the cost of construction will still be N43.6 billion but the social benefit to the populace, in term of the public asset that is gained, the reduction in the cost of car maintenance, the ease and speed of moving around the Lekki-Epe corridor, which has been smooth and serene. The rate of motor accidents has increases a result of the good road. There is reduction in the gas emission and noise pollution with significant increase in value of properties, as a result of the construction of the Expressway and also there are negative shift in the value of some properties, as a result of the change in traffic flow and the creation of employment. Based on the previous research conducted by Atubi, (2010), Onakomayia, (1989), Gbadamosi, (2002), and Ernst and Young(2008).. Whilst, Ernst and Young(2008), studies shows that the vehicle operating cost reduced by 20%, the travel time saving was about 19%, the environmental benefits, in term of reduction in gas emission and noise provision was 83%, extrapolating these figures in to the Lekki–Epe scenario without the toll, though it is difficult to quantified the benefits in monetary term. . The cost benefit analysis, in term of cost is N43 billion and the benefit in term of direct and indirect benefit is estimated as N86.5 billion by the members of Lagos State Chambers of Commerce and Industries; the largest body of Industrialist and Entrepreneurs in the State, in of interviewing their members.

As such CBR = $\frac{₦86.5\ billion}{₦43.6\ billion} = ₦1.98\ billion$

4.4 FINDINGS

From the data analysis, the payback period for the project is approximately 10 years and that means the projects is economically viable and sustainable, because the incomes from the project would have paid the borrowed capital and interest elements within 10years and still have 20 years remaining out of the concession to enjoy economic profit.

The payback period will be year 2021 and the project still has over 20years unexpired term to enjoy economic rent.

In the same vein, the NPV is positive **₦8, 992,050,386** indicating that the project is economically sustainable because of the positive NPV. It also implies that the project is economically viable. Also the IRR is **13.02** percent, which is greater than the discount

rate of 13 percent that is spent to service the borrowed fund, which connote that the project is economically viable and sustainable.

The CBR is 1.98, which is an indication that the project is economically and socially sustainable and viable. When the CBR is greater than 1, it shows that the project should be accepted, and good for the society.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

The focus of the chapter is to present the advantages and disadvantages of PPP, demonstrate whether the benefits of Lekki-Epe expressway concession outweigh the cost of constructing the said road. Also, demonstrate whether the inflows from the project can make the project economically sustainable, narrate the experiences from the Lekki-Epe expressway by the Stake holders that were interviewed in the course of the research, create sensitivity analysis at 2.5% annual traffic growth the rate, which is the normal annual traffic growth rate in standard practice and make recommendations.

5.1 ADVANTAGES AND DISADVANTAGES OF PPP

PPP is an innovative finance model, that make it easier for government to meet the infrastructural gaps, as the government is battling with many social and economic needs that must be provided for the populace but the revenues available to government is dwindling, particularly as a result of global economic meltdown. PPP, is a viable approach or alternative finance opportunity as the private sector will come to the aid of the government providing alternative options at meeting the infrastructural gaps and finance. In the case of the Lekki-Epe expressway, the finance of the project was source by the private sector, with little or no financial pressure on the government, at the end of the day the government is gaining an asset, with zero social cost to the state, the ₦43.6 billion project cost that the government would have used to provide the road, will now be used to provide alternative infrastructures to the society such as schools, electricity and hospitals.

PPP is characterised by non recourse or limited recourse to the asset of the government, in case of any default or future litigation. In simple term, in the case of Lekki-Epe expressway, the Lagos State government asset is of no recourse to the concessionaire, as the private sector, through the special project vehicle will bear the risk associated with the project.

PPP also give government the platform to transfer all the adjoining risk that would have been carried by the government, which is now transferred to the private sector, such as the payment of interest rate, default on the part of contractors, technological risk, market risk, and other risks, which will not borne by the Lagos State government.

PPP create the platform for the private sector to share knowledge and expertise that are not easily available in the public sector, with the government and members of the public sector. Expertise, such as financial engineering, legal documentations, engineering skills and project and infrastructural management skills, which are prevalent in the private sector will be passed down and shared with the staffs of Lagos State Government in the course of the project.

