

**A SYSTEMATIC APPROACH TO THE IMPLEMENTATION OF
PUBLIC-PRIVATE PARTNERSHIPS IN ETHIOPIAN FEDERAL
ROAD INFRASTRUCTURE PROVISION**



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A Thesis Submitted to the Department of Civil Engineering

School of Civil Engineering and Architecture

**Presented in Partial Fulfillment of the Requirement for the Degree of
Master's in Civil Engineering (Specialization in Construction Engineering
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DECLARATION

I hereby declare that this Master Thesis entitled “A Systematic Approach to The Implementation of Public-Private Partnerships in Ethiopian Federal Road Infrastructure Provision” is my original work. That is, it has not been submitted for the award of any academic degree, diploma or certificate in any other university. All sources of materials that are used for this thesis have been duly acknowledged through citation.

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I, the advisor of this thesis, hereby certify that I have read the revised version of the thesis entitled “A Systematic Approach to The Implementation of Public-Private Partnerships in Ethiopian Federal Road Infrastructure Provision” prepared under my guidance by Yenenesh Ketema submitted in partial fulfillment of the requirements for the degree of Masters of Science in Construction Engineering and Management. Therefore, I recommend the submission of revised version of the thesis to the department following the applicable procedures.

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I, the advisor of the thesis entitled “A Systematic Approach to The Implementation of Public-Private Partnerships in Ethiopian Federal Road Infrastructure Provision” and developed by Yenenesh Ketema, hereby certify that the recommendation and suggestions made by the board of examiners are appropriately incorporated into the final version of the thesis.

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We, the undersigned, members of the Board of Examiners of the thesis by Yenenesh Ketema have read and evaluated the thesis entitled “A Systematic Approach to The Implementation of Public-Private Partnerships in Ethiopian Federal Road Infrastructure Provision” and examined the candidate during open defense. This is, therefore, to certify that the thesis is accepted for partial fulfillment of the requirement of the degree of Master of Science in Construction Engineering and Management.

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LIST OF ACRONYMS

Acronyms	Definitions
AACRA	Addis Ababa City Roads Authority
AADT	Annual Average Daily Traffic
ADB	African Development Bank
AIF	Active Implementation Framework
BOO	Build-Own-Operate
BOOT	Build-Own-Operate-Transfer
BOT	Build-Operate-Transfer
BTO	Build-Transfer-Operate
CCAE	Construction Contractors Association of Ethiopia
DBFO/M	Design-Build-Finance-Operate/Maintain
DBO	Design-Build-Operate
DBOM	Design-Build-Operate-Maintain
EACE	Ethiopian Association of Civil Engineers
EAP	East Asia and Pacific
EIB	European Investment Bank
ERA	Ethiopian Roads Authority
ESIA	Environmental and Social Impact Assessment
ETB	Ethiopian Birr
EU	European Union
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
GOE	Government of Ethiopia
GTP	Growth and Transformation Plan
HDM	Highway Development and Management Model
IA	Implementation Agreement
ICSID	International Centre for Settlement of Investment Disputes
IMF	International Monetary Fund
IPP	Independent Power Producers
LAC	Latin America and the Caribbean

MENA	Middle East and North Africa
MOF	Ministry of Finance
NCHRP	National Cooperative Highway Research Program
NIRN	National Implementation Research Network
NYC	New York Convention
OECD	Organization for Economic Cooperation and Development
PFI	Private Finance Initiative
PIU	Project Implementation Unit
PLC	Private Limited Company
PPA	Power Purchase Agreement
PPIAF	Public Private Infrastructure Advisory Facility
PPP	Public Private Partnership
PPP DG	Public-Private Partnership Director General
RAP	Resettlement Action Plan
RFP	Request for Proposal
RFQ	Request for Quote
RII	Relative Importance Index
RSDP	Road Sector Development Program
SPSS	Statistical Package for the Social Sciences
SPV	Special Purpose/Project Vehicle
SSA	Sub-Saharan Africa
UK	United Kingdom
UNDP	United Nations Development Program
USD	United States Dollar
VFM	Value for Money
WB	World Bank
WLC	Whole Life Costing

ABSTRACT

Despite the government's preceding consideration to infrastructures like roads, the Ethiopian road sector is still facing notable problems such as delays, cost overruns, increment of life-cycle maintenance, quality and efficiency concerns. Public-private partnership is used as one of the tools to improve infrastructure services and gives the opportunity to use the private sector potential. Since taking public-private partnerships as an option is new for Ethiopia, careful study and systematically formulated approach for implementation is mandatory. This research aims to examine the driving factors and enabling outline; the desirable conditions to attract private sector; barriers to implementation, and measures to overcome barriers with a main goal to develop a systematic approach through implementation framework for public-private partnership. Both qualitative and quantitative research methods were employed. An extensive literature review, a questionnaire survey, focus group discussion and an interview were used as data collection tools to accomplish the objectives of the study. Qualitative and Quantitative data analyses were implemented to analyze the collected data. Statistical Package for the Social Sciences software version 26 was utilized to analyze the quantitative data. The findings revealed scarcity in government funding, inability of public sector to assume all project risks and social strain on people due to poor road facilities as leading driving factors. Financial viability of projects, political stability, and political support and acceptability for public-private partnerships are deemed as major desirable conditions from the results. The findings also indicated lack of experience and expertise in both public and private sectors, inadequate domestic capital market, lack of transparency and accountability as major barriers; and building expertise through trainings, forming operative regulatory framework and enforcement, promotion of good governance as essential measures to overcome the barriers to implementation. The research proposed a systematic approach for the provision of federal roads through public-private partnerships as an output. The proposed approach, by a means of framework, was validated by experts from private and public sectors. The framework integrates three sections that are effective practices, effective implementation methods, and enabling context. The research output and findings contribute to the implementation and the limited knowledge of public-private partnership practices in Ethiopia.

Keywords: Systematic approach, Public-Private Partnerships, Special Project Vehicle, Road infrastructure, Ethiopian Roads Authority

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Constructing and operating infrastructure facilities, as well as providing essential services, have traditionally been the responsibility of the public sector. Many governments, on the other hand, have found it difficult to meet the increasing demand for infrastructure. Accordingly, governments in several countries have been gradually enlisting the private sector in the provision of infrastructure, and the delivery of basic services through Public-Private Partnership (PPP) (Asubonteng, 2011). A PPP is an arrangement between a public sector and a private party in which the latter conducts all or parts of the government's service delivery, infrastructure provision, or administrative functions while also taking on the associated risks. In exchange, the private party receives a fee based on pre-determined performance requirements (Ma et al., 2019).

In practice, Ethiopia has a rapidly growing population and a significant demand for infrastructures. Yet, there is still a significant gap between real public service performance and public service demand. The constitution of the Federal Democratic Republic of Ethiopia (FDRE) obliges the government to provide all citizens of the country with public infrastructure services, thereby improving economic conditions (Mengiste, 2021). Although the Government of Ethiopia (GOE) has not yet been able to meet the demand for public services, the Ethiopian Government has implemented a number of development programs that highlight the need to increase public infrastructure expansion and quality. One of the key reasons is that public funding alone can't successfully carry out infrastructure construction activities. As a result, the government realized that it needed to mobilize resources from a variety of sources in addition to typical government funding. The private sector seems to be a vital source of money in this context (Debela, 2019a).

Recognizing the importance of road transportation in promoting social and economic growth, as well as its function as a catalyst for poverty reduction, the GOE has intensified its focus on improving the quality and size of the country's road infrastructure. In 1997, the GOE developed the Road Sector Development Program (RSDP) to address road sector bottlenecks. The RSDP was executed in five phases over two decades, from 1997 to 2020. The fifth RSDP, which was

in effect until 2020, was presented in light of the country's goal of becoming a middle-income country by 2025. The entire budget for RSDP five is estimated to be 334.5 billion Ethiopian Birr (ETB), with federal roads accounting for ETB 264.7 billion. About ETB 117 billion was disbursed of which 87 billion was on federal roads during the three years of RSDP five (Ethiopian Roads Authority, 2019). Many of the projects planned under the RSDPs, on the other hand, were not completed in time or on budget and did not fulfill quality standards. As a result, the gap between plan and implementation hampers the country's economic growth efforts and the growing demand for greater road infrastructure (Debela, 2019a).

The GOE planned to use public-private partnership as an alternative means of financing road infrastructure in Ethiopia to promote rapid economic growth and better road infrastructure to alleviate the problems encountered in the implementation of traditional road procurement methods (UNDP Ethiopia, 2015). The Ministry of Finance (MOF) has taken the initiative to design the public-private partnership program framework by preparing a PPP policy followed by PPP proclamation that helps on the implementation of the program in a transparent way. The framework also includes PPP directions and guidelines for the implementation of PPP projects, as well as manuals and regular bid documents (Ministry of Finance and Economic Cooperation, 2017).

According to Debela, (2019b) PPP may provide a variety of benefits for the government sector, when properly formulated and managed, such as reducing public sector financial stresses as a result of the rising cost of infrastructure development, facilitating the risk transfers to private party from the public sector, and improving the value for money spent on infrastructure development. However, limited experience is available in Ethiopia in establishing and administering PPP projects.

The interest in PPPs and problems encountered in the road infrastructure development need for an improved methodology for better-quality infrastructure as well as service delivery through PPPs. Thus, this research was required to be conducted corresponding to the need. This research results in a better understanding of PPPs and the development of a systematic approach that integrates different components in the delivery of road infrastructure services, and systematically addresses the key issues to achieve successful implementation in federal road

projects. Details of the research findings and output with concrete recommendations are provided in the following chapters.

1.2 Statement of the Problem

Many countries around the world, especially in developing countries, experience infrastructure backlogs, as evidenced by congested highways, as well as deteriorating bridges (Antono, 2009). These issues have significant societal costs, ranging from lower economic growth to decreased market competition. There is a clear correlation between infrastructure development and economic growth. This has to do with the infrastructure's characteristics, or as a final service output for customers (Dawit Mengiste, 2021).

The Ethiopian Roads Authority (ERA) is the contracting authority responsible for the development, operations, and maintenance of the federal roads network. Most of the federal road projects administered under ERA encounter various problems such as decreased cost savings, cost overrun, durability problems, low effectiveness of projects, time overrun, quality problems, and increment of life-cycle maintenance (Belay, 2018). In relation to this, Ethiopia's road sector is completely dominated by public-sector investment. The method of procurement utilized in the sector is mostly traditional (Debela, 2019a).

One of the aspects that unite the whole economy is an efficient transport infrastructure that aids economic and urban development. Poor infrastructure and high transport costs are commonly identified in low-income countries as fundamental barriers to economic development. The GOE strives to strengthen infrastructure in the road industry in particular. On the other hand, development operations on road infrastructure cannot be undertaken from government funds alone. And private sector involvement in infrastructure services is wise (UNDP Ethiopia, 2015). In relation to this, PPPs are increasingly being used as an alternate strategy to the development and funding of public infrastructure services around the world, even though, Ethiopia is still in the early stages of applying PPPs to address road infrastructure insufficiency. (Debela, 2019a).

The implementation of PPP in a systematic approach for the delivery of federal road infrastructure services in Ethiopia has a clear gap. Therefore, there is a need to explore the entire PPP process and the key aspects to consider for the successful implementation of PPP to develop a systematic approach. Since a comprehensive systematically formulated approach does not

exist in Ethiopia, it becomes significant to perform a research that can give objective and scientific support for effective implementation of PPP in Ethiopian federal road infrastructure provision.

1.3 Objectives

1.3.1 General objective

- The general objective of this research is to develop a systematic approach for public-private partnerships implementation in Ethiopian federal road infrastructure provision.

1.3.2 Specific objectives

The specific objectives of this study are:

- To determine the driving factors and enabling outline for the implementation of public-private partnerships in the provision of Ethiopian federal road infrastructure
- To investigate the desirable conditions to attract private sector participants for public-private partnerships implementation
- To identify the barriers to the implementation of public-private partnerships along with the measures to overcome the barriers
- To develop an implementation framework for public-private partnerships

1.4 Research Questions

To address the above objectives, the study takes the following specific questions to be solved by the end of the research:

- What are the driving factors¹, and an enabling outline that lead to the consideration of public-private partnerships to realize the implementation in the road sector?
- What are the desirable conditions that should be created in order to attract private sector participants for implementing public-private partnerships?
- What are the barriers to the implementation of public-private partnerships and how can those barriers be managed?

¹ Are used to describe “Reasons” in this text

- What is an implementation framework for considering public-private partnerships in Ethiopian federal road infrastructure provision?

1.5 Significance of the study

The research is significant because its findings can be used for the successful implementation of PPP in the Ethiopian road sector. It provided a systematic approach to make the PPP process practical for federal road infrastructure provision.

This study is relevant because it deals with one of the most challenging problems faced by the government of Ethiopia which is delivering road infrastructure assets and services with the desired quality. The necessity of developing a systematically formulated way for the successful implementation of PPP in federal road infrastructures is closely related to the solving infrastructure backlog in the road sector. Therefore, the research is conducted to identify problems and finding alternative in the road sector for future application. The significance of the study for:

Public sector: This research is significant as it provides directions for adopting PPPs to reduce public sector administrative costs, practice for sharing risks, reduce the problem of budget constraint, and increase access to the public sector market with the aim of offering benefits to local economic development.

Private sector: The research is significant for the private sector to give an insight about PPP and its implementation success to participate and exploit resources, expertise, and technologies in the public sphere. It also offers directions for solving road infrastructure problems through the successful implementation of PPP by working together with the public sector.

1.6 Delimitations and limitations of the study

1.6.1 Delimitations

The scope of this study is limited to the development of a systematic approach for the implementation of PPP in Ethiopia, particularly for the road sector. The designed systematic approach through a framework is meant for the federal road infrastructure where the Ethiopian Road Authority (ERA) is the responsible body as contracting authority.

1.6.2 Limitations

The limitations can be indicated as the absence of cases to conduct case studies for this research which is due to the reason that there are no PPP road infrastructure projects in Ethiopia. In addition to this, the research would have been more encompassing and complete when an increased number of PPP experts had been available for obtaining data. Another limitation concerning the focus group discussion was the inability of professionals in different organizations to meet at one place at a specified time for discussing the topic raised.

1.7 Operational definitions

The operational definitions or the specific meaning of the basic terms used in this research context are written in Table 1.1. They are described according to the Ethiopian PPP framework by the PPP proclamation no. 1076/2018.

Table 1.1: Operational definitions

Terms	Operational definitions
Public entity	A Public Body or a Public Enterprise
Public body	Any organ of the federal government, which is wholly financed by the federal government budget
Public enterprise	An enterprise fully owned by the federal government and defined under the relevant laws of the Federal Democratic Republic of Ethiopia
Contracting authority	A public body or a public enterprise which intends to enter into public-private partnership agreement with a private party
Private party	A party that enters into PPP agreement with a contracting authority
Project company(SPV)	The legal entity incorporated under the laws of the FDRE by the successful bidder whose sole purpose shall be to execute and implement the public-private partnership agreement and other project agreements, if any.
Public-Private Partnership(PPP)	A long-term agreement between a contracting authority and a private party
Public-Private Partnership Agreement	A contract concluded between the contracting authority and a private party setting forth the terms and conditions of the PPP.
Project agreement	The PPP Agreement and other agreements entered into between the contracting authority or another public entity and the private party for the purpose of the project.

Unsolicited proposal	Any proposal undertaking a public- private partnership project that is not submitted in response to a request or solicitation issued by the contracting authority within the context of a competitive selection procedure.
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1.8 Thesis outline

This thesis has four main chapters. A summary guide to each chapter is found below:

Chapter one: it is the introduction of the research, and is devoted to giving a general review and introduction to the study. This chapter includes the background of the study and a statement of the problem on which the research is based. The significance, the objective of the research as well as the research question that is intended to be answered by the end of the research are discussed. Following that, the delimitations & limitations of the research are illustrated. These all sections intend to give the reader an introduction for the study and lead to the next chapter.

Chapter two: it is the literature review section of the research containing previous researches and information by different researchers and authors. This chapter starts by giving a general overview of what the chapter has followed by a theoretical and empirical review of the concept. The chapter is aimed at establishing a better understanding of subjects related to the PPP and its implementation in Ethiopian federal road infrastructure provision.

Chapter three: namely Research Methodology, which concentrates on the research methodology used in this research. The chapter presents and explains the research design, sampling techniques, source of data, research instrument, method of data collection, and data analysis. The chapter also briefly presents the framework development for the approach to the successful PPP implementation.

Chapter four: namely the Results and Discussions, which is considered as an important chapter. Its purpose is to present the results of the research analysis and the proposed framework for implementing PPP in the Ethiopian federal road infrastructure provision.

Finally, the Conclusions and Recommendations section of the research is presented. The conclusions and findings of the study are explained in it. It then indicates the areas of gaps and recommends further research. The summary of the findings is provided in the conclusions section as the last point. Figure 1.1 demonstrates the overall thesis outline.

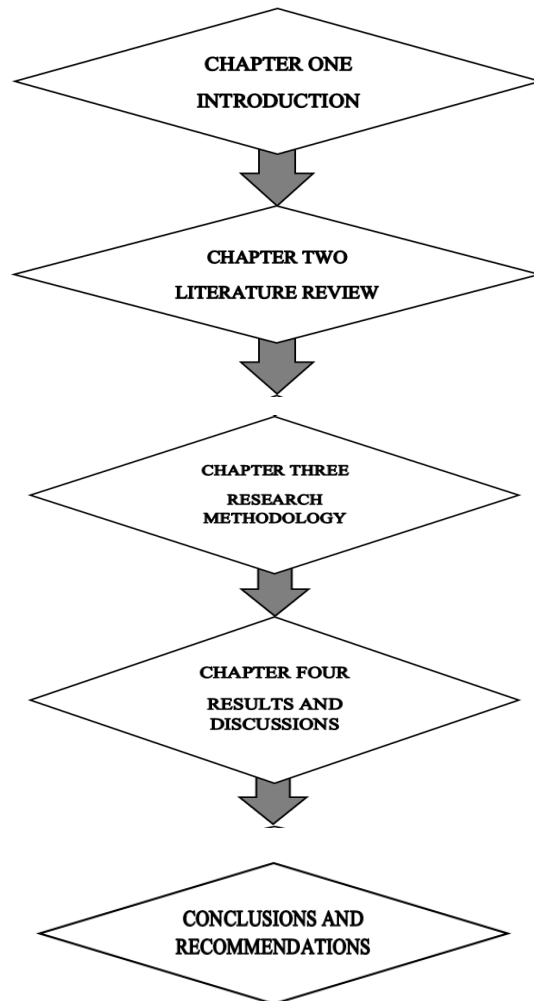


Figure 1.1: Thesis outline

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

The literature review comprises the theoretical and empirical background of the concept. The research gaps are also included under the literature review. The theoretical review includes the concept and context of PPP from several perspectives, basically to get an insight on what it is, why, and when PPP starts. The experiences of countries in the PPP market along with PPP in Ethiopia are included in the theoretical review. In the empirical review of literature, the driving factors and enabling outline of PPP implementation in Ethiopia; desirable conditions to attract private partners; barriers to implementation, and measures to overcome the barriers are included. Finally, the development of an implementation framework that can be used to realize PPP implementation along with its benefits are explored. Figure 2.1 summarizes the main topics included in the literature review.

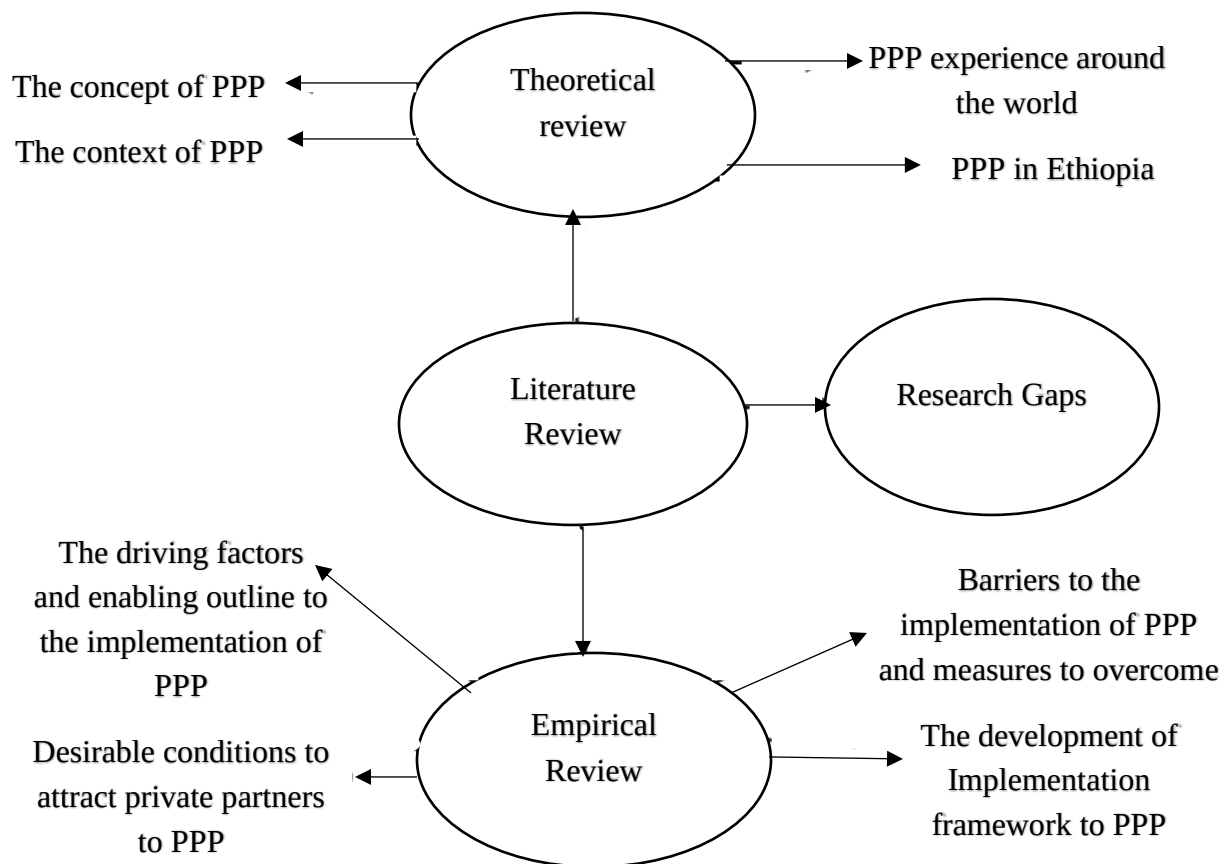


Figure 2.1: Overview of literature review

2.2 Theoretical Review

2.2.1 The concept of public-private partnership

2.2.1.1 Basic concept of public-private partnership

A specific definition of PPP is needed to comprehend the term. Several organizations define PPPs as follows:

One of the most well-known expressions of PPP is given by United Kingdom Commission on PPP as follow: “a public-private partnership is a risk-sharing relationship between the public and private sectors based upon a shared aspiration to bring about a desired public policy outcome” (European PPP Expertise Centre, 2012). In comparison, according to The Canadian Council for Public-Private Partnerships, (2002) PPP is expressed as: “a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks, and rewards.”

According to European Investment Bank (EIB), “Public-private partnership is a generic term for the relationships formed between the private sector and public bodies often to introduce private sector resources and/or expertise to help provide and deliver public sector assets and services” (Thomson et al., 2005). On the other hand, European commission, (2004) defines the term PPP as “forms of co-operation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management and maintenance of an infrastructure of the provision of a service.”

The term PPP is stated by International Monetary Fund (IMF) as: “Public-private partnerships refer to arrangements under which the private sector supplies infrastructure assets and infrastructure-based services that traditionally have been provided by the government. PPPs are used for a wide range of economic and social infrastructure projects, but mainly to build and operate roads, bridges and tunnels, light rail networks, airports, and air traffic control systems, prisons, water and sanitation plants, hospitals, schools, and public buildings.” (Led & Hemming, 2006).

Organization for Economic Cooperation and Development (OECD) expresses PPP as: “PPP is an agreement between the government and one or more private partners (which may include the operators and the financiers) according to which the private partners deliver the service in such

a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners and where the effectiveness of the alignment depends on a sufficient transfer of risk to the private partners.” (OECD, 2008). In comparison, the World Bank, (2012) gives the definition as: “PPP is a long-term contract between a private party and a government agency, for providing a public asset or service, in which the private party bears significant risk and management responsibility.”

In the context of Ethiopia "Public-Private Partnership" means a “long-term agreement between a contracting authority and a private party under which a private party undertakes to perform a public service activity that would otherwise be carried out by the contracting authority; receives a benefit by way of compensation by or on behalf of the contracting authority; tariffs or fees collected by the private party from users or consumers of a service and a combination of such compensation and such charges or fees. And the private party is generally liable for risks arising from the performance of the activity or use of the state property in accordance with the terms of the project agreements” (Public-Private Partnership Proclamation No. 1076/2018, 2018).

2.2.1.2 The concept of public-private partnership from various perspectives

Considering cooperation, shared objectives, joint investments, benefit-sharing, and risk sharing in inter-organizational relationships, a public-private partnership is an agreement between two or more organizations that allows them to work together against common or compatible goals, with some degree of shared authority and obligation, a joint commitment of capital, shared risk-taking, and mutual benefit. The implication is that resources are invested cooperatively, resulting in mutual risk-taking, authority sharing, and benefits for both partners (Jomo et al., 2016).

From the contractual governance and inter-organizational relationship aspects, PPPs are partnerships that include contractual arrangements, alliances, cooperative agreements, and joint activities used for policy creation, program support, and delivery of government programs and services (Quium, 2011). In addition, PPP refers to a legally binding contract between government and business for the provision of assets and the delivery of services that divide obligations and business risks among the various partners considering contractual governance and risk allocation dimension (OECD, 2008).

Taking bundling service provision and long-term contract into consideration, when opposed to the conventional approach to infrastructure provision, the key feature of a PPP is that it combines investment and service provision in a single long-term contract. The concessionaire can maintain and operate the properties for the length of the deal, which may be as long as twenty or thirty years, in return for usage fees, which are its reimbursement for the investment and other costs (Jomo et al., 2016). Moreover, From the perspective of inter-organizational relationship in terms of power and knowledge sharing, PPP is a relationship involving the sharing of power, function, assistance, and/or information with others for the achievement of common goals and/or mutual benefits (OECD, 2012).

2.2.2 The context of public-private partnership

2.2.2.1 Public-private partnership models

Governments throughout the world have used a variety of contractual structures to deal with the changing project characteristics and stakeholders' roles in the evolution of the PPP approach. As a result, numerous PPP models have emerged, allowing the successful implementation of projects for new or maintenance projects (Cherkos et al., 2020). The following are some of the most famous PPP schemes² for constructing new facilities (National Council of Public-Private Partnerships, 2016):

Design-Build-Operate (DBO): The private partner is responsible for the design and development of a public facility under this arrangement. When the facility is ready, the government receives it, while the private partner is responsible for its service for a set period of time. The government continues to be in charge of asset maintenance and ownership. **Build-Transfer-Operate (BTO)** is another name for this strategy (Quium, 2011).

Design-Build-Operate-Maintain (DBOM): This scheme combines design-build with a private partner's responsibility for the operation and maintenance of a public facility for a set period of time. When the time limit is up, the operation is returned to the government as the asset's owner. **Build-Operate-Transfer (BOT)** is another name for this strategy (The World Bank, 2009).

²Ministry of Finance, 2019 states “Schemes” as “Models”

Build-Own-Operate-Transfer (BOOT): The government grants a private partner the right to invest, design, construct, and operate a facility for a set period of time under this program. For a certain period of time, the properties are often owned by the private sector. By the end of the period, the government regains control of the facility's ownership, service, and maintenance, as well as its capital investment (Dunn-Cavelty & Suter, 2009).

Build-Own-Operate (BOO): A private partner is given the right to finance, design, build, operate and maintain a project by the government. The private partner is entitled to keep control of the project under this arrangement, so it is not expected to return the facility (The World Bank, 2014).

Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M): The government grants a private partner the right to design, construct, finance, operate, and/or maintain a new public facility under a long-term lease through this program. Via the lease scheme, the private sector is entitled to own the asset for a fixed period of time. The facility is returned to the government at the end of the lease period. DBFO/M, which is used in many countries, encompasses both BOO and BOOT systems (The World Bank, 2014).

PPP may be implemented to operate existing programs and facilities in addition to dealing with the construction of new public infrastructure. There are several common schemes in this context, which are listed below (National Council of Public-Private Partnerships, 2016):

Service Contract: The government hires a private company to offer services that were already provided by the government. This is known as a simple principal-agent relationship, which is the most basic form of PPP (The World Bank, 2014).

Management Contract: This arrangement is almost identical to a service contract, except that the private partner is responsible for the facility's entire operation and maintenance (Quium, 2011).

Lease: The government grants a private partner a leasehold interest in an asset under this scheme. As a result, based on the lease terms, the private partner will be responsible for the asset's operation and maintenance (Quium, 2011).

Concession: The government grants a private partner exclusive rights to operate and maintain an asset for a long period of time based on performance expectations established by the government under this scheme. The government keeps ownership of the original asset, while the private party keeps ownership of any changes made during the concession period (The World Bank, 2014).

Based on payment classification, there are essentially two basic PPP models for road projects involving capital investments, namely user pay road PPP contracts and government pays road PPP contracts. User pay road PPP contract, which is the best known PPP arrangement, is a DBFO arrangement also known as a BOT arrangement. This arrangement implies that a private company is responsible for the design, construction, financing and the operations of infrastructure for a given period of time. Operations include the right (concession) to charge users a fee for the use of the infrastructure. For road infrastructure, this will normally be done through tolls (Ministry of Finance, 2019).

On the other hand, when the PPP arrangement does not include the right to levy and retain user charges, the arrangement is commonly referred to as a (DBFM) arrangement that is Government Pay Road PPP. This arrangement implies that a private company is responsible for the design, construction, financing and maintenance of infrastructure for a given period of time. The costs are reimbursed by the public authority based on a predefined payment schedule (availability payments or shadow tolls) (Public-Private Infrastructure Advisory Facility, 2009c).

In the case of availability (or unitary) payments, revenues for the private company are fixed. Therefore, the private sector faces no demand risk. However, the income for the private sector depends on the actual infrastructure use in the case of shadow tolls. Therefore, the private company does incur demand risk. Since users have access to the infrastructure ‘free of charge’, the demand risk is predominantly related to the uncertainty of traffic forecasts (these are mainly driven by macroeconomic and regional economic conditions and do not include the uncertainty on the user’s willingness to pay) (Ministry of Finance, 2019).

2.2.2.2 The basic structure of public-private partnership arrangement

The government, project sponsor, project operator, financiers, suppliers, contractors, third parties, and customers are all involved in a typical PPP framework, which can be quite complex. A significant feature of PPPs is the development of a separate business enterprise known as a Special Purpose/Project Vehicle (SPV). The SPV is a legal entity that takes on a project and negotiates contracts with other parties, including the government. SPV is also the preferred way of implementing the PPP projects in limited or non-recourse situations, where lenders are solely relying on project's cash flow and security over their assets as the only means to repay debts (Quium, 2011). Figure 2.2 shows a PPP structure with the PPP agreement between SPV and the public entity (Contracting Authority) as well as all of the other project agreements between several stakeholders and SPV.

