BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

GRADUATE SCHOOL OF BUSINESS

RESEARCH PROJECT

RISKS AND CONSTRAINTS OF HIGHWAY PUBLIC PRIVATE PARTNERSHIP (PPP) PROJECTS IMPLEMENTED IN ZIMBABWE

BY

ENERST SHENJE

B1541737

THIS RESEARCH PROJECT IS SUBMITTED TO THE BINDURA UNIVERSITY OF SCIENCE EDUCATION (BUSE) FACULTY OF COMMERCE, GRADUATE SCHOOL OF BUSINESS IN PARTIAL FUFILMENT OF REQUIREMENTS OF THE MASTER IN BUSINESS LEADERSHIP (MBL) DEGREE QUALIFICATION.
APPROVAL FORM

The undersigned certify that they have read and recommend to the Bindura University of Science Education for acceptance: A dissertation with title, “An Assessment of Risks, Constraints and benefits in highway Public Private Partnerships (PPPs) implemented in Zimbabwe”, by Enerst Shenje in partial fulfilment of the requirements for the Degree of Masters in Business Leadership (MBL).

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DECLARATION

I Enerst Shenje, do declare that “An Assessment of Risks, Constraints and Benefits in highway Public Private Partnerships (PPPs) implemented in Zimbabwe” is the result of my own investigation and research, except to the extent indicated in the acknowledgements, references
and by comments included in the body of the report and it has not been submitted in part or in full for any other degree to any other University.

Ernest Shenje

SIGNATURE                    DATE

DEDICATION

I dedicate my dissertation work to God almighty, my family and my friends. I dedicate this research to the Lord God for the gift of life, good health, loving and courageous family and friends. I dedicate this work to my loving wife, Tracey whose words of encouragement and push for tenacity ring in my ears. I dedicate this work to my parents, Francis and Edith Shenje for having been my best cheerleaders. I also dedicate this dissertation to my church family and friends who have supported me throughout the
process. I dedicate this work and give special thanks to my friend Brian Hundi for being there for me throughout the entire Masters in Business Leadership Programme.

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Department of Roads for the support in carrying out the research.

ABSTRACT

The study was undertaken under the topic, ‘An assessment of the risks, constraints and benefits of highway Public-Private Partnerships in Zimbabwe’. The public sector was represented by Department of Roads, Ministry of Transport and Infrastructure Development. The poor state of the country’s road network due to road maintenance backlog as characterised by potholes motivated the selection of the study.

The research used a population of 150 people. The sample consisted of 36 civil engineers, ten (10) civil engineering contractors, nine civil engineering consultants, two concessionaires and three other professional who had experience in Highway Public-Private Partnership projects in Zimbabwe. Both probability and non-probability sampling methods were used in the research. Stratified random sample was used for the probability sample while a purposive sample was used for the non-probability sample.

The research considered both qualitative and quantitative research methods to gather qualitative and quantitative data respectively. The multi-stage sampling technique used in the research. Semi-structured interviews were conducted to gather qualitative data while a structured questionnaire was used to gather quantitative data. The reliability of
the Likert scale was tested for internal consistency using the Cronbach’s coefficient which was calculated and found to be 0.91. Graphical and statistical representations were used for the quantitative data while narrative summary was used for the qualitative data.

It was found out that, if properly managed, PPPs have the potential to unlock the needed resources to fund highway infrastructure projects in Zimbabwe since PPP were considered a sustainable source of finance to fund strategic PPP projects. The findings of the research project show that most experts in the industry were aware of the effectiveness of PPP in developing highway PPPs. Experts indicated that the low uptake of highway PPPs and achievement of maximum success was as result of risks and constraints. The findings further showed that considering Zimbabwe’s economic environment, the financing options provided through PPPs make the method increasingly popular. Due to fiscal pressures by other sectors of the economy, there was urgent need to embrace PPPs on our highways. The Zimbabwe Agenda for Sustainable Socio-Economic Transformation blue print identified private sector participation as a sustainable source of finance to fund strategic highway projects since PPPs create opportunities and stimulates investments in infrastructure development and economic growth.

It was concluded that Zimbabwe is high risk country and that there was no conducive environment for the implementation of highway PPP projects and the evidence was the low uptake of highway PPP projects when roads were in a very bad state. However, of the implemented projects, it can be concluded that the country had a monitoring and evaluation framework for measuring the success of PPP projects since all the highway PPP projects were successful. The research recommends the establishment of PPP unit, strengthening of the Anti-corruption commission, training on PPP and inclusion of PPP in curricula, the adoption of legal, regulatory and institutional frameworks of 2010, aggressive sourcing of funds from investment source markets, adoption the PPP Hybrid Annuity Model (HAM) model, the government should have a priority list of projects to be implemented under the PPP model.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

The aim of this research is to assess the risks, constraints and benefits of Public-Private Partnerships (PPPs) particularly in the development of highway infrastructure in Zimbabwe during the period 1995 to 2015. The chapter seeks to explore the background of the study, statement of the research problem, main aim of the study, study objectives, research questions, hypotheses, significance of the study, research limitations and delimitation of the study as well as research assumptions under which the research study is unfolded.

1.2 Background to the study

A good, efficient and interconnected road network system is important and is a requirement for any country in the world. Increase in traffic and trade volume, among others, leads to the need for an increase in traffic efficiency (Karim, 2012).

Pessoa (2008) postulates that over the past two decades, developing countries’ capacity to provide public services on their own in an effective and efficient manner was questionable. Not only were the resources invariably inadequate, the quality and efficiency of the services they provided were very often rather poor (Pessoa, 2008). As put forward by Pessoa (2008), in developing countries, there was poor resource allocation and poor management in public services. The public sector was burdened with bureaucratic procedures. Because the public sector did not compete, it had no incentive to improve quality, particularly in situations where it was a monopoly.

Franceys and Weitz (2003), reiterated that governments in developing countries had embarked on structural reforms, privatizing infrastructure and infrastructure sectors. In other words developing countries needed far more financing for infrastructure than could be provided by domestic funds. That was as a result of depleted infrastructure. The World Bank, in 2006, estimated that only about 24% of Zimbabwe’s total road network was in good condition while over 40% was in a very poor state. With that scenario, road maintenance requirements far exceeded budget allocations.
As indicated by Muleya and Zulu (2009), Zimbabwe had only five projects worth US$841 million dollars placed at number six in terms of estimated total investment. South Africa was at the top of the table with an estimated total investment of US$25,341 million while Swaziland was at the bottom of the table with an estimated total investment of US$53 million. The estimated total investment in PPPs in Africa was US$ 34,741 million dollars as at 2009.

The main source of funding for highway developments in developing countries had traditionally been through Public Sector Investment Programmes (PSIP) and other road user charges such as fuel levy, transit fees, vehicle licences, abnormal load fees and toll fees. Due to dwindled revenue from those sources of funding, governments were increasingly adopting Public Private Partnerships (PPPs) which use the road-user pay principle, which involves motorists paying a fee (toll) for driving on a particular tolled road (Mbara, Marirangwe and Mukwashi, 2010).

Faced with the urgent need to raise funds to develop infrastructure, the Government of Zimbabwe through the Short Term Economic Restructuring Programme (STERP) of (2009) recognised that it had become prudent and necessary to adopt PPP guidelines to provide guidance to all PPP practitioners in both the public and private sectors. In 2013 the Government of Zimbabwe came up with PPP guidelines which were not yet adopted by the time this research study was submitted.

The primary responsibility of the Public-Private Partnership (PPP) Policy imposed upon government Institutions was to identify potential PPP projects as part of the annual budgetary process. Projects were supposed to be identified and prioritised using a cost benefit analysis in terms of how well they addressed the country’s development requirements.

1.3 Statement of the research problem

Traditional financing methods were inadequate to finance highway infrastructural development in Zimbabwe since the government’s financing capacity was limited by tight fiscal pressures. As put forward by Gumbie and Kudenga (2009), a World Bank mission pointed out that, given the total road maintenance funding requirements in 2005 was about US$160 million, only US$10 million, amounting to 6% of the requirements, was disbursed. In the 2009 financial year the estimated maintenance funding
requirements for road maintenance amounted to about US$225 million, compared to a budget provision of US$13 million which was less than 6% of the total financial requirements. The road rehabilitation requirements were estimated at the time to about US$1.3 billion compared to a mere 0.6% budget allocation of US$ 8 million. As a result of inadequate funding, highways were in a very bad state.

The research was carried out to assess the risks, constraints and benefits of highway Public-Private Partnership projects in Zimbabwe and also to explore how the highway PPP projects implemented in the country post-independence impacted on the economy in a bid to reduce the sector’s government funding dependence syndrome.

1.4 Purpose of the study

The purpose of the research was to come up with recommendations that mitigate the risks and constraints in highway PPP projects in the country. In addition, the recommendations would create a conducive environment for investment in highway PPP projects. Resultantly, improve the highway infrastructure which will result in improved standards of living.

1.5 Study Objectives

The study considered the following secondary objectives:

1.5.1 To identify the risks and constraints associated with the highway PPP projects in Zimbabwe.
1.5.2 To highlight the benefits of the highway PPPs in the country.
1.5.3 To identify PPP key success indicator in Zimbabwe.
1.5.4 To identify the successful projects implemented in Zimbabwe during the period 1995 to 2015.
1.5.5 To suggest recommendations.

1.6. Research Questions

1.6.1 Which risks were associated with highway PPPs implemented in Zimbabwe between 1995 and 2015?
1.6.2 What were the constraints to the implementation of highway PPPs?
1.6.3 What were the benefits of the highway PPPs in the country?
1.6.4 Explain the key success factors of the PPP highway projects in Zimbabwe?
1.6.5 Were there successful highway PPP projects implemented during the period 1995 to 2015?

1.7 Hypotheses

1.7.1 Null hypothesis

Public Private Partnerships implemented in Zimbabwe during the period 1995 to 2015 had no value for money.

1.7.2 Alternative hypothesis

Public Private Partnerships implemented in Zimbabwe during the period 1995 to 2015 had value for money.

1.8 Significance of the Study

The findings of the research redounded to the benefit of society considering that PPPs played an important role in infrastructure development then. The greater demand for improved roads in particular, justified the need to adopt PPPs. Thus, the adoption of recommendations derived from the results of the study would result in a win-win situation between the public sector (government) and private sectors in the delivery of highway infrastructure in Zimbabwe. Furthermore, the research intended to assist the following stakeholders:

1.8.1 The researcher

The study would help to uncover critical areas in PPPs that many researchers were not able to explore. Thus, a new model of PPPs might be arrived at. Resultantly, the research would contribute to the PPP body of knowledge.

1.8.2 Academic Community

The readers would know the risks associated with the PPPs, successes, failures and lessons learnt from the PPPs. They would also benefit from the recommendations of the research subject to their scrutiny. Gaps that might have been left in this research would be an area of future research by other researchers.
1.8.3 The Government of Zimbabwe

The study sought to critically evaluate the PPPs discourse as applied to highway infrastructure development and the efforts made by the government during the period 1995 to 2015. The research would therefore, assist the government of Zimbabwe in policy reviews and formulation. It would assist in the provision of world class road infrastructure to support investment and economic growth. Furthermore, it would assist in the planning and prioritization of highway developmental mega projects.

The outcome of this research was hoped to reveal the differences between Zimbabwe’s PPP models as applied on highway projects and models from other countries. As such, by recognizing the differences, advantages on those differences that were beneficial in various aspects could be considered positively. Decision making would be based on facts and lessons learnt.