PPP is a tool of employment generation, as it is estimated that over 200,000 jobs will be created, either directly or indirectly in the course of the concession cycle of Lekki-Epe Expressway.

PPP also stimulate economic growth, like the inflow of foreign direct investment (FDI) from the African development bank and the Standard bank, providing of shore fund for the project. LCC through the parent company ARM raised private placement from local investors and Lagos State raised bond in the capital market to create mezzanine finance for the project.

On the contrary, PPP is bedeviled with lots of cumbersome procedures, that require special skills, which is very expensive or costly, like the procedures of putting together different professionals that are associated with Lekki-Epe expressway is cumbersome, some professional were brought into the country from Europe and South Africa, just to put papers together in preparation for the project bid or tenders, making PPP only attractive to the big firms and less attractive to small firms that are prevalent in Nigeria.

PPP has been tagged as the scientific methods of corruption, in that the government set-up that template for their cronies, the government also set-up the template for the selection, finance the selection process and select the preferred firm ,who are often times, political associates and finance the project from the stolen public funds, through the private equity firm, like in the case of Lekki-Epe expressway, the names of the individuals that invested in the private equity firm, ARM is still coded till date. The construction company **HITECH,** which is constructing Lekki-Epe expressway is said to belong to the former governor of Lagos State and has no record of previous experiences in the construction of such high profile road.

5.2 THE COST BENEFIT ANALYSIS OF LEKKI-EPE EXPRESSWAY

The project cost is estimated at₦43.6 billion and the accruing benefits of the road, as aggregated by the members of the Lagos Chambers of Commerce and Industries, be it direct or indirect benefits is estimated to be in the tune of ₦86.3 billion and in order to determine the cost benefit ratio, the cost will be used to divide the estimated benefits, which is 1.98 , a positive figure, meaning that the benefits of the project to the society is greater than 1, that is, the benefits outweighs cost, which is a strong indication that the society is better off with the existence of the project.

5.3 DOES THE INFLOWS FROM THE TOLL SUSTAIN THE LEKKI-EPE EXPRESSWAY ECONOMICALLY?

The findings from the analysis is chapter 3 and chapter 4 shows that the NPV is positive ₦8, 992,050,386 and based on this, we can deduce that the inflows from the toll is more than enough to make the Lekki-Epe expressway economically sustainable because the loan, interest rate element and other sundries could be taken care off from the inflows. Furthermore, the IRR of 13.02% is greater than DCR of 13.0% signifying that the project is economically sustainable.

5.4 THE EXPERIENCES OF THE STAKEHOLDERS IN COURSE OF INTERVIEWS

The civil society groups were in support of the project but were against the payments of tolls by the commuters because they believe that road construction is an essential infrastructure that should not be left in the hand of private sectors, purely for the economic gains. Some members of the civil societies had gone to court to challenge the payment of the tolls, which they believe, it is taxation, as the citizens are paying many taxes to the government and not deriving benefits.

The members of the Lagos State Chambers of Commerce were happy with the PPP Project which to them is easing the travel time; increase the value of properties in the Lekki-Epe corridor and creating further employment in the economy. The Staffs of the LCC were actually hostile and not willing to provide relevant information on the project, the best they could offer is to refer the questions to their website.

The Larger percentage of the commuters interviewed were happy with the project, as they now spend less time on the road and they can now focus on other things because of the time gained outside traffic.

The property owners interviewed were happy as there is significant increase in the property value to about 25% within the Lekki-Epe corridors both in term of the rental and capital value.

The bankers that participated in the project referred to the project as the first PPP toll road in Nigeria, that the project expanded their project finance knowledge, whilst looking forward to similar future project of the same magnitude.

The traffic authorities were friendly, providing the data on the traffic counts and attesting to reduction in traffic offences as a result of the road project, however, there has been significant increase in the motor accidents since the commencement of the tolling as a

result of the excessive speeding on the good road.

