

**CHALLENGES IN IMPLEMENTING PUBLIC PRIVATE PARTNERSHIP (PPP)  
PROJECTS IN THE ROAD SECTOR IN ZAMBIA**

**BY**

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**A Dissertation submitted to the University of Zambia for the partial fulfilment of the  
requirements for the Degree of Master of Engineering in Project Management**

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF ENGINEERING  
LUSAKA**

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I, Raivy Namalala Chilala, do hereby, duly declare that the authenticity of the work presented herein is a product of my own, except for the scope acknowledged. It has never been published or presented in part or full for an academic qualification at any Institution/University.

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## APPROVAL

This dissertation of Raivy Namalala Chilala is approved by the University of Zambia in partial fulfilment of the requirements for the award of the degree of Master of Engineering in Project Management.

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## ABSTRACT

The uptake of Public – Private Partnerships (PPPs) in the road sector in Zambia has been limited, despite the government of the Republic of Zambia’s initiatives as far back as 2009 when the PPP Act was enacted. This study sought to find out the main challenges in the implementation process and to offer possible solutions. To achieve the objectives, the researcher used both the qualitative and quantitative approaches, comprising of a detailed literature review, semi-structured interview and questionnaire survey. The Statistical Package for Social Sciences (SPSS) was used to analyse the collected data. The study confirmed the prevalence of PPP implementation challenges in the road sector in Zambia. From 14 identified implementation challenges, the study found nine as significant and requiring attention. The three leading ones were: (1) non-financial viability of the concessions due to low traffic volume (70.6%); (2) lack of time, resources and knowledge in the implementing agencies (64.7%); and, (3) inconsistent and unclear PPP Policy (61.8%). Based on this research, possible solutions were: (i) implementing agencies to categorize the non-economically and economically viable toll roads and incentivize the former as part of the long-term solution; and, (ii) build capacity in all implementing agencies and/or create specialized ‘swat teams’ to work with implementing agencies on specific transactions as ‘quick wins’. Based on these results, two corresponding PPP Models were recommended to encourage investment in the road sector in Zambia: (i) the Design Finance Build and Transfer Model for non-economically viable projects and (ii) the Design Finance Build Operate and Transfer Model for economically viable projects.

Keywords: Public – Private Partnerships, Implementation challenges, Zambia

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## ABBREVIATIONS

ADB	Asian Development Bank
BBR	Bulawayo Railway
BLT	Build-lease-and-transfer
BOOT	Build-own-operate-and-transfer scheme
BOT	Build, Operate and Transfer
BT	Build and Transfer
BTO	Build-transfer-and operate
Caltrans	California's Department of Transportation
CFI	Private Finance Initiative
CRN	Core Road Network
CSO	Central Statistical Office
EIB	European Investment Bank
EIZ	Engineering Institute of Zambia
GDP	Gross Domestic Product
GED	Groupe European De Development
GRZ	Government of the Republic of Zambia
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
LAO	California's Legislative Analyst Office
LDO	Lease, Develop And Operate
LuSE	Lusaka Stock Exchange
MOFNP	Ministry of Finance and National Planning
NASPSA	National Pension Scheme Authority
NBP	Newlands By-Pass
NCC	National Council for Construction
NGOs	Non-Governmental Organization
NLB	New Limpopo Bridge
NPM	New Public Management
NPPID	National Policy and Programme Implementation Department

NRFA	National Road Fund Agency
PFI	Private Finance Initiative
PFR	Primary Feeder Roads
PPP	Public – Private Partnership
PSD	Private Sector Development
PWA	Public Works Authority
RDA	Road Development Agency
ROT	Rehabilitate-operate and transfer
RSAWP	Road sector Annual Work Plans
RSNDP	Revised Sixth National Development Plan
RTSA	Road Transport and Safety Agency
SANRA	South African National Roads Agency
SPSS	Statistical Package for Social Sciences
SPV	Special Purpose Vehicle
SR	State Road
SWM	Solid Waste Management
TMD	Trunk, Main and District
TRAC	Trans African Concessions Consortium.
UK	United Kingdom
UKAS	Unit Kerjasama, Awam Swasta
US	United State
USA	United states of America
ZNCC	Zimbabwe National Chamber of Commerce.

## **CHAPTER ONE: RESEARCH BACKGROUND**

### **1.1 Introduction**

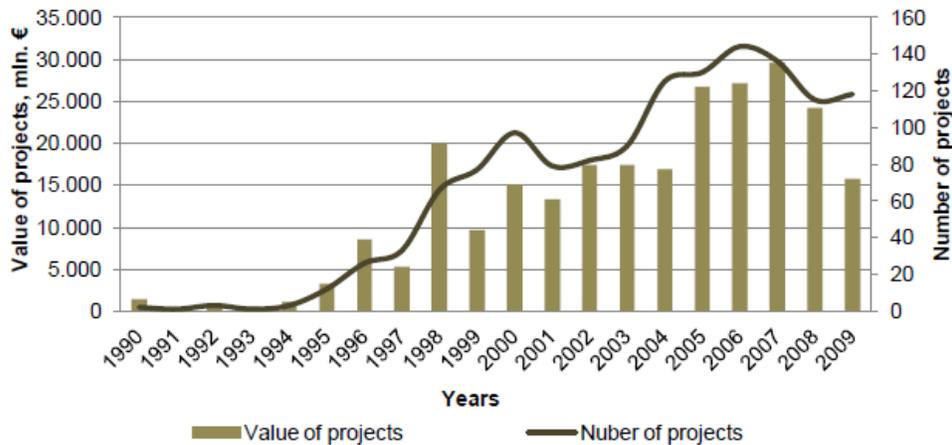
The uptake of Public – Private Partnerships (PPPs) in the road sector in Zambia has been limited, despite the Government of the Republic of Zambia’s (GRZ) initiatives as far back as 2009 and the rising global interest in PPP models for delivery of various kinds of infrastructure.

According to Lengwe (2014), developed countries such as the United Kingdom (UK), China India, France, Japan and Singapore and other rapidly/or developing Asian countries such as Indonesia, Malaysia, South Korea, Hong Kong, Australia and Thailand among others, have generated interest and implemented PPPs/Private Finance Initiatives (PFIs) in their quest for additional sources of capital and/or as a means of enhancing value for money for public service delivery. The United Kingdom (UK) has pioneered the trend through its Private Finance Initiative (PFI) as a means of developing and delivering all types of infrastructure, ranging from schools to defense facilities (Deloitte Research, 2006).

According to Douglas (2013), Australia and Canada have also long histories of using PPPs for public infrastructure projects and that usage is likely to grow in the future. In both Countries, the development of centralized PPP agencies to develop standardized agreements to shepherd and oversee the use and implementation of the PPP model for such projects seems to be one of the key factors that has contributed to their success, or at least to have lessened the number of severe failures.

Similarly, Deloitte Research (2006), reported that India was scheduled to invest \$47.3billion in highways alone for six years of which 75 percent was from public-private partnerships while Japan had 20 new PPP Projects in the pipeline. The report also stated that in Europe, the volume of PPP deals was doubling, tripling, and even quadrupling year to year in many Countries.

According to the European Investment Bank (EIB) report (2010), there was a growing interest in the use of PPP within Europe for the period between 1990 and 2009 as depicted in Figure 1.



**Figure 1.1: European PPP Trend, 1990-2009**

Source: European Investment Bank, 2010

In Africa, South Africa has an exceptional experience in PPP Projects involving about 300 such Projects at national and provincial levels since 1994 (PPIAF, 2009). According to PPIAF (2009), the South African National Roads Agency (SANRA) began tolling part of the major national roads in the mid-1990s and developed concessionary structures to overcome budgetary constraints. The N4 project linking the economic heartland of the Country (Gauteng Province) to Maputo port, about 630km long was the first major PPP Project to be implemented (PPIAF, 2009). The original agreement for N4 stipulated a 30 year concession from 1997. The concession was awarded to the Trans African Concessions (TRAC) consortium. TRAC was responsible for the financing, design, construction, rehabilitation, operation and maintenance of the toll road. Financing for the Project was split between 20% equity and 80% debt. The Governments of South Africa and Mozambique jointly and severally guaranteed the debt of TRAC and to a certain extent the equity. The concession contract was signed with South African National Roads Agency (SANRA) and the Mozambique Roads Agency (MRA) in 1997 and will end in 2027, after which the road will revert back to the Governments.

Zimbabwe has also implemented PPP projects such as the Beitbridge, Bulawayo Railway (BBR), the New Limpopo Bridge (NLB) and the Newlands By-Pass (NBP) (ZNCC, 2009).

According to ZNCC (2009), the Newlands Bypass was completed in 2007 and was constructed on a Build and Transfer (BT) basis with the contractor handing over the facility to the

Government upon completion. The NLB involved the financing and building of a toll bridge over the Limpopo River and was awarded to a private player in 1993 by the Governments of Zimbabwe and South Africa on a Build, Operate and Transfer (BOT) basis. The Project was the first BOT Project of that nature in the African continent. It saw the birth of a new company, the New Limpopo Bridge (Pvt) Limited, a private company, incorporated and registered in Zimbabwe and a subsidiary of NLPI Ltd, an investment holding company, whose main investment focus is infrastructure-related Projects on the continent of Africa. The construction of the bridge was completed in a record time of thirteen months and was officially commissioned by the Presidents of Zimbabwe and South Africa on November 24, 1995. The company is still operating the bridge, and has managed to computerize its systems to ease procedures for crossing the border and aid the promotion of trade and development.

According to Cornelius (2010) Beitbridge Bulawayo Railway (BBR) is a PPP project in Zimbabwe on a BOT basis by Beitbridge Bulawayo Railway (PVT) Limited, a subsidiary of NLPI Ltd, (just like in the NLB). BBR is a 350km railway line from Beitbridge to Bulawayo which was built in record time of 18 months. The BBR line links an essential corridor of development in Zimbabwe and provides shorter travel time by railway between the South African border and Bulawayo

According to Mukela (2010), the Government of the Republic of Zambia (GRZ) embarked on a comprehensive reform programme through the Private Sector Development Programme (PSD) in 2009. Through this initiative, and as part of the broader reform strategy, the Government of Zambia identified Public Private Partnerships (PPPs) model as an option that would help to address infrastructure development and the PPP Act was enacted by Parliament. In the Revised Sixth National Development Plan (RSNDP), Zambia has acknowledged the use of PPP Projects as an alternative source of financing and as a means of enhancing social and economic development.

The Government of Zambia's vision on PPPs is: *"To have well developed and maintained quality and socio - economic infrastructure and related services that enhances the Zambian*

*people's livelihood and effectively contributes to national development through PPP frameworks and initiatives" (PPP Act 2009).*

While other forms of financing such as budget and Project support (internally generated grants and loans) have been used, the GRZ has acknowledged that the use of PPP tools and techniques to finance infrastructure development could enhance public service delivery (Lengwe, 2014). Forthwith, the PPP Unit was formed as a Directorate under the Ministry of Finance then, and currently under State House.

According to Zambia Developments Agency (ZDA) report in Mwenda (2014) there was only one PPP transaction that had been entered between the Government of Republic of Zambia and the private sector under the provisions of the PPP Act of 2009. The said agreement was the redevelopment of the Long Acres Lodge by the Thuthuka Group International of South Africa. (ZDA, 2014). The transaction was a US\$ 200 million Project that envisaged the development of a five-star hotel, a shopping mall, conference centre, office complex and related infrastructure.

According to Mwenda (2014), there were however, a number of PPP transactions that existed before promulgation of the PPP Act of 2009. Most of these transactions collapsed for various reasons and key among them was an absence of a legal and regulatory framework as well as lack of an institutional arrangement at the time. The transactions depended on the concession agreements signed with GRZ without a backup legal framework which made the agreements porous. Mwenda (2014) cited the following concessions as examples:

1. The 20 year concessioning of Zambia Railways assets to Railway Systems of Zambia in 2003. This concession was cancelled in 2012 by Government for breach, failure to perform to Government's expectation;
2. The 25 year concessioning of Mpulungu Harbour Corporation to Agro Fuel Zambia in 2000. The concession was cancelled by Government in 2010 for failure to perform;
3. The 65 year Build-Own-Transfer contract between Lusaka City Council and China Henani for the financing, construction, operation and transfer of Lubama Market around 2000/2001. This concession is still subsisting; and,

4. The 25 year Kasumbalesa One-Stop-Border Post, the agreement was for a build-operate-and transfer contract with Baran Trade and Investment Limited (operated as Zambian I.P. Border Crossing Company Limited) in July 2009. The contract was cancelled by Government in 2012 for failure to materialize.

From the foregoing, it can be seen that the success rate on the use of PPPs in Zambia was low and that the infrastructure gap has been widening. According to the Africa Infrastructure Country Diagnostic Country Report (Zambia 2010) by the World Bank, Zambia needed to spend US\$1.6 billion a year over the decade (2006-2015) to develop its infrastructure to the level found in the rest of the developing world. This was equivalent to 20% of Zambia's Gross Domestic Product (GDP) and it is about double the Country's rate of investment in the recent past. The report estimated Zambia's infrastructure funding gap at US\$500 million per year (6.5% of GDP) over the ten years from 2006 to 2015. The Report stated that closing this gap required raising more funds and looking for more effective ways to meet infrastructure targets.

## **1.2 Situational Analysis of the Road sector in Zambia**

The period of economic downturn in Zambia has seen continued deterioration in existing public infrastructure which has been exacerbated by the Government's inability to allocate a significant portion of the national budget towards capital projects due to absence of fiscal space (World Bank, 2010).

For the Road sector which is the focus of this study, Zambia has a total classified public road network of 67,671 Kilometer (km), comprising of trunk, main, district, primary, secondary and tertiary feeder, urban and park roads (RDA, 2014). The Public Roads Act (2002) defines Road Development Agency (RDA) as overall Road Authority whose main function is to provide care, maintenance and construction of public roads in Zambia among other duties.

According to a report by Raballand et al (2012), most of the public roads in Zambia were constructed after independence (between 1964 and late 1970's). At the time, Zambia had one of Africa's most prosperous economies and was classified as a Middle Income Country. With

healthy tax revenues from the mining sector and negligible debt, the Government then could afford to embark on major programmes of public investment in road infrastructure.

The report further stated that these roads have received very little or no maintenance since construction. This was despite the Country at the time having a steady financial income to support maintenance. The Government's pre-occupation or priority then was to open up the Country with a decent road network. Following the nationalization of the copper mines in 1972, there was a sharp economic decline that led to the inadequate resources being available for road maintenance and construction. Thus, due to inadequate maintenance, most of the roads had deteriorated sharply by the late 1980s. Coupled with ever dwindling revenue for the country caused by low copper, high fuel prices and depreciation of the Kwacha, it became increasingly difficult for the Government to finance the repair of the road network from its annual budgets

A Road Condition Survey conducted in 1995 on 8,800 km of Trunk, Main and District (TMD) roads revealed that only 20 percent were in 'good' condition, 29 percent 'fair' and 51 percent 'poor' (World Bank, 1997). In addition, 90 percent of feeder roads were in 'poor' condition. A recent road condition survey of 2013 on 40,454 km of the Core Road Network (CRN) revealed that 72 percent of Primary Feeder Roads (PFR) was in poor condition while the TMD network had a composite condition of 56 percent good, 22 percent fair and 23 percent poor (RDA, 2013).

To avert the deploring road conditions and also to contribute to economic growth of the Country, the Government of Republic of Zambia through Road Development Agency as implementing Agency in 2012, embarked on series of road construction and maintenance programmes to improve the road network (RDA, 2012). Notable programmes among others under implementation were:

- 1) Link Zambia 8000 Programme which was launched in 2012;
- 2) Pave Zambia 2000 which was launched in 2013;
- 3) Lusaka 400 which was launched in 2012; and
- 4) Copperbelt 400 which was launched in 2016.

Figure 1.2 shows the major road network in Zambia.



Figure 1.2 Zambia’s Major Road Network

Source: Link Zambia 8000 Programme, RDA, 2012

According to RDA Annual Report (2016), the Pave Zambia 2000 and Link Zambia 8000 programmes were solely financed by the GRZ through NRFA and were experiencing financial challenges following the Government’s inability to release sufficient funds to meet cash flow requirements. Nearly all projects were behind schedule due to poor cash flow challenges.