1.8.4 General populace of Zimbabwe

The general public would benefit from improved road infrastructure hence, reduced costs of doing business, reduced accidents, easy transportation of people and goods and improved standards of living would be attained. Non-governmental organisations (NGOs) would benefit in terms of the infrastructure and hence implement their projects easily especially those implementing philanthropy programmes and income generating businesses such as mining and farming.

1.8.5 The physical environment

The attributes of poor highway maintenance were; vegetation growing on the shoulders of roads, poor drainage resulting in erosion of some road sections particularly approaches to hydraulic structures like bridges and siltation of water bodies. Implementation of PPPs would result in well maintained roads and safeguarded environment.

1.9 Research Assumptions

In order to validate this research, the following assumptions were adopted as a guide to the research process:

- It was assumed that the participants would answer truthfully and honestly.
- It was assumed that participants were volunteers who were free to withdraw from the study at any stage, with no ramifications.
- The sample was a perfect representation of the population the researcher aimed to make inferences to.
- Data collection instruments were valid and reliable.

1.10 Scope (Delimitations) of the study

The scope of the study was confined to an assessment of the risks, constraints and benefits of highway PPP projects implemented in Zimbabwe during the period 1995 to 2015. The results of this study could be generalized to the roads sub-sector in Zimbabwe. The respondents were engineers, consultants, contractors, concessionaires and financiers of PPP highway construction projects from the public and private sectors of the industry, and from client organisations.

1.11 Ethical considerations

Research ethics plays a central role in ensuring that research findings in a study are credible and reliable as pointed out by Trochim (2006). There are a number of key phrases that describe the system of ethical protections that are used to protect better rights of research participants (Johnson and Christensen, 2011). In this study informed consent, privacy, deception, anonymity and confidentiality were used.

1.11.1 Informed Consent

Trochin (2006) defined informed consent as implying to all possible and adequate information with regard to the purpose of the research, the procedures followed in the execution of the investigation, all possible advantages and disadvantages and dangers to which the participants may be exposed, as well as information to establish the credibility of the researcher must be provided to potential participants. Informed consent is a procedure by which research subjects choose whether or not they wish to participate in a research study after having been informed of the possible risks and benefits of participating in the research. Three elements were satisfied for consent to be given to the respondents which are; capacity, information and voluntariness therefore respondents who were not willing to participate in the research were not forced. Informed consent helped the researcher to come up with a valid research since respondents participated in the study voluntarily.
1.11.2 Privacy

Privacy was also taken into consideration in publishing information obtained from the respondents and this was done in a way that insures individual’s anonymity in particular names of participants were not revealed. Violation of the promise of privacy can result in harm to the subject.

1.11.3 Anonymity and confidentiality

Anonymity and confidentiality were granted in that participants did not identify themselves and the information collected was kept confidential.

1.12 Limitations of the Study

There was no pre-determined population of the study especially in the private sector and hence the researcher used expert judgement and referrals from other captains of industry to come up with the study population. For information on other countries’ PPP models, the researcher relied on available information online and offline. Due to the researcher’s tight schedule, time was a constraint of the research study.

1.13 Definition of terms

- **Benefit**
  something that is advantageous or good.

- **Constraint**
  This is an element, a factor or a subsystem that works as a bottleneck. It restricts an entity, project or system from achieving its potential with reference to its goal

- **Infrastructure**
  The basic structures or facilities necessary for a country or organisation to function effectively for example roads and bridges.

- **Hybrid Annuity Model (HAM)**
  It is a PPP model in which the first 40% payment is made by the government as a fixed amount in five equal instalments where as the remaining 60% is paid as variable annuity amount after the completion of the project depending upon the value of the asset created.
- **Highway**
  A road that connects towns and/or cities.

- **Public-Private Partnership (PPP)**
  An arrangement between one or more public and private sectors, typically for a long term nature that enable them to work cooperatively towards shared or compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of resources, shared risk-taking and mutual benefit.

- **Public Sector Investment Programme (PSIP)**
  Is the budgeting and strategic planning tool available to government to translate its policies and plans into projects and programmes.

- **Regional Trunk Road Network (RTRN)**
  Roads linking countries within southern Africa region.

- **Risk**
  An positive or negative event that has impacts on the outcome of a project. This implies future uncertainty about deviation from expected earnings or expected outcome.

### 1.14 Chapter summary

The above chapter covered the introductory part of the research study, the background to the study, statement of the research problem. Other areas included the purpose of the study, objectives that the research aimed to achieve, the research questions, hypotheses to be tested and the significance of the study. Research assumptions, delimitation of the study, ethical considerations and limitations that the researcher faced were also discussed. In the following chapter, literature deemed to be in tandem with this research was quoted and reviewed.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The previous chapter covered the introductory part of the research study, that is, the background to the study, the statement of the research problem, the purpose of the study, study objectives, research questions, hypotheses to be tested, the significance of the study, assumptions of the study, delimitations of the study, ethical considerations and limitations of the study. This chapter brings out the purpose of literature review and the sources of literature reviewed. Finally, the relevant literature was reviewed. The key areas covered include history of PPPs, definitions of PPPs, principles of successful PPPs, forms of PPPs, risks of PPPs construction projects, types of PPPs, benefits of PPPs and constraints of PPPs construction projects.

2.2 Purpose of literature review

Any research which is worth its purpose has to be based on a detailed authentic literature review which helps to examine a number of issues related to the research problem in question. The assertion on literature review is confirmed by Leedy (1980) who said; “literature review in itself reveals investigation germane to one’s own field under study as well as showing how collateral researchers have handled similar issues”. Literature review is value adding as it enables the researcher to establish a point of reference for more focused investigative exercise by revealing data and information that is already known.

Literature review enabled the research to gain understanding of the current problem in relation to the previous problems. As a result, strategies used to study the previous problems might be applicable to the current problem. However, if the research environment of previous studies was not similar to the current study, the strategies would need to be modified to fit the current research environment. The most important purpose was to identify an information gap. To narrow the gaps if any, recommendations were proffered in the conclusive chapter.

In order to answer the research question, the study identified risks which occurred during the implementation of the PPPs, considered the benefits of the PPPs and used a
checklist of key success factors in determining successful PPP projects implemented in Zimbabwe during the twenty year period, 1995 to 2015.

2.3 Sources of literature reviewed

Sources of literature for the study that helped the researcher to develop a good understanding of trends that emerged from previous and current researches were primary and secondary sources of information. A selected number of journals relating to PPP were also examined. Sources of literature included textbooks, journal articles, conference reports, seminar presentations, report to the PPP workshop conducted in 2009, the internet and reports from other sources.

2.4 History of PPPs

Public-Private Partnerships (PPP) are not new. Concessions, the most common form of PPPs, provide services of general economic interest. Jomo, Chowdbury, Sharma and Platz (2016) posit that PPPs date back thousands of years. During the Roman Empire concessions served as legal instruments for projects in the following areas; road construction, public baths and the running of markets (Jomo et al., 2016). Bezançon (2004) gave examples of French nobleman named Luis de Betman who was granted a river concession in 1438 to charge the fees for goods transported on the Rhine in medieval Europe. Budäus and Grüning (2004) confirmed that initially PPPs facilitated joint development and renewal of problematic urban zones for urban construction projects. Jomo et al. (2016) went on saying that, during the seventeenth and eighteenth century, infrastructure facilities like water channel, roads and railways were privately funded under concession contracts in America, Asia and Europe.
2.5 Definitions of Public-Private Partnerships

Table 2.1: Differing conceptualisations of Public-Private Partnerships

<table>
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<td>An arrangement between two or more entities that enable them to work cooperatively towards shared or compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of resources, shared risk-taking and mutual benefit (HM Treasury, 1998).</td>
<td>▪ Inter-organizational relationships; ▪ Cooperation; ▪ Shared objectives; ▪ Joint investment; ▪ Risk sharing</td>
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<tr>
<td>Public-Private Partnerships are ongoing agreements between government and private sector organizations in which the private organization participates in decision making and production of a public good or service that has traditionally been provided by the public sector and in which the private sector shares the risk of that production (Forrer, Kee, Newcomer and Boyer, 2010)</td>
<td>▪ Risk allocation; Inter-organizational relationship</td>
</tr>
<tr>
<td>A legal-binding contract between government and business for the provision of assets and the delivery of services that allocates responsibility and business risks among the various partners (Partnerships British Columbia, 2003).</td>
<td>▪ Contractual governance; Risk allocation</td>
</tr>
<tr>
<td>The main characteristics of PPP, compared with the traditional approach to the provision of infrastructure, is that it bundles investment and service provision in a single long term contract. For the duration of the contract, which can be as long as twenty or thirty years, the concessionaire will manage and control the assets, usually in exchange for user fees, which are its compensation for the investment and other costs (Engel, Fischer and Galetovic, 2008).</td>
<td>▪ Bundling; Service provision; Long term contract</td>
</tr>
</tbody>
</table>
Table 2.1 – Continued

<table>
<thead>
<tr>
<th>Definition</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnerships which include contractual arrangements, alliances, cooperative agreements, and collaborative activities used for policy development, program support and delivery of government programs and services (Osborne, 2000).</td>
<td>▪ Inter-organizational relationship; Contractual governance</td>
</tr>
<tr>
<td>A relationship that consists of shared and/or compatible objectives and an acknowledged contribution of specific roles and responsibilities among the participants which can be formal or informal, contractual or voluntary, between two or more parties. The implication is that there is a cooperative investment of resources and therefore, joint risk taking, sharing of authority, and benefits for all parties (Lewis, 2002).</td>
<td>▪ Inter-organizational relationship; Shared objectives; Mutual investments; Risk sharing; Benefit sharing</td>
</tr>
<tr>
<td>A relationship involving the sharing of power, work, support and/or information with others for the achievements of joint goals and/or mutual benefits (Kernaghan, 1993).</td>
<td>▪ Inter-organizational relationship; Shared objectives; Power and information sharing; cooperation</td>
</tr>
</tbody>
</table>

Source: Roehrich, Michael and Gerald, (2014)

From the definitions given above there are key issues that all the authors highlighted. Public-Private Partnerships entail that there exists an inter-organisational relationship. Because the public sector and private sector enter into partnership, it therefore entails that there is corporation, joint investment, risk sharing, contractual governance and benefit sharing as indicated by Lewis (2002). All the above is as a result of shared objectives between public sector and private sector.

2.6 Principles for successful Public-Private Partnerships

Corrigan, Hambene, Hudnut, Levitt, Stainback, Ward and Witenstein (2005) identified the following principles for successful Public-Private Partnerships:
- Prepare properly for Public-Private Partnerships
- Create a shared vision
- Understand your partners and key players
- Be clear on the risks and rewards for all parties
- Establish a clear and rational decision making process
- Make sure all parties do their homework
- Secure consistent and coordinated leadership
- Communicate early and often
- Negotiate a fair deal structure
- Build trust as a core value

Corrigan et al. (2005) and Roehrich, Michael and Gerald (2014) in their literature on differing conceptualisation of Public-Private Partnerships and principles for successful Public-Private Partnerships respectively, had common characteristics in that the authors highlighted the issue of, shared vision and objectives, risk sharing and cooperation.