5.5 SENSITIVITY ANALYSIS

Sensitivity analysis was conducted to predict the outcome of the IRR and NPV in a scenario, when the annual traffic growth rate is 2.5% in the Lekki-Epe corridor as against the 10% annual traffic growth rate that was initially assumed in chapter 4. 2.5% is the normal annual growth rate for traffic.

This new assumption will impact the yearly traffic court, the cash flow analysis, the NPV and IRR. It is quick to note that every other assumptions stated in Chapter 4 remain constant, besides the annual traffic growth rate that is now 2.5%.

5.5.1 The New Traffic Count @ 2.5% Annual Growth Rate

Years	Traffic Flow	Income
		Projection @ =N= 120
2008	27,603,072	3,312,368,640
2009	28,293,149	3,395,177,856
2010	29,000,478	3,480,057,302
2011	29,725,489	3,567,058,735
2012	30,468,627	3,656,235,203
2013	31,230,342	3,747,641,083
2014	32,011,101	3,841,332,111
2015	32,811,378	3,937,365,413
2016	33,631,663	4,035,799,549
2017	34,472,454	4,136,694,537
2018	35,334,266	4,240,111,901
2019	36,217,622	4,346,114,698
2020	37,123,063	4,454,767,566
2021	38,051,140	4,566,136,755
2022	39,002,418	4,680,290,174
2023	39,977,479	4,797,297,428
2024	40,976,916	4,917,229,864
2025	42,001,338	5,040,160,610
2026	43,051,372	5,166,164,626
2027	44,127,656	5,295,318,741
2028	45,230,848	5,427,701,710
2029	46,361,619	5,563,394,253
2030	47,520,659	5,702,479,109
2031	48,708,676	5,845,041,087
2032	49,926,393	5,991,167,114

2033	51,174,552	6,140,946,292
2034	52,453,916	6,294,469,949
2035	53,765,264	6,451,831,698
2036	55,109,396	6,613,127,490
2037	56,487,131	6,778,455,677
	1,211,849,476	**₦145,421,937,169.25**

Table.13

The estimated traffic flow and projected income at 2.5% annual growth rate for a period of 30 years is contained in the table.

Calculation

5.5.2 Net Present Value

Years	Cashflow	DCF@13%	PV
0	(43,600,000,000)	1	(43,600,000,000)
1	-	0.885	-
2	-	0.7831	-
3	-	0.693	-
2011	3,567,058,735	0.6133	2,187,677,122
2012	3,656,235,203	0.5428	1,984,604,468
2013	3,747,641,083	0.4803	1,799,992,012
2014	3,841,332,111	0.4251	1,632,950,280
2015	3,937,365,413	0.3762	1,481,236,868
2016	4,035,799,549	0.3329	1,343,517,670
2017	4,136,694,537	0.2946	1,218,670,211
2018	4,240,111,901	0.2606	1,104,973,161
2019	4,346,114,698	0.2307	1,002,648,661
2020	4,454,767,566	0.2042	909,663,537
2021	4,566,136,755	0.1807	825,100,912
2022	4,680,290,174	0.1599	748,378,399
2023	4,797,297,428	0.1415	678,817,586
2024	4,917,229,864	0.1252	615,637,179
2025	5,040,160,610	0.1105	556,937,747
2026	5,166,164,626	0.0981	506,800,750
2027	5,295,318,741	0.0868	459,633,667
2028	5,427,701,710	0.0768	416,847,491
2029	5,563,394,253	0.068	378,310,809
2030	5,702,479,109	0.0601	342,718,994
2031	5,845,041,087	0.0532	310,956,186
2032	5,991,167,114	0.0471	282,183,971
2033	6,140,946,292	0.0417	256,077,460
2034	6,294,469,949	0.0369	232,265,941
2035	6,451,831,698	0.0326	210,329,713
2036	6,613,127,490	0.0289	191,119,384
2037	6,778,455,677	0.0256	173,528,465

	544,864,842,222		**(21,748,421,353)**

Table.14

Decision: the management should not accept the project because it has a negative NPV.