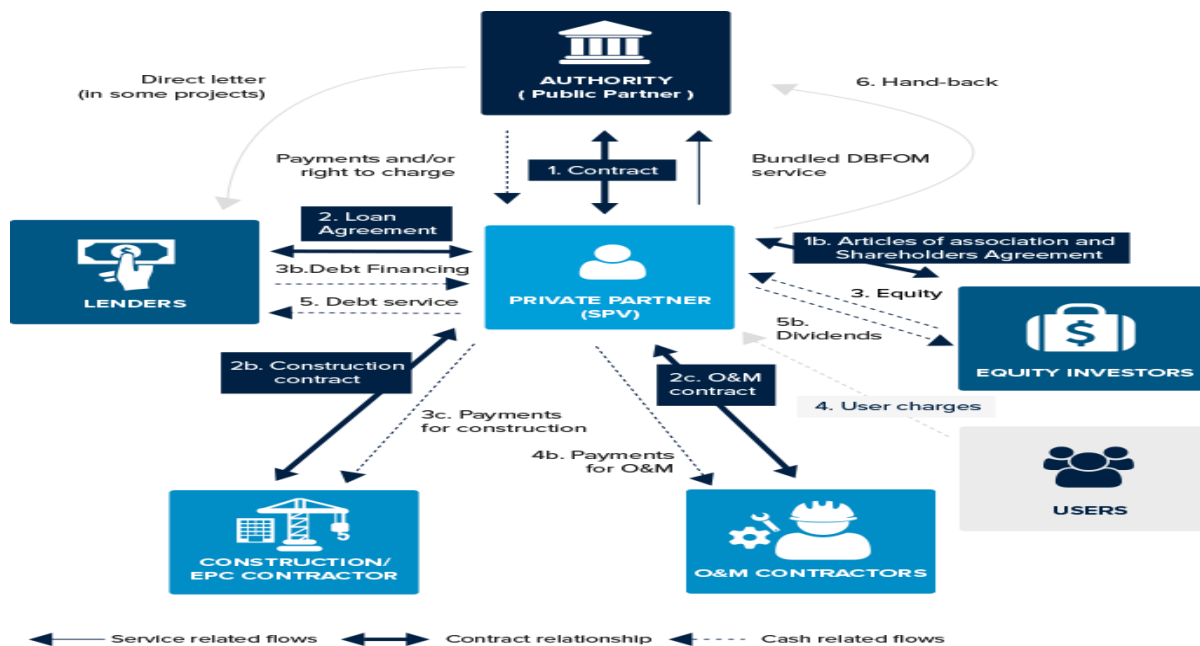


Figure 2.2: PPP contract structure (Source: Public-Private Partnership Director General, 2021)

SPV is set up by the private partners, who in exchange for shares contribute to the long-term equity capital, representing ownership in the SPV. A key feature of SPV as a firm is that it cannot enter into any business which is not associated with the project. SPV protects the rights of the lenders and investors as a separate legal entity (Chowdhury and Chen, 2010). Given the amount of investment, the managerial and operational skills necessary, and the risks involved, a project may be too huge and complicated to be executed by a single investor. In this scenario,

the SPV allows forming an alliance with other investors who can invest, contribute technological and management skills, and share risks as required (Quium, 2011). In exchange for shares, the government may also contribute to the SPV's long-term equity capital. In this situation, the SPV is formed as a joint venture between the public and private sectors, and, like the other private-sector shareholders, the government is granted equal rights and corresponding asset interests within the SPV (The World Bank, 2014).

According to Chowdhury and Chen, (2010) a joint venture is an operating company owned by a government entity and a private company (or multiple companies including foreign companies if permitted by law), or a consortium of private companies. An SPV is frequently made as a partnership between an experienced construction firm and a service operations firm capable of running and maintaining the project. Other than its strategic, financial, and economic interests, the government may also like to directly participate in a PPP project. The main reasons for such direct involvement are to hold interest in strategic assets; to address political sensitivity and fulfill social obligations; to ensure the commercial viability of the project; to provide greater confidence to lenders, and to have better insight to protect the public interest. The country's legal and regulatory regime and the policies on PPPs guide direct government involvement in the PPP project (Quium, 2011).

2.2.2.3 Principles of public-private partnership

The European commission, (2004) stated specified principles³ of PPPs in its green paper on PPPs and community law on public contracts and concession. One of the basic principles of PPPs is the long-term contractual arrangements, which involves collaboration between the public and private partners on various aspects of a proposed project. As a result, the government and the private entity remain linked for a long time. The contract can be for 25 or 30 years.

The output based specification is defined as one of PPPs principles. The public entity is mainly concerned with determining the goals to be achieved in terms of public interest, service quality and pricing policy, and it is responsible for ensuring that these goals are met. In addition to this, the risk sharing between the public and private partners, to whom the risks that the public sector normally bears are passed is one of the principles. A PPP, on the other hand, does not always

³ stated as “Values” in PPP guidelines of Ethiopia by Ministry of Finance, (2019)

imply that the private party bears any or even the majority of the project's risks. The specific risk distribution is assessed case by case, based on the parties' respective ability to evaluate, monitor, and cope with the risk (European commission, 2004).

According to principles put in place by Prachi, (2019) the PPP strategy focuses on facilitating long-term public services. Roads for transportation, dams for power and water supply, and street lights for lighting are all part of the plan. This demonstrates that PPP is service-oriented. Moreover, in PPP, the project's cumulative cost is calculated once for the duration of its life. Thus, the initial capital expenditure, repair and maintenance costs, alteration costs, and subsequent disposal costs are all taken into account. This is referred to as whole-life costing. Value for money (VFM) as a principle is gauged by the combination of whole life costs and quality. Value for money is reflected in the reduced risk of cost overruns and delays as well as efficiency gains. This value for money, that is driven by a transfer of the design, construction and operational risk to the private developer, needed to be considered in PPP road development. Furthermore, since private companies are involved, the PPP strategy introduces the ramifications of imagination and emerging technologies to infrastructure projects, which gives public sector access to innovation. This is enhanced by market competition which will drive best value (The World Bank, 2012).

2.2.2.4 Roles and limitations of public-private partnership

PPP provides a win-win advantage to both the public and private sectors in the delivery of public infrastructure and services as it is focused on best practices. The pace, reliability, and effectiveness associated with private sector practices to public service delivery to ensure value for money are the main benefits for the government. Under a PPP system, the long-term costs of service delivery can be measured more realistically, promoting more effective resource usage. Furthermore, PPP aids in the improvement of service delivery and facility management through creativity, customer service, and eventually increased cash flows (The World Bank, 2012).

Another significant role of PPP is that it allows governments to use private money to provide public services. Government should pool private capital to augment public budget resources and accelerate economic as well as social growth by using PPP as a strategic service and infrastructure delivery mechanism (Asubonteng, 2011).

The private sector injects improved technology, apply creative business practices, and generate productivity to raise profits by partnering with government and investing in public service delivery. The private companies are benefited since they are motivated through bonus if they complete the project before time to improve efficiency. Furthermore, the private sector benefits from capacity building interventions that are purposefully incorporated into PPP agreements to establish and enable individual private partners, private agencies, and communities to become skilled and competent in order to meet local and national development goals (Riess et al., 2005).

PPPs generate value for the money by integrating and transferring public and private sectors skills, information, and expertise to ensure maximum efficiencies (Debela, 2019a). The government can also hand over the associated risk along with the project to the private firms who have relevant experience and knowledge in the area (Prachi, 2019).

PPPs, on the other hand, have drawbacks. PPPs are significantly complex. The number of actors involved in the implementation is an indication of the complexity and scale of the required level of analysis to prepare and manage the various components. This complexity requires the commitment of the public authorities, associated capacity-building measures as well as increased use of external advisors and expertise (Rodriguez, 2019). PPP also represents a long-term commitment between the public and private sectors in terms of flexibility, project design, and political commitment. The PPP route has more political exposure. After a political change, new governments may believe that the governments are paying just for an infrastructure project, which has in the past brought political advantages for their predecessors (Public-Private Infrastructure Advisory Facility, 2018).

Correspondingly, increased construction costs as a result of limited domestic market capacity can be considered as a PPP disadvantage. This may lead to price increment, thus offsetting other benefits of the PPP method. When user fees are not adequately structured, it results in complaints, or even lead to legal challenges. The government thoroughly evaluates the tolling strategy and decide on acceptable toll amounts in road projects before proceeding. In addition, the advantage of PPP contracts for the public sector may be reduced as a result of the frequency of contract renegotiation, where the private party could secure favorable contract terms which would never have been achieved under competitive conditions (Public-Private Infrastructure Advisory Facility, 2018).

2.2.2.5 General enabling outline for implementation of public-private partnership

A PPP outline is a wide-ranging approach that includes policy, laws, regulations, and procedures that define what works the public and private sectors must perform, as well as how these tasks are intertwined during the life cycle of a PPP project. This outline determine how PPP projects are defined, assessed, prioritized, budgeted for, procured, tracked, and accounted for which are usually done on a programmatic rather than ad hoc basis (The World Bank, 2014).

Experience has revealed that a permissive policy and legal structure, as well as a favorable investment environment, are needed for PPP to be effective. The government requires a consistent policy framework that lays out the procedures for selecting, preparing, and procuring projects under the PPP framework. A legal and/or regulatory structure is often needed to ensure the effectiveness of long-term contractual PPP agreements (The World Bank, 2012). To promote public procurement processes, contracts, contract management, operational performance, and customer satisfaction, both the government and private parties may need to make adjustments to their institutional setup. The PPP guiding principles also need to be followed as well (Asubonteng, 2011).

To protect the interests of the public sector, which retains ownership and ultimate responsibility for the asset during its life cycle, a life-cycle approach is helpful. A sound policy and legal structure, efficient risk sharing, a sophisticated procurement mechanism, excellent project management, and proper concession arrangements are all important components of a successful project. This method may also be used to detect and minimize any risks or issues that can arise during the implementation of a PPP (Antono, 2009). There are three major phases in the life cycle approach for implementing infrastructure projects under PPP schemes as follows (Deloitte, 2006).

Policy and planning stage: Governments determine when a project should be handled by PPP schemes at this level. Defining goals and objectives, issuing major PPP guidelines, developing the legal framework, designing a standard framework to drive down costs, establishing processes for receiving and qualifying candidate projects, outlining the role the PPP project will play in the larger infrastructure program, designing the procurement process, and analyzing stakeholder are some of the activities involved in this phase (Deloitte, 2006).

Transaction stage: Establishing consistent and attainable performance expectations, formulating financial rewards for good performance and consequences for bad performance, and assessing the optimum level of risk to be transferred to the private partner are some of the considerations. The emphasis is on establishing a competitive procurement that provides the best possible outcome for governments while meeting the particular project specifications according to established procurement rules. The safeguarding of public interests is an important aspect of the transaction process (Zhang, 2005).

Construction and Concession stage: Construction, operation and maintenance occur during this stage. In most cases, a private partner operates the facility while the government supervises it. In this case, the government pays close attention to all contract provisions and introduce incentive methods to increase efficiency, despite the fact that the problems in each operation are vastly different (Deloitte, 2006).

2.2.3 Public-private partnership experience around the world

For more than 30 years, various types of PPP have been introduced in European Union (EU) nations, Australia, Central America, North America, South East Asia, and Africa. More than 1,300 PPP contracts were signed in the EU between 1990 and 2009, with a total value of more than EUR 250 billion. Since the beginning of 2007, approximately 350 new ventures worth nearly EUR 70 billion have reached financial close (Oktavianus et al., 2018).

In terms of the number of PPP projects completed between 1984 and 2011, China, India, Brazil, and the Russian Federation are ranked first, second, third, and fourth, respectively. Brazil, India, the Russian Federation, and China, on the other hand, are ranked first, second, third, and fourth in terms of total expenditure (US\$ million) in PPP projects over the same period (World Bank, 2017).

Despite the interest of many governments in the PPP agenda, only a few countries have dominated the PPP markets across the various developing regions. Brazil has made a significant contribution to the growth of PPP projects in the Latin America and the Caribbean (LAC) area over the years. Brazil saw a dramatic growth in ventures, with a 45 percent share of LAC PPP investments in 2003 and a 78 percent share in 2012. Mexico and Argentina, for example, have

gradually adopted the PPP definition and have contributed a variety of projects to PPP investments in LAC region (The World Bank, 2013).

Over the last two decades, there has been progress in the East Asia and Pacific (EAP) region's PPP industry. This places the region in second place among developing regions in terms of PPP investments. China has launched the most PPP projects in the region, followed by Malaysia and the Philippines. In China, there are over 14,000 existing PPP projects with a total value of \$2.7 trillion. In previous years, The Malaysian government has previously formed a PPP unit that aids the expansion and facilitation of further public projects (Wikipedia, 2021).

According to The World Bank, (2013) PPPs have been successful in India in the development of infrastructure, particularly road assets. In 2014, India earned 36 of the 40 PPP projects that reached financial close, accounting for 90% of the total. According to the Indian government, the 10th plan will invest \$320 billion in infrastructure. Road projects account for approximately 53.4 percent of total projects by number and 46 percent by value (Wikipedia, 2021). Apart from India, other developing countries such as Bangladesh and Pakistan in South Asia region have shown interest in involving the private sector in the delivery of public infrastructure (Kim et al., 2011).

In comparison to neighboring regions, private investments in PPPs have been low in the Sub-Saharan Africa (SSA) and Middle East and North Africa (MENA) regions. In essence, SSA has reported more than 509 PPP projects worth USD157,148 million over the last two decades. MENA, on the other hand, had more than 164 PPP ventures. South Africa has accounted for the majority of the region's overall PPP investments (Oktavianus et al., 2018).

Public-private partnerships have grown in importance in both social and infrastructure development in Canada. PPP Projects include several road projects including the Sea-to-Sky Highway project (Wikipedia, 2021). Chile is Latin America's most appealing infrastructure investment market. It began in 1990, when the Chilean government, faced with deteriorating infrastructure, decided to seek alternative sources of funding. The government then prioritized the construction of urban highways and airports. Chile establishes a concession process in order to maintain clarity, transparency, and fairness to the partnership's implementation. Chile's regulatory framework remains stable and predictable in order to attract private sector investment. Chilean law allows for the termination of contracts for serious offenses committed

by private partners and encourages compliance at all stages of the transaction (Oktavianus et al., 2018).

According to Oktavianus et al., (2018) over the last few decades, the UK has been a prominent country in terms of private capital investment in infrastructure. In the United Kingdom, there are over 600 PPPs in the form of PFI arrangement for hospitals, schools, prisons, bridges, roads, and military equipment. In comparison, PPPs in Australia are used to provide services in a variety of economic and social infrastructure sectors (roads, railways, airports, and so on).

Vietnam introduced PPPs with the goal of attracting private investments for the country's infrastructure projects. Currently, Vietnam had introduced 131 PPP projects, \$24,134 (total investment committed to PPPs since 1990, US\$ million) and has 127 active PPP projects under construction or operation with active investment of \$23,435 (US\$ million) (Wikipedia, 2021).

With the passage of "The Private Capital Inducement Act" in early 1994, South Korea began cultivating private infrastructure investment. PPP in the country was planned to minimize public spending and take advantage of private sector production. Seven new North-South corridors and nine new East-West corridors are expected to be completed by 2020. In 2020, the government intends to provide 6,400 kilometers of highways. This depicts the number of PPP-based social infrastructure projects in South Korea (Wikipedia, 2021).

2.2.4 Public-private partnership in Ethiopia

Emperor Menelik granted his Swiss adviser, Alfred Ilg, permission to establish a company to build and operate a railway from Djibouti through Harar to the White Nile in the nineteenth century that can be considered as a start for concessional arrangement. The railway's completion was a significant socioeconomic event for Ethiopia, as it opened the country up to international markets (Debela, 2019a). Ethiopia has also had a legal instrument to use private sector investment by concessions under its administrative law since 1960, but the practice in infrastructure growth has been hampered due to various political and economic factors (UNDP Ethiopia, 2015).

In recent development, the power sector has attracted Independent Power Producers (IPP). Among these IPP, Corbetti Geo Thermal Private Limited Company (PLC) and the GOE signed an Implementation Agreement (IA) and a Power Purchase Agreement (PPA) to develop

geothermal power in December 2017. This agreement marked a major step in the development of privately financed power generation in Ethiopia. According to the agreement between the parties, the special purpose vehicle company, Corbetti Geothermal Plc, will construct 1,000 Megawatt geothermal power plants with an estimated cost of USD 4 billion. The electric power generated will be sold to the Ethiopian government national grid with an agreed rate (Corbetti Geothermal plc, 2017)

Fortified by recent developments, the Ethiopian government recognized the need to mobilize resources from sources other than traditional government infrastructure financing. To address this problem, the government created a PPP structure and PPP Unit within the Ministry of Finance in late August 2017 (Ministry of Finance and Economic Cooperation, 2017). Ethiopia has promising PPP prospects in the infrastructure market, including highways, railways, electricity, telecommunications, and transportation, to name a few. Moreover, the disparity between public service delivery and demand in Ethiopia emphasizes the urgent need for PPP arrangements, especially in sectors like roads (UNDP Ethiopia, 2015).

Adequacy of the transport sector plays pivotal role in the socio-economic development of a country. Acquainted of this fact, the government of Ethiopia in the Second Growth and Transformation Plan (GTP II) has determined to reduce the average time to reach the nearest all weather road. In order to achieve this goal, the Ethiopian Roads Authority has planned to construct Adama- Awash, Awash – Mieso and Mieso - Diredawa (a total of 357 km) express ways which is a continuation government efforts to improve the standard of its import-export corridors (Ethiopian Roads Authority, 2018). Figure 2.3 illustrates the existing PPP pipeline in several sectors of Ethiopia including the transport sector.

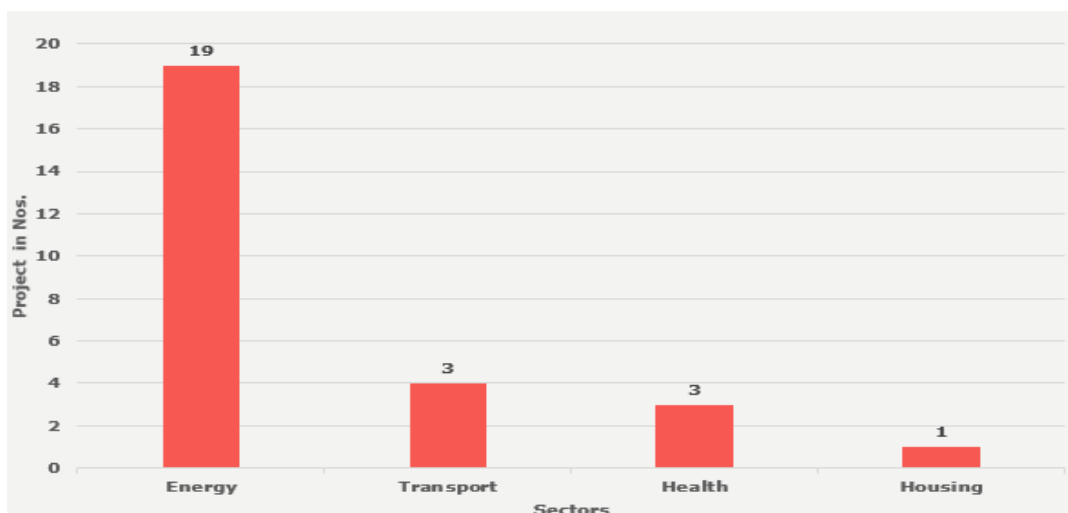


Figure 2.3: Existing PPP pipeline in Ethiopia (Source: Public-Private Partnership Director General, 2021)

The existing Adama-Awash-Diredawa road, the main import export corridor for the country, is providing service for mixed motorized & non-motorized means of transport which significantly reduce its efficiency and also result in accidents. The accelerated development of the country and in particular the GTP-II requirement of an efficient and safest road network, and implementation of the proposed expressway projects is essential in fulfilling the goal set at the end of the plan. Implementation of the road projects will contribute to reduce accidents and the associated loss of resource and human lives. The present and potential high emissions from vehicular congestion, especially in town sections, and the associated impact on public health will also be reduced (Ethiopian Roads Authority, 2018).

Three alternative analysis was made to arrive at the best alternative options. “No action scenario”, upgrading the existing asphalt road, and constructing a new expressway were considered. Accordingly, the existing Addis-Adama-Djibouti asphalt road has failed to support the growing traffic flow rate and axle load, a long haul from export-import and local transport demands as well as social and ecological safety rules. Therefore, the no-project alternative was not evaluated as a feasible option and does not support the growth & transformation strategy which is formulated to bring about fast economic development in the country. This found to be a base for the proposal of three PPP highway projects as shown in Table 2.1 (Ethiopian Roads Authority, 2018).

Table 2.1: Proposed PPP highway projects (Source: Public-Private Partnership Director General, 2021)

Section	Length (Kms)	Unit cost (USD million/km)	Total cost (USD million)
Adama – Awash	125	3.48	435
Awash – Mieso	72	2.78	200
Mieso – Diredawa	160	2.78	455
Capitalized interest			39
Land acquisition cost			yet to be estimated
Total			1,119
*Lower unit cost due to fewer lanes i.e. single carriage way with provision for widening			

The Adama-Awash Expressway Project is divided into two lots (Lot 1: Adama-Melkajilo (Km.60) and Lot 2: Melkajilo –Awash (Km. 60) for implementation. Adama-Melkajilo (Km.60) express way project starts at the out skirt of Adama city from the end of Addis-Adama expressway. The expressway projects are within the corridor of the existing Addis Ababa - Adama - Awash - Djibouti trunk road. The project road is the continuation of Addis-Adama express way road segment from Addis Ababa to Djibouti which has the highest traffic volume and load in the country as it is the main corridor to the port of Djibouti. Large portion of the traffic are heavily loaded trucks transporting import and export goods (Ethiopian Roads Authority, 2018). The route map of the proposed projects is depicted on Figure 2.4.

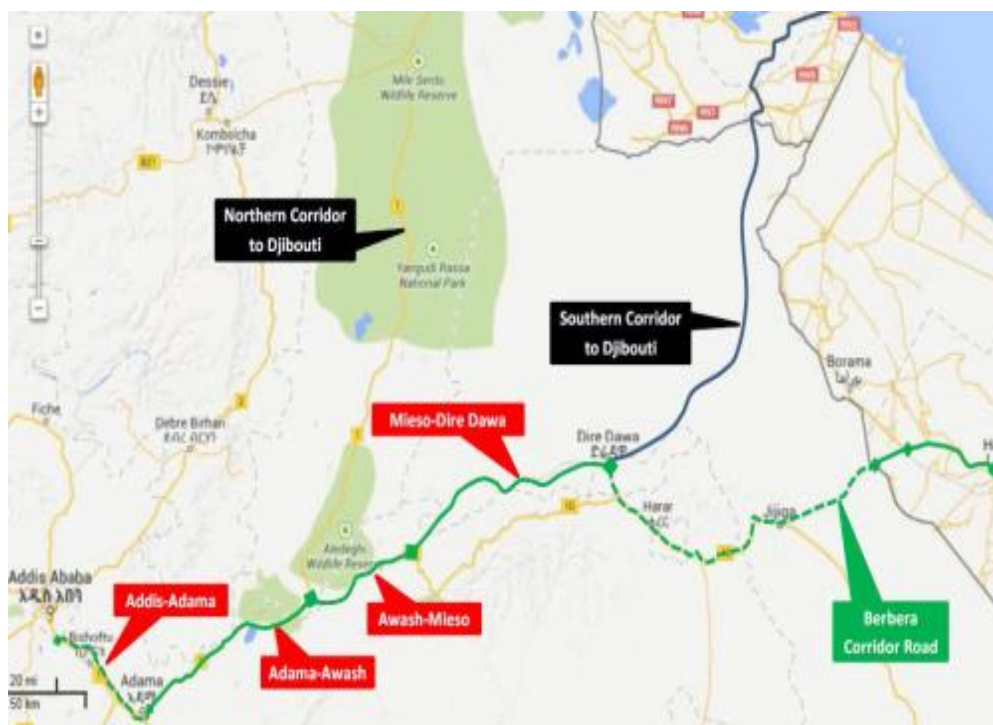


Figure 2.4: Route map of proposed PPP highway projects in Ethiopia (Source: Ethiopian Roads Authority, 2018)

Current status of ERA in terms PPP road projects indicates that it has not delivered any federal road using PPPs. The pre-feasibility study, feasibility study including Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) report of Adama-Awash Expressway Lot I, Adama- Melkajilo (Km-60) as part of the expansion project of Addis Ababa-Adama express way project was completed by Net Consult Consulting Engineers and Architects PLC. However, the project is currently excluded from PPP pipeline and the country has launched it to be implemented over a five-year period. The government of Ethiopia and the African Development Bank (ADB) Group have signed a 98 USD million grant agreement from the African Development Fund to help finance the project (Public-Private Partnership Director General, 2021).

2.3 Empirical Review

2.3.1 The driving factors and enabling outline for the implementation of public-private partnership

2.3.1.1 The driving factors for the implementation of public-private partnership

Governments worldwide seek to use public-private partnerships to provide road infrastructure, however, each one has its reasons for doing so. In terms of what drives governments to implement PPP, there are variations. PPP is implemented for a variety of reasons, including finance requirements and poverty alleviation, particularly in developing nations. PPP should be explored since there is a significant infrastructure gap, as well as other issues that arise as a result of it, such as inadequate economic development and reduced living standards (Antono, 2009).

Prior studies on driving factors for adopting PPP discussed the reasons or motivations. Cheung et al., (2009) employed a questionnaire survey to investigate the reasons for implementing PPP in Hong Kong, Australia and the UK. The study discovered the top two reasons for implementing PPP in Hong Kong as demanding contribution to economic development and high quality of services required. In Australia, the three key reasons are high quality of services required, demanding contribution to economic development and inefficiency because of public monopoly and lack of competition. The main drivers for implementing PPP in the UK as indicated in the study are shortage of government funding, demanding contribution to economic development and avoid public investment restriction.

Ismail, (2014) used questionnaire survey to investigate the factors forcing the implementation of public private partnerships (PPP). The results of the study show that the driving forces for PPP implementation in Malaysia are demanding contribution to economic development, whole of life cost savings required, social strain on people due to poor road facilities, requirement for improvements in the levels of services and shortage of government funding. Different countries have a different priority for each of the driving forces as indicated in the study. The findings indicate that in various nations the distinctive nature of PPP is represented within each country's various motivations for implementing PPP.

Cherkos and Jha, (2021) conducted a study through documents from five toll roads and bridge projects in Senegal, Ghana, Nigeria, Mozambique, and Cote d'Ivoire and interviews with the key stakeholders of toll road projects in Ethiopia to identify drivers of road sector public-private partnership adoption in new and inexperienced markets in order to develop a framework that identifies potential PPP solutions to public delivery problems. The study results demonstrate that fostering economic development with the help of the private sector to raise project financing and constructing roads that can ease traffic congestion are the main potential drivers of PPP implementation in inexperienced PPP markets.

Chan et al., (2009) made a comparative study between China and Hong Kong regarding the key drivers for adopting PPP. The 15 drivers were classified into five groups: cost savings and value for money, reduced public funding, catalyst for economy, enhanced asset quality and service levels, and Equitable risk sharing. The findings indicated that respondents from China rated economy-related drivers higher, whereas Hong Kong respondents tended to rate efficiency-related drivers higher. The study discovered differences in the motivation for implementing PPP between the two economies whereby in Hong Kong the main motivation factor is related to the quality of services and efficiency whilst in China, the key motivation is related to the economic factor.

Gebremeskel et al., (2020) used questionnaire survey and semi-structured interviews to identify driving factors for the implementation of PPP projects in the Ethiopian context. The findings revealed 22 identified driving variables were grouped into: benefit for public and private sectors, social development, cost reduction, attention of private sector, management ability of public sector, and ability of private sector. Most driving factors for adopting PPP projects were related to financial problems as indicated in the study.

A questionnaire survey and an in-depth interview was used to elicit the perceptions of the state-owned agencies and private sector on the underlying reasons for implementing PPP in road construction in Ghana. The general results show that shortage of government funding, economic development pressure of demanding more facilities, accelerate project development, allows for shared risk, and ability to raise funds for project by private sector are the most important reasons for implementing PPP in road construction in Ghana (Ametepey et.al., 2018)

Liu and Wilkinson, (2011) employed semi-structured interviews and focus group discussions to determine the drivers for implementing PPP in New Zealand. The study revealed seven categories of driving factors for PPP implementation: acceleration of infrastructure demand, better risk allocation, whole of life cost savings, improved quality of services, likely to access additional revenue sources, benefits for local economic and social development and improved project scrutiny.

The summary of driving factors and their sources is shown in Table 2.2. It comprises 11 factors.

Table 2.2: Summary of driving factors to PPP implementation

No	Driving factors	Source
1	Inability of public sector to assume all project risks	Liu and Wilkinson, (2011), Ametepey et.al., (2018)
2	Infrastructure demand that is increasing at a faster rate	Liu and Wilkinson, (2011), (Ametepey et.al., 2018)
3	Local economic development required	Cherkos and Jha, (2021), Ismail, (2014), Cheung et al., (2009), Chan et al., (2009)
4	Requirement for improved project scrutiny	Liu and Wilkinson, (2011)
5	Requirement for improvements in the levels of services	Ismail, (2014), Cheung et al., (2009), Liu and Wilkinson, (2011),
6	Scarcity in government funding	Ismail, (2014), Cheung et al., (2009a), Chan et al., (2009), Liu and Wilkinson, (2011), Ametepey et.al., (2018)
7	Social strain on people due to poor road facilities	Gebremeskel et al., (2020), Ismail, (2014)
8	The demand for effective initiatives employing the skills and experience of the private sector	Gebremeskel et al., (2020)
9	The need for Value For Money	Chan et al., (2009)
10	Traffic congestion reduction	Cherkos & Jha, (2021)
11	Whole of life cost savings required	Ismail, (2014); Liu and Wilkinson, (2011)

2.3.1.2 Enabling outline for public-private partnership implementation in Ethiopia

It is critical for the public sector to be able to correctly identify and select projects where PPPs will be viable, structure contracts to ensure appropriate pricing and risk transfer to private partners, and establish PPPs as an effective instrument through improvements in service delivery, performance, and development above those attainable through public procurement.

Countries must have the institutional capacity to create, administer, assess, and track PPPs (Jomo et al., 2016). The Ethiopian PPP system defines and explains the scope, identification, preparation, and implementation of PPPs in Ethiopia. Furthermore, the country's PPP framework includes comprehensive implementation guidelines with detailed issues, as well as standard bid documents for PPP projects (Mengiste, 2021).

Since 2016, the Ministry of Finance (MOF) has led efforts to create a PPP legal framework by drafting a national PPP policy, PPP Proclamation No. 1076/2018, PPP directive and general as well as sector specific guidelines (Bekele and mezgebu, 2018). According to the PPP policy document, initially PPPs will be implemented as a tool for developing infrastructure. As a result, projects for PPP arrangements will be chosen in accordance with the GTP II's specific infrastructure priorities for the GOE. However, as the PPP scheme's implementation capability increases, the GOE recognizes that a variety of projects will be considered for implementation through the PPP scheme. Any PPP project must be implemented through the formation of a special purpose/project company in Ethiopia by a private party (Ministry of Finance and Economic Cooperation, 2017).

A) Public-private partnership proclamation's key provisions

The PPP Proclamation no. 1076/2018 establishes a new PPP statutory framework with the aim of encouraging and implementing privately funded infrastructure projects by improving accountability, equity, value for money, and efficiency. Design, funding, construction, rehabilitation, expansion, modernization, service, repair, administration, and/or management are all included in PPP projects for new or existing facilities. The scope of implementation is defined in both the PPP Proclamation no. 1076/2018 and the Ethiopian PPP Policy.

The PPP Proclamation no. 1076/2018 specifies transactions and programs that are not covered by the PPP Proclamation's scope of operation. As a result, transactions and industries such as oil, mines, minerals, and airspace rights are exempt, as are privatization or divestiture of public infrastructure by public corporations, and PPP ventures where contracts were in the process of being negotiated or had already been signed at the time of the PPP Proclamation's enactment. One crucial point to remember here is that, due to the above exclusion, the Ethiopian government's latest policy shift and decision to privatize various public companies (such as the Ethio-Telecom and the Ethiopian Airlines) would not be governed by the PPP Proclamation.

According to the outline, not all contracts with government bodies are automatically PPPs. The following distinguishing elements must be met, according to Art. 2 of the PPP Proclamation no. 1076/2018 and Section 5 of the PPP Policy: agreement with the contracting authority; a long-term agreement; public service activity; compensation; and transfer of risk to the private party.

B) Legal framework for public-private partnership

The legal framework for PPP includes the PPP policy. It was released in August 2017, and set goals to enhance public service operations, reduce project delays and cost overruns, and increase the use of private sector capital for public services. Furthermore, on February 2018, the PPP Proclamation No.1076/2018 was enacted to create a binding and favorable statutory framework, and promote the implementation of privately funded infrastructure projects by improving accountability, transparency, fairness, and long-term suitability. In order to strengthen the PPP Framework, Art 12(4) of the PPP Proclamation and in accordance with Article 8 of the PPP Directive, PPP DG is required to issue general and sector-specific guidelines, on the occasion that PPP Directive No. 55/2018 has been proclaimed. The PPP Guidelines are the next step in the PPP Framework's growth. Its aim is to promote the growth of public-private partnerships.

C) Institutional framework for public private partnership

The PPP Proclamation no. 1076/2018 establishes the functions and obligations of various public entities that will be in charge of administering PPP projects at various levels: PPP Board, PPP Unit, and Contracts Management Team. The PPP Proclamation sets the institutional framework which is demonstrated in Figure 2.5.

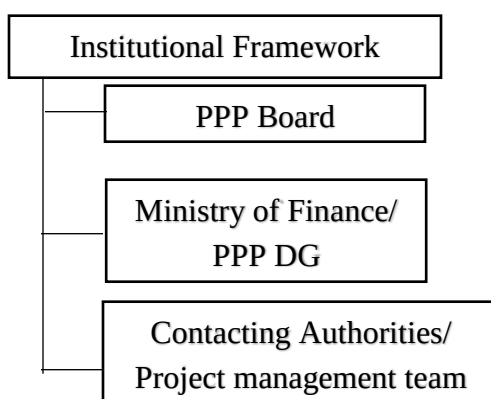


Figure 2.5: PPP institutional framework of Ethiopia (Source: Public-Private Partnership Director General, 2021)

The PPP Proclamation no. 1076/2018 calls for the formation of a high-level public-private partnership board with 9 members, including Ministry of Finance (Board Chair & Owner of PPP Framework), National Bank of Ethiopia; Ministry of Water, Irrigation and Electricity; Ministry of Transport; Ministry of Public Enterprises; National Planning Commission; The Ministry of Federal and Pastoralist Affairs (Ministry of Peace) and two private sector members. MOF serves as the Board's secretariat. The Board is responsible for approving PPP projects before commencement, as well as risk allocation, government support, and overall viability of the PPP project. It has the authority to approve any major changes to a project agreement.