**Table 2.2 Partnership principles**

<table>
<thead>
<tr>
<th>Number</th>
<th>Partnership principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Purpose is clear, aligned and realistic</td>
</tr>
<tr>
<td>2</td>
<td>Availability of appropriate financial and human resources</td>
</tr>
<tr>
<td>3</td>
<td>Clarity of motivations, roles, capabilities and contributions</td>
</tr>
<tr>
<td>4</td>
<td>Sufficient organizational processes and procedure that foster collaboration</td>
</tr>
<tr>
<td>5</td>
<td>Alignment of partners and policies</td>
</tr>
<tr>
<td>6</td>
<td>Commitment ownership and responsibility of partners towards the partnership</td>
</tr>
<tr>
<td>7</td>
<td>Partnership is participative and empowering</td>
</tr>
<tr>
<td>8</td>
<td>Culture of collaboration trust and openness</td>
</tr>
<tr>
<td>9</td>
<td>Presence (and awareness) of cultural transformation, synergy, efficiencies or exchange</td>
</tr>
<tr>
<td>10</td>
<td>Define success monitors and reports its performance</td>
</tr>
<tr>
<td>11</td>
<td>Partnership is continually engaging with others, developing and learning</td>
</tr>
</tbody>
</table>
Table 2.2 - Continued

<table>
<thead>
<tr>
<th>Number</th>
<th>Partnership principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Clear attribution of benefits, risks and blame</td>
</tr>
</tbody>
</table>

Source: Jeffares, Sullivan and Boivard, (2009)

The implication of these twelve partnership principles were two-fold in that, firstly, the partnerships ought to be assessed across all of the domains; secondly, an ideal Public-Private Partnership would presumably score well on all counts (Jeffares, Sullivan and Boivard, 2009). Others had also followed this desire for a tool to assess the extent to which PPPs perform. OECD (2008: 133-134), for example, produced a heuristic listing of ten good ‘good practices in the public-private partnership process’ as their guidance as shown in Table 2.3, below.

Table 2.3 Ten good practices in the Public-Private Partnership process

<table>
<thead>
<tr>
<th>Number</th>
<th>Good Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Affordability and value for money</td>
</tr>
<tr>
<td>2</td>
<td>Value for money (primary objective)</td>
</tr>
<tr>
<td>3</td>
<td>Fiscal rules and expenditure limits</td>
</tr>
<tr>
<td>4</td>
<td>Risk sharing</td>
</tr>
<tr>
<td>5</td>
<td>Competition and contestability</td>
</tr>
<tr>
<td>6</td>
<td>Budget documentation and transparency</td>
</tr>
<tr>
<td>7</td>
<td>Regulatory risk and legal framework</td>
</tr>
<tr>
<td>8</td>
<td>Institutional capacity: the PPP unit</td>
</tr>
<tr>
<td>9</td>
<td>Public sector comparator</td>
</tr>
<tr>
<td>10</td>
<td>Political support from the highest level</td>
</tr>
</tbody>
</table>

Source: OECD, (2008: 133-134)
As far as the extent to which Public-Private Partnerships perform is concerned, both United Nations Economic Commission for Europe (2013) and OECD (2008: 133-134) were agreeing. Important to note is that both authors mentioned value for money, risk transfer and market competition as key performance indicators of PPPs.

2.7 PPP success factors

United Nations for Economic Europe (2013) identified the following as critical success factors for a successful PPP:

- Political will
- Value for money
- Government commitment
- PPP Champion
- Clear output specification
- Appropriate risk sharing
- Performance management

As highlighted by Corrigan *et al.* (2005 and Roehrich, Michael and Gerald (2014), value for money and risk sharing are key success factors of PPP projects. United
Nations for Economic Europe (2013) further indicated that to achieve value for money and risk sharing, there is need for political will, government commitment through an effective Public-Private Partnership (PPP) champion.

### 2.8 Classifications of PPP

Considering European Commission Guidelines for Successful Public-Private Partnerships (PPPs), Public-Private Partnerships can be classified using a scale from full public responsibility to full private responsibility as shown in Figure 2.2 below.

<table>
<thead>
<tr>
<th>Public responsibility</th>
<th>Private responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP Procurement</td>
<td></td>
</tr>
<tr>
<td>Traditional Public</td>
<td>Build-Operate transfer (BOT)</td>
</tr>
</tbody>
</table>

**Figure 2.2 Public Private Responsibility in Procurement Methods. Source:** European Commission Guidelines for Successful Public PPP, (2003)

#### 2.8.1 PPP Arrangements

The institute for Public-Private Partnerships (PPP) in Washington D. C. (USA) used the following arrangements for PPPs shown in Table 2.4.

<table>
<thead>
<tr>
<th>Types of contract</th>
<th>Duration</th>
<th>What contractor usually receives</th>
<th>Nature of contractor performance</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service contract</td>
<td>Short-term (1-3 years)</td>
<td>A fee from the government for the performing the service</td>
<td>A definitive, often technical type of service</td>
<td>Facility repair and maintenance laundry</td>
</tr>
<tr>
<td>Management contract</td>
<td>Medium-term (3-8 years)</td>
<td>A fee from the government for performing the service and a performance based incentive</td>
<td>Manage the operation of a government service</td>
<td>Regional water supply management</td>
</tr>
</tbody>
</table>
## Table 2.4 - Continued

<table>
<thead>
<tr>
<th>Types of contract</th>
<th>Duration</th>
<th>What contractor usually receives</th>
<th>Nature of contractor performance</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease</td>
<td>Long-term (8-15 years)</td>
<td>All revenues, fees or charges from consumers for the provision of the service; the service provider pays the government rent for the facility</td>
<td>Manage, operate, repair and maintain (and maybe invest in) a municipal service to specified standards and outputs</td>
<td>Existing airport or port facilities</td>
</tr>
<tr>
<td>Build-operate-transfer</td>
<td>Long term (15-25 years)</td>
<td>The government pays the service provider on a unit basis</td>
<td>Construct and operate, to specified standards and outputs, the facilities necessary to provide the service</td>
<td>Building construction, maintenance of regional schools, prisons or hospitals</td>
</tr>
<tr>
<td>Concession</td>
<td>Long term (15-30 years)</td>
<td>All revenues from consumers for the provision of service; the service provider pays a concession fee/debt to the government</td>
<td>Manage, operate, repair, maintain and invest in public service infrastructure to specified standards</td>
<td>New airport or seaport facilities, toll roads or bridges</td>
</tr>
</tbody>
</table>

2.8.2 Forms of PPPs

As stated by Hodge and Greve (2005), there are two major categories of partnerships namely: economic partnerships and social partnerships. These forms include contracting; Design-Build-Operate (DBO); Design-Finance-Build-Operate (DFBO); Build-Operate-Transfer (BOT); Build-Own-Operate-Transfer (BOOT); Operate-Maintenance (OM); Lease-Build-Operate (LBO); and Buy-Build-Operate (BBO) as confirmed by Savas (2000:246). The table below focuses on the four forms which are contracting; contracting, Build-Operate-Transfer (BOT), Design-Finance-Build-Operate (DFBO) and concession.
### Table 2.5 Strength and Weaknesses of PPP arrangements

<table>
<thead>
<tr>
<th>PPP Type</th>
<th>Main Features</th>
<th>Application</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracting</td>
<td>Contract with Private party to design and build public facility. Facility is financed and owned by public sector. Key driver is the transfer of design and construction risk.</td>
<td>Suitable to capital projects with small operating requirement. Suitable to capital projects where the public sector wishes to retain operating responsibility.</td>
<td>Transfer of design and construction risk. Potential to accelerate construction program.</td>
<td>Possible conflict between planning and environmental considerations. May increase operational risk. Commissioning stage is critical. Limited incentive for whole life costing approach to design. Does not attract private finance.</td>
</tr>
<tr>
<td>PPP Type</td>
<td>Main Features</td>
<td>Application</td>
<td>Strengths</td>
<td>Weaknesses</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>-------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>BOT</td>
<td>Contract with a private sector contractor to design, build and operate a public facility for a defined period, after which the facility is handed back to the public sector. The facility is financed by the public sector and remains in public ownership throughout the contract. Key driver is transfer of operating risk in addition to design and construction risk.</td>
<td>Suited to projects that involve a significant operating content. Particularly suited to water and waste projects.</td>
<td>Transfer of design, construction and operating risk. Potential to accelerate construction. Risk transfer provides incentive for adoption of whole costing approach. Promotes private sector innovation and improved value for money. Improved quality of operation and maintenance.</td>
<td>Possible conflict between planning and environmental considerations. Contracts are more complex and tendering process can take longer. Cost of re-entering the business if operator proves unsatisfactory.</td>
</tr>
<tr>
<td>PPP Type</td>
<td>Main Features</td>
<td>Application</td>
<td>Strengths</td>
<td>Weaknesses</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>-------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>DFBO</td>
<td>Contract with private party to design, build, operate and finance a facility that reverts to the public sector. The facility is owned by the private sector for the contract period and it recovers costs through public subvention. Key driver is the utilization of finance and transfer of design, construction and operating risk. Variant forms involve different combinations of the principle responsibilities.</td>
<td>Suited to projects that involve significant operating content. Particularly suited to roads, water and waste projects.</td>
<td>As for BOT plus: Attracts private sector finance; Attracts debt finance discipline; Delivers more predictable and consistent cost profile; Greater potential for accelerated construction program; and Increased risk transfer provides greater incentive for private sector contractor to adopt a whole life costing approach to design.</td>
<td>Possible conflict between planning and environmental considerations. Contracts can be more complex and tendering process can take longer. Contract management and performance monitoring systems required. Cost of re-entering the business if operator proves unsatisfactory.</td>
</tr>
</tbody>
</table>
Table 2.5 - Continued

<table>
<thead>
<tr>
<th>PPP Type</th>
<th>Main Features</th>
<th>Application</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concession</td>
<td>As for DBFO except private party recovers costs from user charges. Key driver is the Polluter Pays Principle and utilizing private finance and transferring design, construction and operating risk.</td>
<td>Suited to projects that provide an opportunity for the introduction of user charging. Particularly suited to roads, water(nondomestic) and waste projects.</td>
<td>As for DBFO plus: Facilitates implementation of the Polluter Pays Principle; and; Increases level of demand risk transfer and encourages generation of third party revenue.</td>
<td>As for DBFO plus: May not be politically acceptable. Requires effective management of alternatives/substitutes, e.g. alternative transport routes; alternative waste disposal options.</td>
</tr>
</tbody>
</table>


Table 2.4, Table 2.5 and Figure 2.3 indicate that the longer the contract period the higher the degree of private sector risk and the higher the degree of private sector involvement. In other words, as the degree of private sector increases, the degree of private sector involvement gravitate toward privatisation.

2.9 Risks of PPP construction projects

Taken from Ngoma, Mundia and Kaliba, (2014) perspective, PPPs are not the panacea for the delivery of services, but the public sector has negative traits in implementing projects. Agyemang (2011) agreed by saying, the public sector was unable to manage risks well as that was characterised by most projects experiencing cost and schedule overruns. However, Ngoma, Munda and Kaliba (2014) argued that the public could realise significant benefits when PPPs were used in an appropriate context.
Construction projects can be unpredictable. Zou, Zhang and Wang (2005) stated that managing risks in construction projects has been recognised as a very important process in order to achieve project deliverables in terms of time, cost, quality, safety and environmental sustainability.

Banaitiene and Banaitis (2012) argued that risk management in the construction project management context was a comprehensive and systematic way of identifying, analysing and responding to risks to achieve the project objectives. Banaitiene and Banaitis (2012) further argued by saying effective risk management process encourages the construction company to identify and quantify risks and to consider risk containment and risk reduction policies.

Sato, Kitazume and Miyamoto (2005) submitted that though a quantitative risk analysis technique was established through a series of studies, the probability of each risk, amount of damage and other data are required for actual risk analysis. As postulated by Ngoma, Munda and Kaliba (2014), one of the most important drivers for value of money in the implementation of PPP projects is risk transfer. Hayford (2006) supported that perspective by saying that appropriate risks could be transferred to the private sector, which was better placed to manage them. Unfortunately, as put forward by Ng and Loosemore (2007), risk transfer was handled poorly in PPP projects.