According to NRFA Report (2016), the Road sector’s indebtedness to local Contractors and Consultants increased from ZMW 2.33 billion on December 31, 2015 to ZMW4.24 billion Kwacha in April 2016 against the budgetary allocation of K3.41 billion for the 2016 Road sector

Annual Work Plan. From the above analysis, the financing gap was widening and the need for PPPs in the Road sector could not be over emphasized.

### **1.3 Problem Statement**

In 2009, the GRZ embarked on a comprehensive reform programme through the Private Sector Development Programme (PSD). Through this initiative, and as part of the broader reform strategy, the GRZ identified PPP model as an option that would help to address infrastructure development and the PPP Act was passed by Parliament in August 2009 (Mukela, 2010). Despite this initiative being in place since 2009, PPPs have not recorded any significant presence in Zambia while the financing gap and state of road infrastructure is worsening by the day. Closing this gap requires raising more funds and looking for more effective ways to meet infrastructure targets. While huge capital investment beyond budget and Project support is required, experiences in other developing and developed countries have shown that the use of PPPs could remedy the situation (Fall et al. 2009).

This study sought to find out the challenges in the implementation of PPPs in the Road sector in Zambia after enactment of the PPP Policy in 2009 and offer possible solutions to simulate growth.

### **1.4 Aim**

The main objective of this research was to find out the challenges in the implementation and offer possible solutions in the Road sector in Zambia. The research objectives were:

- 1 To find out the challenges faced in the implementation of PPPs in the Road sector in Zambia; and,
- 2 To recommend the possible solutions to mitigate the challenges faced in the implementation in the Road sector in Zambia.

## **1.5 Research Questions**

The research questions were:

- 1 What challenges exist in the implementation of PPPs in the road sector in Zambia?; and,
- 2 What could be the solutions to mitigate the PPPs challenges faced in the road sector in Zambia?

## **1.6 Significance of the Study**

The researcher decided to undertake this study due to the following reasons:

- 1 To provide sufficient explanation of the challenges which had hindered effective delivery of PPPs in the Road sector in Zambia.
- 2 To provide policy makers and implementing agencies with evidence based information on PPP challenges experienced and possible solutions to enable them design viable interventions which would improve PPP delivery in the road sector in Zambia.
- 3 That the information which had been generated by the study would be useful to future researchers and scholars in the areas of PPPs in the road sector in Zambia and elsewhere as it built on the existing knowledge.

## **1.7 Scope of the Study**

The study was limited to PPP Projects in Road sector in Zambia. It investigated challenges and recommended possible solutions in the implementation process.

## **1.8 Conceptual Framework**

The study used the concept of New Public Management (NPM) to conceptualize the challenges in the implementation of PPPs in the road sector in Zambia. NPM can be defined “as a body of managerial thought or as an ideological thought system based on ideas generated in the private sector and imported into the public sector” (Larbi, 1999). Public–Private Partnership (PPP) is a tool of governance. All over the world, many countries use this governance method to manage public infrastructure (Massoud et al. 2002).

Through NPM, public services are carried out by the private sector with structural, organizational and managerial changes. Palmer (2009) argues that NPM focuses on the management of public services by the private sector with management changes to maximize efficiency and profitability. The formation of a PPP transaction facilitates the transfer of such responsibilities from a public to a private institution.

The researcher investigated the prevalence of failure factors in the implementation of PPPs in the road sector in Zambia. The failure factors were recorded as challenges in the implementation process. Figure 1.3 shows the conceptual framework used for the study.

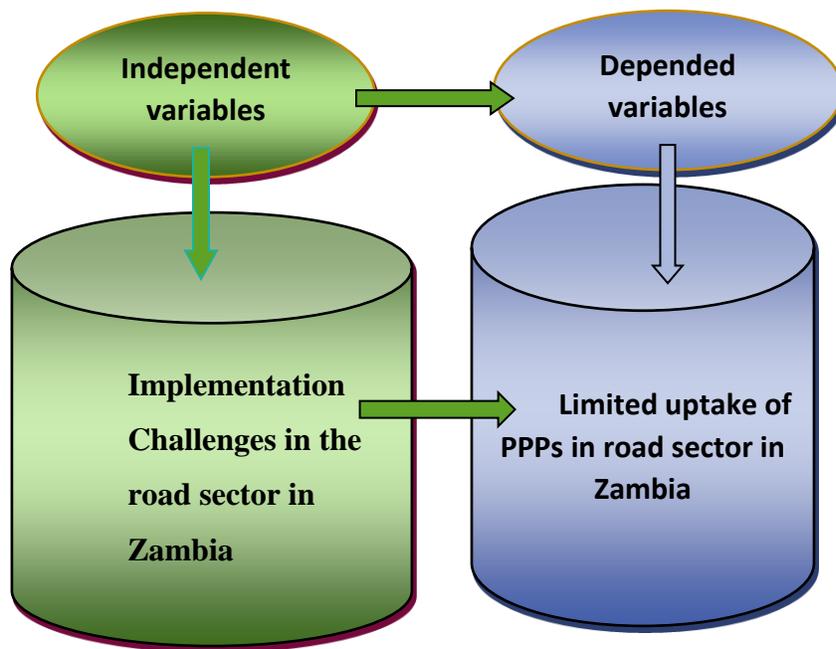


Figure 1.3 Conceptual Framework

The implementation challenges were the independent variables while the uptake of PPPs in the road sector in Zambia was the dependent variables. The underlining concept was that players such as government, non governmental organisation and the corporate world would form various types of PPPs when the implementation environment was conducive. The conducive implementation environment in this case would be described as one with little or no failure factors. The research preposition was *“limited uptake of PPPs in the road sector in Zambia was caused*

*by implementation challenges*”. The study sought to find out the challenges in the implementation process that limited the uptake of PPPs in the road sector in Zambia.

### **1.9 Brief Methodology**

The study was both descriptive and explanatory in design. It was descriptive in nature that it provided an account of factors which impeded the uptake of PPPs and explanatory because it showed the cause and effect relationship between variables. The researcher used a conceptual framework to investigate the prevalence of implementation challenges. Both primary and secondary data was used for analysis. Out of a population of 213 experts in the implementing agencies, a sample of 28 respondents and 7 management staff from 5 different private institutions were purposively drawn to participate in a semi structured questionnaire survey and interviews. The Statistical Package for Social Sciences (SPSS) was used to analyze the collected data. The results were further analyzed using the ‘Pareto’s Principle’ to narrow to specific challenges that mattered the most and needed attention.

### **1.10 Summary of Chapter 1**

The chapter focused on the introduction of the dissertation. It included a background of the growing global interest in the uptake of PPPs in both developed and developing nations. It explained the trigger of this interest as the quest for additional sources of capital and/or as a means of enhancing value for money for public service delivery. The chapter also highlighted the limited uptake of PPPs in Zambia in general and in the road sector in particular despite the government’s initiative as far back as 2009 when the PPP Act was enacted. Through this initiative, and as part of the broader reform strategy, the Government identified PPP model as an option that would help to address infrastructure development (Mukela, 2010). Unfortunately, nine years later, this initiative had not recorded significant use in the road sector in Zambia.

Under the situational analysis in the road sector, the chapter revealed that owing to the limited source of funds for capital projects in Zambia, most road projects under implementation were under the government’s balance sheet. According to NRFA Report (2016), the Road sector’s indebtedness to local Contractors and Consultants was increasing and the financing gap was

widening. Similarly, a report by the Africa Infrastructure Country Diagnostic Country Report (Zambia 2010) by the World Bank, stated that Zambia needed to spend US\$1.6 billion a year over the decade (2006-2015) to develop its infrastructure to the level found in the rest of the developing world. The Report further stated that closing this financial gap required raising more funds and looking for more effective ways to meet infrastructure targets.

The research objectives were to establish the challenges that impeded implementation of PPPs in the road sector in Zambia and to offer possible solutions. The study was important in that it provided a feedback to policy makers on what was needed to stimulate PPPs in the road sector in Zambia. To achieve its objectives, the study used both descriptive and explanatory approaches. It was descriptive in that it provided an account of factors which impeded PPPs and explanatory in nature because it showed the cause and effect relationship between variables. The researcher used a conceptual framework to investigate the prevalence of the implementation challenges.

### **1.11 Organization of the Dissertation**

This dissertation is divided into seven chapters. Chapter One gives an introduction, statement of the problem, objectives and significance of the study. Chapter Two highlights the literature reviewed. It investigates the PPP concept in a diverse way to evoke a broader understanding of the term. It provides a general understanding of the term, its importance and how it has evolved globally. The PPP term is contextualized to establish the scope, purpose and perspectives and how it is perceived by various parties involved and the need to do them. Chapter Three presents the research methodology and techniques that were used for data collection and analysis. The research paradigms and conceptual framework aimed at giving a general view or perspective to guide the research at hand are addressed in a bid to signify the philosophical paradigm adopted and to facilitate the investigation using acceptable methods or techniques. Chapter Four presents the research findings. Chapter Five discusses the main findings of the research. It shows how the current results fit into the existing knowledge. Chapter 4 also gives the limitations and the area for future study. Chapter Six presents the conclusions and recommendations.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

Chapter one highlighted the research background and the context of the problem. It also stated the research objectives and gave a synopsis of the whole report.

Chapter Two investigates the PPP concept in a diverse way to evoke a broader understanding of the term. It provides a general understanding of the term, its importance and how it has evolved globally. The PPP term is contextualized to establish the scope, purpose and perspectives and how it is perceived by various parties involved and the need to do them. The chapter further reviews and evaluates the existing PPP Models at global and local level, their successes and challenges. Through this process, the Researcher believes challenges experienced in the implementation of PPPs in the road sector in Zambia could be identified and compared with the world experience.

### **2.2 Definition of Public Private Partnership**

There is no single definition of the term “Public Private Partnership”. The term should be viewed as a spectrum of possible relationships between public and private actors for the co-operative provision of traditionally public-domain services (Li, 2000). This study focused on PPP Projects on the higher order of maturation on the spectrum of PPP definition.

Private partner involvement arrangements in PPPs differ between each other depending on the level of responsibilities and risks transferred to the private partner (Amekudzi et-al, 2008). The responsibilities concerned include activities such as: designing, building, financing, maintaining, operating, and owning the facilities.

According to Ikpefan (2004), a private sector consortium forms a special company called a "special purpose vehicle" (SPV) to develop, build, maintain and operate the asset for the contracted period. In cases where the Government has invested in the Project, it is allotted an equity share in the SPV. The consortium is usually made up of a turnkey contractor, a

maintenance company and equity investor(s). It is the SPV that signs the contract with the Government and with subcontractors to build the facility and then maintain it.

There are several PPP schemes that can be adopted, depending on the nature of the infrastructural project in question. A few examples would include the following:

### **2.2.1 Build-and-Transfer (BT)**

Under a BT scheme, the private sector player sources the finance and constructs the infrastructure. Upon completion, the company hands the infrastructure to Government or responsible Government Agency, which then takes over all the roles (ownership and operation roles). In turn, the Government pays the company an agreed sum, together with reasonable returns negotiated beforehand (ZNCC, 2009).

### **2.2.2 Build-Operate-and-Transfer (BOT)**

Under a BOT model, a private sector player undertakes the construction of the infrastructure, financing the construction as well as the operation maintenance. The company would then operate the facility for a fixed term, during which time the private player would be allowed to impose on users of the infrastructure fees or rates, such as user fees and rentals. The charges to consumers would be expected to be exactly as captured in the contract and should enable the company to recover its costs as well as earn a reasonable return. At the end of the fixed term contract, the facility is transferred to the Government Agency or local Government Unit concerned (ZNCC, 2009).

### **2.2.3 Build-Own-Operate-and-Transfer (BOOT)**

This is a scheme where the private sector company finances, constructs, own and operates the infrastructure for a fixed term. Ownership implies that the company is allowed to make any decisions it sees fit during the ownership tenure, with minimal or no Government interference. It also gets the opportunity to recover its total investment, operating costs as well as a reasonable return. This would be done through collecting tolls (e.g. for highways), fees, rentals or other charges. At the expiry of the fixed term, the infrastructure is handed over to Government, which would then take all responsibilities (Grimsey, 2004).

#### **2.2.4 Build-Lease-and-Transfer (BLT)**

Under a BLT model, the private sector constructs the infrastructure and once complete, it hands the operation issue to the Government on a lease arrangement, where the Government/Government Agency would be paying for the lease. The lease payments would give the company an opportunity to recover its costs, and after an agreed term, the Government stops paying the lease and assumes ownership and control over the facility (Engel et al. 2011).

#### **2.2.5 Build-Transfer-and Operate (BTO)**

A BTO scheme entails the private sector company building the infrastructure and upon completion, transfers the infrastructure to the Government. However, despite not having ownership, the company is allowed to operate the infrastructure on behalf of the Government, with proceeds being distributed as per contract agreement (ZNCC, 2009).

#### **2.2.6 Rehabilitate-Operate and Transfer (ROT)**

This involves a system where the infrastructure that is already in existence but in a bad state is handed over to the private sector player for refurbishing, maintenance and reconditioning. The private player is allowed to operate the infrastructure for a period, recoup investment costs and get a reasonable return before the facility is handed back (Engel et al. 2011).

#### **2.2.7 Lease, Develop and Operate (LDO)**

Under an LDO scheme, the private sector player leases an existing facility from the Government, renovates, modernises or expands it before assuming operation rights for a fixed term. In that process, the company gets an opportunity to recover costs while Government benefits from the lease payments (Grimsey, 2004).

### **2.3 Public – Private Partnerships (PPPs) Concept**

A Public-Private Partnership (PPP) involves the private sector in aspects of the provision of infrastructure assets new or existing infrastructure assets that have traditionally been provided by the Government, (Ikpefan, 2004). In the traditional arrangement, for example, a Public Works Authority (PWA) awards a project designed by the PWA to a private firm which builds

the project after receiving an agreed payment. The contractual link with the project ends after a Defect Liability Period. One concern with traditional procurement is that in most cases the separation between construction and operation gives the builder little incentive to account for life-cycle costs such as future maintenance and operations costs beyond what is specified in general construction standards for infrastructure Projects.

According to Renda et al, (2006) most Governments tend to allocate financing to new Projects rather than to maintaining existing infrastructure which results into little maintenance, higher costs and lower quality standards. Years of neglect and suboptimal service generate concern and demand for better maintenance of infrastructure. Furthermore, forgone investment opportunities and design choices during the building phase, as a result of the separation between construction and operation, could help to lower the costs. Responding to these problems, a number of infrastructure projects are globally constructed using PPPs, an arrangement by which the Government's PWA partners with a private firm. The services provided by the private firm include building, maintaining and operating that the facility for an agreed period. In exchange, the private firm receives user fee revenues for the duration or other periodic payments. (In another variation, an existing facility is "sold" to the private partner, who then maintains and operates the facility in exchange for user fee revenue

Therefore, the term PPP has the characteristic feature of a heavy initial investment that must be recovered in a long-term contract. The private partner builds, operates, maintains and internalizes the life-cycle costs of the Project. Since the firm is rewarded for the provision of infrastructure services, it is in its interest to provide adequate maintenance while reducing life-cycle costs

Private partner involvement arrangements in PPPs differ between each other depending on the level of responsibilities and risks transferred to the private partner (Amekudzi et al. 2008).

## **2.4 Purpose of Public – Private Partnerships**

PPPs are intended to obtain more 'value for money' than under traditional public procurement options. When correctly implemented, PPPs produce reduced life-cycle costs, better risk

allocation, faster implementation of public works and services, improved service quality and additional revenue streams (Renda et al. 2006).

There is also anecdotal evidence that PPPs can lower construction and operation costs (Eduardo, et al., 2011). For example, the private concessionaire that built express lanes on the Riverside Freeway (State Route 91) in the Orange County of California reduced construction time substantially by improving traffic management during construction. Another example is the consortium that built the I-495 Capital Beltway high occupancy toll (HOT) lanes in Fairfax County, Virginia, at one-third of the cost of the high occupancy vehicle (HOV) lanes as planned by the Virginia Department of Transportation (Poole, 2006).

An example of efficiency gains is the Chicago Skyway. During the first four years, operating costs decreased by 11 percent, in real terms, compared with the previous four years under city management (average traffic was similar in both four-year periods). A large part of this decrease in operating costs was due to lower labour costs. The private firm replaced city workers that had been paid at least \$20 per hour with those paid at market rates of \$12 to \$15 per hour (ROADSSnews, 2005) .