The formula for calculating the NPV is as contained in chapter 4 is still but the cash flow has changed, because of the 2.5% annual traffic growth rate. From the above table, the NPV is negative (21,748,421,353) which is not viable and economically sustainable, at annual traffic growth rate of 2.5%, as such the project is an economic suicide.

5.5.3 The Internal Rate of Return

Years	Cashflow	DCF@13%	PV	DCF@3%	PV
0	(43,600,000,000)	1	(43,600,000,000)	1	(43,600,000,000)
1	-	0.885	-	-	-
2	-	0.7831	-	-	-
3	-	0.693	-	-	-
2011	3,567,058,735	0.6133	2,187,677,122	0.8885	3,169,331,686
2012	3,656,235,203	0.5428	1,984,604,468	0.8626	3,153,868,486
2013	3,747,641,083	0.4803	1,799,992,012	0.8375	3,138,649,407
2014	3,841,332,111	0.4251	1,632,950,280	0.8131	3,123,387,139
2015	3,937,365,413	0.3762	1,481,236,868	0.7894	3,108,156,257
2016	4,035,799,549	0.3329	1,343,517,670	0.7664	3,093,036,774
2017	4,136,694,537	0.2946	1,218,670,211	0.7441	3,078,114,405
2018	4,240,111,901	0.2606	1,104,973,161	0.7224	3,063,056,837
2019		0.2307		0.714	

	4,346,114,698		1,002,648,661		3,103,125,895
2020	4,454,767,566	0.2042	909,663,537	0.681	3,033,696,712
2021	4,566,136,755	0.1807	825,100,912	0.6611	3,018,673,009
2022	4,680,290,174	0.1599	748,378,399	0.6419	3,004,278,263
2023	4,797,297,428	0.1415	678,817,586	0.6232	2,989,675,757
2024	4,917,229,864	0.1252	615,637,179	0.605	2,974,924,068
2025	5,040,160,610	0.1105	556,937,747	0.5874	2,960,590,343
2026	5,166,164,626	0.0981	506,800,750	0.5703	2,946,263,686
2027	5,295,318,741	0.0868	459,633,667	0.5537	2,932,017,987
2028	5,427,701,710	0.0768	416,847,491	0.5375	2,917,389,669
2029	5,563,394,253	0.068	378,310,809	0.5219	2,903,535,460
2030	5,702,479,109	0.0601	342,718,994	0.5067	2,889,446,164
2031	5,845,041,087	0.0532	310,956,186	0.4919	2,875,175,710
2032	5,991,167,114	0.0471	282,183,971	0.4776	2,861,381,414
2033	6,140,946,292	0.0417	256,077,460	0.4637	2,847,556,795
2034	6,294,469,949	0.0369	232,265,941	0.4502	2,833,770,371
2035	6,451,831,698	0.0326	210,329,713	0.4371	2,820,095,635
2036	6,613,127,490	0.0289	191,119,384	0.4243	2,805,949,994
2037	6,778,455,677	0.0256	173,528,465	0.412	2,792,723,739
	91,634,333,371		**(21,748,421,353)**		**36,837,871,663**

Table.15

$$IRR = LR + \frac{NPVlr}{NPVlr - (NPVhr)} X (HR-LR)$$

Where;

IRR = Internal rate of return
LR = Lower rate
HR = Higher rate
NPV Lr = Net present value of the lower rate
NPV hr = Net present value of the higher rate

$$IRR = 3 + \frac{36,837,871,663}{36,837,871,663 - (21,748,421,353)} * (13 - 3)$$

$$3 + \frac{36,837,871,663}{58,586,293,016} \quad 10$$

$$3 + \frac{36,837,871,663}{58,586,293,016} \times 0.1$$

3 +0.06

3 +0.06

3 + 0.06

IRR = 3.06%

Decision: From the calculation. The IRR is now 3.06% based on 2.5% annual traffic growth rate, which shows that the project is not economically viable and sustainable, because the IRR is less than the DCR of 13%.