2.10 Types of risks to Public Private Partnerships (PPP)

Padiyar, Shankar and Varma (2004) identified a number of risks at different stages of PPP projects as detailed below:

2.10.1 Engineering and construction phase

The project company draws down the majority of the loan to finance construction activities, equipment purchase and other pre-operating costs. The phase could last several years depending on the size of the project.

2.10.2 Project start-up phase

During this phase, equipment was tested, raw materials inputs were ordered, project staffing was completed and marketing started. Loan exposure might rise slightly during this phase due to working capital requirements and final payments to contractors and
equipment suppliers. Initial sales from project start up enabled loan payoff to commence.

2.10.3 Operating phase

Inadequacy of revenue was the most significant risk during the phase, especially from the perspective of debt serving and acceptable and return to project investors. Over a period of time, as the project cash flow stabilized and the exposure of the lender/investors got reduced, the risk perception also reduced.

In addition to the risks specific to each phase of the project, there were other risks like political risk and force majeure risk that remained through the project period, though the impact might vary based on the project phase.

Table 2.6 Key types of project risks to Public or Private Partnerships

<table>
<thead>
<tr>
<th>Phase</th>
<th>Type of Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development phase</td>
<td>▪ Planning and environment process</td>
</tr>
<tr>
<td></td>
<td>▪ Political will</td>
</tr>
<tr>
<td></td>
<td>▪ Regulatory</td>
</tr>
<tr>
<td></td>
<td>▪ Site</td>
</tr>
<tr>
<td></td>
<td>▪ Permitting</td>
</tr>
<tr>
<td></td>
<td>▪ Procurement</td>
</tr>
<tr>
<td></td>
<td>▪ Financing</td>
</tr>
<tr>
<td>Construction phase</td>
<td>▪ Engineering and construction</td>
</tr>
<tr>
<td></td>
<td>▪ Changes in market conditions</td>
</tr>
</tbody>
</table>
### Table 2.6 - Continued

<table>
<thead>
<tr>
<th>Phase</th>
<th>Type of Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating phase</td>
<td>• Traffic</td>
</tr>
<tr>
<td></td>
<td>• Competing facilities</td>
</tr>
<tr>
<td></td>
<td>• Operating and maintenance</td>
</tr>
<tr>
<td></td>
<td>• Appropriation</td>
</tr>
<tr>
<td></td>
<td>• Financial Default Risk to public agency</td>
</tr>
<tr>
<td></td>
<td>• Refinancing</td>
</tr>
<tr>
<td></td>
<td>• Political</td>
</tr>
<tr>
<td></td>
<td>• Regulatory</td>
</tr>
<tr>
<td></td>
<td>• Handback</td>
</tr>
</tbody>
</table>

Source: US Department of Transportation Federal Highway Administration, (2012)

### Table 2.7 Risk Matrix for Public-Private Partnerships

<table>
<thead>
<tr>
<th>Type of Risk</th>
<th>Source of risk</th>
<th>Risk taker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site risks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site conditions</td>
<td>Ground conditions, supporting structures</td>
<td>Construction contractor</td>
</tr>
<tr>
<td>Site Preparation</td>
<td>Site redemption, tenure, pollution/discharge, obtaining permits, community liaison</td>
<td>Operating company/ Project company</td>
</tr>
<tr>
<td></td>
<td>Pre-existing liability</td>
<td>Government</td>
</tr>
<tr>
<td>Land use</td>
<td>Native title, cultural heritage</td>
<td>Government</td>
</tr>
<tr>
<td>Technical risks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>Fault in tender specifications</td>
<td>Government</td>
</tr>
<tr>
<td></td>
<td>Contractor design fault</td>
<td>Design contractor</td>
</tr>
<tr>
<td>Type of Risk</td>
<td>Source of risk</td>
<td>Risk taker</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>Construction Risk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost overrun</td>
<td>Inefficient work practices and waste of materials</td>
<td>Construction contractor</td>
</tr>
<tr>
<td></td>
<td>Changes in law, delays in approval, etc.</td>
<td>Project company/investors</td>
</tr>
<tr>
<td>Delay in completion</td>
<td>Lack of coordination of contractors, failure to obtain standard planning approvals</td>
<td>Construction contractor</td>
</tr>
<tr>
<td>Failure to meet performance criteria</td>
<td>Quality shortfall/defects in construction / commissioning tests failure</td>
<td>Construction contractor/project company</td>
</tr>
<tr>
<td><strong>Operating risk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating cost overrun</td>
<td>Industrial relations, repairs, occupational health and safety, maintenance, other cost</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Government change to output Specifications</td>
<td>Government</td>
</tr>
<tr>
<td>Delays or interruption in operation</td>
<td>Operator fault</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Government delays in granting or renewing approvals, providing contracted outputs</td>
<td>Government</td>
</tr>
<tr>
<td>Shortfalls in service quality</td>
<td>Operator fault</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Project company fault</td>
<td>Project company/investors</td>
</tr>
</tbody>
</table>

Source: Lewis, (2001)
2.11 Benefits of PPPs

Fedderke and Bogetić (2006) articulated that benefits of PPPs had been widely discussed in the literature. PPPs were used as a mode for infrastructure development. PPPs provided the public sector with fiscal space to fund other projects that otherwise would have been previously unaffordable. Harris (2006) identified the potential PPP benefits were as follows; cost savings, risk sharing, improvements or maintenance of existing levels of service, enhancement of revenues, more efficient implementation, economic benefits. A number of benefits of PPP projects were described in a 2004 Report by FHWA (2004), as follows:

2.11.1 Significant cost savings

The above report indicated that PPP could save 6 to 40 percent of the cost of construction as well as considerably lowering the potential of cost overruns (FHWA, 2004). An example was the Miami Port Tunnel Project. Projections were that, Florida Department of Transportation (FDOT) would need annual payments of $68 million for the design, construction, operation and maintenance of the tunnel. However, all the three proposals from the private sector significantly lowered costs.

2.11.2 PPP encourages innovations and incorporate life-cycle costs

PPP had a chance of encouraging the incorporation of life-cycle costs in the design and construction of infrastructure projects which often led to delivery of a higher quality project. PPP also encouraged the private sector to come up with creative and innovative measures for improving the quality of infrastructure.

2.11.3 Reduced time on project delivery

The access to immediately available private sources of capital by the private sector helped shorten the delivery of PPP projects. The efficiency with which the project was delivered made PPP projects constructed faster than traditional projects. With the innovation in PPP delivery, repair and replacement of over 800 bridges were possible in the State of Missouri. The innovation was expected to get the bridges done in five years instead of initial twenty year projected duration.
2.11.4 Value for money
To decide whether or not to procure infrastructure through a normal tender process or with PPP, a value-for-money test needed to be applied. Considerations would have to be made on how much it would cost for government to provide infrastructure and services by itself compared to the cost of providing the same infrastructure and services through PPP. If the comparison showed that PPP was more cost effective, the difference in cost would be the value for money. If the value for money showed that the traditional procurement methods were more effective, the PPP option was not going to be selected.

2.11.5 Better risk allocation
The main principle of any PPP was the allocation of risk to the party best able to manage it at least cost. That was purposely to optimise rather than maximise risk transfer to ensure best value was achieved.

2.11.6 Improved quality of service
Experience suggested that the quality of service achieved under a PPP was often better than that achieved by other traditional procurement (United Nations Development Program, 2010). That might have reflected the better integration of services with supporting assets, the introduction of innovation in service delivery, or the performance incentives and penalties typically included within a PPP contract. With most PPP projects, full payment to the private sector contractor only occurred if the required service standards were met throughout the project. Other benefits of PPP included:

- Maximising the use of each sector’s strength
- Reduction in public capital investment
- Better environmental compliance
- Shared resources between both sectors
- Mutual rewards for both sectors

2.12 Constraints and risks of PPP construction projects
As put forward by Coyle (2002), risk is a concept that is understood but not easily defined. Ngoma, Mundia and Kaliba, (2014) posits that risk may be associated with the possibility that something harmful or damaging could occur if events go wrong, or it may relate to taking a chance where the outcome could be either favourable or adverse.
Shen and Ng (2001) was of the opinion that risk may be associated with the uncertainty of the outcome of prospective actions.

In the construction context and processes, constraints however primarily affect productivity (Chua, Shen and Bok, 2003). Goldratt (1990) defines a constraint as anything that limits a system from achieving higher performance when measured against its goal in respect to continuous improvements in organisations. Mayer, Painter and Lingineni (1995) and Whelton, Penneanen and Ballard (2004) as summarised by Ngoma, Mundia and Kaliba (2014) defined a constraint in construction as an inhibiting condition, agency or force that limits a system’s performance in a given context or environment.

OECD (2008) stated that the primary objective of a PPP is value for money. Risk transfer is one of the major drivers of value for money in the implementation of PPP construction projects. Hayford (2006) as summarised by Ngoma, Mundia and Kaliba (2014) emphasised that appropriate risks can be transferred to the private sector, which is better placed to manage them. An optimal allocation of risk is one of the objectives of PPPs and the value of transferability needs to be rationalised (Grimsey and Lewis, 2002; Li et al., 2005a; Tang et al., 2010; Zhang, 2005) as summarised by Ngoma, Mundia and Kaliba (2014). As noted by Menendez (1998), four primary types of constraints and risks, in the development of PPP construction projects outlined below, often need to be overcome.

2.12.1 Political-bureaucratic constraints and risks

As postulated by Ngoma, Mundia and Kaliba (2014), the multi-faceted decision making caused by the involvement of a number of agencies and the prevalent emphasis of administrative procedures rather than on strategies and results that stem from the traditional, length tendering processes pose constraints to the PPP environment. In PPP projects, political risks, such as the discontinuation of concessions, tax increases, inappropriate tariff implementation and increases and enforcement of new government policies, need to be managed (Demirag et al., 2011; Nur, 2005; Abednego and Ogunlana, 2006) as taken from Ngoma, Mundia and Kaliba (2014).

2.12.2 Regulatory constraints and risks
As confirmed by Ngoma, Mundia and Kaliba (2014), unclear procedures and lack of or deficient framework for the resolution disputes and ambiguous responsibilities among independent agencies and line ministries, affect the regulatory environment. Menendez (1998) as summarised in Ngoma, Mundia and Kaliba (2014), highlighted that constraints must be overcome to provide transparent procedures for the delineation of market competition, tariff-setting and any other legal issues related to the regulation of the general framework for project implementation and operation along with any revisions to such procedures.

2.12.3 Financial Constraints

Taken from Ngoma, Mundia and Kaliba (2014), it became clearer that financial constraints and risks stemmed from public budgetary limits and vague user charge policies, needed to be addressed to achieve sound financial structure for all project phases. Menendez (1998) suggested that there should be an appropriate blend of back-stopping conditions, equity contributions, or other risk-reducing measures, which can help achieve the economic objectives of specific projects for society as a whole.

2.12.4 Methodological constraints and risks

The methodological constraints and risks stem from frequently limited knowledge of interrelationships between variables, which prevents the clear definition of performance indicators or the estimation of values that are key to the economic and risk evaluation of project (Ngoma, Mundia and Kaliba, 2014). Eradicating these constraints could refine critical elements of PPP structuring, such as conditions under which a project may be feasible, the likelihood that certain outcomes can actually take place, the value of environmental factors, the ability to adequately define the quality of levels of service, the means of verification of compliance with agreed performance indicators and the specification of remedial actions (Menendez, 1998).