Li (2000) argues that there are many drivers for PPPs. One common driver involves the assertion that PPPs enable the public sector to harness the expertise and efficiencies that the private sector can bring to the delivery of certain facilities and services traditionally procured and delivered by the public sector. Another common driver is that PPPs may be structured so that the public sector body seeking to make a capital investment does not incur any borrowing. Rather, the PPP borrowing is incurred by the private sector vehicle implementing the project. On PPP projects, where the cost of using the service is intended to be borne exclusively by the end user, the PPP is, from the public sector's perspective, an "off-balance sheet" method of financing the delivery of new or refurbished public sector assets (Li, 2000).

According to the Price Water House Coopers Report (2005), PPPs make projects affordable; maximizes the use of private sector skills; under PPPs, the private sector takes life cycle cost risk; with PPPs, risks are allocated to the party best able to manage or absorb each particular

risk; PPPs deliver budgetary certainty; PPPs force the public sector to focus on outputs and benefits from the start; with PPPs, the quality of service has to be maintained for the life of the PPP; the public sector only pays when services are delivered; PPPs encourage the development of specialist skills, such as life cycle costing; and PPPs allow the injection of private sector capital. 5The report further argues that it is not always possible to transfer life cycle cost risk; PPPs do not achieve absolute risk transfer; PPPs imply a loss of management control by the public sector; PPP procurement can be lengthy and costly; the private sector has a higher cost of finance; and PPPs are long-term relatively inflexible structures.

According to the Price Water House Coopers (2005), legal impediments and uncertainties regarding PPPs affect both the public and private sector. Accounting issues and balance sheet treatment provide further uncertainties which must be addressed from the outset of a project.

The report by Price Water Cooper (2005) was of great importance to this study as it brought out the advantages and disadvantages of PPP. However, the report was conducted in 2005, thus its content may not be valid to date. Further, the scope of the study was not known, making it difficult to generalize the findings to the Zambian environment.

## **2.5 Challenges of Public – Private Partnerships (PPPs) Concept**

Suhaiza et al. (2014) conducted a Research to scrutinize the challenges in implementing PPP by examining the factors that hinder the successful adoption of PPP in Malaysia. According to her study, the mean scores for the fourteen factors range from 1.42 to 4.14, which indicate that each factor is of different importance as perceived by the overall respondents as well as by each group of respondents as the constraints for successful implementation of PPP in Malaysia.

According to her findings, the top five negative factors of PPP adoption were perceived as most important by the overall respondents. Out of the five factors, one factor, '*lack of Government guidelines and procedures on PPP*', was perceived as the most important factor that impedes the implementation of a project via PPP. The remaining four factors were perceived as important hindrance factors in respect of adopting PPP. The factors in descending order of importance included '*lengthy delays in negotiation*', '*higher charge to direct users*',

*'lengthy delays because of political debate' and 'confusion over Government objectives and evaluation criteria'.*

Eight factors were perceived by the overall respondents as neither important nor not important obstacles for successful PPP implementation. One factor, *'less employment position'*, was perceived as unimportant in preventing the successful adoption of PPP in Malaysia.

The factor *'insufficient Government guidelines and procedures'* (mean=1.45) was the most important factor that hindered the successful implementation of PPP in Malaysia. This result was evidenced by the fact that although PPP was officially unveiled in 2006, the first official PPP reference (Malaysian PPP Guidelines), was only published in 2009 by the Unit Kerjasama, Awam Swasta (UKAS). She reported that although there were six Government guidelines on PPP implementation in Malaysia, the guidelines were too brief and not useful to the users. She further reported that it was critical to have sufficient guidelines, particularly for the tendering and contract management as the lack of adequate guidelines may result in a reduction in project quality and an increase in the cost of the PPP Project. *'Lengthy delay in negotiation process'* (mean=1.66) was ranked as the second most important factor that hindered the adoption of PPP in Malaysia.

The study by Suhaiza et al. (2011) was of importance to this study as it clearly highlighted the challenges faced in Malaysia in the implementation of PPP. However, the research was based on Malaysia and not Zambia which has a different social, economic and political environment. The research was also based on the general implementation of PPP in Malaysia and not in the Road sector as in the case of the current study. The study by Suhaiza et al. (2011) was conducted 4 years ago and its findings may not be valid to date.

Table 2.1 shows the results of perceptions of survey respondents in Malaysia.

**Table 2.1 Perceptions of Survey Respondents Concerning the Relative Importance of Constraints in adopting PPP Projects.**

No	Constraints	Public		Private		Overall	
		Mean	Rank	Mean	Rank	Mean	Rank
1	Lack of Government Guidelines and procedures on PPP	1.4	1	1.48	1	1.45	1
2	Lengthy delays in negotiation	1.52	2	1.77	2	1.66	2
3	Higher charge to the direct users	2.17	3	2.13	3	2.15	3
4	Lengthy delays because of political debate	2.18	4	2.15	4	2.16	4
5	Confusion over Government objectives and evaluation Criteria	2.3	5	2.19	5	2.25	5
6	High risk relying on private sector	2.83	1	2.40	6	2.61	6
7	High Project costs	2.40	6	2.84	10	2.62	7
8	A great deal of management time spent in	2.71	8	2.64	7	2.67	8
9	Transaction high participation costs	2.77	9	2.79	9	2.78	9
10	Lack of experience and appropriate skills	2.63	7	2.93	11	2.80	10
11	Very few schemes have actually reached the contract stage (aborted before contract)	3.0	1	2.73	8	2.84	11
12	Excessive restrictions on participation	2.87	1	2.94	12	2.91	12
13	Reduce the Project accountability	3.06	1	3.11	13	3.09	13
14	Less employment positions	3.87	1	4.14	14	4.02	14

Source: Suhaiza et al (2014): Challenges in implementing Public Private Partnership (PPP) in Malaysia

According to a report by Farja (2009), the Government of Indonesia has strongly encouraged private sector financing to fill the gap between supply and demand for road infrastructure. The report stated that Toll Road projects had limited financial feasibility because of extremely high construction costs or a marginal expected traffic volume which inevitably cut into profit or cost recovery for the operator. The study by Farja (2009) found that the provision of Government support was needed in toll road development in Indonesia. Such support was essential in ensuring the realization of the toll road master plan in Indonesia which included many projects that were of marginal feasibility financially. He reported that existing PPP schemes within

Indonesia's regulatory framework and the method of providing Government support (capital grants) remain basically conservative and in need of improvement in order to both reduce risks for the Government and to create value for money. He found that operating subsidy (or service payment method) offered a better opportunity for the Government to fulfill the purpose of providing Government support while at the same time limiting the fiscal risk and ensuring value for money through linking its payment to private sector performance.

The study by Farja (2009) was of great importance to this study as it brought out the challenges in the implementation of PPPs, but the study was conducted in Indonesia. This result could not be generalized to the Zambian context which had a different social, economic and political environment. Further, the study was conducted in 2009 and its findings would not be valid to date.

Muhammad (2012) conducted a study on PPP in solid waste management (SWM) in Sri Lanka. The study revealed that due to weaknesses in the public sector such as inefficiencies, wastefulness, carelessness, poor service delivery and provision of low quality goods for high rates, developing nations face problems to manage the waste properly. Therefore, Governments in developing nations have increased the involvement of the private sector to provide SWM services through PPPs. The study also found that the Governments alone could not deliver effective and valuable services. With the introduction of PPP, the Private Sector could supply SWM services more effectively and cheaply. However, it was found that, if there was need for good supportive environment otherwise the Private Sector would find it difficult to manage the waste leading to failure in the Project.

The study by Muhammad (2012) was of great importance to this study but it was based on solid waste management and not on road maintenance and construction. The study was conducted outside Zambia with different social economic and political environment.

According to a report by Deborah et al (2013), the use of PPPs had been embraced to some extent in California but the delivery had been low and the performance of such Projects had been mixed at best. California enacted its first PPP enabling legislation in 1989 for four

“Demonstration” Transportation projects. These projects were consummated on a model of design, built, finance, operate and maintain by a private partner. Nearly 24 years later, only two of those contemplated projects had actually been built, SR-91 and SR-125. The concession agreement for SR-91 was for 10-mile, four-lane Toll Road in Southern California. It was opened to traffic in 1995 at a cost of about \$130 million and was for a duration of 35 years. However, California’s Department of Transportation (Caltrans) purchased SR-91 for about \$208 million in 2002, after a dispute arose between the concessionaire and Caltrans regarding a nearby roadway that Caltrans wanted to build that allegedly violated a non-compete clause in the concession agreement.

Similarly, SR-125 is another 10-mile long, four-lane toll road in Southern California which was opened to traffic in 2007 and closed down in 2011 due to bankruptcy. The report stated that the project cost was more than \$450 million and during its operation the concessionaire filed for bankruptcy. The low traffic volume resulted into less-than-expected user fees which subsequently made the project unprofitable. The project’s design-builder had to write-off more than \$150 million in losses stemming from the project. Through the concessionaire’s bankruptcy, an association of cities and the County of San Diego bought SR-125 for about \$342 million in 2011.

Furthermore, the report stated that in 2006 California passed an additional PPP enabling legislation to permit the development of four more transportation projects, but none of these contemplated projects in that legislation was ever built (Douglas et al. 2013). The Report further stated that in 2009, a broader PPP enabling legislation was enacted in California that allowed for an unlimited number of transportation projects to be developed in California provided certain conditions were met. One such PPP Project was the Presidio Parkway which connects San Francisco to the Golden Gate Bridge. Unlike SR-91 and SR-125, which were based on user-fee payments to the concessionaire, Presidio Parkway is based on an availability payment scheme. The concession agreement called for a 30-year term, and included numerous performance-based standards that would reduce the amount payable to the private partner if not met during the concession term.

The report by Douglass et al (2013) was valuable to this study because it highlighted some specific projects in California which were implemented under PPPs and the challenges that were experienced and to some extent the solutions that were implemented. However, these findings could not directly be generalized to the Zambian context with different social, economic and demographic environment.

The UK Government (2011) conducted a study on the strengths and weaknesses of its Private Finance Initiative (PFI) models. The study revealed that after over 700 projects using Private Finance Initiative (PFI) models in UK had been completed, there was a perception that the model, while still viable, had been tarnished by what the report called “waste, inflexibility and lack of transparency” which made “a compelling case for a reform”. As a result, the UK Government undertook to gather evidence from a wide range of interested parties regarding the strengths and weaknesses of PFIs. The report first chronicled key weaknesses of PFIs, and then described the adoption of a new approach, Private Finance 2 (PF2). The report cited the following weaknesses:

1. The process was often slow and expensive, leading to reduced value for the taxpayer;
2. The PFI contracts were often inflexible, making alterations difficult during the operational period;
3. The process had not been transparent enough in the areas of future liabilities and returns to the investor;
4. The risks transferred to the private sector resulted in higher risk premium charged to the public sector; and
5. The perception of windfall gains to equity investors had led to concerns about the true value for money of the Projects.

To address the above concerns, the Government’s new PF2 initiative proposed the following key components:

1. Include the Government as a minority public equity co-investor;
2. Introduce funding competitions for a portion of equity to attract long-term investors;
3. Accelerate project delivery by, among other things, strengthening the mandate of Infrastructure and supporting departmental centralised procurement units, shortening the

- tender process, standardising procurement documentation and introducing additional Treasury oversight;
4. Improving transparency by publication of more information throughout the process; and,
  5. Returning more risk-management to the public sector.

The study by the UK Government (2011) on its CFI was useful to this research as it brought out the weakness and possible solutions.

Engel et al (2011) in a Discussion Paper for Hamilton Project concerning “Public Private Partnerships to Revamp United State (US) Infrastructure” gave an insight of an underestimation of Traffic Volume for a PPP transaction. The paper stated that, Dulles Greenway, a fourteen-mile toll road, was designed as a Greenfield build-operate-transfer facility that would become the property of the state of Virginia after forty-two and a half years. Virginia’s general assembly authorized private development of this toll road in 1988. A group of investors thought that this toll road linking Washington’s Dulles International Airport and Leesburg, Virginia, would be a promising investment. Their expectations were based on the prospect of residential and commercial growth in the area which was subsequently expected to increase congestion on existing arterial roads serving the corridor. To finance the Greenway, investors put up \$40 million in cash and secured \$310 million in privately placed taxable debt. Loans were to be repaid with toll revenues.

The paper states that the investors however underestimated how much users disliked paying tolls which resulted in less revenue than forecasted. Furthermore, investors did not count on the Commonwealth of Virginia widening the congested Route 7, which serves the same users. Two independent consulting companies had predicted a daily flow of 35,000 vehicles in 1996 when the road opened at an average toll of \$1.75 per vehicle. In practice, however, the average number of vehicles per day turned out to be only 8,500, one-fourth of the initial estimates. After tolls were lowered to \$1.00, daily ridership increased to 23,000, still far below predictions. Bonds that were issued to finance the Project were renegotiated and some of the initial investors wrote off their equity. After refinancing and an extension of the franchise term to sixty years, the project became financially viable (Eduardo et al. 2011).

The paper by Engel et al (2011) was useful to this study for it brought out the challenge of low traffic volume in the implementation PPPs in United States of America.

Mwenda (2015) reported that in Chile and Mexico, the PPP program was successful because the procurement process was transparent; it focused on creating public awareness (tolling culture) the Government learned as program developed and made adjustments; attracted international firms who brought finances, credibility and the know-how. However, the combination of small contract duration and low traffic volume resulted in high tolls and existence of free roads contributed to financial distress of concessionaires and program resulted in massive Government bail-out. The report by Mwenda was important to this study because it highlighted areas where there were success and challenges.

## **2.6 PPP Challenges in Zambia**

Citing a report by Zambia Development Agency (ZDA) on PPPs in Zambia in Mwenda (2014), the GRZ approved a policy framework for the implementation of PPPs in December 2008. The strategic objective of this policy was to facilitate the provision of infrastructure and effective delivery of social services using PPP arrangements in order to ensure that economic growth was attained through enhanced productivity, improved competitiveness and wealth creation. Following the policy pronouncement by GRZ, Parliament in August 2009 passed the PPP Act No. 14 of 2009 which aimed at promoting and facilitating the implementation of privately-financed public infrastructure Projects in Zambia.

According to the ZDA report as in Mwenda (2014), there was only one PPP agreement signed between the Government and the private sector. The said PPP agreement was for the redevelopment of Long Acres Lodge into a five-star hotel, a shopping mall, conference center, office complex and related infrastructure signed with Thuthuka Group International of South Africa. Mwenda (2014) citing the ZDA (January, 2014) pointed out that although the political leadership in Zambia had made pronouncements and expressed desire and optimism to use the PPP arrangement to deliver public infrastructure and services, the Country required political champions to drive the PPP agenda.

Some of the constraints identified by the ZDA in the implementation of PPPs were: Lack of capacity in Government to undertake PPP Projects; lack of financial resources dedicated to PPP Projects; lack of clear guidelines and regulations to guide contracting authorities and the private sector in the implementation of PPPs; and high transaction costs and lengthy lead time on complex arrangements that require the involvement of various experts including financial, legal, sectorial expertise, transaction advisory.

Mwenda (2014) further pointed out that: “Although the PPP Act of 2009 provided for the establishment of the PPP unit, the unit has not been properly constituted. Due to considerations such as cost and time, it was decided that to kick-start the process of implementation of the PPP Projects with officers from the Ministry of Finance, particularly those from the National Policy and Programme Implementation Department (NPPID). This resulted in critical gaps in requisite skills and expertise. This negatively affected the implementation of PPPs since the enactment of the Act. However, in November 2013, Cabinet approved and institutionalized the PPP Unit functions into the ZDA. ZDA played a critical role in coordinating PPP Projects between various key players and contracting authorities in Zambia.”

The report by Mwenda (2014) though important to this study and based on Zambian situation, was not empirical in nature. Mwenda (2014) merely reviewed secondary data and reproduced it which poses a challenge on the validity of the report.