The formula for calculating the IRR is still the same as contained in chapter 4, likewise the DCF at 13%. The cash flow has changed, as a result of the new input of 2.5% annual traffic growth rate.

5.6 RECOMMENDATIONS

The followings are the recommendations presented in the light of the research on the economic sustainability of Lekki-Epe expressway, as a PPP model in Nigeria. The success of the Lekki-Epe toll road cannot be overlooked; despite the initial reactions from the civil societies, as such the PPP model should be adopted in the provision of other infrastructural projects in the country, as a way of reducing the infrastructural gaps. The PPP model should be adopted in the area of the provision of Airports and constructions of toll road roads both in Lagos State and other States in Nigeria.

There should be constant training on PPPs, both for the staffs in the public sectors and private sectors, as the required PPP's skills are scarce in the country. These knowledge gaps were observed in the course of the research, as the participants and stakeholders that were involved were involved in the Lekki-Epe toll road, were of distorting and variance opinions on the meaning and processes of PPP.

Access to information on the PPP procedures and transactions should be easily made available to the public by the stakeholders, especially the LCC and the financial institutions that were involved in the project. LCC should not treat data and information from the projects as classified documents because the project is meant for the benefits of the populace.

The government should engaged the civil societies and the populace on the benefits of PPPs and the processes involved in the PPPs projects, particularly the processes leading the determination of the toll so that the government would not be perceived as the enemy of the populace by forcing a rate on the commuters without any logical and rational explanation. The government should embark on public enlightenment campaigns before fixing the toll.

The concessionaire should have constructed an alternative road and put the purported alternative road in motor able conditions before embarking on toll collection, so that commuters will have options beside the toll road.

The concessionaire should embark on corporate social responsibility, that will win the hearts of the commuters and the communities located in the course of Lekki-Epe expressway, like the provision of hospitals, portable water, schools amongst others, for the communities that are located along the expressway.

LCC should ensure that there are emergency ambulances plying the Lekki-Epe expressway at intervals, in order to attend to victims of motor accidents promptly. Also there should be police patrol vehicles plying the route 24hours daily, in order to make the route safe for commuters.

LCC should construct more pedestrian bridges at different intervals along the Lekki-Epe expressway which has over 30 communities that are residing along the route; such pedestrian bridges will allow the commuters to cross over from one side to another without disturbing the flow of traffic and causing motor accidents as a result of such activities.

5.7 FUTURE RESEARCH DIRECTION

Future research could potentially focus on the intrinsic benefits of PPP with regards to Lekki-Epe toll road, to see whether the intervention of PPP on the road resulted in the creation of value to different stakeholders along the Lekki-Epe corridor, such as property owners that their properties were previously overlooking the expressway and commanding previously economic rent and value but now are cut off directly from accessing the road, thereby reducing the economic value of such properties.

Also, future research should be conducted on whether the PPP intervention via the toll road actually assisted to reduce corruption being perpetrated by the politicians, as it is being propagated by some citizen that PPP is an advance and scientific form of corruption in developing countries like Nigeria.

Lastly, future research should be conducted on the best way to determine the actually price that should be charged as toll to commuters on toll roads in Nigeria, which will reduce tension and civil protest that normally characterised the introduction of the tolls.

5.8 CONCLUSION

The findings of the research shows that the Lekki-Epe toll road is economically sustainable as reflected in the Cash Benefit Ratio (CBR), IRR and NPV in the research.

These findings also affirm and corroborate earlier studies by Kirk et al. (2006), World Bank (1998) and Hill (2011), that there is a relationship between economic growth, sustainable development and the provision of efficient, reliable and affordable infrastructure through PPP in Africa as demonstrated by the economic growth that is springing up along the Lekki-Epe expressway.