Risk analysis and management are important parts of the decision making process in a construction company. Kartam and Kartam (2001) elaborated that the construction industry and its clients are widely associated with a high degree of risk due to the nature of construction business activities, processes, environments and organizations. In reality, these are many projects that fail to meet deadlines as well as cost and quality targets because of poor risk management (Ng and Loosemore, 2007; Karim, 2011) in
Ngoma, Mundia and Kaliba (2014). Sillars and Kangari (2004) furthermore, informed that the PPP experience cannot be simply copied from one country to another because different countries have different practices in terms of culture and policy.

Therefore, this research study seeks to suggest potential solutions for addressing the deficiency in the PPP statutory and regulatory framework, which would result in maximizing benefits while minimising risks and constraints.

2.13 Environmental consideration

Since the world is going green, it is therefore extremely important that PPP projects are environmentally friendly. Agyemang (2011), argued that such projects that meet environmental regulations can be referred to as green PPP projects. Enforcement of these regulations is often by the public sector and some private agencies working as non-profit organisations.

2.14 Chapter summary

In reviewing literature the research focused on Public-Private Partnerships (PPPs). The research gave a brief historical background of PPPs. Different conceptualisation of PPPs were highlighted. Principles of successful PPP as well as PPP success factors were listed. Strength and weaknesses of the different forms of PPP were discussed. Comparative data of PPPs implemented in SADC countries as at 2009 was tabulated. Risks and benefits of PPP construction projects were discussed. Zimbabwean and external case studies were discussed. Lessons learnt and reasons for low uptake of PPPs in Zimbabwe were highlighted. The following chapter will discuss the research methodology for benefits and risks for PPP transportation projects.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter reviewed literature deemed to be relevant to the research study. This chapter outlines the activities employed by the researcher in collecting data from the field. It focused on the research design, research subjects, research instruments, data collection procedures as well as data presentation and analysis procedures used in the research. The researcher also supplied reasons why the data collection tools were suitable in the research study.

3.2 Research Design

As defined by Kolbaek (2014), a research design is the systematic planning and procedures a researcher develops to study a scientific problem. Selltiz, Wrightman and Cook (1994) defined research design as the plan of action involving the arrangement, collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. Burns and Grove (2003:195) defined a research design as a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings. Parahoo (1997:142) described a research design as a plan that describes how, when and where data are to be collected and analysed. Polit, Hungler and Beck (2001:167) defined a research design as the researcher’s overall strategy for answering the research question or testing the research hypothesis. Creswell (2014), research designs are types of inquiry within qualitative and quantitative and mixed methods approaches that provide specific direction for procedures in a research design. Others have called them strategy of inquiry (Denzin & Lincoln, 2011).

The researcher considered both quantitative and qualitative research methods (mixed methods) with the objectives of gathering relevant data and material pertaining to highway Public Private Partnerships (PPP) projects implemented in Zimbabwe during the period 1995 to 2015. The research was solemnly based on existing facts and opinions based on respondents experience on highway PPPs.
Table 3.1 The Research design

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Pragmatism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approaches</td>
<td>Both deductive and Inductive</td>
</tr>
<tr>
<td>strategy</td>
<td>Case study</td>
</tr>
<tr>
<td>Choices</td>
<td>Mixed methods</td>
</tr>
<tr>
<td>Sampling</td>
<td>Both probability and non-probability sampling</td>
</tr>
<tr>
<td>Time Horizon</td>
<td>Cross sectional</td>
</tr>
<tr>
<td>Type of data</td>
<td>Contextual, statistical and non-statistical</td>
</tr>
<tr>
<td>Data collection procedure</td>
<td>Quantitative and qualitative instruments</td>
</tr>
<tr>
<td>Data analysis procedure</td>
<td>Narrative analysis and descriptive statistic</td>
</tr>
</tbody>
</table>

Source: (Saunders, Lewis and Thornhill, 2009)

Table 3.1 above shows the research design which was adopted by the researcher. The research used the case study research strategy. The research focused on highway PPP projects implemented in Zimbabwe. Robinson (2002) defined case study as a strategy for doing research which involved an empirical investigation of a particular contemporary phenomena within its real life context using multiple sources of evidence. The case study enabled a rich understanding of the context of research and process being enacted (Morris and Mood, 1991). The research used cross sectional time horizon because it was a study of phenomena at a particular time.

3.2.1 Mixed research method

Cresswell (2014) posits that mixed methods involve a combination of quantitative and qualitative data in a research study. In this study, an exploratory sequential mixed methods approach was used. In an exploratory sequential approach, the researcher first begins with a qualitative research phase and explores the views of participants. The data are then analysed and the information used to build into a second, quantitative phase.
3.2.2 Qualitative research method

Newman and Miles (1979) postulated that qualitative approach involves documenting real events, recording what people say, observing their behaviour and studying written documents. In considering qualitative research method, the researcher adopted phenomenological research design. Phenomenological research design is a design of enquiry coming from philosophy and psychology in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants. This description culminated in the essence of the experiences for several individuals who had all experienced the phenomenon. The design has strong philosophical underpinnings and typically involves conducting interviews (Giorgi, 2009; Moustakas, 1994). Qualitative research method enabled the researcher to uncover and appreciate risks and constraints associated with highway PPP projects implemented during the period 1995-2015.

3.2.3 Quantitative research method

Quantitative research is confirmatory and deductive in nature. The aim is to count things in an attempt to explain what is observed (MacDonald & Headlam, 1986). In this research, the researcher used non-experimental designs. Two types of non-experimental designs were used and they were the survey design and correlation design. Creswell (2012) confirmed that correlation design use correlation statistic to describe and measure the degree of association between two or more variables or set of scores. In this research, correlation between the public and private sector was statistically calculated using the Spearman correlation coefficient (r_s).

3.2.4 Triangulation

The research found it difficult to consider quantitative and qualitative research methods as mutually exclusive. Hence, both qualitative and quantitative research methods were used in a complementary fashion. While quantitative research design strived to control bias so that facts could be understood in an objective way, qualitative approach strived to understand the perspective of the stakeholder, looked to firsthand experience in providing meaningful data.

By combining the two methods, the advantages of each method complemented the other resulting in a stronger research design that ensured valid and reliable findings. The
inadequacies of the individual methods and threats to internal validity were addressed. In this research the two methods used cross validated and built each other’s results hence, better results in terms of quality and scope were produced.

3.3 Research subjects

The sub-topics considered under research subjects were; target population, research sample and sampling procedures.

3.3.1 Target population

As defined by Cohen and Manion (1983), population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying. In support of that, Murimba and Moyo (1995) described population as any group of individuals that are under investigation or study. In this study, the target population consisted of highway engineers in the construction industry, civil engineering consultants with experience in highway PPPs, civil engineering contractors in highway construction, concessionaires and financiers. The target population was estimated to involve 150 people.

3.4.2 Sample and sampling procedures

Kotler and Armstrong (1999:114) defined sample as a segment of the population selected for marketing research to represent the population as a whole. In this case, seventy five (75) respondents with experience in highway engineering were selected. Stutely (2003), as summarised by Saunders, Lewis and Thornhill (2009) advised that a minimum number of 30 for statistical analyses provides a useful rule of thumb for the smallest number in each category within the overall sample. The sample was most suitable because it had objects of interest to research with common characteristics and the researcher could easily interact with. The composition of the sample is indicated below.
Table 3.2 Sample composition

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineer</td>
<td>36</td>
</tr>
<tr>
<td>Civil Engineering Contractor</td>
<td>10</td>
</tr>
<tr>
<td>Civil Engineering Consultant</td>
<td>9</td>
</tr>
<tr>
<td>Concessionaire</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

Both probability and non-probability sampling were used to select subjects to be included in the study. Both sampling techniques were used because they complemented each other and enabled the researcher to unpack the risks and constraints and benefits that were associated with highway PPP implemented in Zimbabwe during the study period.

Stratified random sampling was used in order to ensure that the sample was representative. Participants from both the public and private sector needed representation. Furthermore, concessionaires, contractors and financiers needed representation.

Multi-stage sampling was used when the researcher was selecting interview participants. Because rich and quality data was needed, interviewees with more than 20 years experience in highway PPPs were selected.

Purposive sampling technique was used for the study. Saunders, Lewis and Thornhill (2009) described purposive sampling as a non-probability sampling procedure in which the judgement of the researcher is used to select the cases that make up the sample, verifying that the respondent does in fact meet the criteria for being in the sample. With a purposive sample, the researcher got opinions of the target population. Purposive sampling was considered since the information required was highly technical.
3.4 Research instruments

This section of the research presents the techniques that were employed when gathering pertinent research data and information. Each technique was closely scrutinised so as to reveal its strengths and weaknesses. The researcher proceeded to explain the strategies that were employed to counter the weaknesses so that they could not negatively impact the research results.

3.4.1 Questionnaire technique

In this study, the researcher used the questionnaire as a data collection instrument. Abawi (2013) confirmed that the questionnaire was invented by Sir Francis Galton and defined the questionnaire as a data collection instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. A questionnaire requires respondents to answer questions anonymously eliminating fears of being victimised (Gwimbi and Dirwai, 2003). Taken from Cohen and Manion (1983) perspective, a questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Sanson (2011) defined a questionnaire is a document designed with the purpose of seeking specific information from the respondents and it is best suitable to literate people.

In this research, the questionnaire consisted of a list of same pre-set questions that were given to all the respondents in the same order so that the same information could be collected from all the participants.

Advantages of the questionnaire technique

The major advantage in designing a questionnaire is that it is cheap to produce. The researcher designed the questionnaire for this research while in the comfort of his home and at work. The cost was indeed minimal. The questionnaire was also cheap to administer to respondents since respondents in the vicinity were hand delivered whereas for those respondents out of Harare, the questionnaire was sent through the e-mail. Within a week the researcher had distributed all the 70 questionnaire copies.
Questionnaire results were easily quantified since all the questions were closed-ended, like the multiple choice type questions. Using spreadsheet, the questionnaire results were analysed quickly and efficiently. Respondents were from the public and private sector. Relationship between variables was examined using the correlation coefficient (rs). The research could be generalised hence, high external validity. Additionally the survey results had high internal validity. Yield data from questionnaire results were not available by other means.

**Disadvantages of the questionnaire technique**

However, when using the questionnaire, care must be taken in wording of questions since respondents may interpret them differently. The major challenge in questionnaire design is to make it clear to all respondents. In order that confusing points were identified, the researcher conducted a pilot trial. During the pilot trial, the questionnaire participants were randomly selected from the study sample.

The other drawback of the questionnaire is unwillingness or inability of respondents to give full and accurate replies to questions thereby reducing the validity of data. To counter that disadvantage the researcher employed a number of strategies. The researcher took the list of information he wished to obtain from respondents and devised draft questions. The researcher conducted interviews to gather relevant data on the type of questions to include in the questionnaire including the research questions. All that was done for clarity; making sure those questions had the same meaning to all respondents. Short and simple sentences were used and sensitive questions which could harm respondents were avoided. Hypothetical questions were totally avoided.

**3.4.2 The semi-structured interview technique**

Modern society has been called the ‘interview’, or even the ‘confessional’ society, the latter calling up a particular type of interview where intimate matters may be revealed (Atkinson & Silverman, 1997). Abawi (2013) stated that semi-structured interviews include a number of planned questions, but the interviewer has more freedom to modify the wording and order of questions. Interviews are discussions, usually one-on-one between an interviewer and an individual, meant to gather information on a specific set of topics (Harrell and Bradley, 2009).