The PPP Proclamation no. 1076/2018 creates the PPP Directorate General (PPP - DG), which is located within MOF. The PPP-DG's duties include directing and overseeing PPP projects; providing technical support; tracking and evaluating PPP projects; reporting to the Board, and interacting with the public about PPP projects. This organ acts as the focal point for all PPP projects and develops coherent and standardized rules for all PPP projects.

According to the PPP proclamation no. 1076/2018, public sector contracting agencies that are parties of the PPP agreement shall form a project management team which includes financial, technical, and legal crew to oversee the PPP transaction process. A member of the PPP directorate general will be part of the project management team. Preparing feasibility reports, tracking project execution, and liaising with stakeholders are among the duties of the teams. ERA is the contracting authority which enters into a PPP agreement with the private sector. ERA is re-established as a regulatory federal government institution in July 8, 2011 under regulation 247/2011. It is tasked with managing the country's roads including responsibilities for developing and administering highways; certifying the standard of road construction and creating proper conditions on which the road network is promoted.

The structure of PPP Directorate General that is under the PPP board is depicted on Figure 2.6. It comprises three divisions that are PPP Capacity Building, Knowledge Management and Communication Directorate; PPP Framework Management and Contract Support Directorate, and PPP Project Development and Monitoring Directorate under Deputy Director General.

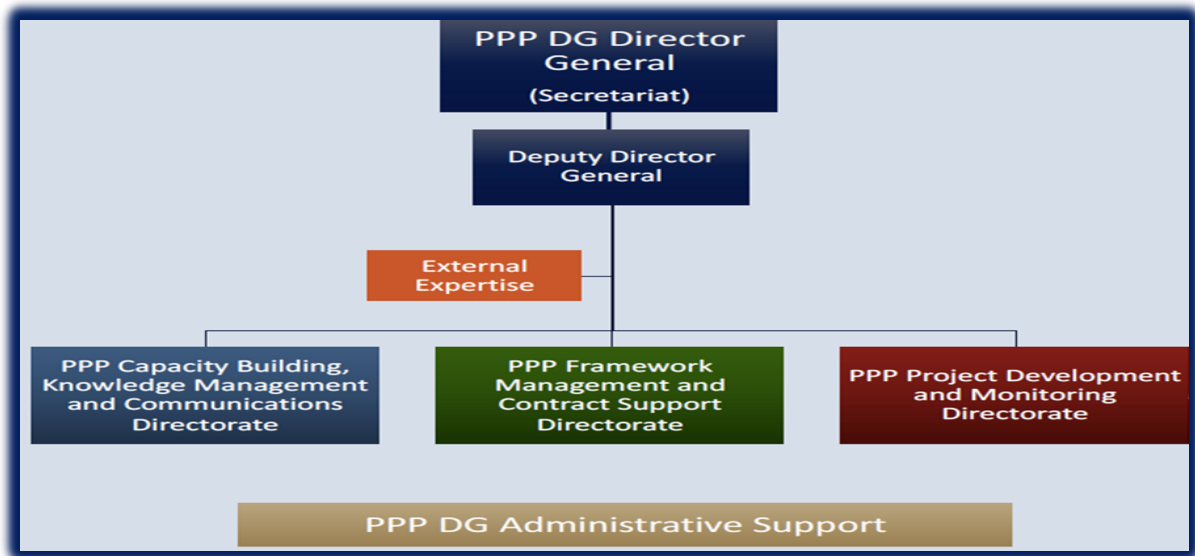


Figure 2.6: Structure of PPP Director General (Source: Public-Private Partnership Director General, 2021)

The PPP project management team which is under the responsible contracting authority for construction of federal road projects that is ERA is administered by “Expressway & Special Road Construction Projects Contract Management Directorate”.

D) Process (prepare, structure and manage public-private partnership projects)

Preparing PPP depends up on the governing principles mentioned on the PPP guideline which include output based specification, long-term contractual arrangements, value for money, transfer of risk, market competition, and whole life costing. PPPs differ from typical public-sector infrastructure delivery routes, and these variances necessitate changes in the public sector's approach and capabilities to prepare them. PPPs are also associated with certain new costs. They are not always the most appropriate procurement choice, and they are not a solution for all of the public sector's finance and infrastructure concerns (Ministry of Finance, 2019).

The use of PPP for infrastructure projects should only be considered when the public sector environment is suited to supporting PPPs, the project is suitable to being carried out as a PPP, the potential barriers to successful project implementation can be identified and can be overcome, and the project must be commercially viable for the private sector and offer value for money (VFM) for the public sector (Ministry of Finance, 2019). VFM for road PPPs is

demonstrated in the decreased risk of costs overruns, delays and efficiency improvements that lead to lower life cycle costs. This value for money is generated by the transfer of design, construction, and operational risk, as well as the utilization of private financing, which gives the private developer an incentive to complete the project on time and on budget (Ministry of Finance, 2019).

In addition to this, models to implement PPP in Ethiopia are Design – Build – Operate- Maintain (DBOM); Design – Build – Finance – Operate-Maintain (DBFOM); Build – Operate – Transfer (BOT); Build – Transfer – Operate (BTO); Build – Own –Operate (BOO) and Build – Own – Operate – Transfer (BOOT) (Ministry of Finance, 2019).

In the project identification phase, the key project selection criteria include value for money (does this approach deliver more value than traditional delivery?), affordability (can the government and/or end users afford required payments?, public interest (are public interest issues adequately studied and addressed?), sustainability (is the project sufficiently appealing to both parties to be sustainable?), and institutional capacity (does the contracting authorities have the capacity to deliver and monitor the project?) (Public-Private Partnership Director General, 2021).

A clear process is necessary to undertake a PPP project which encompasses the identification, development, implementation and monitoring. The several stages to be undertaken in PPP project development are demonstrated in Figure 2.7.

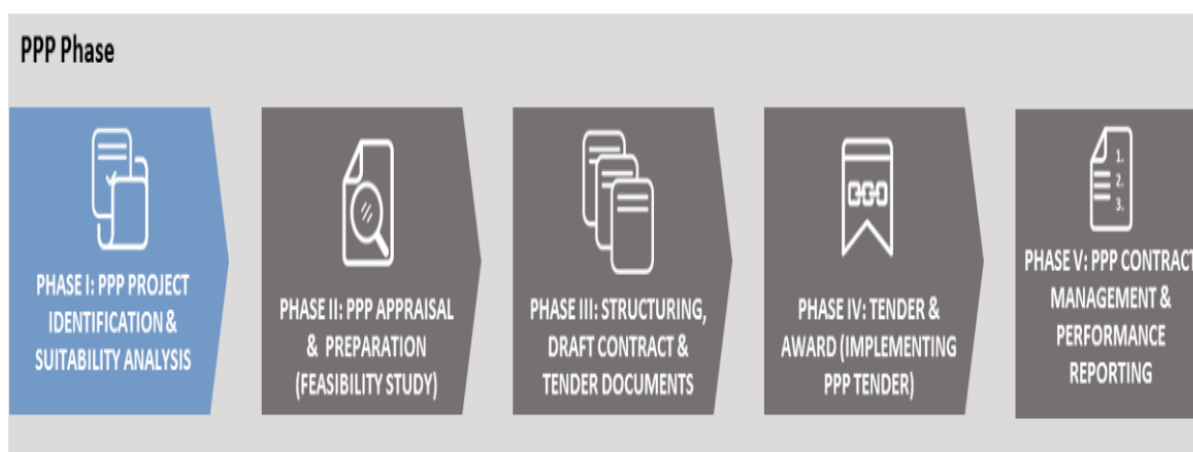


Figure 2.7: PPP life cycle (Source: Ministry of Finance, 2019)

According to the PPP guidelines released by Ministry of Finance (2019), the stages in the PPP process include:

i) Identification

ERA is generally required to identify projects as part of the standard infrastructure planning procedure. ERA ensures whether there is consistency with Ethiopia's development objectives. The development objectives for the road sector in Ethiopia are reflected in the 5-year RSDP. Any initiatives for road PPPs, including unsolicited proposals, need to be aligned with the RSDP. PPP suitability application should include a tentative demand assessment in terms of expected Annual Average Daily Traffic (AADT) for the coming 30 years. This initial demand analysis takes some factors into consideration as the main drivers for traffic growth. The factors include whether the project is a greenfield or brownfield project; is envisaged to be replicated or not; current demand (preferably based on traffic counts); composition of traffic (i.e. the share of small, medium and large vehicles); nearby competing alternatives and expected developments in the region that may impact demand; and expected growth in the economy and population (Ministry of Finance, 2019)

ERA ensures whether the project will provide substantial benefits to the public (in terms of travel time reduction and a reduction in vehicle operating costs due to reduced congestion or improved connection and improvements in the road condition); and whether the project is expected to transfer meaningful and appropriate risks to a private sector partner. Upon project identification, it is sufficient at this stage to provide a qualitative description of the expected economic benefits that must offset the economic costs of the development and management of the road asset which will need to be further substantiated upon project appraisal (Ministry of Finance, 2019)

For road PPPs, the size of the project is large enough for value for money potential to offset the transaction costs which are commonly higher for PPP projects than for conventional projects. The size of the project could refer to the capital value of the project and a threshold of USD 50 million is taken into consideration. However, for possible operation and maintenance arrangements that do not require substantial investments and still may be suitable for PPP, the length of the road is considered and apply a minimum of 50km (Ministry of Finance, 2019).

ii) Feasibility and Structuring

The ERA's Project Team conducts all relevant projects due diligence, which will include a detailed technical, legal, and financial review at a minimum. In general, this analysis will include projections of project capital and operating costs in various scenarios, and it will be used to help develop a project structure that includes: proposed public and private sector responsibilities; risks that each party is expected to assume and how risk is allocated between the private sector and proposed government party (Ministry of Finance, 2019).

With regard to the scope of work for the Feasibility Study the specificities indicated in Table 2.3 are considered:

Table 2.3: Specificities of feasibility study (Source: Ministry of Finance, 2019)

Demand analysis • Traffic counts • Willingness to pay surveys • Network analysis	Economic analysis based on HDM methodology	Design taking into account Ethiopian Highway Design Manual	Land acquisition plan including need for resettlement
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Furthermore, specific care is necessary to the regulatory framework for tolling. This includes addressing what kind of tolling system is appropriate (open or closed); vehicle classification; toll rate setting (Escalations, Discounts such as frequent users, local traffic, time of day); Exemptions such as emergency vehicles, military vehicles; and Toll collection technologies (such as cash, pre-paid, post-paid) (Ministry of Finance, 2019)

iii) Approval of Structure

The PPP Board, with the help of the PPP Unit, performs its analysis based on the proposed project structure. This review would concentrate on the project's ability and willingness to meet the PPP criteria as well as the government's ability and willingness to accept any payment or other obligations or risks incurred by the Project. The government's willingness to continue with the project based on the project structure and expected financial effect, including any government funding or involvement, is indicated by the PPP Board's approval along with any

other approvals needed for government support (Ministry of Finance and Economic Cooperation, 2018). In effect, such approval means that Ethiopia considers the proposed risk and responsibility distribution to be economically beneficial. Following approval, the project team begins the process of selecting a private sector partner. Given several project characteristics, the PPP Board may delegate this decision to the PPP Unit head (Ministry of Finance and Economic Cooperation, 2017)

The Ethiopian Roads Authority is responsible for selecting a private sector partner in compliance with the applicable procurement provisions of the PPP law. In general, this is supposed to be accomplished through an open, competitive tender process aimed at identifying the proposal that offers Ethiopia the most cost-effective alternative. If the government receives unsolicited bids, a competitive procedure should be followed (Ministry of Finance and Economic Cooperation, 2018).

iv) Award and Signing

ERA would request approval from the PPP Board for the assessment and final agreements after selecting the winning bidder. Following approval, ERA officially announces the award and begin preparing the PPP contract for signing. Although post-award negotiations should be kept to a minimum, some adjustments to project agreements may be required, especially with regard to lender participation. If the project risk allocation or planned cash flows differ significantly from what the PPP Board previously approved, additional approval may be required. ERA and all other Government signatories are then allowed to sign the PPP agreements in order to begin the project's implementation stage (Ministry of Finance, 2019)

v) Implementation and Monitoring

ERA is in charge of project management and monitoring, including the output of the private sector group and the overall degree to which the project is meeting service delivery needs satisfactorily. To help with this, the project's development team will draft guidelines for managing PPP agreements that highlight the government's ongoing responsibilities under the agreements, both in terms of financial commitments and performance reporting provisions. Project team members and their successors will also use these contract management guidelines

to oversee the contract over the duration of the PPP project (Ministry of Finance and Economic Cooperation, 2018).

E) PPP procurement modalities

The PPP Proclamation no. 1076/2018 creates layers of procurement procedures that will direct any PPP project. Open bidding procedures with prequalification steps are the most common method for PPP procurement. The PPP proclamation no. 1076/2018 lays out in depth how the open bidding process should be carried out. It offers alternative procurement modalities for PPP projects where an open bidding mechanism is not feasible, such as two-stage bidding processes, competitive dialogue, direct negotiations, and submission of unsolicited proposals.

(i) Open bidding

All PPP projects in Ethiopia are expected to be procured through open bidding process, according to the Ethiopian PPP legal regime. A procurement through an open bidding process consists of two stages: a qualification stage and a proposal stage. The first stage involves bidder qualification, which is started by the PPP-DG by issuing a notice of request for qualification to invite potential bidders to participate in the process. Bidders are expected to meet qualification requirements that are already specified as a minimum threshold in the PPP Directive, and the PPP-DG is expected to set additional qualification criteria (Ministry of Finance, 2019).

After receiving interested bidders' applications, the PPP-DG reviews them. The Directorate General then invites all bidders who met the qualification requirements to send proposals. However, if and only if it has already made such a reservation in the notice of request, the Directorate General retains the right to invite only a small number of bidders who best meet the qualification requirements to send proposals (Ministry of Finance, 2019).

The PPP DG issues a notice of request for proposals, which starts the second stage of an open bidding process. As a result, bidders who passed the first stage should prepare two proposals: a technical proposal for the project's technical specifications, and a financial proposal for the project's financial aspects. After receiving bidders' proposals, the PPP DG evaluates each one using the parameters outlined in the request for proposals note. At this stage, the PPP DG may give domestic bidders a preference margin to increase their participation when reviewing and comparing financial proposals. In reality, foreign bidders who form a consortium with domestic

bidders may be eligible for the preference margin. Finally, the PPP DG selects the winning bidder and notifies them. The DG, on the other hand, notifies the unsuccessful bidders of the successful bidder and the reason for their loss (Ministry of Finance and Economic Cooperation, 2017).

(ii) Two-stage Bidding

A notice of Request for Proposals (RFP) is expected to include specific information about a project in order for bidders to prepare their proposals. However, due to a variety of factors, the PPP-DG might not always be able to issue such a comprehensive notice of request. And it is here where a two-stage bidding method comes in handy that allows bidders to obtain project specifications from themselves. Accordingly, the PPP-DG issues its first request for proposals, inviting bidders to submit preliminary proposals that include project parameters such as performance metrics, technical and financial criteria, other project features, and the key terms and conditions of a project agreement. The DG then gathers the necessary details and drafts a second notice of request that is tailored to its needs (Ministry of Finance, 2019).

(iii) Competitive Dialogue

A competitive dialogue, which is a structured negotiation between the PPP-DG and interested bidders, is only used when the DG needs to procure a complex project and none of the bidding processes is sufficient. The PPP-DG starts the conversation by issuing a contract notice or introductory document in which it outlines its needs and conditions and invites bidders to participate. When the discussion begins, each bidder offers their own solution. The conversation will continue until the DG has identified options that meet its needs and requirements. The PPP-DG ends the dialogue and invites bidders to send proposals once it has found options that meet its needs and requirements. The Directorate General reviews proposals using the parameters outlined in the contract notice and chooses the most economical option (Ministry of Finance and Economic Cooperation, 2018).

(iv) Direct Negotiation

Direct negotiation is used when a project is not appropriate for competition. Some projects may be needed to be completed immediately, may be relevant to national security or national defense. The PPP-DG issues a notice of intent to begin negotiations, which kicks off a direct negotiation.

The PPP-DG can also go through the first stage of an open bidding process if it deems it necessary for the purpose of negotiating with eligible bidders only. On the basis of the parameters, the DG then selects the bidder who best fits its needs and specifications (Ministry of Finance and Economic Cooperation, 2018).

(v) Unsolicited Proposals

Unsolicited proposals can be submitted in relation to projects that have not already been approved by the Board for study or implementation. If the PPP-DG accepts the unsolicited proposal, the contracting authority will proceed to prepare a feasibility study then to tender up on the approval of the board. Unsolicited proposal will be awarded through a competitive selection process. However, the proponent of the unsolicited proposal may be given a bonus on its technical and/or financial score during the competitive selection procedure or financial compensation for studies undertaken if it is not awarded the project (Ministry of Finance and Economic Cooperation, 2018).

F) Rights and guarantees provided to the private party

The PPP Proclamation no. 1076/2018 offers various rights, incentives and guarantees for the private party. The government's support in terms of property, money, incentives, guarantees, and other value is critical to the viability of PPP projects. The private party is granted the right to create security interest over any of its assets (movable and immovable), shares of the project company including those relating to the infrastructure project, as required to secure any financing needed for the project. In addition to this, with the prior consent of the public entity, the private party is permitted to assign its rights and obligations under the project agreement. Exemption from existing land laws was also provided on the PPP Proclamation no. 1076/2018. PPP projects in connection with tenure and bid procedures required to obtain land are exempted from current land lease regulations.

Government support is provided by the declaration by means of economic support and various safeguards needed to ensure the project's feasibility, sustainability and/or financial viability. The project economic support could take the form of cash subsidies or in-kind donations. The Government may also guarantee the performance of a public enterprise in the form of minimal off-take, payment guarantees, securities, undertakings or binding comfort letters under the

project agreement. Moreover, If, as a result of a new law specifically applicable to the infrastructure facility, the rights and responsibilities of a private party or contracting public body significantly increase or decrease. The affected party has a right to compensation under the project agreement. The PPP Board can also recommend tax reduction or other incentive for a particular PPP project, where it is applicable. In addition, the parties can decide their own dispute settlement procedures, including alternatives to formal adjudication processes (Public-Private Partnership Proclamation No. 1076/2018, 2018).

G) Cost recovery mechanism

Roads are by far the dominant mode of transport infrastructure using the PPP model. For privately financed road infrastructure development, including rehabilitation, the most distinctive feature is the cost recovery mechanism. The basic cost recovery options according to Ministry of Finance (2019) are user charges (the user is charged a fee for the use of the infrastructure and in case of roads this fee is commonly referred to as ‘tolls’); shadow tolls (periodic payments from a public authority to the private company based on the actual usage of the infrastructure) and unitary payments (periodic payments upon operations from a public authority to the private company once the project is completed and ready to use). The different cost recovery mechanisms differ significantly in their cash flow profiles for both the public and private sectors.

In the case of a road with shadow toll, there is no direct pricing, and traffic will only be influenced marginally by increased marketing efforts. In this case, traffic volumes are determined only by macroeconomic and regional economic conditions. In the case of real tolls, the demand risk is related to the user’s willingness to pay; the macroeconomic conditions, and regional economic conditions (Ministry of Finance, 2019).

The ‘willingness to pay’ will depend on the benefits of the infrastructure to the respective users. Following negotiations between the public authority and the private company, the public authority may offer to mitigate the company’s demand risk by providing guarantees. This will reduce the risk profile for the private company and consequently reduce its cost of capital, hence improving the financial performance of the project. However, the use of guarantees also has a cost, which the public sector will need to consider. Demand risk is allocated to the public sector when the private company collects the tolls on behalf of the government (Ministry of Finance, 2019).

H) Governing law and dispute resolution

The Negotiating Parties may decide on the dispute resolution process and may decide on an arbitration procedure by means of the PPP proclamation. This amendment amends the present provision of the Ethiopian Civil Procedure Code prohibiting the submission to arbitration of disputes concerning administrative contracts (contracts concluded by administrative agencies). It is necessary to remember that, while it permits parties to opt for arbitration by means of the PPP proclamation no. 1076/2018, Ethiopia has not ratified the International Centre for Settlement of Investment Disputes (ICSID) convention yet and has not signed the New York Convention (NYC) on the Recognition and Enforcement of the foreign sector. For the purposes of imposing arbitral awards, this will bind parties to Ethiopian law (Bekele and Mezgebu, 2018).

2.3.2 Desirable conditions to attract private sector participants

The global use of the PPP concept is increasing in many regions of the world, particularly in developing nations, as a result of poor infrastructure services, the tendency toward urbanization, and limited budget availability. However, unlike developed countries, most developing countries have been unable to attract much private sector participation in recent years. A number of desirable conditions that can draw the interests of both local and foreign private partners can be identified and arranged to implement PPP for providing infrastructures (The World Bank, 2009).

Many researchers in various administrative regions have studied the desirable conditions for attracting private sector participants for PPPs. The World Bank, (2009) provided a project planning guide that outlines the main steps that draw investors to African countries' local PPP markets. According to the guide, some of the crucial factors that attract investors are favorable legal structure and policy, existence of enabling policies, financial feasibility of projects, competitive procurement process and long-term political approval and support.

A study by Cheung et al., (2012) revealed private investors and developers desire an established legal system that protects their interests and provides an effective means of resolving contract disputes, given the duration of PPP agreements.

According to a study conducted by Ahadzi and Bowles, (2004) a technically and financially competent contracting authority with highly trained staff shows the public sector's project management power in terms of its ability to participate in fruitful investor negotiations that attracts investors. More precisely, it demonstrates that the public sector has a thorough understanding of the PPP mechanism and is capable of engaging in successful negotiations.

An empirical questionnaire survey was conducted with targeted international PPP experts by Osei-Kyei and Chan, (2017) to identify factors attracting private sector investments to PPP in developing countries. The findings revealed the critical factors as: political support and acceptability for PPPs, financial viability of projects, stable macroeconomic indicators, predictable currency exchange risk and political stability.

According to a study conducted by Chan et al., (2010a) in China, connection to a liquid stock market is enticing to private-sector investors. A well-developed and competitive financial market with attractive existing economic policies enables investors to collect capital at a lower cost. Countries with a matured capital market have a favorable investment climate for private investors and developers in this regard.

A research conducted by Zhang, (2005) mentioned that a country with a stable political system is more likely to draw PPP investors. This is because political stability fosters a favorable investment climate for private investments, and private investors can rest assured that their investments will be secure. The study stressed the importance of government guarantees in allowing private investors to better handle such risks.

Beyene, (2014) conducted a research using questionnaire survey considering professionals and practitioners from different institutions in Ethiopia. The results of the study identified conditions that could attract potential partners to engage in PPP projects namely: government provision of loan, tax exemption or reduction, existence of PPP dedicated public agency, government willingness to share risk, government support in providing loan, prevalence of PPP specific legal and regulatory framework.

The summary of desirable conditions to attract private partner for implementing PPP and their sources is shown in Table 2.4. It comprises 16 factors.

Table 2.4: Summary of desirable conditions to attract private partners

No.	Desirable Conditions	Source
1	Adequate financial capacity of contracting authority	Ahadzi and Bowles, (2004)
2	Available and mature financial market	Chan et al., (2010a)
3	Competitive procurement process	The World Bank, (2009)
4	Existence of enabling policies	The World Bank, (2009)
5	Favorable existing economic policies	Chan et al., (2010a)
6	Financial viability of projects	The World Bank, (2009), Osei-Kyei and Chan, (2017)
7	Government support in providing loan	Beyene, (2014)
8	Government's willingness to share risks'	Beyene, (2014)
9	Political stability	Zhang, (2005), Osei-Kyei and Chan, (2017)
10	Political support and acceptability for PPPs	Osei-Kyei and Chan, (2017), The World Bank, (2009)
11	Predictable currency exchange risk	Osei-Kyei and Chan, (2017)
12	Prevalence of PPP dedicated public agency	Beyene, (2014)
13	Prevalence of PPP specific policy, legal and regulatory framework	The World Bank, (2009), Beyene, (2014)
14	Stable macro-economic conditions	Osei-Kyei and Chan, (2017)
15	Tax exemption or reduction'	Beyene, (2014)
16	Technical competence of contracting authority	Ahadzi and Bowles, (2004)

2.3.3 Barriers to public-private partnership implementation and measures to overcome

2.3.3.1 Barriers to public-private partnership implementation

PPP adoption and implementation might be hindered by a variety of barriers. The identification and elimination of these barriers allow partnerships to work effectively, guaranteeing the successful implementation of current and future PPPs. Successful public-private partnerships are created by paying close attention to the context, determinants, and enabling environment in which they will be executed. As a result, identifying many implementation barriers is important

for providing solutions for them and resolving issues related to insufficient infrastructure facilities (Ismail and Harris, 2014).

Olele, (2016) conducted a study in Nigeria to identify the challenges of PPP implementation by considering a case study of a road project. The study noted lack of capabilities and experience in public sector and the competent service provider of the private sector, and lack of integrated PPP management system at national level.

A study conducted by Jamali, (2004) from Lebanon context identifies factors as challenges in PPP. The findings revealed the factors: risk relying highly on the private sector, lack of support from government in terms of guarantees, poor regulatory and legal framework and lack of transparency and accountability.

According to a study conducted by Asubonteng, (2011) the different sectors in Ethiopia already have a plan for PPP provision. A vital incidence flagged by many respondents of the study was inadequate expertise in implementing policy/regulatory guidance for various PPP scenarios. In addition, both the public and private sector players are not strong enough to drive win-win PPPs across structure, processes, and corporate culture.

A pilot study was performed with a questionnaire survey conducted by the public authorities, local lenders / local banks, concessionaires, and consultants to determine obstacles to the introduction of PPPs in developing nations. The report identifies social, legal, economic, environmental and political barriers and technology. These include lack of experience and expertise in both public and private sector, inability of local institutions to provide long term financing, poor regulatory frameworks and enforcement, weak institutional capacity and PPPs strategy, and weak judiciary for resolving PPP disputes (Babatunde et al., 2014). In addition to the identified barriers the study also listed economic, political and social barriers in implementation of PPPs, inability of local institutions to provide long term financing, difficulty in obtaining foreign exchange, inadequate domestic capital markets, lack of transparency and accountability, politicization of PPP agreements, lengthy delays due to political debate, lack of strong political commitment for PPPs, public opposition, societal discontent against the private sector, lack of confidence and mistrust in PPPs (Babatunde et al., 2014).

The prevalence of road sector PPP implementation barriers in Zambia has been identified by Chilala and Mulenga, (2017). The major challenges identified were lack of time, resources, know-how and authority for creating and implementing PPPs among the staff of implementation agencies; inconsistent and unclear PPP decision making process; non availability of long term financing; and low political commitment.

Several factors were found by the empirical survey conducted in Beijing and the Hong Kong Special Administrative Region to explore the barriers to the effective implementation of PPPs. lengthy delays in negotiations, a lack of experience and competent skills, and a long pause because of political debate in politics showed the top three barriers identified by the Beijing respondents. Correspondingly, the Hong Kong respondents ranked the first and third obstacles among the respondents in Beijing within the top three. There was also evidence that high participation and project costs were ranked bottom by both of the Beijing and Hong Kong respondents (Chan et al., 2010b).

The negative factors affecting the implementation of PPP for construction projects were investigated in a study conducted in the UK using a postal survey questionnaire technique. The study's results revealed negative aspects related to factors such as participant inexperience, and high participation cost and time (Li et al., 2005b).

Ismail and Harris, (2014) conducted a research using a questionnaire survey to elicit the perceptions of the public and private sectors concerning the constraints to PPP implementation in Malaysia. the findings mentioned major constraints from a total of 14 constraints such as lack of government guidelines and procedures on PPP, excessive restrictions on participation, and lengthy delays because of political debate.

The summary of barriers to the implementation of PPP and their sources is shown in Table 2.5. It comprises 19 barriers.

Table 2.5: Summary of barriers to implementation of PPP

No	Barriers	Source
1	Difficulty in obtaining foreign exchange/foreign exchange risk	Babatunde et al., (2014)
2	Excessive participation restrictions	Ismail and Harris, (2014)
3	High participation costs and project costs	Chan et al., (2010b), Li et al., (2005b)

4	High risk relying on private sector	Jamali, (2004)
5	Inadequate domestic capital market	Babatunde et al., (2014)
6	Lack of confidence and mistrust in PPPs	Babatunde et al., (2014)
7	Lack of experience and expertise in both public and private sectors	Babatunde et al., (2014), Olele, (2016), Chan et al., (2010b) Asubonteng, (2011), Li et al., (2005b)
8	Lack of strong political commitment for PPPs	Chilala and Mulenga, (2017), Babatunde et al., (2014)
9	Lack of transparency and accountability	Chan et al., (2010b), Babatunde et al., (2014), Jamali, (2004)
10	Lack of unified PPP management system at national level	Olele, (2016)
11	Lengthy delays because of political debate	Chan et al., (2010b), Babatunde et al., (2014), Ismail and Harris, (2014)
12	Local institutions' inability to provide long-term finance	Chilala and Mulenga, (2017), Babatunde et al., (2014)
13	Poor regulatory frameworks and enforcement	Chilala and Mulenga, (2017), Babatunde et al., (2014)
14	Public opposition	Babatunde et al., (2014)
15	Societal discontent against the private sector	Babatunde et al., (2014)
16	The absence of local government guarantees	Jamali, (2004)
17	Unclear government's decision-making process for PPP projects	Chilala and Mulenga, (2017)
18	Weak institutional capacity and PPPs strategy	Babatunde et al., (2014)
19	Weak judicial framework/weak judiciary for resolving PPP disputes	Babatunde et al., (2014)

2.3.3.2 Measures to overcome barriers to public-private partnership implementation

Despite the range of possible benefits from the use of PPPs, there are a number of barriers and issues to overcome. Such barriers require measures to be taken into account for implementation. To implement PPP in a successful way, the barriers mentioned in the previous section must be addressed. Dealing with several measures, that need attention in eliminating hindrances to implementation, supports to ensure success in PPP projects (Asubonteng, 2011).

According to a research conducted by Asubonteng, (2011) the public sector in Ethiopia requires adequate capacity to realign itself towards PPPs. The study results indicated a lot of training in PPPs and transformational leadership would help to build expertise. Moreover, issues arising from lengthy political debate can be dealt by setting a clear rule of the interval it should take.

According to a research conducted by Asfaw, (2005) on the context of PPP in Ethiopia, it requires the capability to carry out correct accounting, cash flow analysis, investment planning, tendering and negotiating skills, and other related contract management responsibilities. These skills can be built and applied through preparation and training and implementation of actual partnership projects under the concept of empowerment and ongoing learning.

A systematic study methodology (literature analysis, case studies, and interviews with experts and practitioners) was used to draw experience, learn lessons, and benchmark the best practices so as to study the steps for reducing barriers to PPP implementation. An enhanced PPP protocol for infrastructure projects in general has been developed as part of the research, which addresses effective measures for successful PPPs including: promoting good governance; increasing familiarity and knowledge of the public and creating operative regulatory framework are identified (Zhang, 2005).

A study conducted in Chile identified strong judicial system that works, and legal frameworks have critical role in overcoming legal related issues and implementing PPPs. Furthermore, solid political commitment, and engagement of local community, along with the existence of a developed institutional capacity and strategies also supports PPPs. On the other hand, the amount of investment to shape and develop a capital market tackles the hindrance related to inefficient capital market (Oktavianus et al., 2018).

A study conducted in UK identified factors to implement PPP by overcoming the barriers. The study indicated clear government objectives, decision making process and evaluation criteria as one of the ways. Establishment of responsible public and private sectors and government guarantees are also essential in developing PPPs (Li et al., 2005a).

The summary of measures to overcome the barriers to implementation of PPP and their sources is shown in Table 2.6. It comprises 11 factors.