Kalemba (2011) in ‘Assessing Value for Money in Public-Private Partnership Infrastructure Projects in Zambia’ revealed that the PPP Projects did not incorporate the key factors that influence the attainment of value for money which are optimal risk transfer, competition, output based specifications, contract duration, private sector management skills and performance measures and incentives. Risks were not optimally transferred while competition was nonexistent citing the Luburma Market Project and Cha Cha Cha Market Project. In terms of specifications, the above Projects were outlined as inputs contrary to the output based specifications approach for PPPs. Although the contract durations were long enough to warrant the private parties to recoup their investments, the same were not linked to the alternative service

delivery approaches as well as whole life costing mechanisms to ensure that facilities were well maintained and performed according to specifications. As for private sector management skills, it was revealed that the award of the contracts to the private parties was dependent upon their experience in similar projects and their financial capabilities. Hence, there were no linkages with cost reductions, efficiency in delivery or incorporation of private management skills in the design and construction standards.

Kalemba (2011) revealed that there were no measures and incentives embedded in the contracts to enhance the performance of the private parties. Furthermore, it was discovered that there was no value for money analysis undertaken when carrying out the Projects. Similarly, there was no value for money assessment models in Zambia but that competitive bidding was used to ensure that the best offer possible was obtained. The Research also disclosed that although risks were considered an integral component in PPP Projects, there were no processes in place to evaluate them. Instead, the tabulation of risks, likely impacts and the indication of who was likely to bear them were relied upon. The study also exposed that the major hindrance to undertaking value for money assessments was lack of human capacity. Additionally, political interference was regarded as being rife in the PPP procurement process and hence affecting the undertaking of rigorous assessments in the Projects.

Overall, it was concluded that value for money was not being delivered by the Luburma and Cha Cha Cha Markets to the local Government following the non-incorporation of the key value for money drivers in the structuring of the Projects. Ironically, value for money was being delivered to the private parties through the long term nature of the contracts. However, it was also highlighted that a few benefits to the local Government had been gained through the provision of conducive trading environments to traders, generation of income to the local Government as well as creation of employment opportunities for the citizens.

The study by Kalemba (2011) on PPP was based on markets in Lusaka and not on road construction and maintenance in Zambia. However, the Report was useful to this study on the aspect of challenges obtaining in Zambia with regards to PPPs.

## **2.7 Summary of Chapter 2**

This chapter investigated the PPP concept in a diverse way to evoke a broader understanding of the term. It provided a general understanding of the term, its importance and how it has evolved globally.

The chapter further reviewed and evaluated the existing PPP Models at global and local level to establish their successes and challenges. Both PPPs in the road and other sectors were reviewed. Through this process, the Researcher believed challenges experienced in the implementation of PPPs in the road sector in Zambia could be identified and compared with the world experience.

Table 2.2 shows a summary of the Literature Review.

**Table 2.2 Summary of the Literature Review**

SN	Study	Scope	Findings	Observation/Critique
1	Price Water House Coopers Report (2005) Delivering the PPP promise	A review of PPP issues and activities.	The Report brought out the advantages and disadvantages of PPP.	The Report was of great importance to this study as it brought out the advantages and disadvantages of PPP but it was conducted in 2005, thus its content may not be valid to date. Further, the scope of the study is not known, making it difficult to generalize the findings to particular industry.
2	Suhaiza et al (2014) Challenges in implementing Public Private Partnership (PPP) in Malaysia, International Conference on Accounting Studies Kuala Lumpur, Malaysia.	Factors that hinder the successful adoption of PPPs in Malaysia	The factors in descending order of importance included: lack of Government Guidelines and procedures on PPP; lengthy delays in negotiation; higher charge to direct users; lengthy delays because of political debate; and confusion over Government objectives and evaluation criteria'	The study by Suhaiza et al (2011) was of importance to this study as it clearly highlighted the challenges faced in Malaysia in the implementation of PPP. However, the Research was only based on Malaysia and not Zambia which has a different social, economic and political environment. The Research was also based on the general implementation of PPP in Malaysia and not in the Road sector as was the case with the current study

**Table 2.2 Summary of the Literature Review continued**

SN	Study	Scope	Findings	Observation/Critique
3	Mohammed (2012) Public-Private Partnership (PPP) in Solid Waste Management in developing Nations	Solid Waste Management in developing Nations	The study revealed that due to weaknesses in the public sector such as inefficiencies, wastefulness, carelessness, poor service delivery and provision of low quality goods for high rates, developing nations face problems to manage the waste properly. Therefore, Governments in developing nations had increased the involvement of the private sector to provide SWM services.	The study by Mohammed (2012) was of great importance to this study for it highlighted some challenges of PPPs but it was based on solid waste management and not the Road sector. Further, the study was conducted outside Zambia with different social, economic and political environment.
4	Deborah et al (2013) Public-Private Partnerships: Successes, Failures and Plans for the Future, California	Successes, Failures and Plans for the Future for PPPs in California	Deliveries of PPPs in California had been low and the performance had been mixed at best, citing the nationalization of SR-91 in 2002 after a dispute and also due to bankruptcy as a result of low traffic volume	The study by Deborah et al (2013) was of great importance as it bought out the challenge of low traffic volume in the implementation of a PPP Project. However, the study was conducted outside Zambia with different social economic and demographic environment.

**Table 2.2 Summary of the Literature Review continued**

<b>SN</b>	<b>Study</b>	<b>Scope</b>	<b>Findings</b>	<b>Observation/Critique</b>
5	Fajar (2009) The Application of Public-Private Partnerships in Financially Non-Feasible Projects: A Study Tanjung Priok Access Toll Road Project, Indonesia.	Application of Public-Private Partnerships in Financially Non-Feasible Projects in Indonesia	It was reported that Toll Roads had limited financial feasibility in Indonesia because of extremely high construction costs or a marginal expected traffic volume, which inevitably cut into profit or cost recovery for the operator. The study by Farja (2009) found that the provision of Government support was needed in toll road development in Indonesia because of marginal feasibility financially.	The study by Farja (2009) was of great importance to this study as it highlighted the challenges of low traffic volume and possible solutions, but, it was conducted in Indonesia. This posed a challenge on generalizing the findings to the Zambian Context which has a different social, economic and demographic environment. Further, the study was conducted in 2009 and its findings would not be valid to date.
6	UK Government (2011) Strengths and weaknesses of Private Finance Initiative (PFI) Models in UK.	Strengths and weaknesses of Private Finance Initiative	The Report brought out the strengths and weaknesses PFI in UK and recommended areas of improvement.	The Report was useful to this study because it spelt out factors for both successful and unsuccessful implementation of PFI.

**Table 2.2 Summary of the Literature Review continued**

<b>SN</b>	<b>Study</b>	<b>Scope</b>	<b>Findings</b>	<b>Observation/Critique</b>
7	Engel et al (2011) Discussion Paper for Hamilton Project	Public Private Partnerships to Revamp Unites State (US) Infrastructure	The Paper raised issues similar to the findings of Engel et al (2011) regarding marginal financial feasibility. Dulles Greenway had marginal traffic at inception which made the Project unviable.	The study by Engel et al (2011) was of great importance to this study as it highlighted the challenges of low traffic volume and possible solutions, but, it was conducted in US. This posed a challenge on generalizing the findings to the Zambian Context.
8	Mwenda (2015) Public Private Partnership implementation challenge in Zambia.	Public Private Partnership implementation challenge in Zambia	PPP's challenges in Zambia were: Lack of capacity; financial resources dedicated to PPP Projects; Lack of clear guidelines and regulations to guide contracting authorities and the private sector in the implementation of PPPs; and high transaction costs and lengthy lead time on complex arrangements.	The report by Mwenda (2015) though important to this study and based on Zambian situation, was not empirical in nature. Mwenda (2015) merely reviewed secondary data and reproduced it which posed a challenge on the validity of the report.

**Table 2.2 Summary of the Literature Review continued**

SN	Study	Scope	Findings	Observation/Critique
9	Kalemba (2011) Assessing Value for Money in Public Private Partnerships Infrastructure Projects in Zambia	The case of Lusaka City Council	PPP Projects do not incorporate the key factors that influence the attainment of value for money which are optimal risk transfer, competition, output based specifications, contract duration, private sector management skills and performance measures and incentives. Risks were not optimally transferred while competition was nonexistent	The study by Kalemba (2011) on PPPs was based on markets in Lusaka and not on road construction and maintenance in Zambia. However, the Report was useful to this study on the aspect of challenges obtaining in Zambia with regards to PPPs.

## CHAPTER THREE: RESEARCH METHODOLOGY

### 3.1 Introduction

The previous chapter on literature review focused on demonstrating a wider knowledge base of PPPs from various school of thought and context regarding the existing body of knowledge on the subject matter. It documented, related and contrasted the views advanced by various scholars and their respective contributions to the subject of PPPs to provide a reasoned view based on the research at hand. The literature review also provided a detailed understanding of the PPP concept from various perspectives and highlighted a number PPP implementation challenges around the world.

This chapter presents the research methodology and methods and/or techniques that were used for data collection and analysis. The research paradigms and conceptual framework aimed at giving a general view or perspective to guide the research at hand are addressed in a bid to signify the philosophical paradigm adopted and to facilitate the investigation using acceptable methods or techniques.

The methodology adopted allowed the collection of data that was documented and analyzed and whose results assisted in answering the research questions, i.e. “(i) *What challenges exist in the implementation process of PPPs in the Road sector in Zambia, and (ii) what could be possible solutions to mitigate those challenges?*”

The research proposition for this study was: “***Limited uptake of PPPs in the road sector in Zambia is due to implementation challenges***”

The above research proposition focused on addressing the objectives of the study, i.e. To find out the challenges faced in the implementation of PPPs in the Road sector in Zambia. To recommend possible solutions to mitigate the challenges in the implementation process of PPP projects in road sector in Zambia.

To determine the challenges in the implementation process of PPP, this research focused on critical failure factors which were inducted from the literature review and questionnaire survey. The research methodology structure was provided in the introductory paragraph.

### **3.2 The Research Paradigm**

According to Saunders et al (2009), there are a several pedagogical aspects that feed into each other and need to be established and framed into some form of systematic and/or critical thinking to focus, direct and shape any research undertaking. These are theories behind research norms that may feed into certain philosophical commitments such as epistemology, ontology and axiology. Epistemology constitutes acceptable knowledge in a particular field of study and addresses the aspects of positivism, realism and interpretivism. Ontology is concerned with nature of reality and raises questions of the assumptions researchers have about the way the world operates and the commitment held to particular views. It addresses the aspects of objectivism (how social entities exist in reality, external to social actors) and subjectivism (understanding the meanings that individuals attach to social phenomena) and axiology (studies judgements about values) that anchor various research propositions.

### **3.3 Competing Paradigms**

According to Bhattacharjee (2012), research paradigms may be defined as the mental models or frames such as belief systems which are used to organise people's reasoning and observations. Therefore, mental paradigms helps to shape a research study, through the use of recapitulative processes of observation, rationalisation, and validation. The observation phase involves studying natural, social phenomena, events, behaviour of people or systems which require solutions. The rationalisation phase involves making sense out of the observed phenomenon, events, behaviour of people or systems by logically connecting the variant pieces of a complex situation(s) observed. While, the validation phase endeavours to test the theory used during the processes of data collection and analysis. Therefore, there is need to establish a particular paradigm to direct the study.

In other words, the research methods follow the research approach that is normally attached to a particular philosophy adopted. For instance, a research method may follow the deductive

approach and owes more to a positivism philosophy. Similarly, a research method may follow the inductive approach and owes more to interpretivism.

Given the broader scope of paradigms as indicated above, two common paradigms (positivism and interpretivism) have been contrasted in order to assist in the adoption of the paradigm suited for this research.

### **3.3.1 Positivism Paradigm**

The positivist paradigm uses a quantitative deductive approach to research and allows the researcher and his or her values separated from the topic of the research (Saunders et al. 2009). It is one of the epistemology that constitutes acceptable knowledge in a field of study. This is a philosophical stance of the natural science that involves working with an observable social reality and that the end product of such research can be law-like generalisations similar to those produced by the physical and natural scientists (Remenyi et al. 1998:32). It involves an economic collection of large amounts (sample) of precise and comparable data under the control of the researcher to permit generalisation to populations, establish the theoretical framework from the outset and allows replication. Nonetheless, the term stretches beyond the principle of natural science and as they relate to social reality though the constituent elements may vary between authors. Positivism could entail the following principles namely, the principle of phenomenalism; deductivism; and inductivism (Bryman, 2011: 15).

Saunders et al (2009) note that it is perfectly possible to adopt some of the characteristics of positivism in a research, e.g. hypothesis testing, and uses largely quantitative methods. Positivism is therefore the epistemological position that advocates working with an observable social reality and the positivist researcher is likely to use a highly structured methodology in order to facilitate replication (Grill et al. 2002 cited in Saunders et al. 2009). The emphasis is therefore on quantifiable observations that led themselves to statistical analysis.

This is also in line with Wilson (2006:135) definition of a quantitative research, i.e. a research undertaken using a structured research approach with a sample of the population to produce quantifiable insights into behaviour, motivation and attitudes. It is more structured, involves

large samples (100 to 200), more easily replicated, data can quantify the incidence of particular qualitative factors and analysis of quantitative studies tend to be more statistical in nature.

### **3.3.2 Interpretivist Paradigm**

Where the social world of business and management is far too complex and cannot lend itself to theorising by definite laws in the same way as the physical sciences, a research philosophy nearer to that of the interpretivist is used. According to Bryman et al. (2011: 17), interpretivism denotes an alternative to the positivist orthodoxy that has held sway for decades. It is predicated upon the view that a strategy is required that respects the differences between people and the objects of the natural sciences and therefore requires social scientists to grasp the subjective meaning of social action.

The phenomenological paradigm takes a qualitative inductive approach to research. It is an epistemology that advocates the differences between humans in our role as social actors. It is about how humans make sense of the world around Bryman et al. (2011: 18). According to Bryman et al. (2011), the initial application of phenomenological ideas to the social sciences is attributed to the work of Alfred Schutz (1899 – 1959). This is a more subjective assessment required through the use of qualitative data mainly collected through interviews in order to set the main study results in context. A phenomenological paradigm plays a vital role in explaining and understanding business behaviours and performance.

### **3.4 Methodology**

The methodology that was adopted and employed in this study depended on a number of factors such as the nature of questions, objectives set and amount of data to be collected. The nature of the question and objectives set for this study suggest both qualitative research strategy and quantitative.

The study required collection of qualitative data mainly through structured questionnaire and interviews survey in order to set the study results in context. This phenomenological paradigm played a vital role in explaining and understanding business behaviour and performance of PPPs

in the road sector in Zambia. While it is perfectly possible to work with both philosophies (pragmatism view), and considering that mixed methods of both qualitative and quantitative could be highly appropriate in this study, the interpretivist paradigm comes out predominantly and more suited to the research at hand while taking into account the suggestion of Tashakkori (1998) of adopting a philosophy as a continuum rather than opposite position. This research is therefore skewed more on an epistemological fundamental of the interpretivist paradigm. Based on the above assertions, the interpretivist paradigm has been used as the main philosophy employed in this research coupled with a detailed literature investigation.

As indicated above, the research orientation employed was primarily qualitative with some quantitative elements in order to allow a meaningful determination of results. This was appropriate considering that the study focused on determining the challenges in PPPs implementation in the road sector in Zambia. Quantitative methods were used in order for the Researcher to collect statistical information about PPP road funded Projects. Qualitative method was used in order to collect information which could not be obtained using quantitative method such as the challenges experienced in the implementation framework. The use of quantitative and qualitative methods was required because the study required several methods to capture adequate data in order to achieve the desired results. The Researcher used both primary and secondary data. Primary data was obtained using questionnaires and interviews while secondary data was obtained from journals and books. The tool that was employed in the initial identification process of respondents was institution to institution survey. The Researcher had no control over the variables but merely reported the findings of the variable under investigation

In this way, a more comprehensive understanding of the research phenomenon was facilitated and the research question were addressed in totality. Results obtained from the research allowed the researcher to generalize to the road sector. The use of multi-methods (quantitative and qualitative) approach allowed triangulation.