**Advantages of the semi-structured interview technique**
Saunders, Lewis and Thornhill (2009) indicated that interviews are more flexible and productive than any other research method as a result may lead to constructive suggestions. The researcher was able to ask additional questions over and above the initial list of questions. When using the interview technique, complete information was collected with greater understanding as respondents had the opportunity to further elucidate on certain critical areas. Few participants were needed to gather rich and detailed data. It was more personal, as compared to the questionnaire, and as a result, a higher response rate was achieved. It allowed for more control over the order and flow of questions since related questions could be asked interchangeably. Necessary changes were introduced in the interview schedule based on initial results.

**Disadvantages of the semi-structured interview technique**

Interviewing was tiresome hence high risk of bias was high due to fatigue and becoming too involved with interviewees. To counter that disadvantage, the researcher interviewed one interviewee per day given that they were only five interviews conducted. The other problem associated with the interview technique is that information may be neither valid nor reliable; furthermore, the responses given may not be accurate and may not reflect real behaviour. Respondents may lie, forget and sometimes they may lack the required information. In order to counter the above disadvantages, interviewees were given a list of the questions two weeks before the interview so that they could prepare well in advance, during the interview the researcher maintained eye contact to see if the interviewee was lying. During notes taking irrelevant information was not recorded.

**3.5 Data collection procedure**

Data was collected using primary sources (interviews and a questionnaire) and secondary sources. Semi-structured interviews and structured questionnaire were used for collecting primary data. Minutes of meetings and workshops, books, journals and the internet were used as sources of secondary data.

To facilitate an interview, in most cases, an initial contact was established through a telephone call to every selected participant. An introductory letter attached to a list of interview questions was later hand delivered to each and every participant. Upon delivery of the introductory letter, the date for the interview was set and in most cases
that was two weeks after the delivery of the interview questions. A day before the meeting, the respondent was reminded of the interview. Interviews were conducted at the respondents’ work places except for one respondent who was interviewed at his home. Interview results were minuted and on average each interview lasted 30 minutes in duration.

On the questionnaire, an initial contact was established through a telephone call. An introductory letter attached to the questionnaire was distributed to all respondents. For respondents in Harare, questionnaires were hand delivered whereas for respondents outside Harare, questionnaires were sent through the e-mail. Respondents were given two weeks to respond. The completed questionnaire was placed in a box by respondents in Harare and those outside Harare submitted their responses through the Dropbox electronic facility.

3.6 Data presentation and analysis procedures

Data collected was analysed using statistical methods. The reliability of the Likert scale used in the survey questionnaire was tested for internal consistency using the Cronbach’s coefficient (α) calculated using the formula:

\[
\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^{K} \sigma^2_{Y_i}}{\sigma^2_X}\right)
\]

Where \(\sigma^2_X\) is the variance of the observed total test score and \(\sigma^2_Y\) is the variance of component \(i\) for the current sample of persons. As indicated by Siegel and Castellan (1988), values of \(\alpha \geq 0.7\) are an acceptable indicator of the reliability of the scale.

An overall ranking of the risks and constraints by both the public and private sector respondents to the delivery of highway projects implemented during the study period was obtained using the Mean Score (MS) method (ibid). Ranking for each and every risk and constraint factor was determined using a 5-point Likert scale, a 1 (one) was assigned as “lowest risk” and a 5 (five) was assigned as “highest risk”. The factor rankings were then arranged in descending order of importance. Siegel and Castellan (1988) indicated that MS for each risk and constraint was calculated using the formula:

\[
MS = \sum \frac{f \times s}{N} \text{ for } 1 \leq MS \leq 5
\]
Where MS=mean score, f=frequency of response to each rating (1-5) for each risk or constraint, s=score given to each risk or constraint by the respondents ranging from 1 (one) “lowest risk” to 5 (five) “highest risk” and N=number of responses to that risk or constraint. The percentage of respondents strongly indicating the severity of the identified risk or constraint was considered in the case of a tie.

A Spearman correlation coefficient (rs) was used to measure the level of agreement between the two respondent groups; the public and private sectors in their ranking of risks and constraints. The Spearman’s correlation coefficient (rs) is given by:

\[ rs = 1 - \frac{6 \sum d^2}{n(n^2 - 1)} \]

Where \( d = \) difference in ranks and \( n = \) number of data pairs. Significant agreement of the two respondent groups in the ranking was indicated by rs values at 5% level of significance on the ranking of risks and constraints in highway PPP during the study period.

Most questions asked in the survey were represented in tables, pie charts and bar graphs. A linear graph and doughnut chart were also used. The results were analysed based on percentage response. That was represented mathematically as:

\[ \text{percentage}(\%) = \frac{n}{N} \times 100 \]

Where \( n = \) number of responses for answer option and \( N = \) total number of responses for question. The total percentage calculations for each question added up to 100.

Throughout the calculations, a consistent number of decimal places was used. The calculated percentages were represented in tables, pie charts, bar graphs, linear graph and radar chart were also used in the following chapter.

3.7 Chapter summary
The chapter has outlined the activities employed by the researcher to collect data from the field. It focused on the research design, research subjects, research instruments, data collection procedures as well as data presentation and analysis procedures used in the research. The researcher also gave reasons why the data collection tools were suitable in the research study. The next chapter presents the responses and analyses conducted in the research.
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

In chapter three, the research provided the various techniques that were employed to collect, present and analyse data. The techniques were thoroughly scrutinised so as to reveal their strengths and weaknesses. The research proceeded to explain how the weaknesses of the techniques were dealt with so that they could not adversely impact the research results.

This chapter presents the responses and analysis conducted for this research. Graphical and statistical representations were used to present the data. The Cronbach alpha calculated for the research was 0.91. The research distributed 70 questionnaire copies to the 70 targeted respondents and out of that number, 55 copies were returned having been duly completed. The number returned therefore, contributed a success rate of 79%. The research had also targeted to interview five individuals and in that case a success rate of 100% was achieved. In the opinion and discretion of the research, the success rates achieved were quite satisfactory and so, the data presentation and analysis was embarked on as has been presented below.

4.2 Data presentation process

The respondents of the survey were all from Zimbabwe with current or prior involvement and experience with highway PPPs in Zimbabwe. This section of the research report presents the pertinent data that was collected during the research process. The analysed data was carefully scrutinized so the possible causes of the research problem could be identified. The analysis also made it possible in some cases, to identify potential solutions to the research problem and those solutions have been presented in the conclusive chapter.

General experience of respondents in Highway PPP projects

Respondents were asked a number of questions pertaining to their involvement with Highway PPPs. Those questions varied in sector(s) they worked with, positions they held in different organisations, respective years of experience and highway PPP projects executed. The respondents who participated in the survey belonged to different
sectors and areas of the construction industry as presented in Figure 4.1 and Figure 4.2 respectively. Figure 4.1 shows that half of the respondents had experience in both the public and private sectors. Respondents had chance to indicate the sector(s) they had worked for in the industry.

![Figure 4.1 Respondents’ work locations](image)

Figure 4.1 Respondents’ work locations

Figure 4.2 classifies respondents by category and the majority of respondents were Engineers. The other categories represented were consultants, contractors, concessionaires and others not falling within the aforementioned categories, who had highway PPP experience.

![Figure 4.2](image)
Figure 4.2 Distribution of survey respondents by category

Figure 4.3 shows years of experience respondents had as far as highway PPP projects were concerned. The highest number of respondents was in the range of six to ten years of experience. In the survey conducted, the range 16 to 20 years had no respondents. A higher number of respondents had been in the highway sector, for at least six years.

![Years of experience of respondents]

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5 years</td>
<td>20%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>33%</td>
</tr>
<tr>
<td>11-15 years</td>
<td>27%</td>
</tr>
<tr>
<td>16-20 years</td>
<td>0%</td>
</tr>
<tr>
<td>&gt; 20 years</td>
<td>20%</td>
</tr>
</tbody>
</table>

Figure 4.3 Years of experience of respondents

Highway PPP procurement methods familiar to respondents

Figure 4.4 shows the different methods of PPP procurement used for both domestic and foreign highway projects. Respondents indicated the PPP procurement method(s) they were familiar with in their previous experience. All respondents indicated that they were familiar with Built-Operate-Transfer (BOT) and Rehabilitate-Operate-Transfer (ROT). The Operate-Maintain (OM) procurement method had the least number of respondents who were familiar with it.
PPP procurement methods

PPP and Traditional procurement methods

Respondents were asked for their preference between PPP and Traditional procurement methods for procuring highway projects. An option of “sometimes” was included for those who were not conclusive on which method they would prefer. That option was included as it was expected that some respondents might not have had compared the risks and constraints of both methods. As illustrated in Figure 4.5, the majority of respondents indicated that they preferred PPP over Traditional procurement methods. Out of the 60 respondents, 35% did not agree on PPP as being a much effective procurement method for highway PPP projects.
Figure 4.5 PPP and Traditional Procurement method

As indicated in Table 4.1, all the respondents agreed that PPPs were used on highway projects during the period 1995 to 2015.

**Table 4.1 Use of PPP on highway projects in Zimbabwe**

<table>
<thead>
<tr>
<th>Response</th>
<th>Yes</th>
<th>Not sure</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>%</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

As indicated in Table 4.2, all the respondents agreed with the notion that the Government was facing an ever-increasing need to find sufficient financing for highway infrastructure as illustrated in Table 4.2 below. The evidence was the ever deteriorating road infrastructure in the country.

**Table 4.2 Government funding of highway projects**

<table>
<thead>
<tr>
<th>Response</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>%</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

**Highway PPP policies, governance structures and legislation in Zimbabwe between 1995 and 2015**

Respondents were asked if there were policies that governed the implementation of highway PPP projects during the study period. The majority, 60%, agreed that there were policies during the period in question that governed the implementation of highway projects whereas the rest of the respondents disagreed. Those who were interviewed indicated that policies were there and institutionalised. Institutions had different PPP policies. The results are illustrated in Figure 4.6 below.
When the option “neutral” was introduced on whether the government had established governance structures for the implementation of highway PPP projects between 1995 and 2015, there were mixed responses to the question as shown in Figure 4.7. The Modal class was “neutral” while 35% of respondents agreed with the notion that there were governance structures on highway PPP projects between 1995 and 2015. The other remaining 35% disagreed.

Figure 4.7 Governance structures on Highway PPP projects between 1995 and 2015
When asked on legislation of the highway PPPs projects, all the five respondents that were interviewed strongly agreed that during the review period, there was Legislation of PPP due to the fact that the Joint Venture Act was legislated in 2015. The went further and agreed with some respondents who disagreed with the notion that there was legislation on highway PPP due to the fact that the Joint Venture Act was enacted when all the highway PPP projects under review then were implemented.

**Figure 4.8 Legislation of highway PPPs in Zimbabwe**

**General satisfaction on how the Government conducted the PPP process**

As illustrated in Figure 4.9 below, the majority 55% of the respondents indicated that they were not satisfied with the way the Government had conducted the PPP process. Those who were interviewed cited the Plumtree-Mutare as a highway PPP project that lacked transparency. A few constituting 20% indicated that they were satisfied with the way the Government had conducted the PPP process. Those who were neutral constituted 25% of the total respondents.
As illustrated in Figure 4.10 below, 75% of respondents indicated that there was lack of expertise, poor governance and lack of due diligence in the selection of highway PPP projects. It became clearer as the interviewees singled out the Plumtree-Mutare project out of all the other highway projects as characterized by lack of expertise, poor governance and lack of due diligence. That, therefore, contributed to dissatisfaction as indicated by the majority of respondents.