Table 2.6: Summary of measures to overcome barriers to the implementation of PPP

No	Measures	Source
1	Building expertise through trainings	Asfaw, (2005), Asubonteng, (2011)
2	Developing domestic capital markets	Oktavianus et al., (2018)
3	Developing institutional capacity and PPPs strategy	Oktavianus et al., (2018)

4	Engaging local community in project development processes	Oktavianus et al., (2018)
5	Establish Committed/responsible public and private sectors	Li et al., (2005a)
6	Establish strong political commitment for PPPs	Oktavianus et al., (2018)
7	Forming operative regulatory framework and enforcement	Oktavianus et al., (2018) Zhang, (2005)
8	Government Providing guarantees	Li et al., (2005a)
9	Promotion of good governance	Zhang, (2005)
10	Raise public awareness	Zhang, (2005)
11	Setting clear government objectives, decision making process and evaluation criteria	Li et al., (2005a)
12	Setting clear timing and interval for political debate	Asubonteng, (2011)

2.3.4 The development of public-private partnership implementation framework

An article written by Nilsen, (2015) to provide recommendations for enhancing the application of implementation frameworks for researchers, and practitioners indicated an implementation framework assists in realizing implementation and the selection of additional implementation strategies. The article has also mentioned that an implementation framework, or multiple frameworks should be used prior to and throughout an implementation process. This includes both in implementation science research studies and in real-world implementation projects. By definition, implementation science is the study of the factors that determine the full and effective implementation of innovations in practice. The study of factors that are action-oriented and mission-driven is emphasized in this definition of implementation science (National cooperative highway research program, 2017). There is a great value in using implementation frameworks, models, and theories. For practitioners, they can provide shared language to familiarize stakeholders with implementation and function as practical tools for planning, executing, and evaluating real-world implementation process (Moullin et al., 2020).

National cooperative highway research program, (2017) highlighted the gap between researchers knowledge of effective practices and the output actually received by users who could be benefited from the practices. According to Dean et al., (2005), the methods such as implementation by laws/mandates/regulations; diffusion/dissemination of information and training; implementation by providing funding or incentives; implementation without changing supporting roles; when used alone are insufficient, no matter how well done. The findings of this data show that the mentioned methods realize intended outcomes of 5% to 15%.

The National Implementation Research Network (NIRN) published a monograph in 2005 that summarized the application of research findings in a variety of fields. The monograph presented the results of a literature review. The review identified efforts to collect data on implementation practices or programs in any domain, including engineering, agriculture, business, child welfare, health, juvenile justice, manufacturing, medicine, mental health, nursing, and social services. The researchers located nearly 2,000 citations; 1,054 met the criteria for the review, and 743 remained after a full text review. Out of those citations, 377 were considered most relevant; 22 studies included an experimental analysis of factors influencing implementation. From these findings, NIRN developed five over-arching frameworks, called the Active Implementation Frameworks (AIFs) (Dean et al., 2005). Active Implementation is an integrated approach to implementation practice, science, policy for sciences, engineering, and medicine. National cooperative Highway Research Program (NCHRP) has modified and adapted implementation procedures from these frameworks for innovations in planning and construction of highways. AIFs are intended to move researches into practice in several subjects related to contracting methods, safety improvements, accelerated bridge construction, traffic management, and other areas (Dekelbab et al., 2017).

The framework constitutes defined practices (well defined innovations that are useable/implementable), implementation process (development of implementation guidance specific to the research area), capacity and infrastructure (critical program and organizational support needed to implement innovation), implementation teams (the group that guides and manages the implementation), and evaluation plan (the processes that support teams and organizations to solve problems efficiently and get better). In addition, the “Formula for Success” involves multiplication of effective practice (what has to be implemented), effective implementation method (how and by whom), and an enabling context (where it will thrive). If any component is weak then the intended outcomes will not be achieved, on a socially significant scale (National cooperative highway research program, 2017).

A research by Bartley, (2007) had given descriptive data that suggest AIF is a promising framework for promoting implementation of innovations. The case study conducted in the research provides promising data for the use of the AIFs to promote successful implementation of innovations. The results also show implementation teams engage in the development of

capacity and support system to provide the support for change. Assessments of the capacity and support system for implementation provides critical information for action planning to improve success over time.

2.4 Research Gaps

In prior studies, the attractive factors for PPP implementation were explored by providing empirical evidence on the conditions that are attractive to the introduction of PPP in the Ethiopian road sector (Debela, 2019a). Researchers have also investigated the current trends of PPPs in Ethiopia, country Experiences, the requirement for public-private partnership in delivering public infrastructures, the status of PPPs in Ethiopia, and the prospects in the future concerning the demand for infrastructure and public services (Beyene, 2014; UNDP Ethiopia, 2015). Moreover, the critical success factors for PPP implementation were explored by providing empirical evidence on the factors that are critical to the success of PPP in the Ethiopian road sector (Debela, 2019b).

The potential and modalities for potential PPPs to implement in Ethiopia along with a road map for the implementation of potential PPPs are explored in a study (Asubonteng, 2011). Furthermore, a study has also been conducted on the concept of PPP in Ethiopia, its advantages for the economy if successfully implemented, and its implementation by considering several sectors of the country (Asfaw, 2005). Researchers have also studied the driving factors for the implementation of PPP and develop a driving index for new and inexperienced markets considering the case of Ethiopia (Cherkos and Jha, 2021; Gebremeskel et al., 2020). Researchers have also studied reasons for the governments and the private sector to welcome this form of long-term contract arrangement, rather than involving in the traditional procurement methods (Beyene, 2014; Debela, 2019a).

However, a comprehensive systematically formulated approach for implementing PPP in the federal road construction area by considering driving factors and enabling outline of Ethiopia; the desirable conditions to attract private partners together with the barriers and measures to overcome the barriers to implementation is yet to be explored.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Method

The research methodology describes the theory and philosophy behind the research, and outlines various approaches and strategies to address the main research aim and objectives as it represents the whole process of solving the research problem. To achieve the study's objectives and provide answers to the basic research questions, a mixed research method was used that included both qualitative and quantitative methods. The methodology used in this research comprises the research process, study participants, data collection instruments, reliability and validity test, method of data analysis, data analysis techniques used and framework development. In addition, it provides explanations for the approaches taken in order to achieve study objective.

3.2 Research Process

The study began with the definition of problem followed by the development of research objectives which target developing a framework for implementation of PPPs in federal road infrastructures provision. The study then proceeds with a systematic review of the literature to determine the driving factors for PPP implementation, the desirable conditions to attract private sector participants, the barriers to implementation, and the measures to overcome the barrier for implementation of PPP.

The research used a questionnaire survey, an in-depth interviewing and discussions with professionals to collect primary data in order to attain specific objectives of the research. It entailed conducting intensive individual interviews with a limited number of participants on PPP implementation. The results were then analyzed and the framework was formulated followed by drawing conclusions and providing recommendations. The whole research process employed is summarized in Figure 3.1.

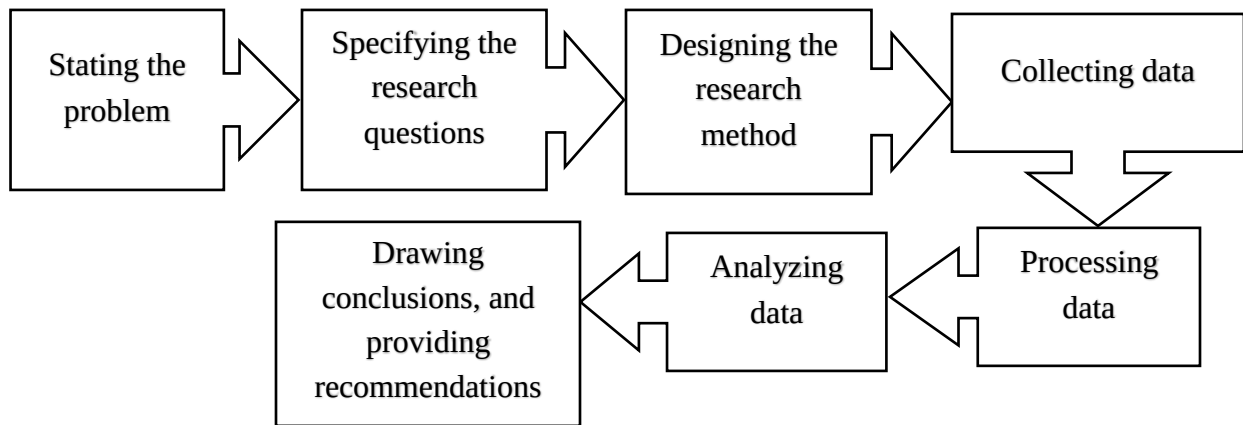


Figure 3.1: Research process

3.3 Target Population

Determination of study population can be considered as significant step in planning a research. The target population of this survey is the public and private sectors including practitioners (contractors and consultants) working in the Ethiopian road sector.

3.4 Study Participants

In this research, all industrial professionals from the public, private, and other areas were included in the target survey respondents to the questionnaire and interview. The survey using questionnaire was performed on relevant governments agencies, departments, and practitioners (contractors and consultants). Those were purposively chosen from the target population public, and private including practitioners employed in Ethiopia. Selection of experts (i.e. purposively) was adopted as the PPP notion continues to evolve despite its existence. The benefit of this approach is that experts' views are more accurate than those of a survey that comprises both experts and non-experts because experts are more familiar with the subject matter.

Key criteria to identify the respondents for the questionnaire include: respondents that work in the field of government policies and regulations on infrastructure development in Ethiopia; respondents that have familiarity or close participation in the procurement of infrastructure projects; those who have worked in their respective field of expertise as senior experts or managers. The objective was to ensure that this sample represented the public and the private sectors including practitioners.

3.4.1 Sample size

The sample size technically depends on the precision the researcher wants to evaluate the population parameter at a particular confidence level. The sample size cannot be determined by a single rule (Taherdoost, 2018). Confidence intervals between 95 and 99% are often acceptable; that is, an error of 5 to 1%. Representative sample size has been determined using the statistical equation provided by Cochran (1977) in Equation. 3.1 at a confidence level of 95% and a precision of $\pm 10\%$ with the aim of gathering data through a questionnaire from the public and private sectors.

$$n = \frac{\frac{z^2 * p * (1-p)}{e^2}}{1 + \left(\frac{z^2 * p * (1-p)}{e^2 N} \right)} \dots\dots\dots \text{Equation 3.1}$$

Table 3.1: Description of the statistics in sample size equation (Source: Cochran, 1977)

Statistic	Description
n	Sample size
Z	Z score found from statistical tables, which is 1.96 for 95% confidence level
P	The estimated population proportion assumed to be 50% or 0.5 ⁴
E	Margin of error (0.1 ⁵)
N	Population size

As shown in Table 3.2 at least 90 responses must be gained depending up the Equation 3.1.

Table 3.2: Sample size determination

Population size	Confidence level (%)	Margin of error (%)	Sample size
1000	95	10	90

To calculate the number of people needed to be invited to take the survey based on the expected response rate⁶ as shown in Table 3.3, equation 3.2 was used (Cochran, 1977):

$$\text{number of respondents to invite} = \frac{\text{number of respondents needed}}{\text{expected \% response rate}} * 100 \dots\dots\dots \text{Equation 3.2}$$

⁴ If the estimated variance (how data points spread out) is unknown take 50% or 0.5, as of Taherdoost (2018)

⁵ A 95% confidence interval with a 10 percent margin of error means that your statistic will differ within 10 percentage points of the real population value 95% of the time (Taherdoost, 2018)

⁶ Usually taken between 80% and 85% (Taherdoost, 2018)

Table 3.3: Number of respondents to invite

Number of respondents to needed	Expected response rate (%)	Number of people to invite
90	80	115

As shown in Table 3.3, the number of people to invite should at least be 115. Accordingly, the questionnaires were distributed to professionals and experts in different institutions. The target experts were respondents from different groups as mentioned below. PPP Directorate General-Ministry of Finance, Ethiopian Roads Authority, Addis Ababa City Roads Authority (AACRA) (Engineering procurement directorate and road construction administration directorate), Federal Integrated Infrastructure Development and Coordinating Agency, National Planning Commission of Ethiopia, Local Contractors and Consultants working with ERA in the road sector, International Contractors and Consultants working in Ethiopia in the road sector, and Civil societies (Construction Contractors Association of Ethiopia(CCAE), Ethiopian Association of Civil Engineers(EACE)). The respondents were asked to rate their degree of agreement according to the five-point Likert scale (1–least and 5–most) against each determined factor for each category.

An interview was also designed and conducted by purposively selecting professionals in both public and private sectors including practitioners (contractors and consultants) to get reliable information. The interviews were administered mainly with experienced top and mid-level management of both public and private sectors including practitioners. Respondents who work in the field of government policies and regulations on infrastructure development in Ethiopia, as well as senior specialists or managers in their particular fields of expertise, took part in the interview.

In the case of the focus group discussion, a Mini focus group was designed and employed, where there is a small potential group of participants that have direct involvement in PPP implementation for federal road infrastructure. A small group of participants, who are currently working in the PPP implementation unit of ERA, purposively selected and participated in the discussion. The participants are made up of individuals with a considerable level of expertise in PPP and the road sector.

3.5 Data Collection

3.5.1 Source of data

Primary and secondary data were used to collect information for the research. While primary data was gathered through questionnaires, focus group discussion and interviews, secondary data was gained through a review of relevant books, journals, magazines, research papers, articles, and unpublished documents, among other sources. The secondary data served as a source for identifying problems and as a criterion for creating and analyzing the primary data.

3.5.2 Data collection instruments

Questionnaire surveys, focus group discussion and interviews are used to collect primary data. Secondary data is gathered from previously completed studies, papers, books, and articles in peer-reviewed publications.

A) Questionnaire

A questionnaire was chosen as the primary research instrument because of its suitability for gathering the requisite level of data. The organized questionnaire⁷ included five sections as well as a cover letter. The first part sought respondent's information following that the second part assesses the driving factors for the implementation of PPP. In the third part, participants were asked to rank the desirability level of conditions to attract private partners. The fourth part of the questionnaire investigates the barriers to the implementation of PPPs together with the measures to surmount those barriers while the last part deals with the relevance of PPP implementation framework development for federal road infrastructure provision. Rating values of 1, 2, 3, 4, and 5 were assigned to the options very low, low, adequate, high, and very high respectively in order to obtain the viewpoint of respondents.

B) Interview

In-depth interview was chosen as a study instrument because it provides significantly more extensive information than other data gathering methods, such as surveys. It is used to investigate the perspectives, perceptions, and opinions of individual experts in the field. Interview questions were organized depending upon the research objectives and by using the

⁷ See Annex- A

findings of the literature review. The interview⁸ consisted of five segments, one of which was a self-introduction. Although the interview was semi-structured, it allowed participants to voice their opinions, which was valuable to the study.

The interview contained questions on the background of the interviewee, experience of the professionals, the driving factors to implement PPP, enabling outline existence and contents for implementation of PPP, the desirable conditions to attract private sector participants, the barriers to implementation of PPPs together with the measures to overcome and the development systematic implementation framework for PPP.

C) Focus group discussion

Conducting focus group discussion was chosen as a means of gathering data on the research area because the topic was considered necessary to be discussed in a group. Focus Group Discussion⁹ is used, which is a qualitative data collection technique that a given topic is discussed by a selected group of people facilitated by a moderator. The discussion started with a self-introduction of both the participants and the moderator. It included 4 main points that are the reasons and enabling outline to implement PPP; the desirable conditions to attract private partners; the barriers to implementation together with the measures to overcome those barriers; and the development of PPP implementation framework for federal road infrastructure provision.

D) Desk study

As part of the literature review, a large number of documents from books and the internet were combed through to acquire the necessary knowledge about the issue. Moreover, resources such as policy documents and the work of other academics were used. The desk study was conducted with the purpose of selecting documents based on whether they contain information needed to develop the questionnaire, focus group discussion, and interview protocol. Furthermore, the purpose of the review of documents was to describe information related to the theoretical study of the concept in greater detail and to give comprehensive information on Public-Private Partnership implementation in Ethiopia.

⁸ See Annex- B

⁹ See Annex- C

3.6 Data Quality Assurance

Due attention was given to minimize the chance of getting higher errors. Hence, reliability and validity tests, which help to detect the presence or absence of those errors, have been carried out. To that end, the researcher has conducted reliability test by Statistical Package for the Social Sciences (SPSS) software to meet the reliability standards.

3.6.1 Reliability

The degree to which an evaluation instrument generates steady and consistent outcomes is known as reliability. A measure is said to have a high reliability when it produces consistent results under similar conditions. Cronbach's alpha is the most common test score reliability coefficient. Cronbach's alpha rises in tandem with the average inter-item correlation (holding the number of items constant). In general, in questionnaire design, a score of higher than 0.7 is regarded acceptable (Stephanie, 2020). The Cronbach's alpha value interpretation is described in Table 3.4.

Table 3.4: Cronbach's Alpha values and interpretation (Source: Stephanie, 2020)

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

In the case of this research, Data was collected from cross-sectional respondents using a purposive sampling method to ensure that consistent information is provided by the right individual and also clear, unambiguous, and non-leading questions were prepared. Moreover, Cronbach's coefficient alpha test was adopted to calculate the reliability coefficient and determine the reliability of the questionnaire used.

3.6.2 Validity

There are two main categories of validity used to assess the validity of test (i.e. questionnaire, interview, etc.) as can be seen on Table 3.5.

Table 3.5: Validity types (Source: Saul McLeod, 2013)

Validity types	
Content related(appropriate content)	Criterion related(relationship to other measures)
Face validity(does the test appear to test what it aims to test)	Concurrent validity(does it relate to an existing similar measure)
Construct validity(does the test relate to underlying theoretical concepts)	Predictive validity(does the test predict later performance on a related criterion)

In this research, validity is carried out by performing the triangulation technique, which facilitates validation of data through cross verification from more than two sources, which involves different types of samples as well as methods of data collection. This was conducted through the use of three separate methods: questionnaire, interview, and focus group discussion. Furthermore, the advisor assessed and examined the contents of the final questionnaire. The final questionnaire was assessed in terms of its content, face validity, construct validity, and measurement scales, in order to ensure that the developed instruments measure what the instruments were designed to measure, as well as the length, structure, and wording of the questions.

3.7 Data Analysis Techniques

In this research, the data collected from the questionnaire survey were analyzed using the SPSS software version 26 and Microsoft Excel. SPSS is a program that allows the analysis of statistical data. The SPSS's name reflects its original use in the social sciences field, even though its application has subsequently grown to other data markets (Gerber and Finn, 2005). It was chosen for data analysis in this research because of its benefits such as comprehensiveness, ease of application, and flexibility to be used by a variety of research fields, generating tabulated charts, and plots of distributions. Microsoft Excel, the other data analysis tool used in this research, is a spreadsheet program that is used to keep track of and analyze numerical data. The two main types of research techniques for data analysis which were used in this research are quantitative and qualitative methodologies.

3.7.1 Qualitative data analysis

The qualitative research data analysis focuses on the subjective assessment of perceptions, views and conduct (Kothari, 2004).

a) Selection of relevant papers

The literature selection process basically for the empirical review was initially subjected to quick review and removal of papers addressed to PPP of other areas like health. The literature review was conducted through systematic study and content analysis of the literatures in order to classify the studies applicable to the research objectives¹⁰. The inclusion/exclusion criteria were considered for each of the objectives including qualitative content analysis to determine the presence of key words/concepts with in a text for credibility dependability and authenticity. The key concepts were the driving factors for PPP implementation, the desirable conditions to attract private participants, the barriers to PPP implementation along with measures to overcome those barriers, and an implementation framework. The inclusion/exclusion criteria also include those that are scholarly publications; those that are written in English language; those with publication date from 2005 onwards; those that have empirical nature; and more emphasis was given for studies in developing countries as well as inexperienced markets. Papers with similarity of the research content, and with non-rigorous research process were neglected. The result of the literature review was used to create a questionnaire using a qualitative approach to gather participants' views on the implementation of PPPs in Ethiopian federal road infrastructure provision.

b) Interview and focus group discussion analysis

The interview and discussions were transcribed by the time of the conduct. All the collected data was unstructured. Therefore, the researcher arranged and transcribed the data collected. The first step was analyzing the data and arranging it systematically aligned with the research objectives by converting all the data into a text format. The qualitative data was analyzed deductively by using the research questions¹¹ as a guide for analyzing the data. After transforming and arranging the data, the next step was organizing it. The large amount of information was organized in an

¹⁰ See section 1.3.2

¹¹ See section 1.4

orderly manner depending up on the research objectives and the questions asked. Finally, conclusive results were written and explained aligned with each one of the objectives. The data was systematically presented and the report was prepared.

3.7.2 Quantitative data analysis

The quantitative data analysis provided quantified outputs from the assessment of literature review of findings and the data collected. In order to investigate the distributions of the information provided by the respondents, the descriptive data analysis approach including the measurement of central tendency (mean value) was used. The methods used for data analysis in this study include the mean score ranking technique, one-sample t-test, reliability test, relative importance index (RII) and Kendall’s concordance analysis as explained below.

A) Mean score ranking technique

The research analyzed the data gathered from questionnaire survey by using mean score ranking technique. Many researchers have adopted the technique to establish the relative importance of the factors and rank depending up on their level of importance (Cheung et al., 2012; Debela, 2019a; Ismail, 2014; Osei-Kyei & Chan, 2017). A ranking was created to represent the relevance of each factor in the given sample.

The mean score (MS) for each factor was computed using equation 3.3:

$$MS = \frac{\sum(fxs)}{N} (1 < MS < 5) \dots \dots \dots \text{Equation 3.3}$$

Where s = score set to each factor by the respondents (ranging from 1 to 5), f = frequency of each rating for each factor, and N = total number of responses concerning that factor (Kavishe et al., 2019).

B) Relative Importance Index (RII)

RII approach was employed to assess the relative importance of the factors. It was utilized to set the level of importance of the factors in the Ethiopian road sector. This method has been utilized by many researchers (Aibinu & Odeyinka, 2006; Debela, 2019a; Holt, 2014). Equation 3.4 was used to determine the RII (Aibinu & Odeyinka, 2006).

$$RII = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{AxN} \dots \dots \dots \text{Equation 3.4}$$

Where: n_5 = Number of respondents for strongly agree, n_4 = Number of respondents for agree, n_3 = Number of respondents for neutral, n_2 = Number of respondents for disagree and n_1 = Number of respondents for strongly disagree. A = the highest score (i. e. 5 in this case), and N = number of respondents assigning the same scoring for the factor/issue. The RII was used to rank the factors.

C) One-sample t-test of the mean score

In order to quantify the significance of the driving factors for PPP in the road sector; the desirable conditions to attract private sector participants for PPP; the barriers to implementation of PPP, and the measures to overcome the barriers for implementation, a One-sample t-test was performed. In performing the t-test, it was proper to show the significance of the factor statistically above the average (taking as 3.5) rather than taking mean values above the average (3.0) as significant (on the 5-point scale). The 5-point scale limit was set at 3.5 (test value = 3.5) and analysis was performed for the one-sample t-test. If the mean score was substantially more than 3.5 at a significance level of less than 0.05, the null hypothesis "the detected factors have no impact/importance or less impact/less important" would be rejected.

For the t-test, Equation 3.5 was used. (Ling, F. Y., Nguyen, 2013).

$$t(df) = \frac{\bar{x} - \mu}{SMD} \dots\dots\dots \text{Equation 3.5}$$

Where: $\bar{x}$ = mean of the sample, μ = mean of the population, and SMD = the standard error of the difference between the two means.

D) Kendall's coefficient of concordance

Kendall's coefficient of concordance, W, is a vital non-parametric relationship measure. It is used to find out the degree of agreement among the respondents on a set of factor/issue rankings. Kendall's coefficient of concordance(W) was calculated using Equation 3.6 (Legendre, 2010).

$$W = \frac{\sum(R_j - \bar{R_j})^2}{N^2(N-1)/12} \dots\dots\dots \text{Equation 3.6}$$

Where, N = number of factors ranked, R_j = average of the ranks assigned to the jth factor, and $\bar{R_j}$ = average of the ranks assigned across all factors. When there are more than seven elements

to rank, it is proposed that the chi-square be used as a close approximation. The coefficient of concordance (W) and chi-square with (N – 1) degree of freedom have the following relationship (equation 3.7):(Legendre, 2010).

$$X^2 = K (N - 1) W \text{Equation 3.7}$$

Where, k = number of respondents ranking the factors, and N = number of factors being ranked. Legendre (2010) recommends the use of a table of critical values for W when $N \leq 7$ and $K \leq 20$; otherwise, testing the chi-square statistic using the chi-square distribution table is recommended. The null hypothesis "the set of respondents' rankings of factors was unrelated to each other" can be rejected when the actual calculated chi-square value matches or exceeds the critical value generated from the table for a specific level of significance, in this case 0.05, and a specific number of degrees of freedom (N -1).

E) Test for reliability

Cronbach's alpha was used to test the reliability of the questionnaire's multiple Likert scale questions. Reliability is calculated on scales of 0 to 1 (with 0 reflecting no reliability and 1 representing perfect reliability). Alpha scores above 0.90, 0.80 and 0.70 are commonly deemed excellent, good and acceptable respectively, to verify their internal consistency (Stephanie, 2020).

The Cronbach's alpha can be calculated with equation 3.8 (Bhattacharjee, 2012):

$$\alpha = \frac{k\bar{r}}{(1+(k-1)\bar{r})} \text{Equation 3.8}$$

Where, K= the number of items, and $\bar{r}$ = the average inter-item correlation. If the computed value of alpha is greater than 0.70, it indicates a higher level of reliability of the adopted measurement scales (Tavakol & Dennick, 2011).

3.8 Framework Development

The research proposed a systematic approach by a means of framework for Ethiopian federal road infrastructure development through PPPs. The proposed framework involved Active Implementation Frameworks (AIFs) using the "Formula for Success". The formula for success is depicted in Figure 3.2.

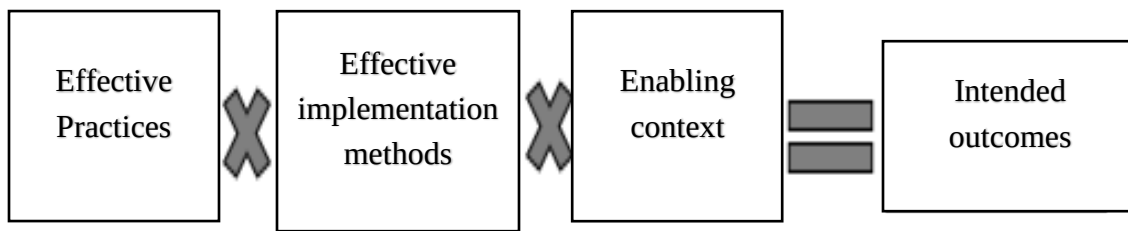


Figure 3.2: The “Formula For Success” (Source: National cooperative highway research program, 2017)

The National cooperative highway research program (2017) listed and discussed five key components of the AIFs which can be applied to any innovation/practice in a given research area.

A) Component one: Defined practices¹² (WHAT)

This is well defined, usable and implementable innovation¹³. For a practice to be implemented, detailed knowledge is required. The details listed below allow for confident implementation and monitoring of the innovation's effectiveness (Dekelbab et al., 2017).

- a) To be useful in practice, the innovation must be well defined, along with its underlying philosophy and defining elements, in order to guide decisions and maintain consistency, integrity, and long-term effort across all implementers.
- b) Clear description of the essential principles which provide a detailed description of the characteristics that must be present in order to claim that the innovation is being employed and that results are being achieved. they are core components, ingredients, or practice elements.
- c) Operational definitions of the essential principle describe the core activities of each key element. At the service delivery level, operational definitions promote functional consistency among practitioners.

¹² Termed as useable innovations in implementation science

¹³ “a technology or practice that an organization is using for the first time, regardless of whether other organizations have previously used the technology or practice.” Klein & Sorra (1996)

- d) Evidence of effectiveness of the innovation is the evidence that the innovation is effective when used as intended.

The form to structure the defined practice as a component of the overall framework is illustrated in Figure 3.3.



Figure 3.3: Defined practice (Source: National cooperative highway research program, 2017)

B) Component two: Implementation process (HOW)

It is a purposeful approach to managing change, building capacity and sustaining the new practice (National cooperative highway research program, 2017). Implementation is divided into four functional stages as illustrated in Figure 3.4, based on the idea that it is a process rather than an event. The (National cooperative highway research program, 2017) listed and discussed the stages as follows:



Figure 3.4: Implementation process (Source: National cooperative highway research program, 2017)

a) Exploration

The need for applying the practice is assessed at the exploration stage. Identifying programs and projects that can address the indicated needs. The exploration stage also evaluates the practice's fit, suitability and feasibility for implementing. Implementation requirements along with potential implementation barriers are also considered. The hexagon tool is necessary to evaluate functionality as well as fit of the practice via six broad factors. Needs of users (how well the

practice might meet identified needs?); fit with current state priorities, structures, and community values; resource availability for training, studies, and administration; evidence indicating the outcomes that might be expected if the practice is implemented well; readiness for implementation (is the practice ready to be implemented?); capacity to implement as intended and to sustain and improve implementation over time.

b) Project development

After the decision to adopt the practice has been made, the application activities normally follow. Developing communication pathways such as identifying stakeholders; ensuring financial and human resources are in place such as funding for studies of the project and selection of study team; awarding contracts for study; conducting research; and developing and structuring the project (project for infrastructure sector) are included in it.

c) Initial Implementation

Initial implementation plans out the strategies that are appropriate for the developed project and for helping it happen. The barriers to implementation are identified and addressed. And any unexpected problems are also addressed. Work concentrates on moving the practice into adoption and on providing support before and after the practice's adoption.

d) Full Implementation stage

It involves the implementation practice as it was intended. Responsible organizations provide support to practitioners and provide feedback on the implementation outcomes for practice assessment and future improvement.

C) Component three: Capacity and infrastructure¹⁴ (HOW)

There are three types of Implementation drivers¹⁵. When integrated and used collectively, these drivers ensure effective and sustainable implementation: competency drivers, organization drivers and leadership drivers. This component includes identification of the drivers with the most and the least purposeful considerations. The details of the component elements are discussed below (National cooperative highway research program, 2017). The way to present

¹⁴ Refers to "Support system" for the implementation

¹⁵ Term of implementation science used for the "Capacity and Infrastructure"

the capacity and infrastructure for implementation is shown in Figure 3.5.



Figure 3.5: Capacity and infrastructure (Source: National cooperative highway research program, 2017)

a) Competency drivers

They are related to the development and improvement of practitioners' competency to improve effective practices.

b) Organization drivers

They are related to development of the support and infrastructure needed to create a hospitable environment for new practice implementation. The organization drivers include a system to assess the outcome of practice implementation and related implementation strategies, administration, alignment with policies and procedures, for using new practices.

c) Leadership drivers

They help guide leaders to use the right leadership strategies to deal with leadership technical and adaption challenges.

D) Component four: Implementation teams (WHO)

Members of the implementation team have special expertise in the processes, implementation, and cycles of improvement. Implementation teams provide a structure for organized implementation assistance. There is shared responsibility and accountability for planning and implementing the new practice. Implementation teams are accountable for making it happen; for assuring that effective practice and effective implementation methods are in use to produce intended outcomes. Implementation teams answers who does the work of implementation?, who will assure practitioners and organizations are ready? and who will help organizations to facilitate hospitable environment? (Dekelbab et al., 2017). Structure for showing implementation teams is demonstrated in Figure 3.6.

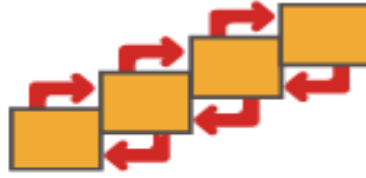


Figure 3.6: Implementation teams (Source: National cooperative highway research program, 2017)

E) Component five: Evaluation plan¹⁶

Implementation teams use feedback to maintain and improve the practice. A system that guarantees practice is fed back into the policy to influence decision-making and continuous improvement is required. Policy-practice feedback loops presented in Figure 3.7 are one type of improvement cycle and, therefore, the cycle, “Plan” (specify the plan that helps move service and interventions forward), “Do” (focus on facilitating the implementation of the plan), “Study” (develop assessment to understand how the plan is working and “Act’ (make changes to the next iteration of the plan to improve implementation) signifies the evaluation plan (National cooperative highway research program, 2017).



Figure 3.7: Evaluation plan (Source: National cooperative highway research program, 2017)

Effective implementation process flow involves a communications process through which the results of scientific research are put into use; often including adoption (decision to implement). Implement only those attributes of practice that add value. The speed and effectiveness of implementation may depend upon knowing exactly what has to be in place to achieve the desired results for stakeholders. The flow includes the four components other than the Defined practice (effective practice) (National cooperative highway research program, 2017).

¹⁶ Termed as improvement cycles in implementation science

Enabling context is part of the “Formula for Success”. Implementation teams actively construct a hospitable environment so that new ways of working are supported by a context. Any implementation team has areas in its control that can be improved to create a more hospitable environment such as scheduling, policy improvement, professional development, and resource allocation. Other areas may not be influenced by the implementation team that still have to be dealt with. This means that the Implementation team has to communicate with other teams that can affect policy, legal, regulatory, and financing contexts in a systematic and transparent manner (Dekelbab et al., 2017).

3.9 Ethical Considerations

Ethical questions that may emerge in the planning, conduct, and reporting of a study are taken carefully into account in a research study involving human participants. During the design of a study approach, the ethical issues are considered and authorized by the appropriate ethics committee prior to the start of data collection. Informed consent, confidentiality and anonymity, risk of harm, and conflict of interest are all ethical concerns that can be evaluated and managed properly (Fleming and Zegwaard, 2018).