### 3.5 Sample Selection and Size

In Zambia, there are six (6) institutions involved directly or indirectly in road construction and maintenance. These are:

1. PPP Unit which is the institution mandated for formulation of PPP policy and guidelines among other responsibilities;
2. Road Development Agency (RDA) which is the overall road authority whose mandate is to design, construct and maintain the road network in Zambia;
3. National Road Fund Agency (NRFA) which is involved in resource mobilization and financing of Projects;
4. National Council for Construction (NCC) which deals with registration of contractors and regulation of the construction industry in Zambia;
5. Road Transport and Safety Agency (RTSA) which deals with road safety; and,
6. The Ministry of Housing and Infrastructure Development (MHID) is responsible for the road sector policy.

The population size for experts in these institutions were RDA-101, MHID-56, NRFA -9, NCC-27, PPP Unit - 6 and RTSA-12, making a total population size of 211. It was from these institutions that 28 respondents (experts) were drawn through purposive sampling. The purposive/judgemental sampling was used to get views from the target group with PPP experience. A sample of 28 respondents was arrived at based on the number of respondents meeting the above criterion. Considering the nature of the sampling method used, an “elite bias” could be possible. This was minimised based on the proportional distribution of the respondents.

The study also included 7 management staff from 5 different private institutions: Consultants; Contractors; Banks; Insurance Companies and National Pension Scheme Authority (NAPSA) who were identified as having participated in PPP transactions in the Road sector in Zambia. This was because this category was the custodian of finances which gave an insight into the study. The findings were therefore generalized to PPPs in the Road sector in Zambia.

## **3.6 Data Collection Procedures**

### **3.6.1 Questionnaire survey**

A questionnaire survey technique was used to gather preliminary data from 28 respondents. This was considered as a reasonable sample frame targeting managers at higher/middle levels with sufficient organization knowledge and experience. A response rate of about 100% was achieved. The questionnaires were suitable because the respondents were educated and did not need an interpreter. It gave the respondents enough time to think over the questions before attempting to answer. It was also convenient for use in data analysis using statistical methods for data collection.

Questions were designed to include aspects of knowledge of PPPs, number of years in the institution/organisation, and those aimed at determining the challenges and possible solutions. Data collected using questionnaires was coded, entered, processed, linked and analysed quantitatively using the SPSS software. The data was further processed using 'pareto principal' to narrow the research to serious challenges that needed the most attention.

Face to face interviews were used to gather information that needed clarification by the respondents so as to get further insights on some issues that were unclear in the questionnaire, and to help come up with a detailed report. Thus, face to face interviews were used when getting information from key informants. The data gathered from the interview survey was in line with what was requested for in the questionnaire. In this way, data and information from the questionnaire was validated by interview survey. The interviews were pre-arranged within the specified time.

All the seven respondents were interviewed representing a response rate of 100 percent. Their views on the cross section aspects assisted in understanding the subject matter. The content analysis technique was used to analyze common responses using concepts and themes (conceptual analysis) and extending this to examining the relationships among the concepts and themes (relational analysis) to build on the former. In this case, it was more of qualitative and inductive. The words, concepts, themes, and phrases were identified, coded and broken down

into manageable categories and quantified in an objective manner. The coding was done based on frequency of concepts signifying the importance of the concept. The concepts were distinguished based on the thrust of the questions. Based on the numbers of occurrences recorded, data was processed using SPSS such as spread sheets and word to generate graphs, charts and tables.

### **3.6.2 Collaborative Information on both Questionnaire and Interviews**

Information from the literature, questionnaire and interviews were used to determine the challenges in the implementation process. A number of researches have used similar techniques before where both questionnaire and interview surveys are used or one of them. For instance, Cheung et al. (2009) used questionnaire survey on enhancing value for money and when investigating reasons for implementing PPPs projects respectively; Medema (2008) used semi-structured interview on Integrated Water Resource Management. Fischer et al. (2010) used a combination of questionnaire and expert interviews when looking at integrated risk management systems for PPPs projects. Similarly, ONG (2003) used both questionnaires and semi-structures interviews whereas Jamali (2007) used both literature review and survey in a customer satisfaction study. Both questionnaires and interviews have been used in similar PPPs research (ONG 2003). Data triangulation approach has also been used by Lattemann et al. (2009) and Gunnigan (2007).

### **3.6.3 Reliability, Validity and Transferability**

The research took a qualitative approach to analysing the data based on a sample of 35 respondents. This approach allowed this sample of the population to produce quantifiable insights using questionnaires and interviews. This was aimed at ensuring integrity and reliability of the data to be collected and the results therefrom. In other words, the data collected was based on well-informed sources with experience in the subject at hand. Similarly, the use of both questionnaire and interview as data collection instruments allowed validation based on data triangulation. Triangulation is said to overcome the intrinsic bias and errors associated with single methods by cross checking the data and findings (Denzin, 1970).

The data source triangulation involves the use of a variety of data sources such as questionnaires and interviews. The researcher looks for the data to remain the same in different context. This form of triangulation has been used in this research by employing both questionnaires and interviews.

Methodological triangulation – This involves the combination of approaches in a single study such as a quantitative followed by a qualitative method. This is said to increase confidence in the interpretation. This form of triangulation has been used in this study. Though the research methodology is based on a qualitative research, both qualitative and quantitative methods have been used in the gathering and analysis of data. The questionnaires were statistically analysed (thus quantitative) and the semi-structured interviews were qualitatively analysed (thus qualitative). This research has therefore used both questionnaires and interviews patched up with a detailed literature review.

### **3.7 Ethical Aspect**

The Researcher got permission from Controlling Officers to conduct research in their respective institutions. The Researcher wrote letters to respondents requesting for their participation in the study. Participants that agreed to take part in the research were assured of the right to maintain their privacy. Participants were also assured of the ethical boundaries such as anonymity and confidentiality.

### **3.8 Limitations of the Study**

The results from the study were not generalized to other sectors which implemented the PPP programs in Zambia because expert sampling was used, which is a non-probability sampling.

### **3.9 Summary of the Chapter 3.**

This chapter presented the research methodology and methods and/or techniques that were used for data collection and analysis. To facilitate an investigation using acceptable methods or techniques, various research paradigms were assessed in order to choose a philosophical paradigm that would fit into this research.

The methodology adopted allowed collection of data that was documented and analyzed and whose results assisted in answering the research questions, i.e. “(i) What challenges exist in the implementation process of PPPs in the Road sector in Zambia, and (ii) what could be possible solutions to mitigate those challenges?”

The research proposition for this study was: “Limited uptake of PPPs in the road sector in Zambia is due to implementation challenges”

The above research proposition focused on addressing the objectives of the study, namely.

- (i) To find out the challenges faced in the implementation of PPPs in the Road sector in Zambia.
- (ii) To recommend possible solutions to mitigate the challenges in the implementation process of PPP projects in road sector in Zambia.

To determine the challenges in the implementation process of PPP, this research focused on critical failure factors which were inducted from the literature review and questionnaire survey.

The study was both descriptive and explanatory in design. It was descriptive in nature that it provided an account of factors which impeded the uptake of PPPs and explanatory because it showed the cause and effect relationship between variables. Both primary and secondary data was used for analysis. Out of a population of 213 experts in the implementing agencies, a sample of 28 respondents and 7 management staff from 5 different private institutions were purposively drawn to participate in a semi structured questionnaire survey and interviews. The Statistical Package for Social Sciences (SPSS) was used to analyze the collected data. The results were further analyzed using the ‘Pareto’s Principle’ to narrow to specific challenges that mattered the most and needed attention

## CHAPTER 4: DATA ANALYSIS AND PRESENTATION OF RESULTS

### 4.1 Introduction

The previous chapter presented the research methodology and techniques used to achieve the data collection and analysis. The data was collected using a questionnaire survey. Before the questionnaire survey was conducted, the questionnaire was piloted at RDA and PPP Unit as a way of exposing and pre-testing the appropriateness of the questions in terms of both the manner in which they were phrased and content. The pilot survey helped to refine the questions based on suggested changes from the two institutions. This was aimed at increasing the reliability of data to be collected. The selection of these two said institutions for piloting of the questionnaire was based on their key roles in PPPs in Zambia. For instance, the PPP Unit is key for policy formulation and ensuring that the PPPs environment is conducive. On the other hand, RDA is the overall Road Authority in Zambia. These institutions have therefore a thorough appreciation and understanding of the PPPs in the road sector in Zambia. They were able to provide meaningful input and critic to the questionnaires.

The questionnaire was administered to the target respondents in order to explore their views and opinions. The views and opinions from the questionnaire were cross checked by semi-structured interviews with selected experts in the PPPs environment in a bid to authenticate the findings. According to Belting (2008), an expert is a person who has a high degree of skill and knowledge in a certain domain, field or industry (in this case, PPPs environment) due to long-time experience and has status, power-to-act and decision-making opportunities based on these skills and knowledge. The semi-structured interviews were used to synergise the results from the questionnaire and aid in minimising the limitations of using a single methodology. This underscores the importance of the triangulation approach to research which was defined in the methodology chapter above. This allowed the research findings to be presented using a combination of both quantitative and qualitative methods to enrich the study.

In line with the methodology outlined in earlier chapter, data was analysed using descriptive statistics despite using a purposive sampling technique. The focus was however mainly on frequency counts and percentages. The use of descriptive statistics on a purposive sampling

technique is supported by Tongco (2007) who notes that statistical analyses have been used with purposive sampling. Belcher et al (2004)

Similarly, in a research by Ojelabi (2009) that involved a purposive sampling technique, data collected were analysed using both descriptive statistics (frequency counts and percentages) and inferential statistics.

## **4.2 Questionnaire Survey - Results and Analysis**

Based on the planned sample of the population as identified and reported in the methodology 35 questionnaires were distributed and administered to the target respondents at RDA, MHID, NRFA, NCC, PPP Unit, RTSA, Consultants; Contractors; Banks; Insurance Companies and National Pension Scheme Authority (NAPSA). The questionnaires were administered to respondents who had either a direct or indirect involvement in the road sector. All distributed questionnaires were filled up representing a response rate of one hundred percent (100%).

### **4.2.1 Part A - Respondents' details**

Part A of the questionnaire required the respondents to indicate to which age group, education level, profession, institution or sector they belonged to. The data was intended to show the source, distribution of responses and subsequent respondents' levels of contribution to the research once analysed. The source and distribution levels based on the frequency and percentages were indicative of the levels of knowledge of PPPs adduced to respective key target institutions.

Respondents were asked to indicate as appropriate the age group to which they belong. The results showed that 88.6% of the respondents were between the age of 31-45 years, an indication that the respondents were mature and experienced. The results were in line with the methodology which required use of mature and experienced experts in the sector. Table 4.1 below shows the frequency and percentage of respondents for each of the age group.

**Table 4.1 Age Group of Respondents**

Age Group	Frequency	Percent	Cumulative Percent
15-30	4	11.4	11.4
31-45	27	77.1	88.6
46-60	4	11.4	100.0
<b>Total</b>	<b>35</b>	<b>100.0</b>	

#### 4.2.2 Question A2 - Education Level of Respondents

Respondents were asked to indicate the category of their level of education to which they belonged to by ticking the appropriate level. The results indicated that 28.6% of the respondents had a first degree professional qualification and 71.4% had post graduate degree. Therefore all respondents had sufficient level of education expected to respond on the subject matter. The results for level of education are presented in Figure 4.2.

**Table 4.2 Education Level**

	Frequency	Percent	Cumulative Percent
Post Graduate Degree	25	71.4	71.4
Graduate Degree	10	28.6	100.0
<b>Total</b>	<b>35</b>	<b>100.0</b>	

### 4.2.3 Question A3 - Profession of Respondents

Respondents were asked to indicate the profession to which they belonged by ticking the appropriate level. The results indicated that most respondents (80%) were Engineers. This result was expected because the road sector was mainly dominated by Engineers. Nonetheless, despite being few in the sector, the knowledge of the other professionals on the subject matter was of vital importance to this study to get a balanced opinion. The results for the level of professional background are presented in Table 4.3.

**Table 4.3 Professional Level**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Engineer	28	80.0	80.0
Accountant	1	2.9	82.9
Procurement Specialist	4	11.4	94.3
Others	2	5.7	100.0
<b>Total</b>	<b>35</b>	<b>100.0</b>	

### 4.2.4 Question A4 - Institution Sampled

Respondents were asked to indicate as appropriate the institution to which they belonged. The results showed that 71.4 percent of the respondents were from parastatals. The results were in line with the information in the introductory and methodology chapters that identified and indicated that the road sector in Zambia was managed by parastatal institutions such RDA, NRFA, and NCC. Therefore, the result showed that the right respondents were used for the study. Table 4.4 shows the frequency and percentage of respondents for each of the institutions sampled.

**Table 4.4 Institution Sampled**

	Frequency	Percent	Cumulative Percent
Government	3	8.6	8.6
Parastatal	25	71.4	80.0
Cooperating Partner	3	8.6	88.6
Regulator/ Oversight	4	11.4	100.0
Total	35	100.0	

**4.2.5 Question A5 – Role Played by the Respondents**

The survey showed that 51.4 percent of the respondents were from road authorities. The results were in line with the information in the introductory and methodology chapters which indicated that the road sector in Zambia was managed by parastatal institutions such RDA, NRFA, and NCC. Therefore, the results indicate that the right respondents were used for the study. Results are presented in Table 4.5.

**Table 4.5 Role Played by Respondents**

	Frequency	Percent	Cumulative Percent
Road Authority	18	51.4	51.4
Policy Formulation and Regulation	8	22.9	74.3
Financing	5	14.3	88.6
Procurement Authority	4	11.4	100.0
Total	35	100.0	

#### 4.2.6 Question A6-Category of Management

Respondents were asked to indicate the category of management to which they belonged. The results indicated that 31.4 percent of the respondents were at strategic level of management while 57.2 percent and 11.4 percent represented middle and lower management respectively. It can be seen that the majority respondents had sufficient levels of knowledge expected to respond on the subject matter. Staff in senior and middle management are normally exposed to sufficient organisational knowledge and involved in tactical operations of their respective institutions. The higher percentage at middle levels is considered normal in that most functional organizational structures have fewer numbers at the strategic apex and more at the middle level. Nevertheless, lower management employees were considered (11.4 percent) to get at an all-inclusive sample. The lower management employees were purposively selected to participate in this research based on the number of years served in their respective institutions and for their knowledge of the subject matter. The results for the category of management are presented in Table 4.6.

**Table 4.6 Category of Management**

Management Category	Frequency	Percent	Cumulative Percent
Senior Management	11	31.4	31.4
Middle Management	20	57.2	88.6
Lower Management	4	11.4	100.0
<b>Total</b>	<b>35</b>	<b>100.0</b>	

#### 4.3 Part B: Road Projects under PPP in Zambia

This section sought to establish the level of infrastructure investment in the road sector to justify the need for PPPs. It sought to identify PPP projects in the road sector in Zambia which would then lead to identification of key informants. The target key informants were Contractors, Consultants and business advisors who had experience in PPPs in the road sector. The results are presented separately for each of the two questions in Part B of the questionnaire.

### 4.3.1 Questions 7- Current Investment in the Road sector

Respondents were asked to indicate as appropriate the level of the current investment in the road sector. Out of 35 respondents, 33 respondents representing 94.3% indicated that the rate of investment in the road sector was inadequate as shown in Table 4.7.

**Table 4.7: Current Level of Investment**

Adequate Investment	Frequency	Percent
Yes	2	5.7
No	33	94.3
Total	35	100.0

The results were at variance with the GRZ's ambitions in both the revised Sixth National Development Plan and the National Vision 2030. To cover up the infrastructure shortage and to improve access to a quality and affordable infrastructure service, the Zambia had from 2008 onwards been promoting PPP Projects across industries which included road sector (ZDA, 2014). However, from this study, it was revealed that the current investment in road sector was still inadequate. The inadequate investment in the road sector was deduced from several projects that had lagged behind implementation schedule due to cash flow challenges.

The study found out that the state of most roads was appalling despite interventions such as Pave Zambia 2000 and Link Zambia 2008 programmes, a reflection of lack of significant funding towards road infrastructure repairs and maintenance. The lack of significant funding for road maintenance and repairs was also reflected on a road condition survey conducted in 1995 on 8,800 km of Trunk, Main and District (TMD) roads by the World Bank. The World Bank Report revealed that 20 percent were in 'good' condition; 29 percent were in 'fair'; and 51 percent in 'poor'. In addition, 90 percent of feeder roads were in 'poor' condition. Furthermore, a more recent road condition survey conducted by RDA (2013) on 40,454 km of the Core Road Network (CRN) revealed that 72 percent of Primary Feeder Roads (PFR) was in poor condition while the TMD network had a composite condition of 56 percent good, 22 percent fair and 23 percent

poor. From the recent results by RDA there were some improvements in the road condition. However, this study found that the level of current investment in the road sector was not equal to the demand for new infrastructure or maintenance needs.