Figure 4.9 General reactions on how the Government conduct the PPP process

Figure 4.10 Focus on highway PPP selection
Delivery of highway projects through PPPs

The interviewees asked about efficiency of highway PPP projects implemented during the period 1995 to 2015 said that, like any other business, the essence of a PPP was to maximise profit. After the initiation stage, the PPP got in quickly, built the projects, got out and made their profit. Respondents indicated that not only were projects implemented within scheduled times, but were also implemented within budget. As cited by some respondents, The Ngezi Platinum Highway, a 77 kilometre road from Selous to Ngezi Mine was constructed and completed in 2001 by a private consortium with a concession from the Ministry of Transport. The project also included the construction of three high level bridges along the 77 kilometre stretch. That road was completed on record time (in a period of 200 days) at industry standards and the total cost was US $25 million. That was a Build, Operate and Transfer PPP. The responses are shown in Figure 4.11.

![Figure 4.11 Delivery of highway projects through PPPs](image)

Cost effectiveness of PPPs

One of the interviewed respondents said that the acceptable profit margin when the Government implemented its first highway PPP project (New Limpopo Bridge) in 1995 was 16%. That was almost a regional standard. Using that 16% profit margin, for a
A twenty year concession project, breakeven was usually achieved 12 years after project completion. Thereafter profit could be shared by both the Government and the private company even though that was not done due to the hyper inflation period. Due to the hyper inflation period the country went through, concessionaires after the hyper inflation period used high rates of return and hence the profit margin increased. Rate of return could be adjusted accordingly. Respondents indicated that the Plumtree-Mutare highway PPP project had 6% rate of return whereas normally the rate of return ranges between 1% - 2.5% in the region. Figure 4.12 shows the responses received.

![Figure 4.12 Cost effectiveness of PPPs](image)

**Figure 4.12 Cost effectiveness of PPPs**

**Reasons to opt for highway PPP**

The survey respondents were asked to indicate reason(s) that influenced authorities to opt for highway PPP projects. All the respondents indicated that financing was the major reasons for highway PPPs. The reasons were ranked in order of popularity as shown in Figure 4.13.
The survey respondents were asked for their opinions on the key success indicators of highway PPP projects. The respondents were to rate the factors they deemed to be the success indicators of highway PPP projects. The respondents were to rank the indicators and the responses are illustrated in Figure 4.14 below. The rating scale was: Strongly agree, Agree, Neutral, Disagree, Strongly disagree. The key success indicators given were; traditional Key Performance Indicators (KPI): Cost, time and quality, public satisfaction, value for money achieved and risk management.

**Figure 4.13 Reasons for highway PPP**

**Key success indicators of highway PPP**

The survey respondents were asked for their opinions on the key success indicators of highway PPP projects. The respondents were to rate the factors they deemed to be the success indicators of highway PPP projects. The respondents were to rank the indicators and the responses are illustrated in Figure 4.14 below. The rating scale was: Strongly agree, Agree, Neutral, Disagree, Strongly disagree. The key success indicators given were; traditional Key Performance Indicators (KPI): Cost, time and quality, public satisfaction, value for money achieved and risk management.
Figure 4.14 Key success indicators of highway PPP

Risks in the implementation of highway PPP projects

Nineteen risk factors were ranked by the respondents from both the public and private sectors and compared. The risks were later evaluated using the mean scores (MS) values. Risk factors with MS values greater than 3.40 were considered significant, which was based on the interpretation that those factors had over a 75% chance of inhibiting project delivery. As a result, as shown in Figure 4.15, the top risks prevalent in the implementation of highway PPP projects were; corruption, inflation, political instability, lack of experience in highway PPP arrangements and project stakeholder disapproval. Spearman’s correlation coefficient (rs) was used to taste whether there was agreement between the public and private sector respondents. An rs value of 0.679 was produced. Therefore, that implied that, with 99% confidence level, there was significant agreement between public and private sector respondents regarding ranking of risks in implementing highway PPP construction projects.
Constraints to implementation of highway PPP projects

Ten constraints were ranked by the respondents from both the public and private sectors and compared. The constraints were later evaluated using the mean scores (MS) values. Constraints with MS values greater than 3.40 were considered significant, and were based on the interpretation that those constraints had over a 75% chance of inhibiting project delivery. As a result, as shown in Figure 4.16, the highest constraints prevalent in the implementation of highway PPP projects were; excessive rates of return to private partners, lack of appropriate legislature, lack of transparency and efficacy of the PPP
process, absence of revenue sharing formula, length concession agreements, inconsistent application of evaluation tools and poor risk allocation between public and private sectors. Spearman’s correlation coefficient was used to test whether there was agreement between the public and private sector respondents. An $r_s$ value of 0.782 was produced. Therefore, that implied that, with 99% confidence, there was significant agreement between public and private sector respondents regarding ranking of constraints in implementing highway PPP construction projects.

Figure 4.16 Constraints to implementation of highway PPP projects

4.3 Discussion of findings in relation to literature

4.3.1 Risks

Taken from Figure 4.15, the top risks prevalent in the implementation of highway PPP projects were; corruption, inflation, political instability, lack of experience in highway PPP arrangements and project stakeholder disapproval. That was supported by the US Department of Transportation Federal Highway Administration of 2012. The US Department indicated that risks such as political will, regulatory, procurement, financing and appropriation occurs at development and operating phase.
4.3.2 Constraints

As shown in Figure 4.16, the highest constraints prevalent in the implementation of highway PPP projects were; excessive rates of return to private partners, lack of appropriate legislature, lack of transparency and efficacy of the PPP process, absence of revenue sharing formula, length concession agreements, inconsistent application of evaluation tools and poor risk allocation between public and private sectors. That concurred with Ngoma et al (2014) who articulated that constraints that stem from vague user change policies need to be addressed to achieve sound financial structure for all project phases.

4.3.3 Benefits of PPP

Harris (2006) identified the potential PPP benefits as cost savings, risk sharing, improvements of existing levels of service, enhancement of revenues, more efficient implementation and economic benefits. FHWA (2004) identified the following benefits of PPPs; cost savings, innovations, reduced time of project delivery, value for money, better risk allocation and improved quality of service. This concurs with Figure 4.13.

4.3.4 Key success indicators

United Nations Economic Europe (2013), identified political will, value for money, government commitment, PPP champion, clear output specifications, appropriate risk sharing and performance management as critical success indicators. They further postulated that, there is need for political will, government commitment through an effective PPP champion. This concurs with Fig 4.14

4.4 Chapter summary

This chapter presented the responses and analyses conducted in the research using graphical and statistical representations. The next chapter summarised the entire research, made conclusions from results related to the research questions, valuated the hypothesis, made recommendations from results related to research questions and made recommendations on areas for further study.
CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented the responses and analysis conducted in this research study. Graphical and statistical representations were used in presenting the data. This chapter has summarised the research from chapter one to chapter four, made conclusions from results related to the research questions, valuated the hypothesis, made recommendations from results related to research questions and made recommendations on areas for further study.

5.2 Summary
The research study was conducted under the topic ‘Risks, constraints and benefits in highway PPP projects implemented in Zimbabwe’. Chapter one covered the introductory part of the research study; the background to the study and statement of the research problem. Other areas included were the purpose of the study, objectives that the research aimed to achieve, the research questions, hypotheses to be tested and the significance of the study. Research assumptions, delimitation of the study, ethical considerations and limitations that the researcher faced were also discussed.

Chapter two brought out the purpose of literature review and the sources of literature reviewed. Finally, the relevant literature was reviewed. The literature was from primary sources (interviews and the questionnaire) and secondary sources (books, journals, the internet, conference and workshop reports and seminar presentations). Chapter three discussed the research methodology. Issues discussed were the research design, the research subjects, research instruments, data collection procedure and data presentation and analysis procedure.

Chapter four focused on data presentation and analysis. The data was collected and presented in graphical, tubular and narrative forms (descriptive statistics). The data was then analysed in a bid to solve the research problem. Chapter five summarised the research from chapter one to chapter four, made conclusions from results related to the research questions, evaluated the hypothesis, made recommendations from results related to research questions and made recommendations on areas for further study.

5.3 Research findings

- After analysing the survey data, corruption, inflation, political instability, lack of experience in PPP arrangements and project stakeholder disapproval were identified as risks that significantly affect highway PPP projects in Zimbabwe. Similarly, excessive rates of return to private partner, lack of appropriate legislature, lack of transparency and efficacy of the PPP process, absence of revenue sharing formula, length concession agreements, inconsistent application of evaluation tools, poor risk allocation between public and private sectors were identified as constraints that significantly affected highway PPP in the country.

- A number of benefits of highway PPP projects were analysed in the survey results. Even though the primary objective of a PPP was value for money, all
respondents indicated that the major reason for highway PPPs was financing. The major benefits of highway PPPs in their order of priority were; financing, value for money, risk transfer, innovations and cost and time saving.

- The key success indicators that were considered in the survey were; traditional Key Performance Indicators (KPI): Cost, time and quality, public satisfaction, value for money achieved and risk management. Survey respondents agreed that as applied to traditional procurement methods, the triple constraints; cost, time and quality were the primary success indicators of successful highway PPP projects in Zimbabwe during the study period. Before approval, a PPP highway project needed to convince management that there was value for money. Generally, respondents agreed with the notion that there was value for money in the implementation of those projects.

- From literature and qualitative data gathered, it came out that all the PPP projects implemented were successful and those were; New Limpopo bridge, Newlands bypass highway and the Ngezi highway and the Plumtree-Mutare highway.

- The other issue that came out was the need for a PPP Policy, PPP guidelines, PPP legislative review and PPP institutional framework since it was perceived that there was lack of expertise, poor governance and lack of due diligence in the section of highway PPP projects.

5.4 Conclusions from results related to research questions

Although the PPP initiative was the way to go given the country’s micro and macro-economic environment, several issues needed to be addressed to create successful and viable PPP highway projects that made economic sense. Based on international best practice, the aspects of risks and constraints were compared with the Zimbabwean scenario. The risks and constraints were identified and ranked, reason to opt for highway PPP projects and key success factors of highway PPP projects and cost effectiveness of highway PPP projects were also identified in the survey report. Successful projects implemented in The country were also identified.

5.4.1 Highway PPP risks in Zimbabwe
Responses from both the interviews and the questionnaire indicated that Zimbabwe is a high risk country.

5.4.2 Highway PPP constraints in Zimbabwe

It can be concluded that there was no conducive environment for the implementation of highway PPPs in Zimbabwe during the study period since the legal, regulatory and institutional frameworks of 2010 were not yet adopted when this research was submitted.

5.4.3 Benefits of highway PPPs in the country

It can be concluded that risks and constraints contributed to the low uptake of highway PPP projects in Zimbabwe. However, there was value for money on all highway PPP projects implemented in the country from 1995 to 2015.

5.4.4 Key success indicators of highway PPP in Zimbabwe

It can be concluded that the country had a monitoring and evaluation framework for measuring the success of PPP projects.

5.4.5 Successful highway PPP projects implemented in Zimbabwe

It can be concluded that all PPP projects implemented in Zimbabwe were successful.

5.5 Hypothesis result

The analysis of all collected data effectively rejected the null hypothesis $H_0$ as enunciated in chapter one that Public-Private Partnerships implemented in Zimbabwe during the period 1995 to 2015 had no value for money hence the alternative hypothesis $H_1$ is true since all the PPP projects implemented had value for money.

5.6 Recommendations

To address highway infrastructure challenges in Zimbabwe, the associated risks, constraints and benefits should be well understood.

5.6.1 Highway PPP risks in Zimbabwe
It is important that the country considers setting up the necessary institution (a PPP unit) for promoting PPPs. The establishment of a PPP unit would also devise an appropriate risk management structure. To manage corruption, the Anti-Corruption Commission must be strengthened by strengthening the Anti-Corruption Act to encourage transparency and improve institutional quality. The Joint Venture Act must be used in conjunction with the Anti-Corruption Act to curb this vice. To set precedence, those implicated should be brought to book and given heavy sentence. Generally the government should improve the easy of doing business.