Ethical considerations were taken into account during this study. In primary data collection methods, questionnaire, focus group discussion, and interview, ethical concerns were carefully considered with a focus on respect for the dignity of research participants. In light of this, the questionnaire began with an introductory opening letter comprising consent of cooperation from respondents following receipt of a letter of formal permission request¹⁷ from the School of Civil Engineering and Architecture of Adama Science and Technology University. Prior to the study, the researcher checked that the professionals had given their full consent.

The respondents were assured of the confidentiality of the information they provided for the sole purpose of the research. The protection of the data privacy of participants in the investigation was also guaranteed, as did the sufficient confidentiality of research data and the anonymity of the participating individuals and organizations. The investigator maintained a constructive relationship and made clear to respondents in advance the purpose and importance of the study.

¹⁷ See Annex –D

CHAPTER FOUR: RESULTS AND DISCUSSIONS

This chapter presents the analysis and interpretation of findings in line with the objectives of the study. Statistical package for the social sciences and Microsoft Excel were used to generate the statistics, the charts, and table presentations in the chapter.

Agreement of survey respondents and reliability

Kendall's coefficient of concordance (W) for the rankings of the driving factors and desirable conditions considering all respondents is 0.204 and 0.512 respectively¹⁸. Similarly, W for the rankings of the barriers and measures to overcome barriers were 0.317 and 0.214 respectively. The computed W values were significant at 0.000. As the number of factors considered was above seven, the chi-square values would be referred to rather than the W values. According to the allowable level of significance (0.05), the critical values of chi-square from the table were 18.31 and 25.00 for the driving factors and desirable conditions respectively. Likewise, the critical values of chi-square from the table were 28.87 and 19.68 for the barriers and measures to overcome barriers respectively. For overall respondents, the computed chi-square values were above the critical values that are 246.84 and 929.284 for the driving factors and desirable conditions respectively. Correspondingly, the computed chi-square values were above the critical value which is 690.426 and 284.834 for the barriers and measures to overcome barriers respectively. These results indicate the null hypothesis that "the set of respondents' rankings of factors was unrelated to each other" has to be rejected. Therefore, there is sufficient evidence to conclude that there is a significant degree of consensus among the 121 respondents.

In order to check the internal consistency of the measurement used in the questionnaire, Cronbach's coefficient alpha was computed¹⁹. The outcomes from Cronbach's coefficient alpha were 0.832 and 0.913 for the driving factors and desirable conditions respectively. Similarly, the outcomes from the Cronbach's coefficient alpha were 0.870 and 0.809 for the barriers and measures to overcome barriers respectively. It demonstrates that all of the driving factors, barriers, and measures have good internal consistency and reliability since α is between 0.9 and

¹⁸ See Annex –E

¹⁹ See Annex –E

0.8. All of the desirable conditions have excellent internal consistency and reliability since α is more than 0.9.

4.1 Demographic Information

A total of 140 questionnaires were distributed to selected Ethiopian road sector participants in various fields of assignment. A cover letter and a copy of the questionnaire were sent to each potential respondent. The study was able to collect data from 121 respondents out of a total target group of 140 professionals. A total of 121 questionnaires indicating an 86% response rate as reported in Table 4.1 were therefore usable. Given that there are no PPP road projects and the number of potential PPP professionals in Ethiopia is limited, 121 responses for this study have been regarded as appropriate.

Table 4.1: Response rate

Type of Survey	Target number of respondents	Actual number of respondents	Response rate (%)Valid
Questionnaire	140	121	86
Total	140	121	86

Table 4.2 reveals the demographic characteristics of the respondents. Out of 121 respondents for the questionnaire survey, 52 (43%) currently working in the public sector, and 69 (57%) engaged in private sector. majority of the respondents, 69 (57%), engaged in the private sector that include practitioners (consultants and contractors). Since so many professionals work in the private sector in Ethiopia's road sector, where the research study was focused, this outcome was expected.

Table 4.2: Questionnaire respondents' distribution

By sector	Target responses	Actual responses	Percentage of actual responses (%)
Public sector	63	52	43
Private sector	77	69	57
Total	140	121	100

Figure 4.1 shows the level of education of the questionnaire respondents. 71 (58.7%) of respondents have a Bachelor of Science (BSc); 47(38.8%) respondents have Master of Science (MSc) and 3(2.5%) respondents have Ph.D. degrees. This demonstrates that the respondents are mature, trained, and prudent enough to give their consent in taking part in the questionnaire survey without partiality.

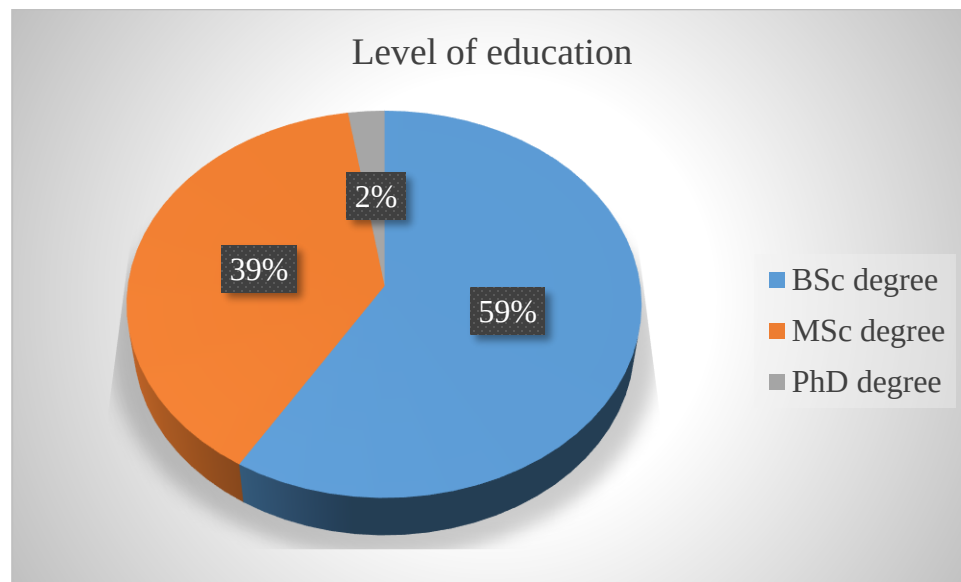


Figure 4.1: Questionnaire respondents' level of education

The years of experience that is depicted in Figure 4.2 indicates 33 (27.3%) of the respondents have <5 years of experience, 40 (33.1%) respondents have 5 to 10 years of experience, 28 (23.1) respondents have 11 to 20 years of experience, and 20 respondents also have over 20 years of experience. This demonstrates that the respondents have sufficient experience to provide reliable information.

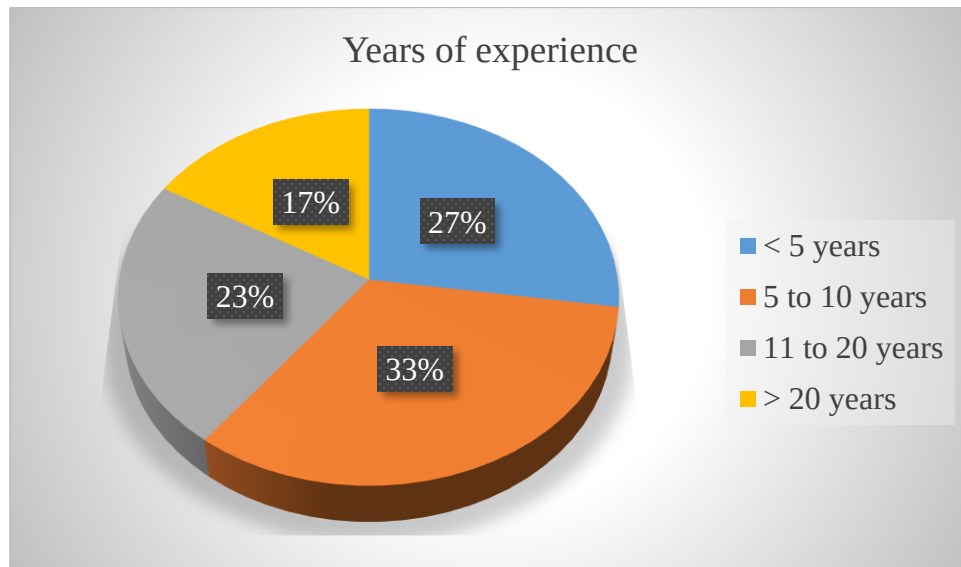


Figure 4.2: Questionnaire respondents' years of experience

Respondents' sector experience shown in Figure 4.3 indicates that 39 (32.2%) respondents were involved in public sector only, 45 (37.2%) respondents involved only in private sector and 37 (30.6%) respondents have an experience in both sectors. This shows that participants have sufficient knowledge and experience of the sectors to provide credible information.

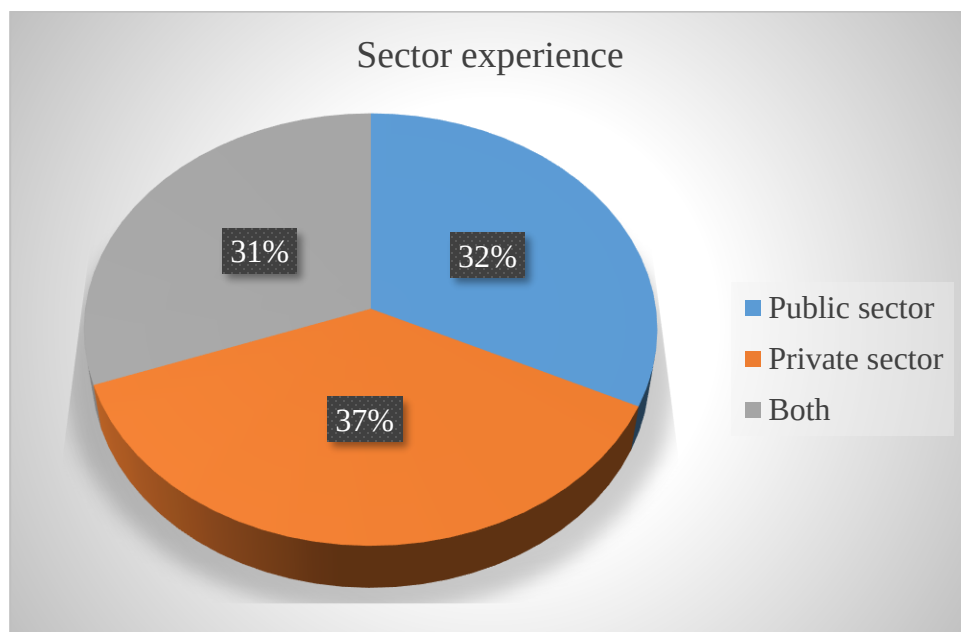


Figure 4.3: Sector experience of questionnaire respondents

Table 4.3 illustrates that the questionnaire respondents have a wide range of specializations, which might help to collect relevant perspectives in order to answer the study questions. Among the total respondents, road consultants and contractors were 9.9% and 9.1% respectively. Contract administrators and procurement specialists comprised 12.4% and 10.7% in a corresponding manner. Project managers and highway engineers were 13.2% and 12.4% respectively. This shows that the respondents have vast knowledge and experience in road infrastructure projects. Though the other experts have experience in other methods of infrastructure procurement, only 7.4% of the respondents were PPP experts. This result demonstrates the lack of PPP experts in Ethiopia.

Table 4.3: Questionnaire respondents' specialization

	Frequency	Percent(%)
CCAIE Board member	4	3.3
Construction supervisor	3	2.5
Contract administrator	15	12.4
Development plan, implementation, research and evaluation expert	1	.8
EACE Member	3	2.5
Highway engineer	15	12.4
Infrastructure development, follow up, and monitoring officer	1	.8
Infrastructure development, planning coordination and support expert	1	.8
Legal Expert	1	.8
Macro plan preparation, monitoring and evaluation team leader	1	.8
Macro-economic research and modelling expert	1	.8
PPP expert	2	1.7
PPP Project development and monitoring acting director	1	.8
PPP Project preparation and monitoring expert	2	1.7
PPP unit team leader	1	.8

Procurement specialist	13	10.7
Project manager	16	13.2
Road consultant	12	9.9
Road contractor	11	9.1
Senior PPP expert	2	1.7
Senior PPP framework management and contract support expert	1	.8
Senior project engineer	3	2.5
Technical advisor	2	1.7
Transport economist	2	1.7
Transport engineer	7	5.8
Total	121	100.0

The interview was carried out among selected target professionals. Out of the total 16 interview participants, 7(44%) were from the public sector and 9(56%) were from the private sector comprising practitioners (contractors and consultants). Out of the ten participants of the interview, 63% of them hold MSc degrees and only 37% were holding BSc degrees as shown in Table 4.4. The years of experience of interview respondents is illustrated in Figure 4.4 which shows the majority of respondents (31%) have experience of more than 20 years in their area of expertise.

Table 4.4: Interview respondents' information

No	Organization	Position	Years of experience in this position	Level of education
1	Ministry of Finance – PPP directorate General	PPP Project Development & Monitoring Directorate Director	4 years	MSc
2	Ministry of Finance – PPP directorate General	PPP Senior Expert	4 years	MSc
3	Ethiopian Road Authority – Expressway & Special Road Construction Projects	PPP Unit team Leader	3 years	PhD

	Contract Management directorate			
4	Ethiopian Road Authority – Expressway & Special Road Construction Projects Contract Management directorate	Senior project engineer	5 years	BSc
5	Ethiopian Road Authority – Regional Construction Projects Contract Management Directorate	Contract administrator	21 years	BSc
6	Ethiopian Road Authority – Engineering Procurement Directorate	Procurement specialist	16 years	MSc
7	Addis Ababa City Road Authority- Engineering Procurement Directorate	Procurement specialist	12	MSc
8	CCAEE	General Manager	6	MSc
9	Local contractor	General Manager	28	BSc
10	Local contractor	Project Manager	26	BSc
11	Local contractor	General Manager	24	BSc
12	Local consultant	General Manager	19	MSc
13	Local consultant	General Manager	22	BSc
14	International contractor	Highway Engineer	14	MSc
15	Local Bank	Branch Manager	11	MSc
16	Local Bank	Branch Manager	13	MSc

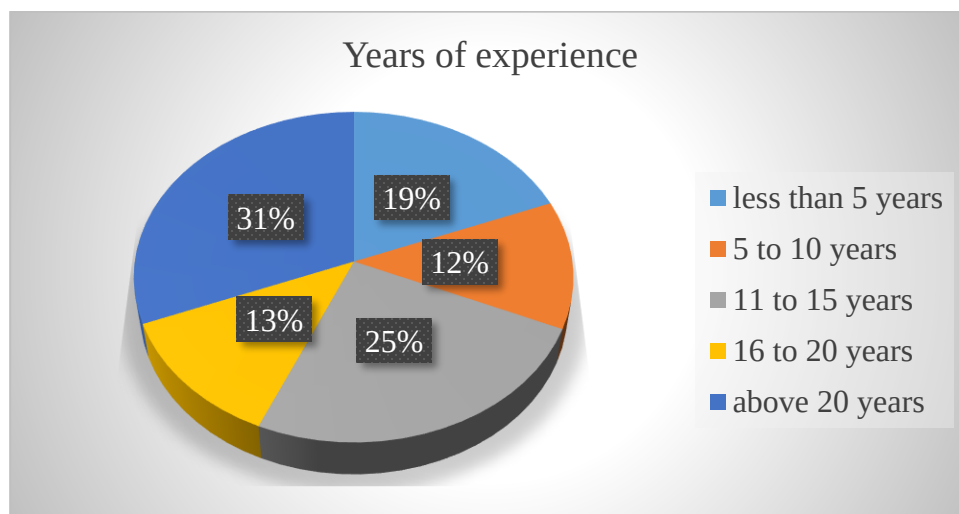


Figure 4.4: Interview respondents' years of experience

The focus group discussion was carried out among selected professionals in PPP unit of ERA. 4 experts were part of the discussion and one of them was a member of PPP unit under the Ministry of Finance for the road sector division as well. The position, years of experience and education level of the focus group discussion participants is illustrated in Table 4.5.

Table 4.5: Focus group discussion participants' information

No	Position	Years of experience in the position	Level of education
1	Team leader of PPP unit under ERA	3 years	PhD
2	PPP expert	4 years	MSc
3	Lead project engineer	5 years	BSc
4	Senior project engineer	9 years	MSc

4.2 The Driving Factors and Enabling Outline to Implement Public-Private Partnership

4.2.1 The driving factors to implement public-private partnership

The questionnaire's target respondents were industrial professionals from the public and private sectors, as well as practitioners (contractors and consultants). These respondents were asked to score their level of agreement with each of the eleven identified driving factors for implementing PPP in Ethiopian federal road infrastructure provision.

Table 4.6 presents the results, which list the driving factors in descending order as ranked by all respondents. The top five important factors were: (1) Scarcity in government funding (mean=3.907, and RII=0.781); (2) Inability of public sector to assume all project risks (mean=3.866, and RII=0.771); (3) Social strain on people due to poor public facilities (mean=3.838, and RII=0.766); (4) The demand for effective initiatives employing the skills and experience of the private sector (mean=3.787, and RII=0.757) and (5) Requirement for improvements in the levels of services (mean=3.750, and RII=0.748). All the top five factors have t - value positive and $P < 0.05$.

One driving factor with t - value negative (indicating the mean value is less than the test value) was ranked least (11th) and was not deemed statistically significant ($p > 0.05$) namely, Requirement for improved project scrutiny (mean=3.421, and RII=0.682).

Table 4.6: Driving factors for PPP implementation in federal road infrastructure

	N	Mean	T(test value = 3.5)	Sig. (2-tailed)	RII	Rank
Scarcity in government funding	121	3.907	4.902	0.000	0.781	1
Inability of public sector to assume all project risks	121	3.866	4.889	0.000	0.771	2
Social strain on people due to poor road facilities	121	3.838	4.620	0.000	0.766	3
The demand for effective initiatives employing the skills and experience of the private sector	121	3.787	4.005	0.000	0.757	4
Requirement for improvements in the levels of services	121	3.750	3.757	0.001	0.748	5
Local economic development required	121	3.727	4.002	0.002	0.745	6
Whole of life cost savings required	121	3.662	3.482	0.005	0.732	7
Infrastructure demand that is increasing at a faster rate	121	3.634	3.381	0.019	0.727	8
The need for Value For Money	121	3.594	3.006	0.026	0.717	9
Traffic congestion reduction	121	3.566	2.188	0.031	0.712	10
Requirement for improved project scrutiny	121	3.421	-1.949	0.175	0.682	11

Note: Results are significant at 95% level ($P < 0.05$); degree of freedom (df) = 120, Mean score based on total respondents, N = 121, RII = Relative Importance Index

The top five highly ranked driving factors of PPP implementation in Ethiopian federal road infrastructure provision are discussed in depth in the following section.

“Scarcity in government funding” is ranked as the most important driving factor as perceived by overall respondents. This finding suggests that PPP arrangements are better suited to a country with financing restrictions and significant infrastructure gaps. The findings by Ismail, (2014) also indicated the factor as among the top drivers for implementing PPP in Malaysia. A study by Cheung et al., (2009b) also identified the factor as one of the top driver for implementing PPP in Hong Kong and Australia. Due to a lack of governmental funds, PPP initiatives frequently entail the private sector coordinating and supplying financing. This relieves the public sector of the obligation to meet short-term funding needs through its own income (taxes or borrowing). This is a benefit in situations where the public sector is constrained

by the amount of capital required to build quality infrastructure (Ismail, 2014). Faced with funding restrictions and realizing the need of infrastructure investment for road projects, Ethiopian government is considering the private sector via public-private partnerships (PPPs) to fill the funding gap. As a result, the absence of public sector financing has been identified as one of the primary drivers for the implementation of PPP, which allows the private sector to fund projects.

“Inability of public sector to assume all project risks” is a driving factor for PPP road projects implementation in Ethiopia which is ranked second by the respondents. Earlier study by Liu and Wilkinson, (2011) also reported similar findings whereby the factor was perceived as the most important factor for adopting PPP in New Zealand. All project risks in road infrastructure development being managed under Ethiopian roads authority results inefficiency. Since PPPs implementation allows allocating project risks to the party that is best able to manage them, it makes it preferable option to be used. Several approaches from solving based on historical experience to simulation models are available to evaluate various risks in a road project. The inclusion of the private party enables the public sector to transfer risks into the private sector and enhances efficiency through private sector management (Chan et al., 2009). This indicates that the lack of capacity of public sector in undertaking road infrastructure project risks is the driving factor to implement PPP.

The third driving factor ranked by overall respondents was “Social strain on people due to poor road facilities”. The finding is consistent with the findings of Ismail, (2014) who identified the factor as one of the top driver for implementing PPP in Malaysia. Well-constructed roads and quality services are needed to be attained by involving the private partner via partnership. The government is required to provide more efficient services because it is facing lack of infrastructure or poor infrastructure service. This scenario results social hardship on people which is considered as one of the driving factors to implement PPP.

Another driving factor is “The demand for effective initiatives employing the skills and experience of the private sector” as ranked fourth by overall respondents. Similar finding was reported as a driving factor for PPP implementation by Gebremeskel et al., (2020). PPPs combine both public and private sectors' talents and resources through risk and responsibility sharing. This allows the public sector to take advantage of the expertise of the private party by

assigning daily operations. And the public sector instead focuses on policy, planning and regulation. The need for private sector capabilities, expertise and innovation urges PPP implementation which can come up with solution for efficiency problems.

The fifth ranked driving factor is “Requirement for improvements in the levels of services”. Previous studies by Liu and Wilkinson, (2011), Cheung et al., (2009b) and Ismail, (2014) also revealed this factor as one of the top five driving factors to the implementation of PPP. Low level of road infrastructure service provision which can be a result from poor planning, and decrease in private sector involvement can result disruption in economic development of a country. This may impulses the use of PPPs to involve private parties in infrastructure service improvement. An important advantage of public services being provided by the private sector is that it may do its best, especially in enhancing the efficiency and service quality (Cheung et al., 2009b). For instance, on heavy traffic roads where overcrowding and safety are serious, private sector involvement can provide more diversified services that are designed to meet the requirements and expectations of road users. To increase services levels, innovative systems and services are more efficiently used for traffic control or stand-by services for accidents (Public-Private Infrastructure Advisory Facility, 2009c). As a result, one of the primary driving factors for establishing PPP schemes has been identified as the necessity for improved service levels.

Among the set of 11 factors “Requirement for improved project scrutiny” is ranked least. The factor may not be considered as significant by the respondents of the survey. Nevertheless, this does not suggest that the factor is irrelevant driving factor for implementation of PPP. On the contrary, a prior study by Liu and Wilkinson, (2011) points out the higher importance of the factor as a driver for considering PPP implementation. Higher requirement for scrutiny (critical examination) with due diligence makes the assessment process reliable and help in gaining efficiency.

Discussion about mentioned points during interview and focus group discussion is presented in the following paragraphs. The indicated points strengthen the findings of the questionnaire.

Public-private partnerships, according to all participants, are a means to pay attention to public services and public service provision in a variety of sectors across the country, including the road sector. Roads, according to participants, have the potential to be a great asset to our country, both in terms of physical investment and social and economic advantages. For this reason, there

is a requirement for road networks to be developed and managed to meet economic, political, and social needs. PPP in roads are appropriate and can improve project quality. In addition, it increases efficiency in terms of traffic congestion reduction resulting in a decrease in vehicle operating cost when done properly under the appropriate circumstances. Factors that make the infrastructure necessary in the first place drive PPPs in the road sector.

The need for advancements in the level of services in terms of accessibility and connectivity are reasons for considering PPPs, since they enable the private sector to provide public services with greater efficiency and quality. In addition to this, the need for road infrastructure is rising more rapidly. Essentially, road infrastructure is critical for the country's economic growth and poverty alleviation. Road transportation is required for the movement of goods, raw materials, and other items, therefore the demand is growing. Moreover, the road industry is making a smaller contribution to economic development. Investing in transportation infrastructure has always been a key driver of economic growth.

The public sector cannot take on all project risks. Project risks can be assigned to the party with the best ability to manage them economically. Design, building, and operating risks, for example, are better suited to the private sector, whereas political and legal risks (law changes) are more suited to the public sector. Economic risk allocation is more widespread in the private sector than in the public sector. However, in other situations, the public sector may share some of the economic risks associated with the lower expected demand for the project's services or foreign exchange risk.

Projects are not being completed on time. A number of problems in terms of cost, quality, time, and inappropriate risk allocations influence the traditional system of road contracting in Ethiopia. And also people's social lives are affected as a result of inadequate public facilities. Poor road infrastructure has a wide range of negative consequences for people, including keeping them poorer. Thus, the need for avoiding the above-mentioned problems can be mentioned as a reason for considering PPPs.

In summary, the general goals of the road transportation sector stem from the country's pressing need for socio-economic development. This necessitates meeting the transportation needs of the productive sectors as well as the general population. To meet these objectives, the road sector's significant unresolved concerns must be addressed.

4.2.2 Enabling outline to implement public-private partnership

The enabling outline for implementation remarked in the PPP framework of Ethiopia was discussed during the interview and focus group discussion.

There is an enabling outline for PPP implementation reinforced by policy document, proclamation, directives, and sector-specific guidelines with the aims of improving service operations, decreasing project delays and overruns, and increasing the use of private sector finance for public services. The goal of the PPP framework is to promote the growth of collaborations between the public and private sectors.

Major issues in the Ethiopian PPP framework were noted during the interview and group discussion.

The distribution of responsibilities between government levels in the conceptualizing, structuring, procurement, and delivery of PPPs is included in the proclamation. Furthermore, the guidelines outline the details on the sectors covered, including the identification, development, implementation, and monitoring of a PPP project in a series of steps. Moreover, how to handle toll payment issues (cash, credit cards, electronic tolling, etc.) is specified in the guidelines for the road sector.

The PPP guideline explicitly discussed residual life span as well as performance standard specifications in relation to global indicators on the quality of the road and elementary indicators on certain specific characteristics such as evenness, skid resistance and cracking. Moreover, issues related to performance standards are included in terms of qualitative indicators (pavement cleanliness, free of gravel, and acceptable wear of marking products i.e. paint) and quantitative indicators such as evenness, skid resistance and deflection for paved roads. Performance indicators are also considered for roadside ancillaries, bridges, tunnels, retaining walls, drainage structures, for operation, and service quality.

PPP security packages are included which is particularly relevant with respect to lenders' step-in rights. The PPP legal framework permits lenders to step in and replace a private party on a PPP contract if there is a substantial breach of the contract's duties that would justify termination. It also provides guidelines on risk-sharing arrangements. The same risk set will not apply to all projects. For instance, in road projects, pre-operative task risks, construction phase risks,

operation phase risks, handover risks, and other risks under several categories can be encountered.

Depending on whether the facility is being built or rehabilitated, the guideline also outlines different types of public-private partnership plans, specification of types of permitted PPP models, and general conditions for these models. PPP models outline responsibility and sequencing for design, construction, ownership, operation, and project status at the end of the contract time (whether it remains in private hands or is it transferred to the private sector) in the proclamation and guideline.

Provisions in relation to procurement modalities to promote competition for PPP projects in the road sector are clarified in the PPP proclamation. It also provides layers of procurement rules that will guide every PPP project. It stated an open bidding process and details how it shall be conducted. Alternative procurement procedures for PPP projects where an open bidding system is not practicable are also described.

Provisions concerning contract management including dispute resolution indicate that the negotiating parties may decide on the mechanism of dispute settlement. And by means of the PPP Proclamation, they may also decide on an arbitration procedure. PPP Proclamation also offers various rights, incentives, and guarantees for the private party including security rights over assets, assignment of the project agreement; government support; tax or other incentives; stability clause/change of circumstance, and exemption from existing land laws.

4.3 The Desirable Conditions to Attract Private Sector Participants

The respondents of the survey were asked to show their viewpoint on private sector participation in the public sphere through PPPs. Out of 121 respondents, none of them responded “Should not participate in the public sphere” or in other words “all infrastructures should be financed and operated by the government”. All participants (121 or 100%) responded “the private sector should participate in the public sphere through PPPs”. The result illustrated in Table 4.7 shows that all of the respondents agreed in the participation of the private sector in the public sphere through PPPs.

Table 4.7: The extent the private sector should participate in public sphere

	Frequency	Percent
Should not participate in the public sphere	0	0.0
The private sector should participate in the public sphere through PPPs	121	0.0
Total	121	100.0

The target survey respondents of the questionnaire were requested to rate their degree of agreement against each of the identified sixteen desirable conditions to attract the private sector for the implementation of PPP in Ethiopian federal road infrastructure provision. The rankings of the respondents are listed in Table 4.8.

The results demonstrated in Table 4.8 show the desirable conditions in descending order ranked by all respondents. The top five desirable conditions were: (1) Financial viability of projects (mean=4.291, and RII= 0.857); (2) Political stability (mean=4.216, and RII=0.842); (3) Political support and acceptability for PPPs (mean=4.083, and RII=0.816); (4) Prevalence of PPP specific policy, legal, and regulatory framework (mean=3.975, and RII=0.793) and (5) Stable macro-economic conditions (mean=3.932, and RII= 0.785). All the above 5 factors have t- value positive and $p < 0.05$.

Three desirable conditions were ranked least with negative t- values indicating that the mean value is less than the test value taken. And they were not regarded as statistically significant ($p > 0.05$) namely, (14) Tax exemption or reduction' (mean=3.493, and RII=0.723), (15) Adequate financial capacity of contracting authority (mean=3.472, and RII=0.700), (16) Government support in providing loan (mean=3.446, and RII=0.689).

Table 4.8: Desirable conditions to attract private partners

	N	Mean	T-test (m = 3.5)	Sig. (2-tailed)	RII	Rank
Financial viability of projects	121	4.291	7.248	0.000	0.857	1
Political stability	121	4.216	7.006	0.000	0.842	2
Political support and acceptability for PPPs	121	4.083	6.684	0.000	0.816	3
Prevalence of PPP specific policy, legal and regulatory framework	121	3.975	5.966	0.000	0.793	4
Stable macro-economic conditions	121	3.932	5.839	0.001	0.785	5

Existence of enabling policies	121	3.876	4.981	0.005	0.773	6
Competitive procurement process	121	3.851	5.060	0.003	0.768	7
Available and mature financial market	121	3.822	4.728	0.007	0.763	8
Predictable currency exchange risk	121	3.772	4.344	0.009	0.753	9
Prevalence of PPP dedicated public agency	121	3.753	3.617	0.010	0.750	10
Technical competence of contracting authority	121	3.726	4.384	0.019	0.746	11
Favorable existing economic policies	121	3.719	3.336	0.030	0.742	12
Government's willingness to share risks'	121	3.705	2.609	0.037	0.740	13
Tax exemption or reduction'	121	3.493	-0.296	0.053	0.723	14
Adequate financial capacity of contracting authority	121	3.472	-1.921	0.057	0.701	15
Government support in providing loan	121	3.446	-1.842	0.068	0.689	16

Note: Results are significant at 95% level ($P < 0.05$); degree of freedom (df) = 120, Mean score based on total respondents, N = 121, RII = Relative Importance Index

The top five highly ranked desirable conditions to attract private sector to PPP implementation in Ethiopian federal road infrastructure provision are discussed in depth in the following section.

The first most rated desirable condition to attract private sector was “Financial viability of projects”. In contrast the findings of Osei-Kyei and Chan, (2017) indicated that this desirable condition is less critical in attracting private partners. It only makes sense to carry out a project as a PPP when it is sound basically for the private sector. Project's overall financial feasibility involves financial assessments at the project preparation stage involving a range of parameters, including project costs, (cost estimates to be developed on an itemized basis with well-considered contingencies added to each cost item based on an evaluation of risk), revenue estimates (based on estimates of corresponding tariffs or any other revenue generating plans), project funding mechanisms (project financing), and financial risks (actual costs higher than estimated project costs; inability to meet required costs; overestimation of revenue streams; difficulties in access to project finance; market access and changes; major inflation or depreciation; and currency exchange fluctuations). All of these inputs inform financial modelling, which allows different scenarios and assumptions to be tested for checking financial viability of projects (Friedo, 2018).

“Political stability” is the second ranked most desirable condition by overall respondents. This factor is vital in our country Ethiopia given the unstable political and electoral system. Uncertainty linked with unstable political environment could impede investment and economic growth. Investment generally requires political stability, which often motivates private investors to invest in a country with sufficient political stability. The avoidance of political violence, the existence of a legitimate constitutional rule and governmental prolonged existence are indicated in political stability. If a country has a stable political environment on a permanent basis, private investors will be willing to invest in PPP projects (Zhang, 2005). Key political and civil group leaders take measures to prevent any possible source of political violation. The finding is consistent with Zhang, (2005) and Osei-Kyei and Chan, (2017) who also indicated the factor as among the top desirable condition to attract private partners.