Furthermore, cross tabulation of the level of current investment in the road sector visa vis the institution sampled showed that there was 100% consensus among the respondents from implementing agencies that the poor state of road infrastructure was attributed to poor and erratic funding. It was revealed that the major programmes such as Pave Zambia 2000 and Link Zambia 8000 were being implemented on the GRZ's balance sheet through the NRFA. It was found that the Road sector's indebtedness to local Contractors and Consultants was not only increasing but had gone beyond the annual budgetary provisions. From the above analysis, it was clear that the financing gap was widening and that there was a need for an alternative source of funding to the road sector in Zambia.

Most of the respondents (82%) acknowledged the need for PPP in construction and maintenance of highways, especially construction of dual roads on major highways. The great north road, which was not only the busiest in the Country, but also contributing most to road accidents, had been mentioned as a priority area. However, it was found that plans were already at an advanced stage for implementation of PPPs for all major roads linking various urban centres including the great north road.

Besides the need for an alternative funding, most respondents (82%) justified their advocacy for PPPs as also a means of avoiding the separation between construction and maintenance during operation characterized by a traditional contract. Respondents argued out that the separation of the above functions gave the contractor little incentive to account for life- cycle costs, such as future maintenance and operations costs, beyond what was specified in general construction standards for infrastructure projects which would be avoided through a PPP model. The respondents stated that if PPPs were correctly administered in the road sector in Zambia, it would result into more 'value for money' than under traditional public procurement options, apportion appropriate risks, ensure faster implementation of public roads and deliver improved services.

### 4.3.2 Question A8 - PPP Projects in the Road sector in Zambia

Respondents were asked to indicate as appropriate the projects implemented under PPPs in the road sector in Zambia. Results showed that most respondents (75.8%) indicated that there were no PPP Projects in the Road sector in Zambia. Table 4.8 shows the results obtained.

**Table 4.8 Running PPP Projects**

	Frequency	Percent	Cumulative Percent
Yes	6	17.1	18.2
No	25	71.4	93.9
Don't know	4	11.4	100.0
Total	35	100.0	

The only notable PPP Project was the Kasomeno Mwenda Road which was represented by 18.2% of the respondents. It was however revealed that Kasomeno Mwenda concession agreement was signed in August 2016 between the GRZ and Groupe European De Development (GED) Projects Africa Zambia Limited for a period of 25-year. The concession agreement involved construction of the 85-kilometere Kaluba/Mwenda road in Luapula Province at a cost of US\$180 million. The Kaluba/Mwenda road cuts across into the Democratic Republic of Congo (DRC) and join the 95km Kasomeno/Kaluba road as part of 180 km road stretch to be constructed by GED.

Furthermore, it was revealed that although the Kasomeno Mwenda concession agreement was signed in August 2016, the concessionaire had not mobilized one year later. Thus, it was concluded that there were no PPP Projects that had been fully implemented in the Road sector in Zambia.

Key informants reported that the Kashiba/Mwenda concession agreement was the first road project to be signed under PPP platform in the Road sector in Zambia. It was found that there were several PPP road projects under procurement in Zambia as tabulated in Table 4.9.

**Table 4.9 PPPs under Procurement**

	<b>Road Description</b>	<b>PPP Type</b>	<b>Status</b>
1	Lusaka to Ndola (T002/T003), approximately 321 km, including Kafulafuta to Luanshya Town (M006), approximately 45 km;	DFBOT	Procurement
2	Ndola to Kasumbalesa Border (T003), approximately 150 km;	DFBOT	Procurement
3	Kazungula via Livingstone to Turnpike (M10/T001) approximately 488 km (including the Livingstone Town Bypass road from Kazungula);	DFBOT	Procurement
4	Chirundu Border to Chilanga in Lusaka (T002), approximately 124 km;	DFBOT	Procurement
5	Chingola to Mutanda via Solwezi (T005), approximately 205 km; and	DFBOT	Procurement
6	Kapiri Mposhi to Nakonde (T002), approximately 855 km.	DFBOT	Procurement
7	Chingola Solwezi Road	DFBOT	Procurement

#### **4.4 Part C: Challenges in the implementation of PPP road Projects**

Respondents were asked to indicate as appropriate factors that impeded implementation of PPPs in the road sector in Zambia. The study confirmed the prevalence of implementation challenges in the road sector in Zambia. Table 4.10 shows the frequency and percentage of the identified implementation challenges.

**Table 4.10: Challenges of implementing PPPs in the road sector in Zambia**

Description of Challenge	Responses		Percent of Cases
	N	Percent	
Lack of Funds and Treasury Approval	9	4.9%	26.5%
Lack of Policy Direction from the Highest Government Level	12	6.5%	35.3%
Change in Priority by Government	6	3.3%	17.6%
Lack of Interest by the Private Sector to Implement PPP Projects	12	6.5%	35.3%
Non Availability of Long Term Financing	17	9.2%	50.0%
Biased Procurement Guidelines towards Traditional Methods	3	1.6%	8.8%
Inconsistent and Unclear Policy directions on PPP	21	11.4%	61.8%
Inadequate Regulatory Framework	3	1.6%	8.8%
Low Political Commitment	9	4.9%	26.5%
Lack of Adherence to the Regulatory Framework by Road Authorities	6	3.3%	17.6%
Lack of Capacity	22	12.0%	64.7%
Lack of Resources within the PPP Unit to Promote PPPs	8	4.3%	23.5%
Inadequate understanding of the Regulator role	7	3.8%	20.6%
Low Interest from the Private Sector	11	6.0%	32.4%
Non Viability due to poor Traffic Volume	24	13.0%	70.6%
PPP Projects take too long to materialize	14	7.6%	41.2%
Total	184	100.0%	

The study found fourteen (14) implementation challenges. Considering that it would be overwhelming to respond to 14 challenges at the same time, the study used the Pareto Principal to narrow to nine (9) significant ones. Pareto principle states that 20% of the population controls 80% of the wealth. Similarly, the study sought to identify a few challenges whose contribution

to low uptake of PPPs in the road sector was 80%. The nine (9) significance challenges in order of importance were:

- (i) Non-financial viability of the concessions due to low traffic volume;
- (ii) lack of time, resources, knowhow and authority within the staff of implementing agencies to originate and implement PPPs;
- (iii) Inconsistent and unclear PPP Policy
- (iv) Non availability of long term financing;
- (v) PPPs take too long to materialize;
- (vi) Lack of Interest by the private sector to implement PPP Project;
- (vii) Low Interest from the private sector to take on PPP Projects due to unstable economic environment;
- (viii) Lack of funds and treasury approval; and,
- (ix) Low political commitment.

Figure 4.1 shows the plot of the results on Pareto diagram.

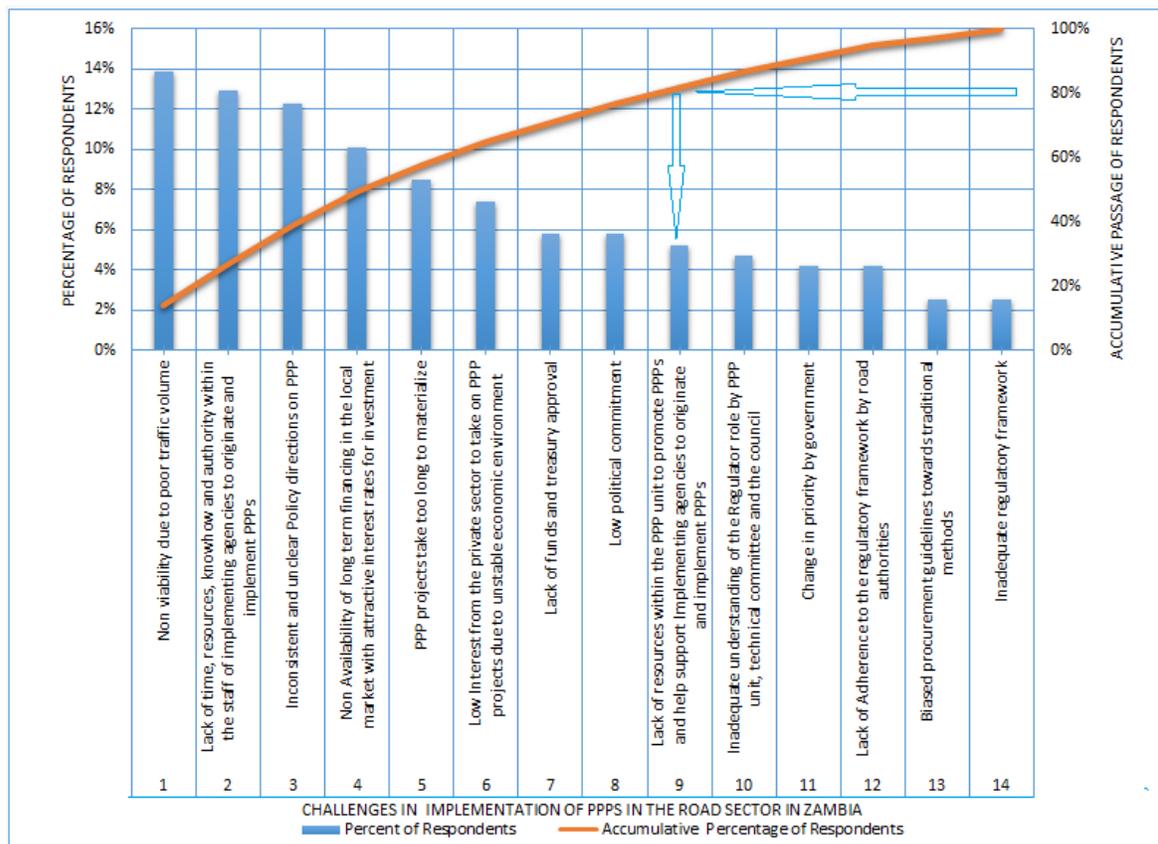


Figure 4.1 Challenges in implementing PPPs in the Road Sector in Zambia

#### **4.4.1 Non viability due to poor traffic volume**

Twenty four (24) out of 35 respondents representing 70.6% indicated that poor traffic volume was a major challenge to implementation of PPPs in the Road sector in Zambia. There was a concern by the respondents on the ability of the concessionaire to recoup costs given the volume of traffic, which was argued to be too low for profitable levels for most of the roads in Zambia. Respondents stated that traffic risk was a serious consideration and that it was difficult to get an accurate estimate of the anticipated traffic on a particular road without extensive modelling exercises. Some respondents indicated that Zambia's population (about 17million, CSO) was densely concentrated along the line of railway such that other transport corridors were characterized by insufficient traffic flow. It was found that low traffic volume would result into less-than-expected user fees which would subsequently make the project unprofitable

Low traffic volume had been reported by various scholars around the world as challenge in the implementation of PPPs. For instance, Douglass et al (2013) found out that low traffic volume was the major challenge on operation of SR-125 in Southern California which was opened in 2007. Douglass et al (2013) reported that the concessionaire filed for bankruptcy within several years of the roadway's opening due to low traffic volume. .

Similarly, Engel et al (2011) reported that two independent consulting companies had wrongly predicted that Dulles Greenway, a fourteen-mile toll road in USA, would have a daily flow of 35,000 vehicles at a toll fee of \$1.75. In practice, however, when the Project opened in 1996, the average number of vehicles per day turned out to be only 8,500, one-fourth of the initial estimates. After tolls were lowered to \$1.00, daily ridership increased to 23,000, still far below predictions.

It was found however that non-commercial viability of a concessional transaction was not a permanent stumbling block to PPPs in the road sector in Zambia. Based on this research, it was found that possible remedies would be categorisation of concessions as:

- (i) the non-economically viable and incentivize them to attract investment; and,
- (ii) economically viable toll roads .

It was further found that there was need for incentives for non-economically viable as a way of one or a combination of the following:

- a. Viability Gap Financing: A budgetary fund was required as a financial subsidy for projects with high socio-economic value but not sufficiently commercially viable to be delivered under PPP. A certain percentage of the total project cost would be subsidized by the Government either as part of a capital contribution during construction or in the form of annuity payments during operation. To this effect there was need to review the PPP policy framework to cover such provisions;
- b. Fiscal Incentives: There was need to make provisions permitting PPP investors to benefit from various fiscal incentives such as reduced import tax on capital; goods; and various tax holidays to reduce the cost of implementing the PPP project and to enhance viability; and,
- c. Special Incentives (Non-Fiscal): Any specific project may get special incentives or other non-fiscal incentives to support the implementation of policy objectives or to enhance the ease and efficiency of delivering the Project. These may include exemption from specific provisions related to insurance regulations, banking regulations and foreign exchange regulations.

#### **4.4.2 Lack of time, resources, knowhow and authority within the staff of implementing agencies to originate and implement PPPs**

Twenty Two (22) out of 35 respondents representing 64.7% indicated that staff of implementing agencies lacked:

- (i) sufficient skills, time and resources to dedicate to PPPs;
- (ii) the knowledge or ability to originate a PPP or manage a PPP transaction; and,
- (iii) the confidence or authority to make critical decisions in managing PPPs.

It was found that most of the implementing agencies lacked requisite skills. Most Government. It was found that inadequately prepared projects which were not ready to go to the market were tendered resulting in delays in the procurement process. The study revealed that sometimes project outcomes were being changed or aligned during procurement.

Further, it was found that poorly formulated projects by Contracting Authorities resulted in PPP concessions being cancelled and projects being reverted back to Government or failure to achieve transaction closure in the first instance.

To stimulate the uptake of PPPs in the road sector in Zambia, it was found that there was need to build capacity in all implementing agencies. The respondents indicated that PPP process was a complex one which required a combination of special skills mix in financial analysis and modeling, transaction structuring, commercial legal expertise, sector knowledge and transaction management which were nonexistent in some implementing agencies.

#### **4.4.3 Inconsistent and unclear Policy directions on PPP**

Twenty One (21) out of 35 respondents representing 61.8% indicated that the PPP policy of 2009 was unclear and that the leadership highest levels of Government was inconsistent. It was found that there was no high level policy direction in PPPs to provide clear and predictable intent on the importance and use of PPPs in general and in specific sectors, such as roads. Therefore, it was unclear whether the highest levels of Government favoured the use of PPPs in general, or whether they favoured PPPs only in specific circumstances, or for specific sectors. For example, it was not clear whether PPPs should be used to achieve value for money, optimal risk transfer, and improve long-term planning or it should be used as a vehicle for financing Projects or not.

The respondents indicated that there was need to develop clearer and more transparent guidelines and policy objectives for PPPs to work in the road sector in Zambia.

#### **4.4.4 Non Availability of long term financing in the local market with attractive interest rates for investment**

Seventeen (17) out of 35 respondents representing 48.6% indicated that was lack of no long term financing in the local market with attractive interest rates for investment. It was found that Zambia's capital market was too small and weak to support Zambia's desired growth prospects and urgently needed a boost to keep up with the thriving economic trends. It was stated that the growth of the economy and local companies regardless of their size needed a strong capital

market to support opportunities and help refinance operations. The study revealed that Zambia's main capital market, the Lusaka Stock Exchange (LuSE), was not a well-developed source of finances.

Key Informants from the Bank of Zambia admitted that the LuSE was too small and that the pensions and insurance should come on board to help provide financing to the banks or directly offer long-term loans to business communities. It was also reported that the Bank of Zambia was reviewing legislation so that such companies were stimulated and helped in strengthening the financial sector.

#### **4.4.5 PPP Projects take too long to materialize**

Fourteen (14) out of 35 respondents representing 41.2% indicated that although there were no timelessness for procurement of PPPs in Zambia, transactions were relatively taking too long to materialize. It was found that several transactions were still at procurement stage since February 2016 when the tenders were advertised. In some countries, for example, it was reported that there were time guidelines for procurement of PPP transaction. For instance, in Bangladesh, PPP Projects using a two stage procurement process were targeted to be completed within 16 to 20 months of the request for proposal being issued. Single stage procurements were targeted to be completed within a much shorter time frame of around 10-12 months. Therefore Zambia could also develop timelines for procurement process and implementation of PPPs in Zambia.