Because of lack of experience in PPPs, more technocrats need to be trained though exchange programmes with other countries dealing with PPPs or trained through programmes developed locally. The PPP subject should be incorporated in curricula for construction related programmes like civil engineering. Project management as a subject should also be incorporated in curricula for construction related programmes in order to effectively manage stakeholders.

5.6.2 Highway PPP constraints in Zimbabwe

The study demonstrated that legal, regulatory and institutional frameworks are needed for PPPs in Zimbabwe. The PPP Policy 2010, the PPP Guidelines 2010, the PPP Legislative Review for Zimbabwe 2010 and the PPP Institutional Framework 2010 need to be adopted for investors to have positive perception about the investment climate in Zimbabwe. This will allay fears from the private sector as well as introducing transparency into the process.

5.6.3 Benefits of highway PPPs in the country

Because of low uptake of highway PPP projects in Zimbabwe, there is need for the government to aggressively sell the highway projects in investment source markets through international tenders, by so doing, promoting effective competition among bidders. The total number of bidders should be enough to introduce effective competition but, should be limited in order to keep control over transaction cost, the quality of the bids and the probability of success. There is need to use standardised contracts to diminish the transaction cost, the delays, and the time scales.

5.4.4 Key success indicators of highway PPP in Zimbabwe
In order to achieve maximum benefits of highway PPP projects, the government should move away from the total dependency syndrome and adopt the PPP Hybrid Annuity Model (HAM) model. Not only is the government suppose to contribute financially, but also be involved during the implementation phase in order to minimise construction and maintenance related risks.

5.4.5 Successful highway PPP projects implemented in Zimbabwe

Although the highway PPP projects implemented in Zimbabwe were successful, the selection of the Plumtree-Mutare road over Beitbridge-Harare-Chirundu road was questionable. It is recommended that the government should have a priority list of projects to be implemented under the PPP model.

5.7 Further study

The study provided valuable insight into risks, constraints and benefits associated with Zimbabwe’s PPP construction projects. The following areas were recommended for future study on highway PPPs.

- A research could be conducted to investigate risks and constraints faced by two similar highway projects implemented by traditional methods and the PPP method.
- Further studies are needed to assess challenges faced by other sectors in Zimbabwe in the implementation of PPP projects.
- Further studies are needed to assess risks and constraints faced by other countries in the African continent.
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APPENDIX A: LETTER OF INTRODUCTION (INTERVIEW)

Ministry of Transport and Infrastructural Development

Department of Roads

P. Bag CY309, Causeway

Harare

02 January 2017

Dear Interviewee
RE: I REQUEST THAT YOU PARTICIPATE IN AN INTERVIEW FOR THE ATTACHED QUESTIONS

My name is Enerst Shenje, student number B1541737 studying toward Masters in Business Leadership (MBL) Degree qualification at the Bindura University of Science Education (BUSE). Research is a compulsory component of the Masters in Business Leadership (MBL) Degree programme and as such, I request that you assist me by completing the attached questionnaire.

The study targets the Zimbabwean transport sector and it seeks to assess constraints, risks and benefits of the use of Public-Private Partnerships in promoting highway infrastructure and service delivery in Zimbabwe. The key highway PPPs implemented in Zimbabwe during the study period were; New Limpopo Bridge (NLB), Ngezi Platinum Highway, Newlands Bypass Road and Plumtree-Mutare Highway.

Data and information you will provide will be used for academic purposes only. The data and information provided will be kept confidentially always. The information will be destroyed after my university has published examination results. The questionnaire is anonymous, in which case, you are not expected to disclose your identity in any manner. Therefore, I expect you to provide answers that are as truthful as possible as per your knowledge.

I thank you in advance for the assistance that I believe you will accord me unconditionally.

Yours faithfully

Enerst Shenje

e2shenje@gmail.com

(+263)71 288 2972 or (+263)77 955 4272
APPENDIX B: INTERVIEW QUESTIONS

1. How much experience do you have on highway PPP projects?
2. Name the Key highway PPP projects implemented in Zimbabwe during the period 1995 to 2015.
3. Was there an evaluation criteria/template to measure the success of highway PPP projects in Zimbabwe during the period 1995 to 2015?
4. What were the risks associated with those highway PPP projects?
5. What were the constraints associated with those highway PPP projects?
6. What were the benefits associated with these highway PPP projects?
7. How do you compare the highway PPP projects and the Traditional Procurement methods? Considering the following Key Performance indicators (KPI); cost, time and quality.
8. Was there Value for Money for these highway PPP projects?
9. Compared to other SADC Countries like South Africa, Tanzania, Mozambique, Mauritius, Madagascar, DRC, Malawi and Zambia, Zimbabwe had low uptake of PPPs as at 2015. What were the reasons for this low PPP uptake?

10. What should government do to promote highway PPPs uptake?

THANK YOU

APPENDIX C: LETTER OF INTRODUCTION (QUESTIONNAIRE)

Ministry of Transport and Infrastructural Development

Department of Roads

P. Bag CY309, Causeway

Harare.

15 January 2017

Dear Respondent
RE: I REQUEST THAT YOU COMPILE THE ATTACHED QUESTIONNAIRE

My name is Enerst Shenje, student number B1541737 studying toward Masters in Business Leadership (MBL) Degree qualification at the Bindura University of Science Education (BUSE). Research is a compulsory component of the Masters in Business Leadership (MBL) Degree programme and as such, I request that you assist me by completing the attached questionnaire.

The study targets the Zimbabwean transport sector and it seeks to assess constraints, risks and benefits of the use of Public-Private Partnerships in promoting highway infrastructure and service delivery in Zimbabwe. The key highway PPPs implemented in Zimbabwe during the study period were; New Limpopo Bridge (NLB), Ngezi Platinum Highway, Newlands Bypass Road and Plumtree-Mutare Highway.

Data and information you will provide will be used for academic purposes only. The data and information provided will be kept confidentially always. The information will be destroyed after my university has published examination results. The questionnaire is anonymous, in which case, you are not expected to disclose your identity in any manner. Therefore, I expect you to provide answers that are as truthful as possible as per your knowledge.

I thank you in advance for the assistance that I believe you will accord me unconditionally.

Yours faithfully

Enerst Shenje

e2shenje@gmail.com

(+263)71 288 2972 or (+263)77 955 4272
APPENDIX D: RESEARCH QUESTIONNAIRE

SECTION A

Tick the most appropriate answer in each case in this section

A.1. In which sector do you operate?
   
   a) Public sector
      [ ]
   
   b) Private sector
      [ ]

A.2. Which category do you fall within?
a) Consultant

b) Engineer

c) Contractor

d) Concessionaire

e) Other

A.3. How many years of experience do you have with highway projects?

a) Five years and below

b) 6-10 years

c) 11-15 years

d) 16-20 years

e) Over 20 years

SECTION B

*Please indicate the PPP procurement method(s) you are familiar with by ticking in the appropriate box.*

B.1. Which PPP procurement method(s) are you familiar with as far as highway projects are concerned?

a) Design-Build-Operate (DBO)

b) Design-Finance-Build-Operate (DFBO)
c) Build-Operate-Transfer (BOT)

d) Build-Own-Operate-Transfer (BOOT)

e) Operate-Maintain (OM)

f) Rehabilitate-Operate-Transfer (ROT)

Tick the most appropriate answer in each case.

B.2. Do you prefer PPP over traditional procurement method? (One characteristic of a Traditional procurement method is that the client bears the costs of the project e.g. lump sum contract, cost reimbursement contract and measurement contract).

a) Yes

b) No

b) Sometimes

B.3. PPPs have been used to deliver highway infrastructure projects in Zimbabwe during the period 1995 to 2015.

a) Yes

b) No

c) Not sure

SECTION C

Tick the most appropriate answer(s) in each case, in this section.
C.1. The government of Zimbabwe is facing an ever-increasing need to find sufficient financing for highway infrastructure.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td></td>
</tr>
</tbody>
</table>

C.2. During the period 1995 to 2015, there were policies to address issues to do with highway PPP projects in Zimbabwe.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td></td>
</tr>
</tbody>
</table>

C.3. During the period 1995 to 2015, the government had established governance structures for the implementation of highway PPP projects in Zimbabwe.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td></td>
</tr>
</tbody>
</table>

C.4. There was legislation on Highway PPPs in Zimbabwe during the period 1995 to 2015.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
</table>
C.5. Rate your general satisfaction on how the government handled the PPP process in Zimbabwe during the period 1995 to 2015.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Satisfied</td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td>Not Satisfied</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td></td>
</tr>
</tbody>
</table>

C.6. Expertise, good governance and due diligence was exercised in the selection of the highway PPPs in Zimbabwe during the period 1995 to 2015.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td></td>
</tr>
</tbody>
</table>

C.7. There was an improvement in the efficient delivery of Highway PPP projects when the private sector was engaged in Zimbabwe during the period 1995 to 2015.

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td></td>
</tr>
</tbody>
</table>
C.8. For the highway PPP projects implemented during the period 1995 to 2015, which of the following is most appropriate?

<table>
<thead>
<tr>
<th>Response</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPPs were more cost-effective than Traditional procurement methods</td>
<td></td>
</tr>
<tr>
<td>Traditional procurement methods would have been more cost-effective</td>
<td></td>
</tr>
<tr>
<td>Cost effectiveness of both PPP and traditional methods were the same</td>
<td></td>
</tr>
</tbody>
</table>

SECTION D

D.1. What is/are the primary reason(s) for implementing highway PPP projects in Zimbabwe?

<table>
<thead>
<tr>
<th>Reason for implementing PPP</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost and time savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortage of work force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value for money</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D.2. The following were the key indicators of successful highway PPP projects in Zimbabwe during the period 1995 to 2015.

<table>
<thead>
<tr>
<th>Success Indicator</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional KPI:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cost, time, quality</td>
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<tr>
<td>Public satisfaction</td>
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<tr>
<td>Value for money achieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk management</td>
<td></td>
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</tbody>
</table>

D.3. Please rank the following risks associated with highway PPP projects as applied to highway PPP projects implemented in Zimbabwe between 1995 and 2015.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Highest risk</th>
<th>High risk</th>
<th>Low risk</th>
<th>Lower risk</th>
<th>Lowest risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project stakeholder approval</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Social acceptance of the project</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of experience in PPP arrangements</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Inflation</td>
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<td></td>
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<tr>
<td>Corruption</td>
<td></td>
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<td></td>
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<tr>
<td>Environmental considerations</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cost overruns</td>
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<tr>
<td>Time overruns</td>
<td></td>
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<tr>
<td>Constraint factor</td>
<td>Highest risk</td>
<td>High risk</td>
<td>Low risk</td>
<td>Lower risk</td>
<td>Lowest risk</td>
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<td>--------------------------------------------------------</td>
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<tr>
<td>Lack of appropriate legislature</td>
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<td></td>
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<td></td>
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<tr>
<td>Length concession agreements</td>
<td></td>
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<tr>
<td>Excessive rates of return to private partner</td>
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<tr>
<td>Absence of revenue sharing formula</td>
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<td>Inconsistent application of evaluation tools</td>
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<td>Poor risk allocation between public and private sectors</td>
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<td>Lack of environmental safe guards</td>
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<td>Lack of transparency and efficacy of the PPP process</td>
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<td>Negative impacts on existing revenues</td>
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<td>Impact of project on alternative routes</td>
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THANK YOU