The third most-ranked desirable condition to attract private partners to implement PPP is “Political support and acceptability for PPPs”. Prior studies by The World Bank, (2009) and Osei-Kyei and Chan, (2017) showed that PPP as a public policy is often advocated to have a direct relationship with the commitment and will of political leaders. Political backing and acceptability for PPPs not only tend to attract investors but also reduce political risks associated with PPP projects. Private investors cannot be motivated to invest in an environment where PPP policy has not been well accepted politically (Cheung et al., 2012). Opposition from the political front creates serious insecurity for private sector investments. In this regard, Gaining sufficient support from all of the political angles prevents the unnecessary abrogation of PPP contracts when a different political party is in power (Osei-Kyei and Chan, 2017).

“Prevalence of PPP specific policy, legal and regulatory framework” is the fourth most-ranked desirable condition to attract private partners. Apparently, this conditions is critical in the developed countries as indicated by the finding of Beyene, (2014). Well-defined legal structure is needed to be established for PPP arrangements. This structure ensures that investors feel secure from future expropriations. A well-structured legal framework encompasses a detailed tendering process, tax regime to the private investor, contract awarding and construction management procedures (The World Bank, 2009). Moreover, Effective regulatory frameworks for PPPs have become an important comparative advantage to attract investors in infrastructure services. Regulatory framework sets forth the dispute and lawsuit mechanism and procedures

explicitly. For placing policies at the right degree of implementation, the legal and regulatory frameworks are fundamental. By guiding and organizing cooperation between interested sectors and government entities, the PPP policies can encourage good relations (Smith, 2012). The PPP framework in Ethiopia contains overall policy, objectives, direction, governance commitment, legal and regulatory framework scope, and application process. Well-structured legal mechanism for PPPs helps to attract both local and foreign investors in PPP market and implement PPP projects.

The fifth ranked most desirable condition by overall respondents is “Stable macro-economic conditions”. In contrast, a previous study by Osei-Kyei and Chan, (2017) reported that the factor is less desired to attract private investors. Macroeconomic stability is considered as one of the most significant factor to engage the attention of private partners. The balance of essential economic linkages shows existence of macroeconomic stability. For example, between domestic demand and output, the balance of payments, savings and investment, fiscal revenues and expenditure. The balance between macroeconomic variables (i.e. Gross Domestic Product, per capita income, general government balance, total debt, inflation, money supply, labor market data) is also an illustration. Achieving this condition requires aligning currency to market levels; managing inflation; establishing foreign exchange facilities; developing a national budget; generating revenue; creating a transparent system of public expenditure, and preventing predatory actors from controlling the country’s resources (Gebremeskel, 2020).

The least ranked factor among the set of 16 factors is “Government support in providing loan”. The factor may not be critical in attracting private partners but that does not mean it is totally undesirable. A prior study by Beyene, (2014) points out less importance of the factor for considering PPP implementation. Government providing loan is one form of support from dimensions of governmental support for PPPs that capture the main formal mechanisms which are directly under control of governments.

Discussion about mentioned points during interview and focus group discussion is presented in the following paragraphs. The stated points highlight the findings of the questionnaire.

Investment in countries with adequate political stability typically encourages private investors. In a number of ways, the political system is involved in the formulation, design, implementation, and performance of PPP projects. An increase in the severity of political unrest reduces

investment and economic growth. In addition to this, to acquire the best value, competitive procurement entails opening the process to proposals and tenders. It attracts private partners as it stimulates competition and makes the procurement process more transparent.

A financially feasible project generates adequate cash flow to provide a reasonable risk-adjusted return on investment. Financial viability is crucial since it expresses the ability to generate sufficient income to meet debt commitments and to allow growth while maintaining service levels. It can be achieved through the entity's ability to pursue its operational goals and achieve its mission from a long-term financial perspective. From a political acceptance viewpoint also, sustained political commitment and support are vital conditions for a PPP program. In an environment where PPP policy is not generally accepted politically, private partners will not be driven to take part in PPPs.

As investors or companies in overseas markets are exposed to currency risk, predictable currency exchange risk is desired to have partnerships like PPP. Currency risk which is the possibility of losing money due to unfavorable moves in exchange rates may create unpredictable profits and losses. Forecasting currency exchange rates can help minimize risks and maximize returns. A strong economic environment is helpful in order to forecast the direction of exchange rates which more likely attracts foreign private partners.

Macro-economic stability as one way of attracting private partners to PPP can be ensured with the existence of a transparent system of public expenses, manageable inflation existence, foreign exchange facilities, a currency that is aligned with market levels, and a developed national budget. Stable macroeconomics reflects effective planning and governance. Because the cost of borrowing and stable currencies are key considerations during funding, private partners have a specific need for such stability.

A specific legal and regulatory framework for PPPs allows potential private partners to freely participate in the road infrastructure service delivery. The mere existence of PPP specific legal framework may not serve the purpose without owning an institution to implement the provision stipulated in it. Put differently, PPP dedicated public agency needs to own the legal framework with its supporting rules and regulations with a full mandate to run and execute according to norms and provisions. This has its own influence in attracting private partners to serve the implementation of PPPs with the strong institutional arrangement in place.

The existence of an available and mature financial market provides private parties with a range of long-term investment options. It also stimulates diversity and competition. Inflation and interest rates also play a role in underpinning the growth of the financial market. This supports private partners to invest with confidence. In addition to this, since 1991, the Ethiopian government has embarked on a program of economic reform, including the privatization of state enterprises. The reforms have the potential to attract private partners to PPPs.

Contracting authority and individuals responsible for implementing PPP projects desire a sound understanding of the needs of the project; skill in the economic and financial appraisal of PPP projects; expertise in structuring PPP project contracts; expertise in procurement and contract management, and experience in dealing with the private sector. The desirability of this condition by private partners depends on having the institutional arrangements for PPPs.

Ensuring that the government bears risks that it can manage better than private investors and also sharing the risks related to force majeure can make private investors attracted to get involved in PPPs. In addition, efficient financing of PPP projects can involve the use of government support. The government may decide to provide direct support for the project through subsidies/grants, in the form of loans, equity investment, and/or debt which can attract private partners in the PPP implementation. And also the adequate financial capacity exhibited by ERA can influence the private sector's decision to invest in PPP projects. Importantly, the financial capacity of contracting authorities reflects their readiness to partner with the private party.

4.4 Barriers to The Implementation of Public-Private Partnership and Measures to Overcome

4.4.1 Barriers to the public-private partnership implementation

The target survey respondents of the questionnaire were requested to rate their degree of agreement against each of the identified nineteen barriers to implementation of PPPs in Ethiopian federal road infrastructure provision.

The rankings of the respondents are listed in Table 4.9. The results illustrated in Table 4.9 shows the barriers in descending order ranked by all respondents. The top five barriers with higher impact were: (1) Lack of experience and expertise in both public and private sectors

(mean=3.972, and RII= 0.795); (2) Inadequate domestic capital market (mean=3.941, and RII=0.788); (3) Lack of transparency and accountability (mean=3.874, and RII=0.775); (4) Poor regulatory frameworks and enforcement (mean=3.831, and RII=0.767) and (5) The absence of local government guarantees (mean=3.828, and RII= 0.765). All the above listed 5 barriers have t - value positive and $p < 0.05$.

Two barriers were least ranked which were not considered statistically significant ($p > 0.05$) with negative t - values namely, Weak judicial framework/weak judiciary for resolving PPP disputes (mean=3.424, and RII=0.684), and Excessive participation restrictions (mean=3.413, and RII=0.682). They ranked 18th and 19th respectively.

Table 4.9: Barriers to the implementation of PPP

	N	Mean	T (test value =3.5)	Sig. (2-tailed)	RII	Rank
Lack of experience and expertise in both public and private sectors	121	3.972	6.872	0.000	0.795	1
Inadequate domestic capital market	121	3.941	5.941	0.000	0.788	2
Lack of transparency and accountability	121	3.874	5.018	0.001	0.775	3
Poor regulatory frameworks and enforcement	121	3.831	3.944	0.001	0.767	4
The absence of local government guarantees	121	3.828	4.614	0.002	0.765	5
Difficulty in obtaining foreign exchange/foreign exchange risk	121	3.822	4.436	0.003	0.763	6
High risk relying on private sector	121	3.817	3.589	0.003	0.761	7
High participation costs and project costs	121	3.806	3.844	0.005	0.760	8
Local institutions' inability to provide long-term finance	121	3.798	3.477	0.005	0.755	9
Societal discontent against the private sector	121	3.761	3.257	0.008	0.752	10
Lengthy delays because of political debate	121	3.748	2.577	0.011	0.748	11
Lack of confidence and mistrust in PPPs	121	3.701	3.222	0.014	0.740	12
Weak institutional capacity and PPPs strategy	121	3.657	3.147	0.022	0.731	13
Public opposition	121	3.642	3.025	0.023	0.727	14
Lack of strong political commitment for PPPs	121	3.539	2.332	0.021	0.707	15

Unclear government's decision-making process for PPP projects	121	3.526	2.110	0.037	0.704	16
Lack of unified PPP management system at national level	121	3.517	1.999	0.048	0.702	17
Weak judicial framework/weak judiciary for resolving PPP disputes	121	3.424	-0.221	0.052	0.684	18
Excessive participation restrictions	121	3.413	-1.649	0.068	0.682	19

Note: Results are significant at 95% level ($P < 0.05$); degree of freedom (df) = 120, Mean score based on total respondents, N = 121, RII = Relative Importance Index

The top five highly ranked barriers that hinder PPP from implementation in Ethiopian federal road infrastructure provision are discussed in depth in the following section.

“Lack of experience and expertise in public sector and private investors” is the first ranked barrier that has higher impact for implementation of PPPs as perceived by overall respondents. Not only in the public sector, but also in the private sector of our country, there is a scarcity of PPP experience and relevant skills. The contracting authority (ERA) has no familiarity with financing methods like the PPP arrangement. The lack of experience and the need for better training by public officials involved in PPP projects is a major issue identified. The private partners also lack appropriate skills in PPP projects. Financing, operating, maintaining and investing in a long-term are not familiar activities to construction contractors (Asubonteng, 2011). The finding is consistent with a previous study conducted by Chan et al., (2010b) that also reported the factor among the top barriers by its respondents from Beijing.

The second most rated barrier by the respondents is “Inadequate domestic capital market”. Earlier study by Babatunde et al., (2014) who also indicated the factor as a barrier to implementation of PPP in developing countries. PPPs are generally concerned with the production of infrastructure services. They are heavily dependent on capital markets (equity capital, debt capital, financial services, market drivers, and capital market innovation). The inadequacy of capital market has an impact on the funding arrangements for infrastructure projects. It also has an influence on PPP bid markets in terms of sustained pressure on the pricing of debt capital; a reduction in the availability of debt capital; tighter credit standards including lower debt to equity ratios leverage; wider use of capital reserves as well as sinking funds to manage revenue volatility risk (European PPP Expertise Centre, 2010).

“Lack of transparency and accountability” is the third ranked barrier to the implementation of PPPs. The lack of transparency and accountability undermines democratic governance and increases risk of human rights abuses which potentially affects the implementation of PPP projects. Manipulated and non-participatory PPPs are a conduit for immense sums of corruption. They render openings for exploitative foreign powers, and directly undermine public faith in governing institutions (Reynaers and Grimmelikhuijsen, 2015). Essentially, Chan et al., (2010b) reported that the lack of transparency and accountability is a barrier to implementation with higher impact in Beijing and the Hong Kong special administrative region. In addition, finding of Jamali, (2004) revealed that this barrier have a significant impact in the Lebanon context.

“Poor regulatory framework and enforcement” is the fourth ranked barrier by overall respondents. A previous study in prevalence of implementation challenges in the road sector of Zambia by Chilala and Mulenga, (2017) also indicated the factor as the major barrier from fourteen identified and short-listed implementation barriers. Typically, inadequate regulatory framework influences PPP implementation in terms of inability in settling disputes and also a failure in monitoring the performance of the regulated entities. Regulatory frameworks establish standards for the terms and conditions for the supply of services; regulate rates (tariffs: are they too low to be economically viable?) and other service charges; establish market rules (issue, review and cancel licenses), and clarify responsibilities (which department is responsible? who should the private sector deal with?) (Smith, 2012).

The fifth ranked barrier by the respondents is “The absence of local government guarantees”. The Government fails to guarantee the lenders that it will service their debt if the SPV fails to do so. PPP projects with longer-term uncertainty and broader risk portfolios require considerable government guarantees to ensure their success. Given the high-risks involved and the lack of favorable environment needed, failing to provide government guarantees to the extent allowed by laws, policies, and capacities is a hindrance in promoting the implementation of PPP projects. Government guarantees are necessary when debt providers such as commercial banks, national and international financial institutions are unwilling to lend to the SPV as a result of concerns over credit risk and potential loan losses (Lu et al., 2019). The finding of the study was parallel with Jamali, (2004) as it indicated the factor among the top barriers having higher impact to the implementation of PPPs.

The least ranked barrier out of the 19 barriers was “Excessive participation restrictions”. This barrier may not have significant impact to implementation as perceived by the respondents of the survey. Nevertheless, this does not suggest that the barrier does not exist/ has zero impact. Alike the outcome, a study by Ismail and Harris, (2014) revealed this barrier has no significant impact to implementation of public-private partnerships in Malaysia.

Discussion about mentioned points during interview and focus group discussion is presented in the following paragraphs. The points strengthen the findings of the questionnaire.

The adoption and implementation of PPPs in our country encounter a variety of obstacles. Inefficient capital markets may limit the motivation to undertake new projects by lowering the economy's total long-term productivity. Because of excessive transaction costs or the uncertainty of achieving a fair price on the stock market the public offering mostly disappears if the capital market is inefficient.

Lack of transparency and accountability affects the private partners and the public as well. Transparency explains what policies are being implemented, how problems are meant to be solved, and what consequences they will have. This can be shown by having websites to disclose policy plans. In addition to this lack of contractual and public accountability system in PPP contract results hampering in implementation of PPPs.

Lack of experience and the need for increased training among public employees is also a concern. In PPP initiatives, the private sector of the country also lacks the necessary capabilities. PPP practitioners especially construction contractors are unfamiliar with the implementation of long-term contracts and project financing. In addition to this, resentment and antagonism from the society also hinder the implementation of PPPs by affecting the method to secure projects and withholding the confidence of policy and strategy makers to provide the necessary political support for the PPP process.

As PPPs are relatively new for our country lower confidence in a PPP market and limited government commitment to a PPP program is demonstrated. Guarantees (Financial and performance) are one type of government assistance that is required by private sector investors, particularly lenders. Guarantees protect them from different risks that may affect the project's cash flows. Financial guarantees can be quite effective tools for improving investor trust or

improving the financing terms of the guaranteed counterparty. Because the risk exposure is more controlled, a performance guarantee is favorable than a financial guarantee. However, the lack of both guarantees makes PPPs difficult to implement.

Exchange rate risk, which arises from currency fluctuations, has an impact on the consideration of PPP projects since it affects financial performance. Appreciation/depreciation of the base currency or foreign currency, or a combination of the two might make obtaining foreign exchange difficult. The most common one is an economic risk in which a company's market value is impacted by exposure to exchange rate fluctuations. Macroeconomic variables, such as geopolitical instability and/or government laws, frequently produce this form of risk. Additionally, local institutions may not have the experience in providing long-term financing and bear the risks that result from it. This affects the implementation of PPPs since long-term finance shifts risk to the providers.

Poor regulatory frameworks and enforcement potentially hinder the implementation of PPP. Lack of a solid regulatory framework makes it difficult to regulate rates; create market rules for the road sector; monitor regulated organizations' performance; explain obligations, and settle disputes.

The unclear decision-making process of PPP projects is also a challenge to implement PPP in Ethiopia. Decisions needed to be made very consciously and, to the extent possible, by the right people. The absence of a well-defined decision-making process in the investment (whether or not the project should proceed) and the procurement (whether or not the project should be a PPP) has a potential impact in considering the implementation of PPPs.

4.4.2 Measures to overcome barriers to public-private partnership implementation

The target survey respondents of the questionnaire were requested to rate their degree of agreement against each of the identified twelve measures that can be taken to overcome the barriers for the implementation of PPPs in Ethiopian federal road infrastructure provision. The rankings of the respondents are listed in Table 4.10.

The results presented in Table 4.10 show the desirable conditions in descending order ranked by all respondents. The top five desirable conditions were: (1) Building expertise through trainings (mean=3.917, and RII= 0.783); (2) Forming operative regulatory framework and enforcement (mean=3.843, and RII=0.768); (3) Promotion of good governance (mean=3.776, and RII=0.755); (4) Developing domestic capital markets (mean=3.656, and RII=0.731) and (5) Developing institutional capacity and PPPs strategy (mean=3.627, and RII= 0.725). All have positive t – values and $P < 0.05$.

Table 4.10: Measures to overcome barriers to implementation of PPP

	N	Mean	T (test value =3.5)	Sig. (2-tailed)	RII	Rank
Building expertise through trainings	121	3.917	6.113	0.000	0.783	1
Forming operative regulatory framework and enforcement	121	3.843	4.821	0.000	0.768	2
Promotion of good governance	121	3.776	5.263	0.000	0.755	3
Developing domestic capital markets	121	3.656	4.257	0.000	0.731	4
Developing institutional capacity and PPPs strategy	121	3.627	5.758	0.000	0.725	5
Establish strong political commitment for PPPs	121	3.603	3.687	0.000	0.721	6
Setting clear timing and interval for political debate	121	3.586	4.065	0.000	0.717	7
Establish Committed/responsible public and private sectors	121	3.562	3.529	0.011	0.712	8
Engaging local community in project development processes	121	3.531	2.987	0.028	0.705	9
Setting clear government objectives, decision making process and evaluation criteria	121	3.526	2.241	0.036	0.703	10
Government Providing guarantees	121	3.515	2.827	0.025	0.702	11
Raise public awareness	121	3.503	1.998	0.021	0.699	12

Note: Results are significant at 95% level ($P < 0.05$); degree of freedom (df) = 120, Mean score based on total respondents, N = 121, RII = Relative Importance Index

The top five highly ranked measures to overcome the barriers that hinder PPP from implementation in Ethiopian federal road infrastructure provision are discussed in depth in the following section.

“Building expertise through trainings” is the first ranked measure to overcome barriers for the implementation of PPPs in the road sector. Training staff can be done on different bases if the required skills are not available within the road authority and the practitioners (contractors and consultants), typically those related to the financial and legal fields. Appropriate training, led by outside experts from the country's private sector or from other countries, is provided in the form of seminars or courses. Expertise building through educating and training road specialists tied to the implementation of PPP projects is most important factor to overcome hindrance to implement PPP in road sector. Earlier studies by Asfaw, (2005) and Asubonteng, (2011) highlighted the relevance of this factor in overcoming barriers resulting from lack of expertise.

The second most rated measure is “Forming operative regulatory frameworks and enforcement”. This measure offers a clear and predictable regulatory environment in which PPPs function without wasting resources. Comparably Oktavianus et al., (2018) and Zhang, (2005) emphasized establishing a strong regulatory framework is necessary to realize the implementation of PPP. The regulatory framework has mechanisms to define, identify and measure risks along with protections from the risk of corruption. By ensuring the integrity of the procurement process and by making the necessary procurement powers available to the relevant authorities enables protections from the risk of corruption (Smith, 2012). Further, PPP project implementation can be effectively regulated using a framework with measures to guarantee value for money, monitoring capacity, and risk management. An enforcement mechanism in the regulatory framework involving a dispute resolution process and contract renegotiation provisions regulate the PPP process. An impartial, independent and efficient judiciary is paramount to this end (Nalo, 2018).

“Promotion of good governance” is the third ranked measure by overall respondents. Based on certain generally accepted core principles, good governance is a major responsibility of the government. These core principles include accountability, transparency, fairness, efficiency, participation, and decency. A fair and transparent rule-based administrative process in public finances by which projects are developed and procured is at the heart of good governance. PPPs, if done well, can bolster the credibility and trustworthiness of governing institutions (Quium, 2011). Transparent information that allows the inferring of accurate conclusions from it promotes transparency. Accountability in the area of PPPs would prevent corruption, enhance

efficiency, monitor public authority misuse, encourage compliance with the rule of law and ensure fair and equitable treatment in PPPs (Fombad, 2012). The study by Zhang (2005) also highlighted the necessity of good governance to solve problems hindering implementation of PPPs.

“Developing domestic capital markets” is the measure that is ranked fourth to implement PPPs in the road sector. Oktavianus et al., (2018) has also reported the factor as significant measure to surmount challenges to implementation considering global experiences. Domestic capital market development can be achieved by increasing enlistment of companies in the capital market; adopting clear and consistent regulatory processes; increasing access to international capital market; setting clear criteria and regulation standards that govern investment schemes, and broadening tax revenue sources through identifying potential taxpayers. Developing the domestic capital market is necessary for the reason that it mobilize and boost private saving, and reduce foreign exchange risk (World Bank Group, 2016).

The fifth ranked measure by overall respondents is “Develop institutional capacity and PPPs strategy”. Likewise Oktavianus et al., (2018) highlighted the contribution of developing institutional capacity and PPPs strategy is significant by reviewing global trends. Implementing institutions at different level have their own capacity limitation. ERA has institutional capacity limitation in the procurement of engineering service; contract administration of construction and design project, and road asset management. The domestic construction industry particularly does not have sufficient competence in project management which is responsible for poor quality of road projects design and other related problems. The fact that road projects could not be completed on time, on budget, and with the necessary quality can be a demonstration of the institutional capacity limitations (Ethiopian Roads Authority, 2019). As a result, institutional capacity building is needed to be improved for the implementation of PPPs. A capacity building work in such a way that can fill the gap of human power, organizational, operational and attitudinal change of the responsible implementing institution reinforces effective implementation (Public-Private Infrastructure Advisory Facility, 2009a).

From a total of 12 measures, “Raise public awareness” is the least ranked measure by overall respondents. Relatively, this measure may not have a close and direct relationship with implementing PPP but that does not mean it is not important in realizing PPP since an

infrastructure without considerable public knowledge and support may face different challenges, especially in user-pay cost recovery agreements. Unlike this, the findings of Zhang, (2005) mentioned the factor as important under social measures to overcome social-related challenges.

Discussion about mentioned points during interview and focus group discussion is presented in the following paragraphs. The stated points reinforce the findings of the questionnaire.

Measures need to be identified to overcome the hindrances to the implementation process of PPPs. Ensuring good governance in PPPs arrangement that ensures public security and safety, and improves road infrastructure services is necessary. Good governance also includes an approach for corruption reduction. Since PPPs are more likely to be corrupted, making clear requirements for preparing feasibility studies; open procedures and known criteria for the award of contracts, and mechanisms to determine and punish offenders address corruption problems.

Good governance can also be ensured by enhancing transparency and accountability. It is vital to provide information on how transparency measures are being executed on a regular basis and to improve access to information. This can be shown by making disclosures of PPP information on the PPP Unit's website promptly. Establishing a good balance between fulfilling the public's interest to know and the private company's need for commercial confidentiality ensures good governance. It can also be ensured by providing protection provision for private property, and making the procurement process more competitive through procurement policy.

Instituting transparency initiatives promotes transparency. The signing of a PPP Integrity Pact could be one of these approaches. The integrity agreement provides an agreement between the contracting authority(ERA) and the bidder whereby both the contract selection and the execution of the contract have abstained from bribery. The pact also includes sanctions in the case of violation of the contract. Aside from transparency, PPP contracts should have a contractual, and public accountability structure that is built throughout the contract to ensure good governance.

Depending on the type of PPP and the initial degree of expertise of the public and private sectors, training personnel can be done on different bases if the necessary expertise is not accessible among the road authorities and practitioners. The training might include risk management and finance issues (how to assess the economic costs and benefits of a given project? how to use debt? how to utilize private capital and possible revenue sources?). In addition to those, the

training might include procurement techniques, contracting (How to prepare a PPP contract? common failures of PPP contracts and how they are addressed?), and managing PPP projects (Unique oversight on challenges of PPP projects, techniques for monitoring technical and financial performance).

The creation of an effective regulatory framework is fundamental to facilitate the implementation of PPPs. Such regulatory framework assures the private partner that the regulatory system includes protection from expropriation; arbitration of commercial disputes; respect for contract agreements; legitimate recovery of costs and profit proportional to risks undertaken.

Raising public awareness linked with engaging the local community in the development of PPP projects starting from initiation to implementation can be ensured by informing the public and promoting identified projects. In order to improve public knowledge about PPP projects, the PPP Unit can hold some public awareness sessions. By using the community engagement appropriately, contracting authorities and private partners will provide a voice for communities in a project. This aids in keeping tariffs or other user charges at an affordable/fair level, and gaining community support.

The government provides guarantees including debt guarantees, exchange rates, tariff collection, permitted level of tariffs, termination compensation, etc. When equity investors in a PPP firm seek security against the financial risks they face, government guarantees become necessary. This aids in overcoming the challenge caused by the private sector's loss of interest in participating in PPPs. The guaranteed entity is the government contracting authority(ERA); The guarantor is the guarantee provider, usually, a central government entity such as the MOF; and The beneficiaries are the project company (SPV) and private sector investors or lenders.

Because of changing market stages, capital market development necessitates ongoing monitoring and policy interventions. Domestic capital markets that are deep, efficient, and well-regulated can create access to long-term finance. By granting companies the ability to borrow domestically in local currencies, domestic capital markets can reduce currency mismatches for borrowers, thus reducing systemic risks.

There are capacity limitations at different levels in implementing institutions. In the areas of engineering service procurement, contract administration for construction and design projects, and road asset management, ERA's institutional capacity is limited., it is necessary to modernize engineering procurement, design and contract management, and road asset management to ensure institutional capability.

4.5 Development of Implementation Framework for Public-Private Partnership

Regarding the relevance to utilizing a systematically formulated framework for PPP implementation in Ethiopian federal road infrastructure provision, the majority of the respondents of the questionnaire 84 (69%) answered yes agreeing to the relevance of the framework, 37(31%) answered maybe, and none of the respondents answered no as shown in Figure 4.5. The survey suggests the utilization of a systematic framework is recommended and appreciated. Moreover, the researcher believes that developing a systematically formulated framework for realizing the successful implementation of PPP is valuable.

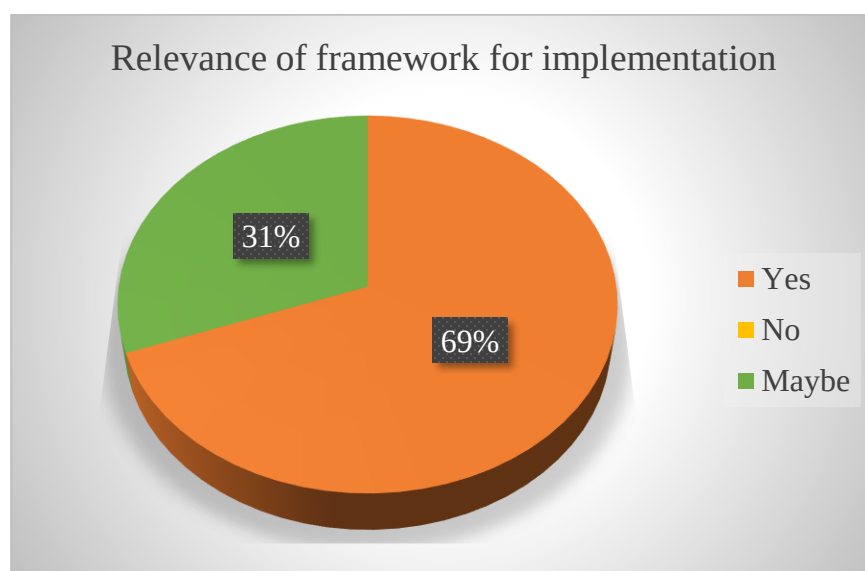


Figure 4.5: Relevance of framework for implementation

Discussion about the relevance of the implementation framework and what it should comprise during development was conducted during the interview and focus group discussion. It is presented below.

Conceptual and theoretical frameworks offer a solid foundation on which knowledge for proper implementation can be advanced. The use of implementation frameworks provides a structure for describing, guiding, analyzing, and evaluating implementation attempts. Proper description, guidance, implementation, and evaluation for realizing the implementation of practice needs a systematically formulated framework.

The usability of PPP can be assessed from several perspectives. Usability in terms of meeting the needs of users and the desired quality service in road infrastructure following the procedures to implementation. In addition to this, suitability with the current priorities of Ethiopia as well as road sector development plan indicates its usability. Moreover, the capacity to implement as intended is in terms of financial and technical competencies to consider effective implementation at all levels. Indications showing the practical success of PPP when implemented as it has to be, needs hard evidence from the experience of other countries and markets.

All things considered and summarized, successful implementation of PPP in federal road provision, demands many prerequisites, such as effective practices and implementation methods, a well-established legal system, a good administration, and governance along with open markets.

4.6 A Systematic Implementation Framework for Public-Private Partnership

PPPs are inherently complex and cover both public and private sectors of the country. Careful investigation and decision processes are needed to implement them successfully, and solve problems related to infrastructure assets and services provision. Moreover, PPPs involve continuous dedicated attention for a long period of time that requires thoughtful monitoring, flexibility, and a willingness to improve. Considering these facts, developing an approach for realizing the implementation of PPPs in the road sector does not simply depend on the components that formulate the framework for implementation. This is in view of the fact that PPP is a new concept in the context of Ethiopia.

There aren't many studies to formulate an approach, especially on determinants²⁰ of PPP implementation in Ethiopia that include why do PPPs are needed (the driving factors for the implementation of PPP) along with where should it be implemented (Enabling outline/framework). And also what are the conditions needed to attract private partners (since without them PPPs can't be realized) and what are the barriers that are hindering PPP from implementation and what measures should be taken to surmount those barriers and realize implementation needs to be addressed. Setting up these points through studies provides backing; leads to realizing the implementation framework, and makes it of reasonable sense/sound, clear, and comprehensive. Thus, the above-mentioned aspects that lead to the successful implementation of PPP give a shred of evidence and support on the development of a framework for implementation of PPP in the road sector.

In Table 4.11 there is a content summary of the points deemed necessary from the overall study which are considered in the development of the comprehensive implementation framework for PPP in Ethiopian federal road infrastructure provision.

²⁰ factors empirically shown to influence implementation

Table 4.11: Content summary of proposed framework

Clear description Public Entity(ERA) -Implement regulatory system/framework -Detects the request for a public service -Agrees service life -Sets outputs for service -Shall pay based on accepted upon performance measures Private Entity (SPV) -Works on design, construction, funding, operation and/or maintenance of service -Operates in a controlled environment -Gets paid by agreed parameters Partnership -The partnership stems from their mutual reliance on one another for payment, regulation, and service delivery, necessitating tight collaboration.	Implementation process			
	PPP Project identification & suitability analysis - Review priority projects, Pre-feasibility, Assess suitability for PPP	Feasibility & Structuring -Detailed feasibility study, Financial and Legal due diligence	Tendering &Award -Pre-selection’, tender process, project company establishment, contract award commercial and financial close	Implementation & Monitoring -Government’s obligations under contracts are met; Performance of project company
	Implementation team - PPP board - PPP Unit - Project management team under ERA (Contracting authority) - Implementation team under SPV	Governing Principles - Long-term contractual arrangements - Whole life costing - Value for money - Output based specification - Transfer of risk - Market competition	Models - Design- Build- Operate-Maintain (DBOM) - Design-Build- Finance-Operate-Maintain (DBFOM) - Build-Operate-Transfer (BOT) - Build-Transfer-Operate (BTO) - Build-Own-Operate (BOO) - Build-Own-Operate-Transfer (BOOT)	
Determinants of implementation				
The driving factors for PPP implementation - Scarcity in government funding - Inability of public sector to assume all project risks - Social strain on people due to poor road facilities - The demand for effective initiatives employing the skills and experience of the private sector - Requirement for improvements in the levels of services - Local economic development required - Whole of life cost savings required - Infrastructure demand that is increasing at a faster rate - The need for Value for Money - Traffic congestion reduction	Barriers to Implementation - Lack of experience and expertise in both public and private sectors - Inadequate domestic capital market - Lack of transparency and accountability - Poor regulatory frameworks and enforcement - The absence of local government guarantees - Difficulty in obtaining foreign exchange/foreign exchange risk - High risk relying on private sector - High participation costs and project costs - Local institutions' inability to provide long-term finance - Societal discontent against the private sector - Lengthy delays because of political debate - Lack of confidence and mistrust in PPPs - Weak institutional capacity and PPPs strategy - Public opposition - Lack of strong political commitment for PPPs - Unclear government’s decision-making process for PPP projects - Lack of unified PPP management system at national level		Measures to overcome barriers to implementation - Building expertise through trainings - Forming operative regulatory framework and enforcement - Promotion of good governance - Developing domestic capital markets - Developing institutional capacity and PPPs strategy - Establish strong political commitment for PPPs - Setting clear timing and interval for political debate - Establish Committed/responsible public and private sectors - Engaging local community in project development processes - Setting clear government objectives, decision making process and evaluation criteria - Government Providing guarantees - Raise public awareness	
Ethiopian Public-Private Partnership framework - Public-Private Partnership Policy - Public-Private Partnership Proclamation no 1076/2018 - Public-Private Partnership Directives number 55/2010/2018 issued to implement - Public-Private Partnership Guidelines		Desirable conditions to attract private sector and implement PPP - Financial viability of projects - Political stability - Political support and acceptability for PPPs - Prevalence of PPP specific policy, legal and regulatory framework - Stable macro-economic conditions - Existence of enabling policies - Competitive procurement process - Available and mature financial market - Predictable currency exchange risk - Prevalence of PPP dedicated public agency - Technical competence of contracting authority - Favorable existing economic policies - Government’s willingness to share risks’		

Basically, the proposed framework that is shown in Figure 4.6 integrates three broadly divided categories in the infrastructure and service delivery process for successful PPP implementation, including (1) Effective implementation methods, (2) Effective practices, and (3) Enabling context. This implementation framework is proposed considering the fact that, although there are many aspects that are project and model specific, the concept, process and key principles in road infrastructure and service delivery through PPPs are essentially identical. While the implementation frameworks are useful guides that can inform effective implementation, the implementation frameworks likely need to be contextualized based on need and the research area. Details of each component one to five is clearly discussed in the following sections.