#### **4.4.6 Low interest and capacity by the private sector to implement PPP Projects**

Twelve (12) out of 35 respondents representing 35.3% indicated that there was low interest and capacity by the private sector to implement PPP Projects road sector in Zambia. Respondents indicated that the construction industry in Zambia was dominated by Contractors of Foreign Origin at the expense of local contractors due to deficiencies in indigenous local construction companies. This finding is augmented by Road Development Agency (RDA) Annual Reports for the period 2006 to 2013 which refer to the lack of local contracting capacity as one major challenge in the implementation of the Road sector Annual Work Plans (RSAWP). The reports

cited poor capital and equipment base; failure to secure project securities; poor workmanship; and poor project management as the major challenges faced by the Private sector.

It was also found that financial lending institution had low interest on PPP transactions because of unstable economic environment in Zambia. A report by Raballand et al (2012) indicated that Zambia had one of the world's fastest growing economies in the last ten years, with real GDP growth averaging about 6.7% per annum but slowed down in 2015 to just over 3%, due to falling copper prices, reduced power generation, and depreciation of the kwacha. Coupled with a downward credit rating from B+ in 2011 to B in 2016, financial lending institutions found the Zambian market not very attractive for business. Zambia's credit rating for 2017 according to Standard & Poor's credit rating was B with a negative outlook while Moody's credit rating was B3 with negative outlook. Fitch's credit rating for the same period was B with negative outlook. In general, a credit rating was used by sovereign wealth funds, pension funds and other investors to gauge the credit worthiness of a borrower.

#### **4.4.7 Lack of funds and treasury approval**

Nine (9) out of 35 respondents representing 26.5% indicated that the treasury approval for some transactions especially Contractor Finance Initiatives (CFI) were not granted because of lack of room to commit more debt by Ministry of Finance. It was found that the Government's debt as a percent of the GDP was used by investors to measure the country's ability to make future payments on its debt and affected the country's borrowing costs and bond yields. It was reported that Zambia's external and domestic debts were on the rise. There was therefore the need to keep the external and domestic debt within the international debt thresholds of 40% and 25% of the Gross Domestic Product (GDP), respectively to maintain a positive image as a country.

#### **4.4.8 Low political commitment**

Nine (9) out of 35 respondents representing 26.5% indicated that the current political commitment on PPP in the road sector in Zambia was low citing a number of CFI that were

pending for actualization at Ministry of Finance. It was found that political leadership had influence on the success of PPPs in the road sector in Zambia and that the commitment was low.

#### **4.4.9 Lack of resources within the PPP unit to promote PPPs and help support implementing agencies to originate and implement PPPs**

Eight (8) out of 35 representing 23.5% respondents indicated that the PPP Unit did not have enough resources to do all that needed to be done to foster successful PPPs. The study found out that the PPP Unit did not have resources to promote PPPs and build capacity within implementing agencies.

#### **4.4.10 Other Implementing Challenges**

From the result analysis, it was found that 5 shortlisted challenges were insignificant and did not need to spend resources on them. These challenges were: inadequate understanding of the Regulator role by PPP unit, technical committee and the council (20.6%); Change in priority by Government (17.6%); Lack of Adherence to the regulatory framework by road authorities (17.6%); biased procurement guidelines towards traditional methods; and, Inadequate regulatory framework (8.8%). Based on these results, it was concluded that it would be prudent to prioritize the high impact challenges.

### **4.5 Summary of Chapter 4**

The chapter presented the findings of the study. It outlined the respondent's background information and their suitability to participate in the study. The study confirmed the prevalence of implementation challenges in the road sector in Zambia. From 14 identified implementation challenges, nine were significant and required attention. The three leading ones were: (1) non-financial viability of the concessions due to low traffic volume (70.6%); (2) lack of time, resources and knowledge in the implementing agencies (64.7%); and, (3) inconsistent and unclear PPP Policy (61.8%). Based on this research, possible solutions were: (i) implementing agencies to categorize the non-economically and economically viable toll roads and incentivize the former as part of the long-term solution; and, (ii) build capacity in all implementing agencies.

## CHAPTER 5: DISCUSSION

### 5.1 Introduction

The previous chapter on data analysis presented that the current level of investment in road sector in Zambia was insufficient citing poor cash flow on running programmes and the rise in the sector debt. While there were improvements in the recent years through programmes such as the Pave Zambia 2000 and Link Zambia 8000 programmes, the demand for better and more road infrastructure was more than the supply. From the rising sector debt, it was concluded that the GRZ could not devote additional resources to accelerate the delivery of the road infrastructure to meet the demand. Through the PPP Act and Policy, the GRZ aimed at delivery of public infrastructure through utilization of alternative form of project finance such as PPPs. However the uptake of the PPPs in the road sector was limited promoting this study.

This study sought to find out the challenges in the implementation of PPPs and recommend possible solutions in the road sector in Zambia. The study confirmed the prevalence of PPP implementation challenges in the road sector in Zambia. The main challenges were: (1) non-financial viability of the concessions due to low traffic volume (70.6%); (2) lack of time, resources and knowledge in the implementing agencies (64.7%); and, (3) inconsistent and unclear PPP Policy (61.8%). The second and third challenges were also reported by ZDA in Mwenda (2014) whose focus was on the general implementation of PPPs in Zambia.

Based on this research, it was found that possible remedies were: (i) implementing agencies to categorize the non-economically and economically viable toll roads and incentivize the former as part of the long-term solution; and, (ii) build capacity in all implementing agencies. To stimulate the uptake of PPPs, two (2) corresponding models were recommended in the road sector in Zambia and there were: (i) the Design Finance, Build and Transfer Model for non-economically viable concessions and (ii) the Design Finance Build Operate and Transfer Model for economically viable projects.

This chapter provides a discussion of the main findings of the research and where applicable, links the literature to the research outcomes.

## **5.2 Prevalence of PPPs implementation Challenges**

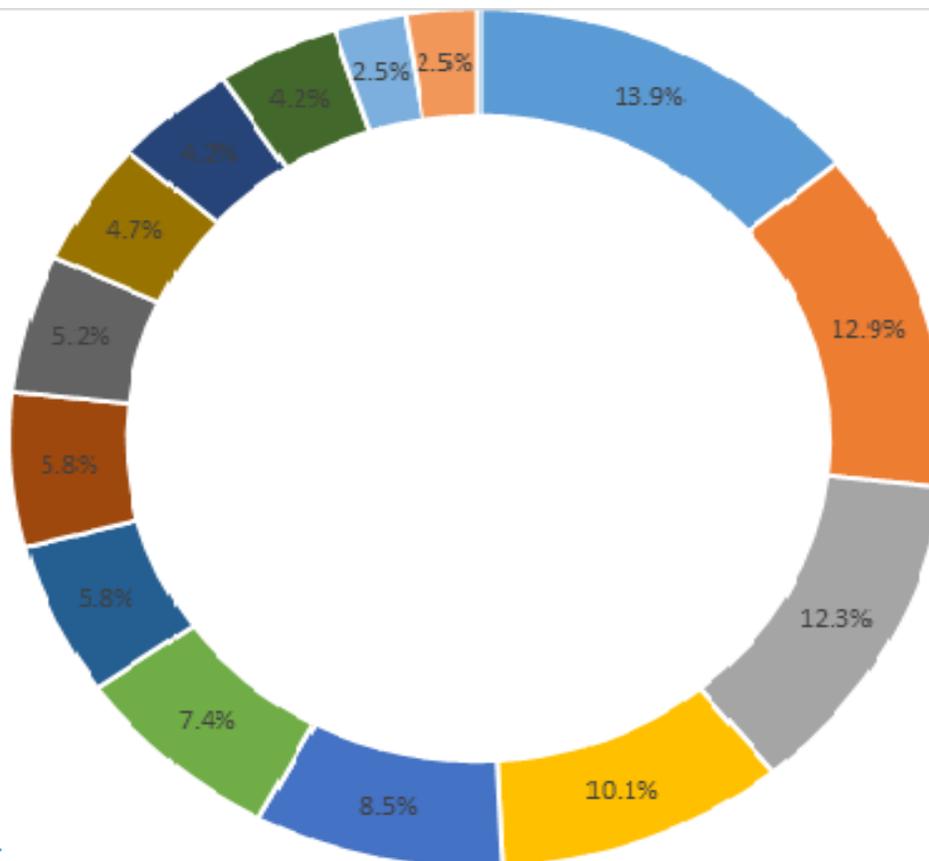
The first research objective sought to find out what challenges existed and impeded implementation of PPPs in the road sector in Zambia. The study confirmed the prevalence of PPP implementation challenges which was correlated by lack of PPP concessions in the road sector in Zambia. This was despite the GRZ's pronouncement and commitments as far back as 2009. This result also correlated with Mwenda's (2014) findings who conducted a study on general PPPs in Zambia unlike the current study which focused on the road sector in Zambia.

Furthermore, the current study revealed that although the political leadership in Zambia had made pronouncements and expressed desire and optimism to use the PPP arrangement to deliver public infrastructure and services, the country required political champions to drive the PPP agenda.

The main implementation challenges identified by the current study were: (i) Lack of capacity in Government to undertake PPP Projects; (ii) lack of financial resources dedicated to PPP Projects; (iii) lack of clear guidelines and regulations to guide contracting authorities and the private sector in the implementation of PPPs; (iv) high transaction costs; and (v) lengthy lead time on complex arrangements that require the involvement of various experts including financial, legal, sectorial expertise, transaction advisory.

Similar results were reported by ZDA in a report of Mwenda (2014). The similarity in the results was attributed to the same geographical boundary, minor changes in economic and social environment and the same PPP policy document reviewed.

The results of the current study are presented in Figure 5.1.



**KEY**

- Non viability due to poor traffic volume
- Lack of Capacity by implementing Agencies
- Inconsistent and unclear Policy directions on PPP
- Non Availability of long term financing
- PPP Projects take too long to materialize
- Low Interest and capacity by the private sector
- Lack of funds and treasury approval
- Low political commitment
- Lack of resources within the PPP unit to promote PPPs
- Inadequate understanding of the Regulator role
- Change in priority by Government
- Lack of Adherence to the regulatory framework
- Biased procurement guidelines towards traditional methods
- Inadequate regulatory framework

Figure 5.1 Challenges of implementing PPPs in the road sector in Zambia

The major difference between the current study and Mwenda’s (2014) was that this study further found that non-economic viability of concessions and inconsistent and unclear policy directions on PPPs in the road sector were the biggest challenges. This study therefore contributed to the body of knowledge and in particular the challenges in implementation of PPPs in the road sector in Zambia. Figure 5.2 shows a plot of the current findings versus Mwenda’s (2014) in a Venn diagram.

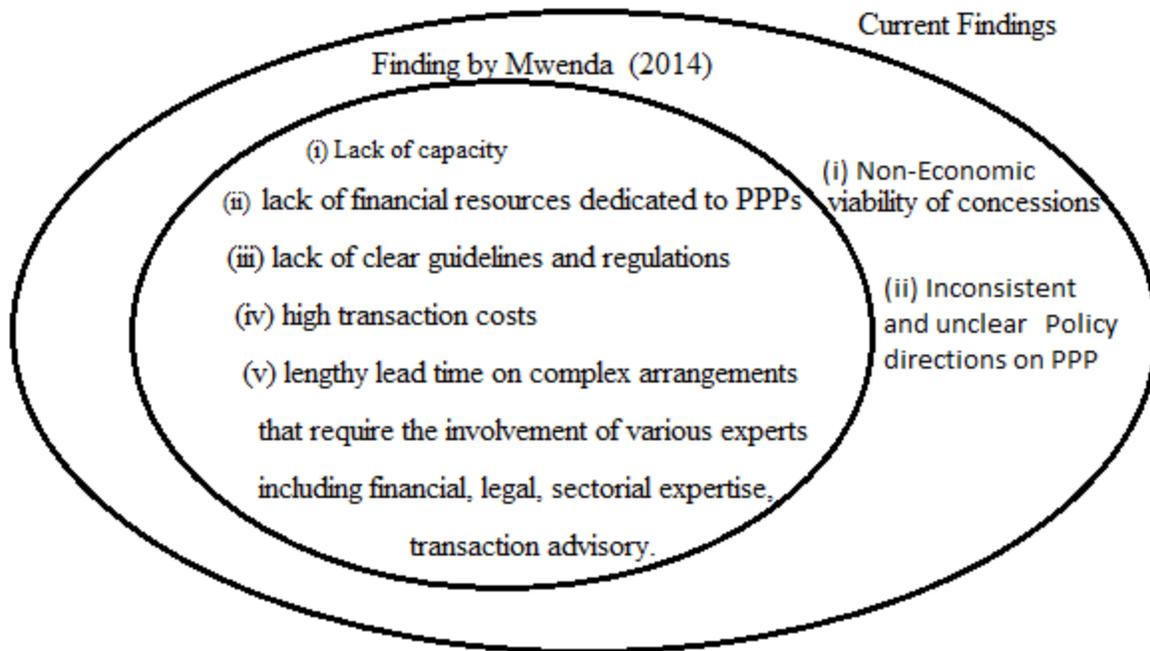


Figure: 5.2 Current findings versus Mwenda’s (2014)

### 5.3 Major challenges

#### 5.3.1 Non-economic viability of concessions emanating from low traffic volume

Twenty four (24) out of 35 respondents representing 70.6% indicated that poor traffic volume was a major challenge to the implementation of PPPs in the Road sector in Zambia. There was a concern by the respondents on the ability of the concessionaire to recoup costs given the volume of traffic, which had been argued to be too low for profitable levels for most of the roads in Zambia. Respondents stated that traffic risk was a serious consideration and that it was difficult to get an accurate estimate of the anticipated traffic on a particular road without extensive modelling exercises.

In Zambia, the road transport was the most used form of transport and was expected to remain as such for a long time to come. This was because alternative forms had not developed as much as the road transport. Flexibility was another advantage that placed the road transport a head of other modes of transport. Therefore, without competition, toll roads (PPPs) were expected to

thrive in Zambia. This leaves a risk of low traffic volume as a major threat to the uptake of PPPs in the road sector in Zambia.

At global level, the risk of low traffic volume had been reported by various scholars as a deterrent to the uptake of PPPs in the road sector. For instance, according to a report by Deborah S. B et al (2013), SR-125, a 10-mile long, four-lane toll road in Southern California was opened to traffic in 2007 and closed four (4) years later citing bankruptcy. The project costed more than \$450 million to build and the concessionaire filed for bankruptcy during its operation citing low traffic volume. The low traffic volume resulted into less-than-expected user fees which subsequently made the project unprofitable. The project's design-builder had to write-off more than \$150 million in losses stemming from the project.

In Indonesia, Farja E.A (2009) also acknowledged that Toll Roads had limited financial feasibility because of extremely high construction costs or a marginal expected traffic volume which inevitably cut into profit or cost recovery for the concessionaire.

Similarly, Engel et al (2011) reported that two independent consulting companies had wrongly predicted that Dulles Greenway, a fourteen-mile toll road in USA, would have a daily flow of 35,000 vehicles at a toll fee of \$1.75. In practice, however, when the Project opened in 1996, the average number of vehicles per day turned out to be only 8,500, one-fourth of the initial estimates. After tolls were lowered to \$1.00, daily ridership increased to 23,000, still far below predictions.

Non-economic viability resulting from low traffic volume is an important finding to road sector in Zambia. Considering that the country's population (about 17million, CSO) was densely concentrated along the line of railway. Transport corridors situated far away from the line of railway are at a more risk of insufficient traffic volume to support the toll roads and implementation of PPPs in the road sector in Zambia.

The similarity in the results with the international experience with regards low traffic volume signifies the importance of the findings.

It should be noted however that non-commercial viability of the concessional transaction was not a permanent stumbling block to PPPs in the road sector in Zambia. Based on this research, it was found that possible remedies would be: (i) implementing agencies to categorize the non-economically and economically viable toll roads and incentivize the former as part of the long-term solution; and, (ii) build capacity in all implementing agencies.

Further, to stimulate the uptake of PPPs, two (2) corresponding models were recommended in the road sector in Zambia: (i) the Design Finance, Build and Transfer Model for non-economically viable concessions and (ii) the Design Finance Build Operate and Transfer Model for economically viable projects. The rationale of Design Finance, Build and Transfer Model was to pass on the operational risks of low traffic flow to the Government that would be better placed to handle them.