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APPENDICES

APPENDIX I: LEKKI-EPE EXPRESS ROAD

APPENDIX II: LEKKI-EPE EXPRESS ROAD

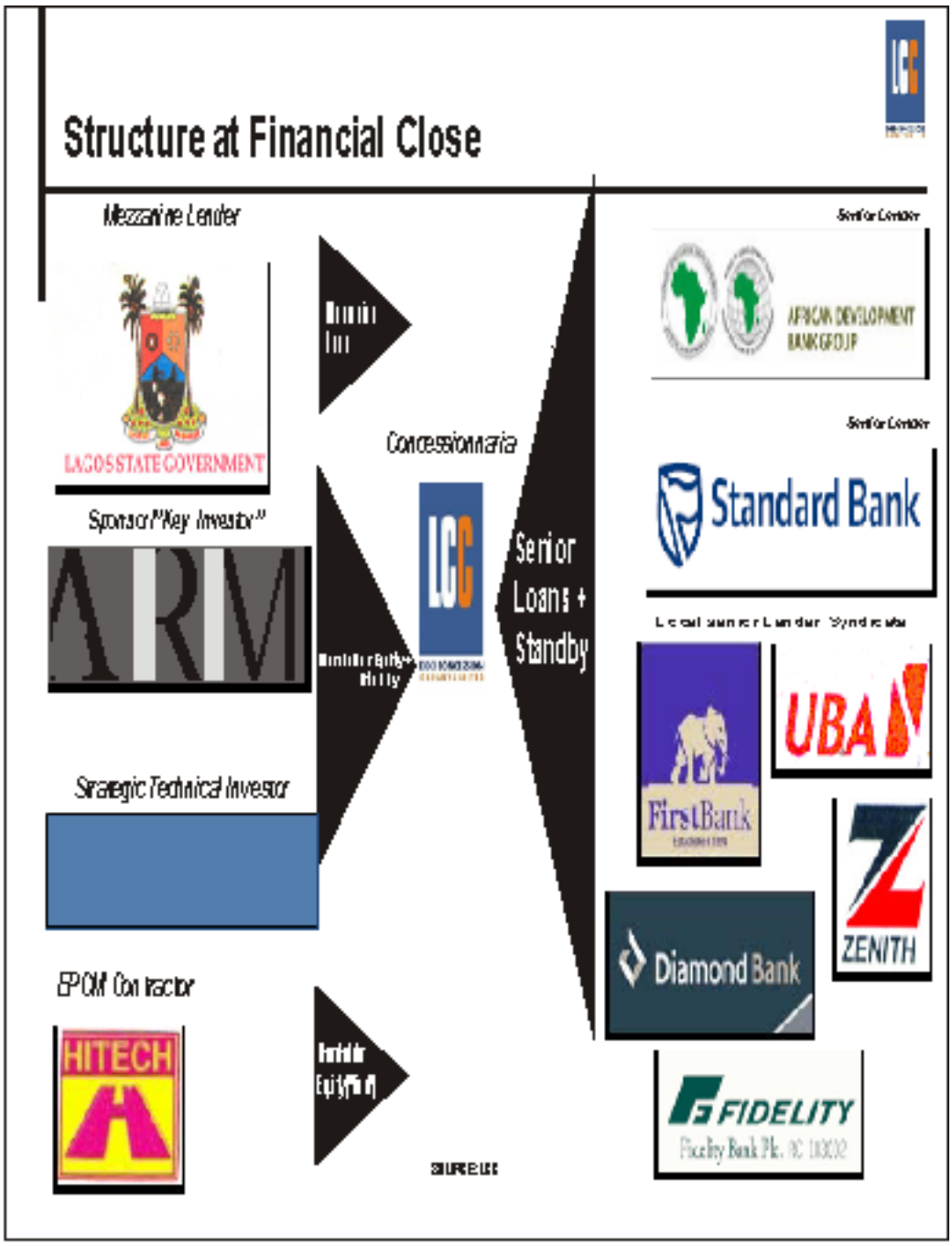
APPENDIX III: LEKKI-EPE EXPRESS ROAD

APPENDIX IV: LEKKI-EPE EXPRESS ROAD

APPENDIX V: LEKKI-EPE EXPRESS ROAD

APPENDIX VI: LEKKI-EPE EXPRESS ROAD

3.8.2



SOURCE: LCC

APPENDIX VII