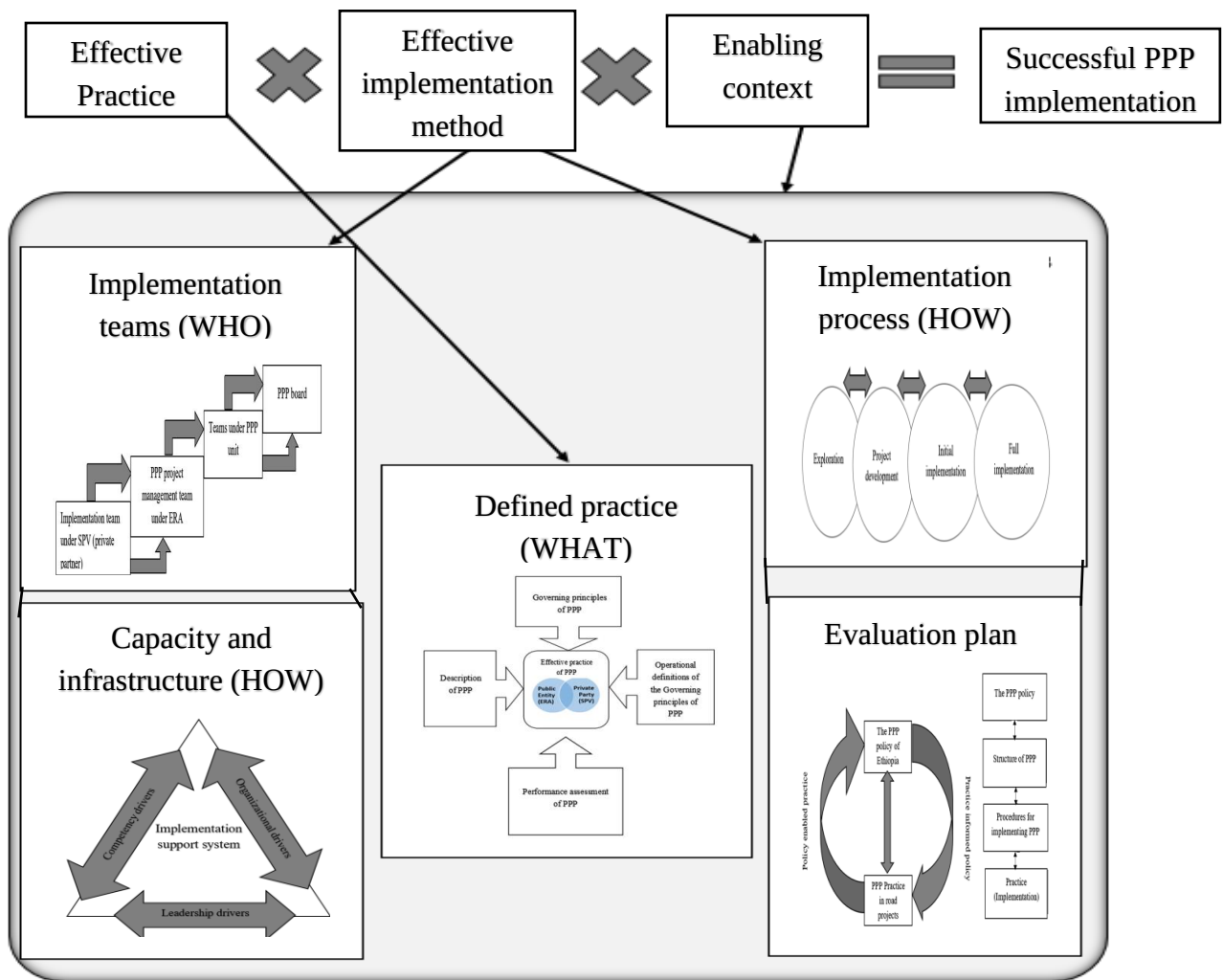


Figure 4.6: Active Implementation Framework applied for PPP implementation in the provision of Ethiopian federal infrastructure provision

Figure 4.7 depicts the combination of each component from one to five to yield the intended outcome that is successful implementation of PPP. Each component of the framework is equally important to figure out the “Formula for Success” that is shown in the middle of the figure. Clear description of each component one to five with the clear view of the figures is provided in the following sections.

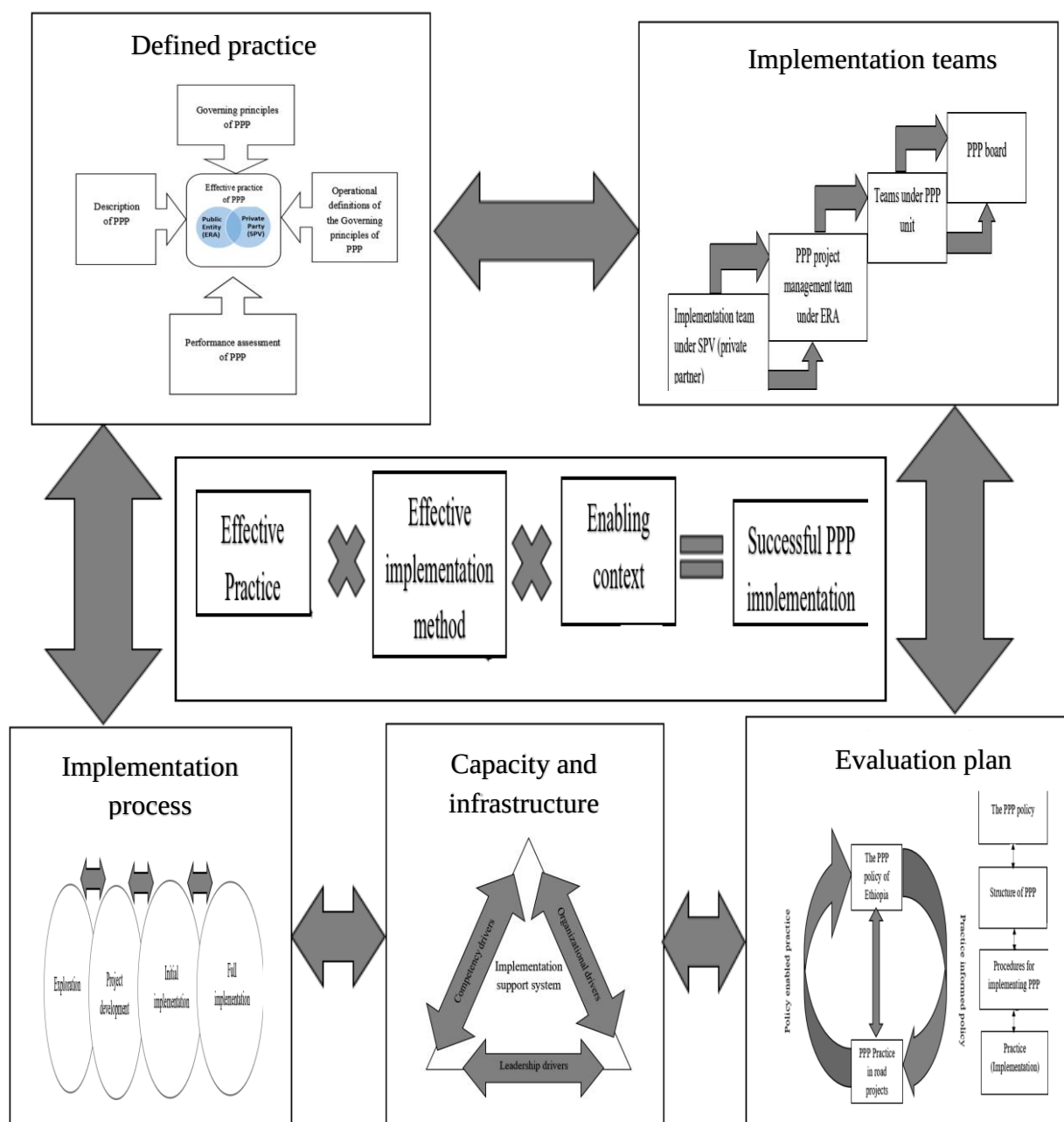


Figure 4.7: Implementation framework components relationship applied to PPP in road infrastructure provision

A) Component one: Effective practice¹

Effective practice as shown in Figure 4.8 includes four basic points to be explicitly defined.

a) Clear description

The PPP in the implementation of federal roads of Ethiopia is a long-term agreement between the Ethiopian Roads Authority and private party with a philosophy that aims to increase private sector involvement; achieve efficient policy outcomes; enhance efficiency and value for money. The core element of the practice implementation is the PPP agreement between the Ethiopian Roads Authority and the SPV (project company). It is developed by ERA, and controls the rights and duties of the private partner to whom the road development and administration are assigned. Most of the rights and responsibilities of the SPV are passed over to a downstream contract structure to the different private actors through different project agreements. shareholders' agreements (especially with financial investors); financial or debt agreements; engineering, procurement, and construction (EPC) contracts; operation and maintenance contracts; insurance contracts and guarantees.

Implementation of PPP can be practiced using one of the following models for a new road project. The models include: Design – Build – Operate- Maintain (DBOM); Design – Build – Finance – Operate-Maintain (DBFOM); Build – Operate – Transfer (BOT); Build – Transfer – Operate (BTO); Build – Own –Operate (BOO) and Build – Own – Operate – Transfer (BOOT).

b) A clear description of the governing principles

Output-based specification: ERA defines the road service required, and the design of the works to deliver that service lies with the private partner.

Long-term contractual arrangements: that are between ERA and the SPV that can be for 25/30 years.

Value for money: VFM is described as the best combination of whole-of-life costs and infrastructure or service quality (or fitness for purpose) to suit the user's needs. Value for money in road projects is shown in the efficiency gains as well as reduced risk of cost overruns and

¹ “Effective practice” and “Defined practice” can be used interchangeably since they refer to the same concept

delays. It is driven by a transfer of the design, construction, and operational risk to the private partner.

Transfer of risk: Basically, design and construction risk, as well as the risk of ownership, is transferred to the SPV (project company) from ERA.

Market competition: Competitive bidding is used to award infrastructure projects. The most important mechanism of competitiveness is competitive bidding. Competition in the construction industry usually relates to a contractor's bidding activities. Quite precisely, the goal of employing competitive bidding is to replace competition in the market with competition for the market. The premise is that when the competition (i.e., the number of bidders) rises, more aggressive bidding will emerge, and prices will fall toward efficiency levels (The International Transport Forum, 2020). Competition drives the best value and provides ERA with access to road-related innovations.

Whole life costing: It is illustrated by giving more focus on reducing cost and long-term responsibility for operation and maintenance.

c) Operational definitions of the governing principles

Whole life costing: In PPP practice, it is to lower long-term costs and provide long-term value for money. To get greater benefits, WLC should be implemented as early as possible. The core activities that drive WLC's success in PPP practice are client-driven optimization; awareness of WLC; WLC encouragement through competitive bidding; integration of all key stakeholders into WLC; early involvement of construction and facilities management teams in design; well-established procedures and methodologies; data reliability and accuracy, and regular monitoring the WLC implementation (Meng and Harshaw, 2013).

The output-based specification: it defines only the outputs that are required from the road project; it does not attempt to address how those outputs might be achieved. Thus, instead of its technical details, the performance (service) requirements for the infrastructure are defined. This allows benefits to be gained from the private sector's capability for innovation and creativity. It is shown in the design, construction technology, management, and financing by the selection of the service provider offering the optimum life cycle cost as opposed to the lowest construction cost. An output-based specification includes background; objectives; functions; processes and

the scope of road services to be provided; the number and type of users the road will serve; stakeholders description; performance objectives; specific services requirements; access requirements, environmental requirements, quality standards and risks (Ellevset, 2016).

Transfer of risk: There are many potential risks that may be encountered in a PPP road project requiring a considerable degree of risk transfer to the private partner. The risks that are applicable are explicitly dictated by the PPP modality chosen. A PPP road project involving a service or operation and maintenance contract carries little or no market risk. This market risk is particularly considerable on other PPP road projects that use a BOOT or BOO.

The following are the most significant risks among the numerous that may be identified: Land availability and acquisition (if the former is not available at the point of tender); Traffic, revenue, costs, and commercial viability of the infrastructure; The construction and operation of the road; The regulatory environment (especially tariff adjustments); Inflation (costs of operation may change substantially more than assumed); Exchange rate risks; and risk related to obtaining the right of way (Public-Private Infrastructure Advisory Facility, 2009d). Bearing in mind risk should be addressed by the party (private or government) best able to handle it at the lowest cost, the optimum risk allocation is not the same as transferring the most risks to the private sector. Risk mitigation (any measures taken by the bearer of the risk) is of little direct concern to the Ethiopian roads authority when the risks are borne by the private partner. The major priority is ensuring that the SPV takes adequate and least-cost mitigation measures to ensure the road project's sustainability.

Value for Money: it comprises selecting the best option; evaluating advantages of various schemes for project implementation (mainly comparing traditional and PPP procurement options) and designing, assessing, and monitoring project cycle efficiency (including project design, costs, inputs, activities, outputs, outcomes, and final impacts). VFM in road infrastructure projects is achieved in the process of project selection and implementation, and in relation to each element of the project cycle. Activities contributing to maximization of VFM includes improved enabling environment to develop road infrastructure; Institution, capacity, and consensus-building; Efficient project preparation and development (reaching commercial and/or financial project closure, promoting, transaction advice, demonstrating, and monitoring bankability, etc.); Project financing (that involves keeping construction costs under control, and

ensuring that the desired quality is achieved at an economic cost); and Improvements of revenue collection (Prokopowicz, 2014).

Market competition: This competition has placed a strong emphasis on the tendering and bidding process, particularly the number of bidders, which is considered as a proxy for competition intensity. A proxy for the competition is the number of bids received per tender. No optimal bid number per tender is determined. Identifying factors and conditions that contribute to higher competition, i.e. greater number of bids, is of particular importance (The International Transport Forum, 2020). From factors influencing the number of bids per tender, project size in terms of value can be mentioned. Projects with contract values of more than USD 50 million generate VFM (Ministry of Finance and Economic Cooperation, 2017). And also institutional maturity of the contracting authority in terms of the political dimension, regulatory dimension, and administrative dimension; procurement process; and market demand size influences the number of bids per tender.

A long-term arrangement: It is between ERA and the SPV that allows the efficiencies required in the Ethiopian road sector. Situations that require contract amendment or change in scope may emerge during the course of PPP contract. For the successful administration of long-term relationships, communication and transparency between the public and private sector are therefore necessary (The World Bank, 2014).

d) Evidence of effectiveness of the PPP practice

Given considerable interest for PPPs, the evidence-based results are still sparse and successful partnerships have been elusive. In evidence, a typical project's outputs and outcomes, which are the building blocks of performance management systems, are examined to determine whether it was successful or unsuccessful. The empirical evidence is notably scarce on the efficiency and effectiveness of PPPs when used as intended with the goal that is described and formulated in a specific, attainable, measurable, relevant, and timely manner.

A piece of evidence for reporting on PPP results considered a systematic review of the available evidence regarding the usage of PPPs. It was based on a thorough search and selection process following the guidelines and procedures of the Campbell protocol starting from an initial collection of 1,433 studies derived from several sources to screening 81 studies that are qualified

as valid evaluative reports. After further screening, finally, the evidence used 47 studies that provide empirical evidence on PPP effectiveness, including 18 case studies and 29 reviews (Ministry of Foreign Affairs of the Netherlands, 2013).

The focus of the systematic review was on the empirical data of relevance, effectiveness, and efficiency of PPPs. It was based on a selection of evidence-based assessments that satisfied the minimum quality standards for independent review and were published by evaluation bodies and research institutions. The evidence on PPP practice at outputs, outcome, and possibly impact level described a positive effect of the PPP (Ministry of Foreign Affairs of the Netherlands, 2013).

Output: Most case studies present a positive effect of the PPP intervention on output (the number of infrastructure or services produced by the PPP). But the evidence is limited since the majority of studies used have no counterfactual.

Outcome: The case studies present a positive effect of the PPP intervention on the outcome (the intermediate/short-term effect of the PPP on the community).

Impact: The impact of PPP which is the net effect of the practice is indicated as “The PPP intervention has a large impact on enrollment, suggesting that the previous low enrollment rate was being driven largely by supply constraints rather than a lack of demand.” However, hard evidence that the net effect of PPPs in road transport infrastructure indicating better performance when used as planned is still lacking.

Empirical evidence based on analyses focused on cost performance, time performance, contract type, and project size of 65 PPP transportation infrastructure projects was provided with concern on actual performance in the implementation phases of the projects. The results concluded that PPP contracts (DBFM model) perform significantly better than projects with traditional contracts. There were indications of reliable performance in favor of PPP with respect to time and costs in large projects while no relationship was found between project size and cost performance. However, it should not be blindly focused on cost and time performance. PPPs may prove to be valuable vehicles for other reasons too. By stressing the value of PPPs through capitalizing on the innovative capacities of the private sector, innovative transport solutions can

be achieved. Time delays and additional project costs could be acceptable if the result is increased project quality, sustainability, innovation, or others (Verweij and Meerkerk, 2021).

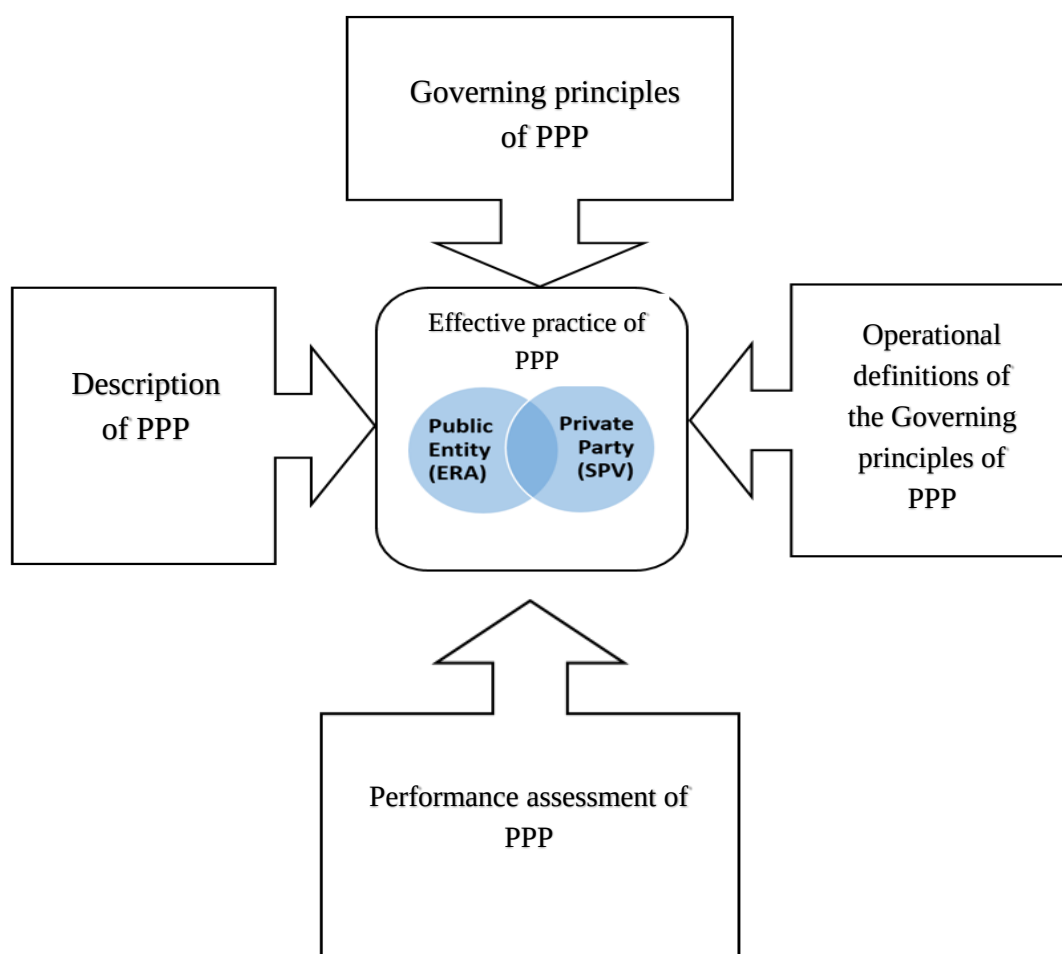


Figure 4.8: Component one of proposed framework

B) Component two: Implementation process

PPP implementation in Ethiopian road infrastructure is a multi-step process as shown in Figure 4.9 including various decisions, actions, and corrections to alter the structures and conditions required to successfully implement and sustain it.

a) *Exploration*

In this stage project identification takes place which includes: Assessing the needs of users in relation to transportation using roads to avoid over-designing; Identifying possible projects or alternatives to meet those needs that can be lined up with the current Ethiopian PPP policy; and

Assessing the fit, suitability, and pre-feasibility of implementing and sustaining the selected project. This stage also involves primary cost and benefits estimates considering conservative estimates of direct and indirect costs, and benefits; benchmarking costs and impacts to ensure a balance between cost, quality and rationale for costs; realistic traffic forecasts and assessment of user as well as management fees.

The usability of PPP can be assessed from several perspectives. PPP implementation can meet the desired quality service needed by users in road infrastructure when it is implemented as it is planned following the procedures. In addition to this, suitability with the current priorities of Ethiopia, structures, and community values can be ensured for PPP as it aligns with the country's goals as well as RSDP. In realizing PPP implementation careful study and capacity building are necessary which needs the availability of needed financial or human resources for study and administration. Readiness to be implemented for providing road infrastructure is also used to assess fit and feasibility in terms of being fully prepared to be implemented and suitable for change. Moreover, the capacity to implement as intended is in terms of financial and technical competencies to consider effective implementation at all levels.

b) Project² development

In this stage feasibility study and structuring takes place with financial and legal due diligence. Financial and human resources are ensured to be in place. They are necessary for funding the detailed feasibility study, selecting the study team, and conducting the study. This stage involves a more detailed project definition with the plan for procurement strategies, delivery, governance, and management processes required to achieve the intended outputs, outcomes, and impacts. Also, the capacity for a successful long-term economic and technical operation of the project should be assessed. Evaluating the degree to which the project is fit to be used is realized in this stage.

c) Initial implementation

It involves designing how to proceed with operation management, activity monitoring, and evaluation tool to ensure proper considerations at the end. In this stage tendering to select the qualified bidder to implement the PPP road project proceeds. The pre-selection process,

² In the infrastructure sector, “project” is the major “product” and is usually predefined by clients

evaluating bidders, and awarding the contract to the competent private partner are included in this stage. Monitoring implementation barriers, solving them rapidly, and addressing any unexpected problems are also activities in this stage to move forward with the implementation.

d) Full implementation

It involves practitioners skillfully implementing the PPP road project. The project is implemented as it is intended. Responsible bodies provide backing (in terms of incentives or government supports to support practitioners) and provide feedback on the implementation outcomes for project assessment (performance of the SPV) and future improvement. This stage involves the mobilization of inputs and delivery of outputs to achieve intended outcomes. It also involves: monitoring of costs, benefits, and results in a PPP project implementation process; providing judgment and assessing the soundness of the VFM methodology, and making adjustments to the project to maximize VFM.

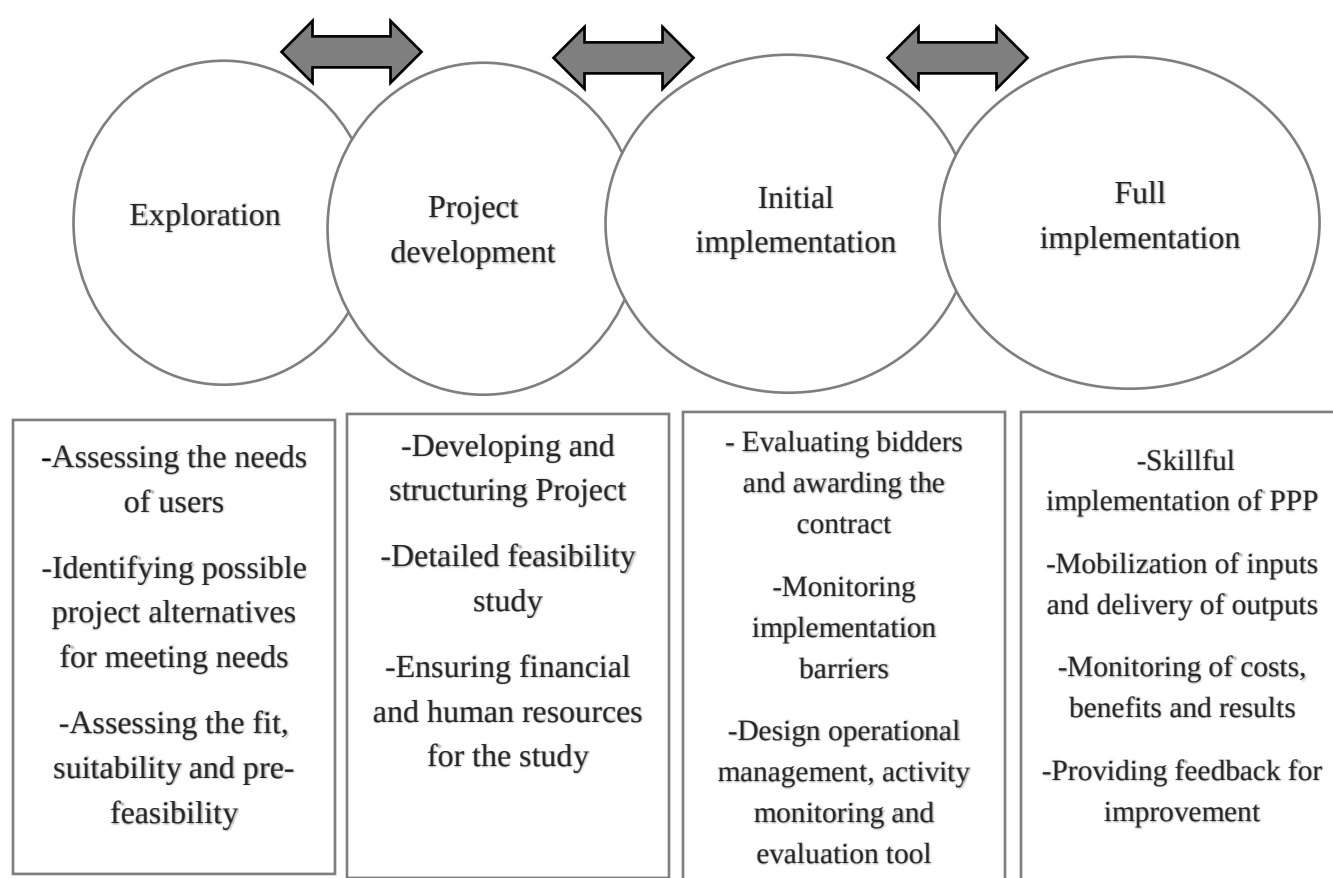


Figure 4.9: Component two of proposed framework

C) Component three: Capacity and infrastructure

The key components of capacity and infrastructure represent the support system needed to make use of effective and well-defined PPP implementation in the Ethiopian road sector as illustrated in Figure 4.10.

a) *Competency in PPP implementation*

It includes personal attributes, skills, experience, personal abilities, knowledge, training, and qualification of implementation teams (Mistarihi et al., 2019).

Personal attributes and abilities: adaptability and flexibility; patience and self-motivation are personal qualities and competencies that are important.

Skills: include a set of skills to effectively manage in a PPP setting. These are social and interpersonal skills; scoping in/out; conceptual skills; project management skills; and, communication and coordination skills.

Experience: the PPP project management team members in the implementation process have sufficient technical and project management experience, as well as experience in negotiation and arbitration

Knowledge, training, and qualification: PPP management team members are knowledgeable and qualified to manage the construction, operation, and financial aspects of the PPP project. They are familiar with and use specialized programming and scheduling techniques.

Competencies in the implementation of PPP can be obtained by granting due consideration in the selection of practitioners; selection of organization staff (administrators, managers, leaders); selection of implementation team members, and arranging training. Moreover, pieces of training help to develop competencies in PPP implementation by focusing on learning new skills through exposure to the ever-expanding PPP body of knowledge. Developing a personal commitment to ethical values regarding procurement transparency; Acquiring governance skills that embrace the implementation of effective control and monitoring structures; and cultivating effective decision-making skills that embrace the notion of collaboration in all key decision-making processes also help to develop competencies in PPP implementation (Devkar et al., 2013).

In addition, skill development and knowledge acquisition is comprehended by dealing with being able to clearly articulate the outcomes and benefits of a PPP project; developing skills that allow the ERA project management team to work effectively with private sector practitioners; improving practical skills to achieve the long term project agendas and desired outcomes; developing a clear understanding of the mechanisms of risk control and mitigation enforcement; promoting the ability to the avoidance of unnecessary changes to project requirements and political interventions; realizing institutional weaknesses and addressing them in a timely manner (Mistarihi et al., 2019)

b) Organization drivers

i Decision-support data systems

When data is available to inform the process of decision-making, better decisions are made. A functional decision-support data system includes quality assurance data (including PPP process checklists, PPP process standards, PPP process documentation, and PPP road project audit) and outcome data. The data that includes both quantitative and qualitative indicators is reliable, frequently reported, and is used to make decisions. The data most useful to support the full and effective use of PPP in ERA may not be available. While ERA has data on intended outcomes, but the data on how skillfully practitioners deliver intended output and services may not be detailed.

Practitioners (private partners) produce the outcomes ERA is expected to provide. Other staff (PPP road project implementation team members, leaders, administrators, etc.) are accountable for monitoring and supporting practitioners so they have the knowledge, skills, abilities, and other support they need to do their job as effectively and efficiently as possible. Decision-Support Data Systems are an important part of continuous quality improvement via evaluation plan.

ii) Facilitative administration

It describes how the PPP implementation team of ERA uses various strategies to ‘facilitate’ the use of the PPP in road projects. A wide range of data that support the overall implementation processes is used to inform decision-making, and to keep organized as well as focused on achieving the desired outcomes. Facilitative administration looks for ways to support

practitioners' use of PPP implementation. It is concerned with any impediment to achieving and sustaining the use of PPP. Facilitative administrative support is a proactive management effort to reduce the obstacles to implementation and establish an environment for practitioners that is administratively hospitable. Alignment with policies and procedures along with identification of barriers and facilitators³ for implementing PPP are included in facilitative administration..

iii) Systems intervention in PPP implementation

It includes external systems not within the PPP management team's immediate control to identify, communicate and resolve issues/barriers. It is focused on the alignment with policies including the PPP policy and procedures, external variables, environments, systems, or structures that influence/have an impact on ERA and SPV. Resources, policies, communication, and systems support need to be aligned to support the implementation of PPP. Intervening to change policies and other systems might be necessary for the implementation process.

c) Leadership drivers

Leadership's role in PPP projects' success is significant. The role of PPP leaders is to promote the collaboration and teamwork of project members. A PPP requires skills in the public and private sectors in order to function efficiently. To promote collaboration and teamwork, project leaders clarify the mission and direction of the project; define each member's role and responsibilities; communicate expectations with clarity, and cultivate trust and commitment among team members. Failure to clarify team members' roles and responsibilities will further complicate the partnership process. In PPP settings, the right leadership strategies to deal with challenges involve emotional competence. The challenges include technical (the zone where there is substantial agreement about what needs to be done and reasonable certainty about how to do it), and adaption (the zone of complexity where there is little agreement and less certainty). In addition, effective communication skills are important, as these help leaders to build relationships and negotiate with their partners in a PPP setting. PPP leaders with effective managerial ability can hold PPP team members accountable. PPP leaders also possess intellectual competence in deliberating on various justifications from many different parties

³ Their presence promotes the implementation

before making any decision. Intellectual competence allows leaders to solve problems by finding new ways of handling challenges (Som et al., 2020).