### **5.3.2 Lack of Capacity**

Twenty Two (22) out of 35 respondents translating to 64.7% indicated that staff of implementing agencies lacked:

- (i) sufficient skills, time and resources to dedicate to PPPs;
- (ii) the knowledge or ability to originate a PPP or manage a PPP transaction; and,
- (iii) the confidence or authority to make critical decisions in managing PPPs.

Knowledge and skills are prerequisite to successful delivery of PPPs. Lack of this prerequisite capacity by implementing agencies increases the risk of inadequately prepared projects being tendered which consequently delay at negotiation stage during the procurement process. Sometimes project outcomes were being changed or aligned during procurement negotiation stage.

### **5.3.3 Inconsistent and unclear policy directions on PPPs**

The second main finding was Inconsistent and unclear policy directions on PPPs in the road sector in Zambia. Twenty One (21) out of 35 respondents representing 61.8% indicated that

leadership on PPPs was lacking at the highest levels of Government. It was reported that high level policy direction did not need to mean rampant enthusiasm for PPPs, but should at least provide clearer and more predictable intent on when and why PPPs in general, and in specific sector. It was unclear whether the highest levels of Government favoured the use of PPPs in general, or whether they favoured PPPs only in specific circumstances, or for specific sectors. For example, it was not clear whether PPPs should be used to achieve value for money, optimal risk transfer, and improve long-term planning or it should be used as a vehicle for financing Projects or not. There was need to develop clearer and more transparent guidelines and policy objectives for PPPs to work in the road sector in Zambia.

The above finding was acknowledged in the research findings by Suhaiza et al (2014). The results showed that lack of Government guidelines and procedures on PPP was the most important factor that impeded the implementation of PPP concessions in Malaysia.

From the foregoing, it is clear that Zambia needed to develop an independent policy direction on the use of PPPs in the road sector to give clarity on the subject matter. The researcher is of the view that a general policy as the case had been would not address specific issues in the road sector.

#### **5.4 Significance and implication of the findings**

The limited uptake of PPPs was likely to continue unless specific measures were undertaken to address the major challenges. The implication of lack of PPPs was continuation of implementation of capital projects under the GRZ balance which would subsequently increase the sector's indebtedness to suppliers, contractors and consultants. The adverse effect of the continued debt accumulation was incapacitation of suppliers, contractors and consultants to take up more works and obviously deterioration of the road network to poor state. To stimulate the uptake of PPPs in the road sector in Zambia, there was need to re-look at the PPP policy framework and coin in specific incentives to encourage investment in the sector. The GRZ also needed to be consistent and adhere to regulations as some of the measures to be undertake.

## **5.5 Credibility and generalization of the findings**

The results are credible because the study used mature, experienced and professional respondents in the road sector in Zambia. Therefore the results could be generalized to the road sector in Zambia. The results however cannot be generalized to other sectors because a purposive sampling was used to determine the respondents.

## **5.6 Limitation**

The results from the study were not generalized to other sectors which implemented the PPP programs in Zambia because expert sampling was used, which is a non-probability sampling. The analysis is based on the prevailing economic fundamental in Zambia. The results may not be valid under different environment.

## **5.7 Further Study**

A study would be necessary to determine what incentives should go with which option once the transaction have been categorized as (i) non-economically viable and (ii) economically viable. The incentives should address the risk of low traffic volume and other threats to the uptake of PPPs in the road sector in order for GRZ to derive value for the money.

## **5.8 Summary of Chapter 5**

The chapter 5 has given a summary of main research results in relation to research outcomes. It has shown how the current results fit into the existing knowledge. The limitations and the area for future study have also been highlighted.

## CHAPTER SIX: RECOMMENDATIONS AND CONCLUSIONS

### 6.1 Introduction

The uptake of Public – Private Partnerships (PPPs) in the road sector in Zambia has been limited, despite the Government of the Republic of Zambia’s initiatives as far back as 2009 when the PPP Act was enacted. The paradox was that there was no study that had been conducted to determine the challenges in the implementation process of PPPs in the road sector in Zambia. This study sought to find out the main challenges in the implementation process and to recommend possible solutions. The specific objectives were:

- 1 To find out the challenges faced in the implementation of PPPs in the Road sector in Zambia; and,
- 2 To recommend the possible solutions required to mitigate the challenges faced in the implementation of PPPs in the road sector in Zambia.

To achieve these objectives, the researcher carried out a detailed literature review and utilized a purposively sampled population of experts in a semi-structured interview and questionnaire survey. The Statistical Package for Social Sciences (SPSS) and the Pareto’s Principle were used for data analysis.

The study confirmed the prevalence of PPP implementation challenges in the road sector in Zambia. The main challenges were: (1) non-financial viability of the concessions due to low traffic volume (13.9%); (2) lack of time, resources and knowledge in the implementing agencies (12.9%); and, (3) inconsistent and unclear PPP Policy (12.3%). The second and third challenges were also reported by ZDA in Mwenda (2014) whose focus was on the general implementation of PPPs in Zambia.

Based on this research, possible solutions among others were:

1. implementing agencies to categorize the non-economically and economically viable toll roads and incentivize the former as part of the long-term solution; and,
2. build capacity in all implementing agencies and/or create specialized ‘swat teams’ to work with implementing agencies on specific transactions as ‘quick wins’.

## **6.2 Recommendations**

To stimulate the uptake of PPPs in the road sector in Zambia, the study recommends both short term and long measures.

### **6.2.1 Short recommendations**

The Government should build capacity in all implementing agencies. The PPP process was a complex one which required a combination of special skills mix in financial analysis and modeling, transaction structuring, commercial legal expertise and sector knowledge and transaction management which were non-existent in most of the implementing agencies.

### **6.2.2 Long recommendations**

1. The implementing agencies should categorize the non-economically and economically viable transactions and incentivize the former.
2. The PPP Unit and the implementing agencies should develop a clearer and more transparent guidelines and policy framework for PPPs in the road sector in Zambia. The PPP policy framework should reflect the proposed incentives for non-economically viable transactions.
3. The Bank of Zambia should review the Capital Market Legislation to enable pension houses, insurance companies and other players to provide financing to the banks or directly offer long-term loans to business communities in order to strengthen the Lusaka Stock Exchange (LuSE) and eventually get attractive interest rates.
4. PPP Unit should define time guidelines for procurement of PPP transactions to minimize the risk of transaction taking too long to materialize.
5. The implementing agencies should effectively manage stakeholders to get the buy in and support for the use of PPPs.
6. The implementing agencies to increase operational budgets for PPPs campaigns.

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## APPENDICES

### Appendix 1: Questionnaire Survey



University of Zambia

School of Engineering

MEng in Project Management

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#### **MSc. RESEARCH PROJECT - ANALYSIS OF THE CHALLENGES OF THE PUBLIC-PRIVATE PARTNERSHIPS (PPP) PROJECTS IN THE ROAD SECTOR IN ZAMBIA.**

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You have been selected as a valued and knowledgeable participant in the Research Project that aims to find out the challenges that exist in the implementation of PPP Projects in the Road sector in Zambia and offer possible solutions.

The PPP Act in Zambia was enacted in 2009, but, only a few PPP Projects have been implemented and the funding gap for Infrastructure Projects is widening. Closing this gap requires raising more resources and looking for more effective ways to meet infrastructure targets. As huge capital investment above National Budgets and Project support are required, experiences in other developing and developed countries have shown that the use of PPPs could remedy the situation (Fall et al., 2009; ADB, 2008; Hay, 2009, p, 1; Al-Shqairal, 2009; Ghobadian et al., 2004; Li 2003, p, 45; ONG, 2003). What are the challenges and solutions for PPPs to work in Zambia?

The questionnaires are completely anonymous. All the information you provide will be treated with the highest order of ethics and strictest confidence. Your opinion and perception on the Research Topic will help develop a better PPP Model for the Road sector in Zambia.

Please answer all the questions and statements as honestly and truthfully as possible. Your contribution will be of profound importance towards the success of this research and thank you very much for your willingness to participate in this study.

For clarification, you may Contact: Mr. Raivy Namalala Chilala, Master of Engineering Student

Cell No. 0977381583

Email address: [namalalachilala@yahoo.com](mailto:namalalachilala@yahoo.com)

**(Please circle or tick the answer)**

**Part A: Respondent's Details**

1. How old are you?
  - a) 15 – 30
  - b) 31 – 45
  - c) 46 – 60
  - d) 61 and above
  
2. What is your highest level of education?
  - a) Postgraduate degree (Masters, PhD) Circle
  - b) Undergraduate degree (Degree: state your specialization-----)
  - c) Diploma/ Certificate
  - d) Grade 12 certificate
  - e) Less than Grade 12 certificate
  - f) No formal Education
  
3. What is your profession?
  - a) Engineer
  - b) Accountant
  - c) Procurement Specialist
  - d) Financing Consultant
  - e) Businessman /Woman
  - f) Other ( specify)-----
  
4. Which one best describes your employment sector?
  - a) Government
  - b) Parastatal
  - c) Co- operating Partner
  - d) Regulator/Oversight
  - e) Civil Society
  - f) Academic Institution
  - g) Others specify-----
  
5. What role do you play in the Road sector?

Road Authority  
Road Construction  
Policy Formulation and Regulation  
Financing  
Consultancy (specify)\_\_\_\_\_

Procurement Authority

Other (specify)-----

- 6. What management level do you belong to in your organization?
  - a) Senior Management
  - b) Middle Management
  - c) Low Management

**Part B: Road Projects under PPP in Zambia**

- 7. Do you think the current investment in the road sector is adequate to address the infrastructure gap in Zambia?
  - a) Yes
  - b) No.
  - c) Not Sure

Give reason for your answer-----

- 8. Have you implemented any Road Projects under PPP in Z a m b i a ?
  - a) Yes
  - b) No.

If your answer to the above question is yes, would you kindly list those PPP Road Projects.

- a. -----
- b. -----
- c. -----
- d. -----

**Part C: Challenges faced in the implementation of PPPs in the Road sector**

9. Has your organization successfully implemented PPP transactions in the Road sector in Zambia?
- a) Yes
  - b) No
10. Which of the following do think are the main barriers hindering PPP investment in the Road sector in Zambia?
- a) Lack of Funds and Treasury Approval;
  - b) A lack of policy direction from the highest levels of government
  - c) Change in priority by the Government
  - d) Non viability due to poor traffic volume
  - e) Lack of interest by the Private Sector to implement Projects under PPP arrangements
  - f) Non availability of long term financing in the Local Market with attractive interest rates for investment
  - g) Biased Procurement guidelines towards traditional procurement
  - h) Inconsistent and unclear policy direction on PPP
  - i) Inadequate regulation framework
  - j) Low political commitment
  - k) Lack adherence to the regulation framework by Road Authorities.
  - l) A lack of time, resources, know-how, and authority within the staff of the implementing agencies, to originate and implement PPPs
  - m) A lack of resources within the PPP Unit to promote PPPs and help support implementing agencies in developing and doing PPPs
  - n) Inadequate understanding of the regulator role by PPP Unit, Technical Committee and the Council
  - o) Low Interest from the Private Sector to take on PPP Projects due to unstable economic environment
  - p) PPP Projects take long to materialize
  - q) All of the above
  - r) Not Sure
  - s) Others (state)-----

**Part D: Possible Solution to PPP challenges in Zambia**

11. What do you think should be done to address the challenges in the implementation of PPPs in the Road sector in Zambia;
- a) Clear Policy direction from the highest levels of Government
  - b) Creation and Institutionalization of a PPP Sub Unit in Road Authority

- c) Creation of specialized ‘swat teams’ to work with implementing agencies on specific transactions
  - d) Streamlining of PPP regulations for PPP Road Projects in Zambia
  - e) Promotion of PPP Projects in the Road sector
  - f) Effective communication between the Public and Private Sector on the PPP deals
  - g) Build Capacity in the implementing agencies
  - h) Others (state)-----
- 

**12. What PPP model would be most suitable for the Road sector in Zambia?**

- a) Build and Transfer Scheme (BT) for instance Contractor Finance Initiative (CFI)
- b) Build Operate and Transfer Scheme (BOT)
- c) Build Own Operate and Transfer Scheme (BOOT)
- d) Build Lease and Transfer (BLT)
- e) Build Transfer and Operate (BTO)
- f) Rehabilitate Operate and Transfer (ROT)
- g) Lease Develop and Operate (LDO)
- h) Others (state/explain)-----

**13. Please give reasons for your answer for Question 14.**

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**14. Any other Comments?**

a. -----

**Thank you for your participation**

## Appendix 2: Interview Questions

1. What type of Organization are you?  
-----
2. Has your Organization pursued PPPs in the Road Sector in Zambia?
  - A. Yes
  - B. No
  - C. If No, why not? -----
3. How do you choose Projects for implementation?
  - A. Work out the Net Present Value and implement Projects with positive values
  - B. Propose Projects to Implementing Agencies with Positive Net Present Value
  - C. Win tenders of Projects advertised by Implementing Agencies
  - D. All of the above
  - E. Others specify-----
4. Do you think a regulation of the PPP Contracts implemented in the Road Sector in Zambia is adequate?
  - A. Yes
  - B. No
5. What are the weakness in the regulation of the PPP Contracts in the Road Sector in Zambia?
  - A. inadequate regulatory framework,
  - B. Lack of adherence to the regulatory framework by the road authorities
  - C. lack of capacity and skills by the road authorities
  - D. inadequate understanding of the regulator role by the Unit, Technical Committee and the Counsel
  - E. All of the above
  - F. Others specify-----
6. What are the challenges experienced in implementation of PPPs in the Road Sector in Zambia?
  - A. A lack of policy direction from the highest levels of government
  - B. A Policy bias toward traditional public procurement and against PPPs
  - C. A lack of fiscal imperative to use PPPs
  - D. lack of clarity in the minds of implementing agencies and the Private Sector on what is their roles and why Zambia should do PPPs.
  - E. Inconsistent commitment to PPPs in different parts of government and at different levels of Government. Commitment and direction on PPPs changes over time, while PPPs require a long time frame
  - F. A lack of time, resources, know-how, and authority within the staff of the implementing agencies, to originate and implement PPPs
  - G. A lack of resources within the PPP Unit to promote PPPs and help support implementing agencies in developing and doing PPPs

- H. Inadequate legislation of PPP
- I. Low political commitment
- J. PPP Projects take long to materialize
- K. Low Interest from the Private Sector to take on PPP Projects due to unstable economic environment
- L. Non availability of long term financing in the Local Market with attractive interest rates for investment
- M. All of the above
- N. Others specify-----

7. Has your Department closed PPP transactions or has it attempted transactions which then were not completed for one reason or another in the Road Sector in Zambia.
- A. Yes
  - B. No
  - C. If the answer to question 15 was No, then answer question 16 otherwise skip it

8. Why were the transactions not completed?
- A. The Contractor become bankrupt
  - B. The Project become unnecessary overtime and there was no need to proceed
  - C. The Contractor failed to perform
  - D. The Government terminated the PPP Agreement for political reasons
  - E. Others specify-----

9. What do you think should be done to address the challenges in the implementation of PPP Projects in the Road Sector in Zambia;
- A. Clear Policy direction from the highest levels of Government
  - B. Creation and Institutionalization of a PPP Sub Unit in Road Authority
  - C. Creation of specialized 'swat teams' to work with implementing agencies on specific transactions
  - D. Streamlining of PPP regulations for PPP Road Projects in Zambia
  - E. Promotion of PPP Projects in the Road Sector
  - F. Effective communication between the Public and Private Sector on the PPP deals
  - G. Build Capacity in the implementing agencies
  - H. Others specify-----

10. What role/Contract would you typically have, or propose to have in a PPP arrangement in the Road Sector in Zamba?
- A. Utility Restructuring, Corporatization and Decentralization
  - B. Civil Works and Service Contracts
  - C. Management and Operating Agreements
  - D. Leases /Affermage
  - E. Concessions, Build-Operate-Transfer (BOT), Design-Build-Operate (DBO)

F. Joint Ventures and Partial Divestiture of Public Assets Full Divestiture

G. Full Divestiture

H. Contract Plans and Performance Contracts

I. Others specify-----

11. State the reason for your option in question 10 above;

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**Thank you for your participation**