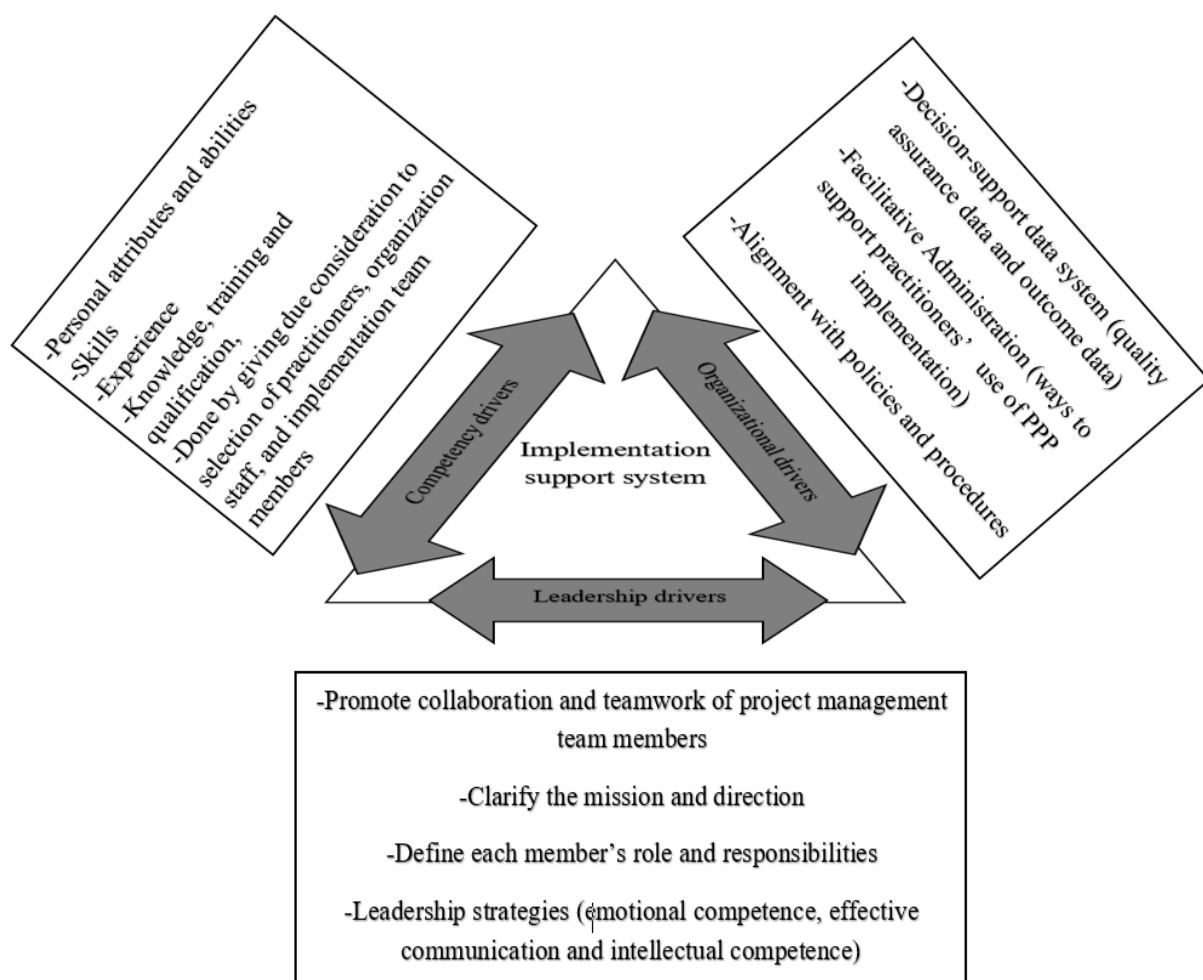


Figure 4.10: Component three of proposed framework

D) Component four: Implementation team

By considering the fact that effective implementation is characterized by a team accountable for allowing it to happen, the PPP project implementation team under ERA is responsible to make it happen in a purposeful and mission-driven way from the public side together with the teams under SPV from the side of the private sector. The teams of the PPP unit under MOF are also responsible to provide support from the side of GOE and monitor the overall process of the PPP road project implementation.

The expert implementation teams that are shown in Figure 4.11 play a role in actively supporting the implementation of PPP road projects. These teams provide an internal support structure to move selected projects through the stages of implementation. They are accountable for assuring that effective practice and effective implementation methods are in use for the successful implementation of PPP. The PPP implementation teams at all levels can engage, collaborate, and build relationships among each other and with stakeholders. Furthermore, implementation teams facilitate change by a means of PPP implementation pieces of training; analyze data for decision making, and support complex change.

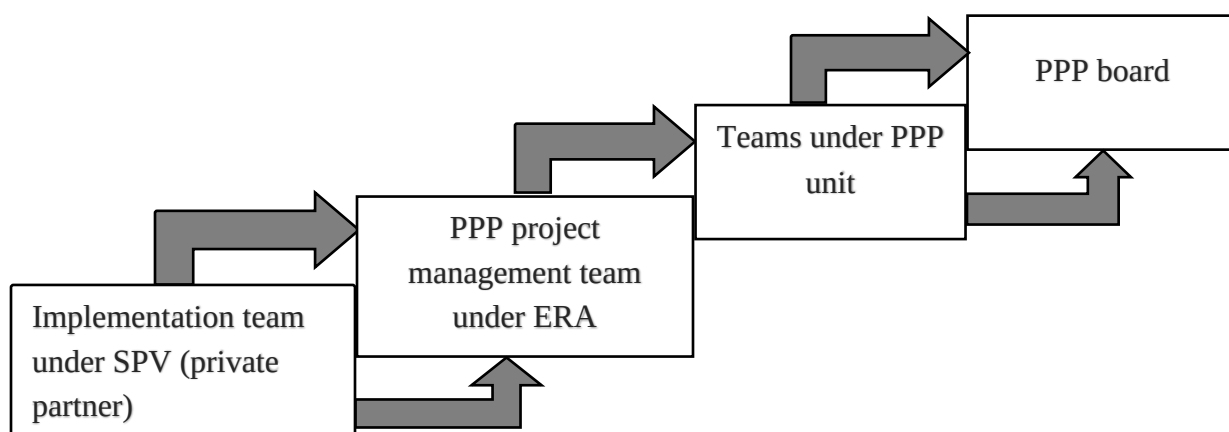


Figure 4.11: Component four of proposed framework

E) Component five: Evaluation plan for improvement

Connecting policy to practice is a key aspect of reducing implementation barriers. A good policy enables good practice, but the policy is also informed by practice. This may support solving implementation barriers that can be solved only at the policy level. The system ensures that PPP practice experiences are being fed back to the policy level to inform decision-making and improvement for other road projects. Policy–practice feedback loops illustrated in Figure 4.12 are ways to evaluate and improve.

Since PPP implementation is a new practice in road projects of Ethiopia, it may not fare well in existing organizational structures and systems of ERA. Thus, Effective policy–practice feedback gets institutionalized into the ERA’s way of work.

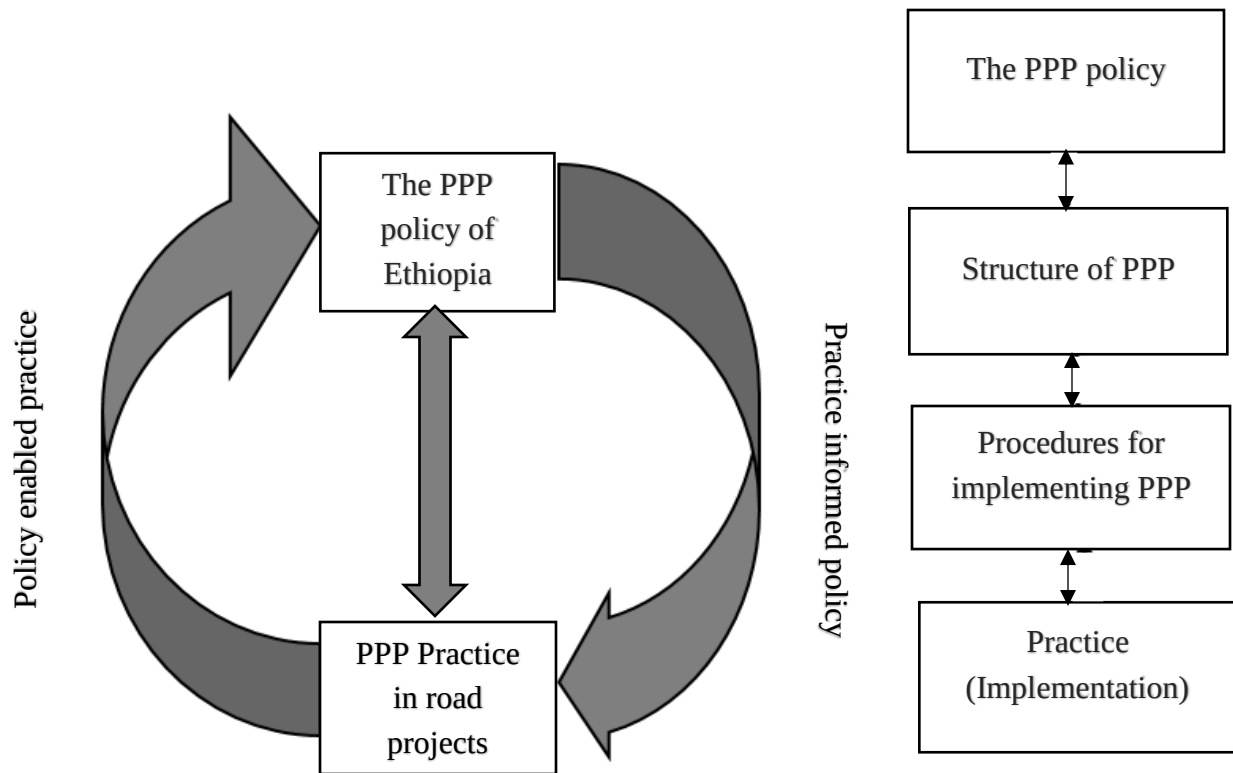


Figure 4.12: Component five of proposed framework

F) Enabling context (where it is going to be implemented)

An enabling context for PPP is essential given the nature of the PPP policy objectives and PPP characteristics. Worldwide experience has demonstrated that the successful implementation of a PPP program requires an enabling context to be in place to implement PPP projects effectively and with maximum benefit to the public sector. Thus, the implementation of PPP projects requires the prior establishment of a PPP Framework.⁴ Several measures⁵ and conditions⁶ are likely to be in place to establish an enabling environment that attracts interest from the private sector for the provision and funding of the road infrastructure through PPPs (Public-Private Infrastructure Advisory Facility, 2009b). The desirable conditions for creating a favorable climate to attract private partners' funding and efficiencies for road projects under optimal conditions for the public sector form an enabling context for the successful implementation of PPPs.

⁴ See section 4.2.2

⁵ See section 4.4.2

⁶ See section 4.3

Validation of proposed framework

To justify the proposed framework and assess its possible application, a validation process is required. In this regard, the views of PPP experts and practitioners from both the private and public sectors are essential. Experts and practitioners in the field of public-private partnerships who were purposely selected for interviews in order to ensure its applicability and adaptability were consulted in this matter. The validation procedure involved a total of seven people, including four PPP experts from the public sector and three professionals from practitioners (local contractors and consultants).

In general, most did agree that the framework was well developed and included important issues that had to be addressed in a systematic approach to road infrastructure provision through PPPs. However, some indicated that aspects of the framework had to be improved in order to address project-specific and model-specific issues. In addition to that, strong pieces of evidence need to be provided in a more detailed manner that PPP would succeed if it is implemented as intended. This aspect needs to be done since the potential application of PPPs and risks associated differs depending upon the model selected for considering PPP implementation. The insight of the validation showed that the proposed approach through framework has the potential of providing valuable guidance and roadmaps for the successful delivery of PPP road infrastructures in Ethiopia.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

This chapter describes the conclusions and recommendations of this thesis based on the research findings. Conclusions were being made on key points identified as specific objectives of the thesis including the driving factors for the implementation of PPP, enabling outline of PPP in Ethiopia, the desirable conditions to attract private partners, barriers to implementation of PPP, and measures to overcome the barriers. Subsequently, these conclusions are followed by recommendations on the same points about the actions needed to improve conditions in the future for implementing PPP road projects in Ethiopia. In addition, direction for future related researches is given as a contribution to developing a more advanced body of knowledge on the PPP implementation in Ethiopia.

5.1 Conclusions

Conclusions of the research in terms of the contributions of the work towards achieving the objectives⁷ are made, and the following conclusions are drawn based on findings of the research.

- The mean score analysis conducted determines the relative importance of the driving factors to implement PPP in Ethiopian road sector. The results indicate that 10 out of the 11 factors are important because their mean values exceeded 3.5. The top five important factors include: scarcity in government funding; inability of public sector to assume all project risks; social strain on people due to poor road facilities; the demand for effective initiatives employing the skills and experience of the private sector, and requirement for improvements in the levels of services. On the contrary, requirement for improved project scrutiny is ranked least, suggesting that the factor is not a strong reason to implement PPP in Ethiopian federal road infrastructure provision.⁸
- The top five most desired conditions determined by the results of relative importance index include: financial viability of projects; political stability; political support and acceptability for PPPs; prevalence of PPP specific policy, legal and regulatory framework, and stable macro-economic conditions. The desirability level of the conditions to attract private partners is determined by the mean score analysis conducted. The finding indicates that 13

⁷ See section 1.3.2

⁸ See section 4.2

out of the 16 conditions are desirable because their mean values exceeded 3.5. In contrast, the least ranked factor is government support in providing loan, which is an indication of relatively less desirability of the condition to attract private partners for considering PPP implementation in Ethiopian federal road infrastructure provision.⁹

- The performed mean score analysis shows the impact level of the barriers to implement PPP in Ethiopian federal roads. The results indicate that 17 out of the 19 barriers are deemed high-impact barriers because their mean values exceeded 3.5. The top five barriers with higher impact include: lack of experience and expertise in both public and private sectors; “inadequate domestic capital market; lack of transparency and accountability; poor regulatory frameworks and enforcement, and the absence of local government guarantees. On the other hand, excessive participation restrictions is ranked last, indicating that the barrier do not have a strong impact to implement PPP in provision of Ethiopian federal roads.¹⁰
- The top five measures to overcome barriers to implementation identified by the results of relative importance index include: building expertise through trainings; forming operative regulatory framework and enforcement; promotion of good governance; developing domestic capital markets and developing institutional capacity and PPPs strategy. the importance of the measures to surmount the barriers is determined by the mean score analysis conducted. The finding revealed that all of the measures are important because their mean values are above 3.5.¹¹
- The existence of PPP framework in Ethiopia to provide enabling outline is depicted on the PPP policy, PPP proclamation no 1076/2018, PPP directive no 55/2018 and PPP guidelines considering the key areas to realize the practice of PPP in Ethiopia. The enabling outline is where PPP can be successfully implemented.
- Systematically formulated approach by a means of framework to implement PPP in road infrastructure provision and produce intended outcomes included effective practice of PPP; effective implementation of PPP, and enabling context. It involved defined practice, implementation process, capacity and infrastructure, implementation teams, and evaluation

⁹ See section 4.3

¹⁰ See section 4.4.1

¹¹ See section 4.4.2

plan all of which are aligned with efforts to implement PPP in Ethiopian road infrastructure provision.

5.2 Recommendations

Based on the findings of the research, the subsequent recommendations were forwarded.

- It is recommendable to formulate an appropriate structure for policy enactment by the concerned government authority aimed at overcoming implementation barriers and safeguarding successful PPP implementation mainly because PPP implementation is new and progressing in Ethiopia, so the need for clear structure and procedures on PPP is considered important in the road construction industry.
- In order to ensure the PPP implementation in the Ethiopian road infrastructure provision, it is suggested to provide the desirable conditions for the private partners by the Government of Ethiopia since efficiency in PPP road projects is determined by the private party's ability to manage the project's full life cycle, as well as financial and technical capabilities.
- It is recommended to undergo real application of the approach by the Ethiopian Road Authority which can give further information on its usefulness in considering effective implementation and further improvements to review limiting cases and increase the applicability of the approach.

Recommendations for Further Research

Further researches recommended below focus on several areas around the implementation of PPP in federal road infrastructure provision as follow:

- Evaluation of the PPP policy in terms of risk-sharing, unsolicited proposal, and sector-specific PPP issues to create a conducive implementation environment in the road sector need to be addressed by further researches.
- It remains to be studied if the effectiveness of PPP implementation using the proposed approach is possible from the perspective of resource-poor settings by identifying the amount of resources needed.
- Further studies can evaluate the effectiveness of the approach by assessing post-implementation and out-comes data.

- Supplementary investigations are recommended on individual components of the proposed framework considering project-specific and model-specific implementation to give details and expand the application of the implementation framework.
- Further study is recommended on the applicability of the proposed approach in other sectors since this study is limited to road infrastructure provision.

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ANNEXES

Annex – A: Questionnaire



Adama Science and Technology University
School of Civil Engineering and Architecture
MSc program in Construction Engineering and Management

Questionnaire

Dear Respondent,

I am currently undertaking a Master of Science (MSc) degree in Construction engineering and Management at Adama Science and Technology University (ASTU). By responding to this questionnaire, your will help me realize my final thesis work on the subject **“Systematic Approach to The implementation of Public-Private Partnerships in Ethiopian Federal Road Infrastructure Provision”**.

PPP is an arrangement between a public body and a private party or parties for the purpose of designing, financing, building and operating an infrastructure facility that would normally be provided by the public sector. In other words, it is a contractual agreement between a governmental organization and a private party whereby private party performs whole or certain parts of the service delivery or infrastructure provision, and assumes substantial risks equivalent to the payment agreed in the contract. In return, the private party receives a fee which may take the form of user charges or direct payments from the government in accordance with the pre-defined performance criteria. It is an effective technique for solving infrastructure backlog problems as well as improving the efficiency of service delivery of infrastructure projects by

The aim of this survey is to explore about PPP and develop a systematic approach for adopting it for federal road infrastructure development in Ethiopia.

This questionnaire has five (05) parts and it takes on average 15 to 20 minutes of your time. Please read each question or statement carefully and try to answer all questions honestly and to your best knowledge. Your answers will be treated confidentially and only for academic purpose. I greatly appreciate your cooperation and contribution to the success of this study by genuinely participating in this questionnaire. If you have any questions about the survey, you may contact yeneketema17@gmail.com/+251922232244

Thank you,

Yenenesh Ketema

Post Graduate Student (Construction Engineering and Management)

School of Civil Engineering and Architecture

Adama Science and Technology University

Part 1: Respondent's Information

1.1. Company Name (optional): _____

1.2. Type of your organization

☐ Contracting authority (ERA)

☐ Local Consulting company

☐ Local Construction company

☐ Foreign Consulting company

☐ Foreign Construction company

Other, please specify: _____

1.3. Your position: _____

1.4. Your level of education

☐ Diploma

☐ BSc degree

☐ MSc degree

☐ PhD degree

1.5. Your years of experience

☐ < 5 years

☐ 5 to 10 years

☐ 11 to 20 years

☐ > 20 years

1.6. In how many projects have you been involved for more than 6 months?

☐ < 5 projects

☐ 6 to 10 projects

☐ >10 projects

1.7. Which sector do you have experience with?

☐ Public sector

☐ Private sector

☐ Both

Part 2: Driving factors to the implementation of PPP in the road sector

2.1. What are the reasons/driving factors to implement PPP in Ethiopian federal road provision?

Please rate the degree of significance of the driving factors for the consideration of PPP for federal road provision. 1 = not significant 2= lower significance 3 = medium significance 4 = higher significance 5 = Extremely significant

No	Driving Factors for implementation	1	2	3	4	5
1	Inability of public sector to assume all project risks					
2	Infrastructure demand that is increasing at a faster rate					
3	Local economic development required					
4	Requirement for improved project scrutiny					
5	Requirement for improvements in the levels of services					
6	Scarcity in government funding					
7	Social strain on people due to poor road facilities					

8	The demand for effective initiatives employing the skills and experience of the private sector					
9	The need for Value For Money					
10	Traffic congestion reduction					
11	Whole of life cost savings required					

Part 3: The desirable conditions to attract private sector participants for Public Private Partnerships

3.1. Do you think the private sector should participate in infrastructure provision through PPPs?

☐ Should not participate in the public sphere (all road infrastructures should be financed and operated by the government)

☐ The private sector should participate in the public sphere through PPPs

3.2. If your answer for Question 4.2 is other than the first choice, please rate the desirable conditions to attract private parties to PPPs. 1 = very poorly desired condition, 2= poorly desired condition, 3 = average 4 = highly desired condition 5 = Extremely desired condition

No	Desirable conditions	1	2	3	4	5
1	Adequate financial capacity of contracting authority					
2	Available and mature financial market					
3	Competitive procurement process					
4	Existence of enabling policies					
5	Favorable existing economic policies					
6	Financial viability of projects					
7	Government support in providing loan					
8	Government's willingness to share risks'					
9	Political stability					
10	Political support and acceptability for PPPs					
11	Predictable currency exchange risk					
12	Prevalence of PPP dedicated public agency					
13	Prevalence of PPP specific policy, legal and regulatory framework					
14	Stable macro-economic conditions					

15	Tax exemption or reduction'					
16	Technical competence of contracting authority					

Part 4: The barriers to the application of Public Private Partnerships in Ethiopian federal road infrastructure provision

4.1. Please use a rating scale from 1 to 5 to assess the impacts of the following barriers to the development of PPPs in the organization. 1 = Extremely low impact, 2 = low impact and 3 = average 4 = high impact 5 = Extremely high impact

No	Barriers	1	2	3	4	5
1	Difficulty in obtaining foreign exchange/foreign exchange risk					
2	Excessive participation restrictions					
3	High participation costs and project costs					
4	High risk relying on private sector					
5	Inadequate domestic capital market					
6	Lack of confidence and mistrust in PPPs					
7	Lack of experience and expertise in both public and private sectors					
8	Lack of strong political commitment for PPPs					
9	Lack of transparency and accountability					
10	Lack of unified PPP management system at national level					
11	Lengthy delays because of political debate					
12	Local institutions' inability to provide long-term finance					
13	Poor regulatory frameworks and enforcement					
14	Public opposition					
15	Societal discontent against the private sector					
16	The absence of local government guarantees					
17	Unclear government's decision-making process for PPP projects					
18	Weak institutional capacity and PPPs strategy					
19	Weak judicial framework/weak judiciary for resolving PPP disputes					

4.2. What measures can be taken to overcome the barriers to the implementation of PPPs. Please use a rating scale from 1 to 5 to assess the importance of the following measures. 1= very Low importance 2= Low importance 3= Average 4=High importance 5 = very Higher importance

No	Measures to overcome barriers	1	2	3	4	5
1	Building expertise through trainings					
2	Developing domestic capital markets					
3	Developing institutional capacity and PPPs strategy					
4	Engaging local community in project development processes					
5	Establish Committed/responsible public and private sectors					
6	Establish strong political commitment for PPPs					
7	Forming operative regulatory framework and enforcement					
8	Government Providing guarantees					
9	Promotion of good governance					
10	Raise public awareness					
11	Setting clear government objectives, decision making process and evaluation criteria					
12	Setting clear timing and interval for political debate					

Part 5: The development of an implementation framework for Public-Private Partnerships in Ethiopian federal road infrastructure provision

5.1. Do you think that we need a systematically formulated framework for the implementation of PPPs in federal road projects?

☐

Yes

☐

No

☐

Maybe

Thank you for your cooperation!

I look forward to receiving your input at the soonest possible time.

Annex – B: Interview Questions

1. Self-introduction

- *Name of the organization:* _____
- *Respondent's Name (optional):* _____
- *Position/role:* _____
- *Years of experience in the mentioned position:* _____

Date and time: _____

2. The Driving factors and enabling outline to PPP implementation in Ethiopia

- What are the driving factors (reasons) to implement PPP in road sector? What do you think are the factors other than lack of government budget in considering a PPP?

- Is there an enabling outline/framework for PPP implementation? If there is, please explain

What key areas did the enabling outline address?

3. The desirable conditions to attract private participants for implementation of PPPs

- What do you think are the desirable conditions to attract private participants for PPPs?

4. Barriers and measures to overcome the barriers to the implementation of PPPs

- According to your view, what are the barriers/obstacles to the development and implementation of PPPs in road sector?

- From your perspective, what do you see as ways/measures to overcome the barriers to public-private partnerships (PPPs).

5. The development of systematic implementation framework for PPPs

- Do you believe that it is relevant to have a systematically formulated approach through implementation frameworks in PPPs for the road sector?

- If yes, what key points should the implementation framework contain?

Annex – C: Focus Group Discussion



Adama Science and Technology University
School of Civil Engineering and Architecture
MSc program in Construction Engineering and
Management

Focus Group Discussion

A research entitled “A Systematic Approach to the Implementation of Public-Private Partnerships in Ethiopian Federal Road Infrastructure Provision”

Discussion Points

- ◆ Driving factors and enabling outline for the implementation of Public-Private Partnerships in provision of Ethiopian federal road infrastructure
- ◆ Desirable conditions to attract private sector participants
- ◆ Barriers to Public-Private Partnerships implementation
- ◆ Measures to overcome the barriers
- ◆ Implementation framework for Public-Private Partnerships in Ethiopian federal road infrastructure provision

Annex –D: Receipt of a Letter of Formal Permission Request

P.O. Box 1838	Tel: 0222 110140	Email: mesfinbenti@yahoo.com
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ADAMA SCIENCE & TECHNOLOGY UNIVERSITY

አዳማ - ኢትዮጵያ
 Adama - Ethiopia
 ቀን 13 ሚያዝያ 2013
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የሲቪል ኢንጅነሪንግና አርክቴክቸር ት/ቤት

ዲን

ዶ/ር መስፍን በንቲ

ለ ሚ. መ. ለ. ከተ. ወ. ሆ. ለ.

ተማሪ የኔነሽ ከተማ የአዳማ ሳይንስና ቴክኖሎጂ ዩኒቨርሲቲ የሲቪል ኢንጅነሪንግ እና አርክቴክቸር ት/ቤት የሲቪል ምህንድስና ት/ክፍል የኮንስትራክሽን ኢንጅነሪንግ እና ማኔጅመንት የሁለተኛ ዲግሪ ተማሪ ስትሆን የመመረቁ ድህረ ለመስራት ከመ/ቤታችሁ ሚያስፈልጋችን ዳታ ለመሰብሰብ ለዚህ በተዘጋጀው መጠይቅ መሠረት አስፈላጊውን የዳታ ዝርዝር በነጻ ማግኘት ትችሉ ዘንድ ትብብር እንድታደርጉላት በአክብሮት እንጠይቃለን፡፡

ከሰላምታ ጋር



መስፍን በንቲ ዲን (ዶ/ር)
የሲቪል ኢንጅነሪንግና አርክቴክቸር ት/ቤት ዲን



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Annex – E: Various Computations

a) *Descriptive statistics of the “Driving factors”*

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variation
Inability of public sector to assume all project risks	121	1.00	5.00	3.8661	1.26991	1.61267
Infrastructure demand that is increasing at a faster rate	121	1.00	5.00	3.6342	.90753	.82361
Local economic development required	121	1.00	5.00	3.7270	.9163	.83961
Requirement for improved project scrutiny	121	1.00	5.00	3.4212	1.11740	1.24858
Requirement for improvements in the levels of services	121	1.00	5.00	3.7501	1.02532	1.05128
Scarcity in government funding	121	1.00	5.00	3.9074	1.02491	1.05056
Social strain on people due to poor road facilities	121	1.00	5.00	3.8381	.82636	.68287
The demand for effective initiatives employing the skills and experience of the private sector	121	1.00	5.00	3.7870	.96627	.93368
The need for Value For Money	121	1.00	5.00	3.5941	1.28340	1.64712
Traffic congestion reduction	121	1.00	5.00	3.5663	1.18083	1.39436
Whole of life cost savings required	121	1.00	5.00	3.6621	1.20279	1.44670
Valid N (listwise)	121					

b) Descriptive statistics for the “Desirable conditions”

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Adequate financial capacity of contracting authority	121	1	5	3.4722	1.27321	1.61877
Available and mature financial market	121	1	5	3.8220	.99853	.99706
Competitive procurement process	121	1	5	3.8511	1.30214	1.69557
Existence of enabling policies	121	1	5	3.8762	1.27811	1.63357
Favorable existing economic policies	121	1	5	3.7190	1.00711	1.01427
Financial viability of projects	121	1	5	4.2911	.80269	.64431
Government support in providing loan	121	1	5	3.4463	1.31103	1.71880
Government's willingness to share risks'	121	1	5	3.7054	1.29325	1.67250
Political stability	121	1	5	4.2162	.78201	.61154
Political support and acceptability for PPPs	121	1	5	4.0833	1.09625	1.20176
Predictable currency exchange risk	121	1	5	3.7721	.68928	.47511
Prevalence of PPP dedicated public agency	121	1	5	3.7534	1.31003	1.71618
Prevalence of PPP specific policy, legal and regulatory framework	121	1	5	3.9751	1.21452	1.47506
Stable macro-economic conditions	121	1	5	3.9322	.82356	.67825
Tax exemption or reduction'	121	1	5	3.4930	.96902	.93914
Technical competence of contracting authority	121	1	5	3.7261	1.22527	1.50129
Valid N (listwise)	121					

c) Descriptive statistics for the “Barriers”

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Difficulty in obtaining foreign exchange/foreign exchange risk	121	1	5	3.8224	.74258	0.55143
Excessive participation restrictions	121	1	5	3.4133	.92471	0.85509
High participation costs and project costs	121	1	5	3.8062	.65412	0.42787
High risk relying on private sector	121	1	5	3.8170	1.31201	1.72137
Inadequate domestic capital market	121	1	5	3.9414	.92721	0.85972
Lack of confidence and mistrust in PPPs	121	1	5	3.7013	1.02639	1.05348
Lack of experience and expertise in both public and private sectors	121	1	5	3.9723	.81503	0.66427
Lack of strong political commitment for PPPs	121	1	5	3.5393	1.09125	1.19083
Lack of transparency and accountability	121	1	5	3.8741	.78171	0.61107
Lack of unified PPP management system at national level	121	1	5	3.5173	1.19320	1.42373
Lengthy delays because of political debate	121	1	5	3.7482	.61458	0.37771
Local institutions' inability to provide long-term finance	121	1	5	3.7980	1.20319	1.44767
Poor regulatory frameworks and enforcement	121	1	5	3.8314	.61032	0.37249
Public opposition	121	1	5	3.6423	.86358	0.74577
Societal discontent against the private sector	121	1	5	3.7610	.96909	0.93914
The absence of local government guarantees	121	1	5	3.8284	.62737	0.39359

Unclear government's decision-making process for PPP projects	121	1	5	3.5261	1.14720	1.31607
Weak institutional capacity and PPPs strategy	121	1	5	3.6572	1.31254	1.72276
Weak judicial framework/weak judiciary for resolving PPP disputes	121	1	5	3.4243	1.04021	1.08204
Valid N (listwise)	121					

d) Descriptive statistics for the “Measures”

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variation
Building expertise through trainings	121	1.00	5.00	3.9170	.83622	.69926
Developing domestic capital markets	121	1.00	5.00	3.6562	1.10785	1.22733
Developing institutional capacity and PPPs strategy	121	1.00	5.00	3.6271	.86951	.75605
Engaging local community in project development processes	121	1.00	5.00	3.5313	1.25404	1.25404
Establish Committed/responsible public and private sectors	121	1.00	5.00	3.5621	.96566	.93250
Establish strong political commitment for PPPs	121	1.00	5.00	3.6030	1.26894	1.61021
Forming operative regulatory framework and enforcement	121	1.00	5.00	3.8433	.78147	.61070
Government Providing guarantees	121	1.00	5.00	3.5152	1.17882	1.38962
Promotion of good governance	121	1.00	5.00	3.7762	1.08250	1.17181
Raise public awareness	121	1.00	5.00	3.5034	.98123	.96281
Setting clear government objectives, decision making process and evaluation criteria	121	1.00	5.00	3.5262	.93365	.87170

Setting clear timing and interval for political debate	121	1.00	5.00	3.5861	.81682	0.66719
Valid N (listwise)	121					

a) One-sample T-test result for the “Driving factors”

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Inability of public sector to assume all project risks	121	3.866	1.2699	.1154
Infrastructure demand that is increasing at a faster rate	121	3.634	.9075	.0825
Local economic development required	121	3.727	.9163	.083
Requirement for improved project scrutiny	121	3.421	1.1174	.1015
Requirement for improvements in the levels of services	121	3.750	1.0253	.0932
Scarcity in government funding	121	3.907	1.0249	.0931
Social strain on people due to poor road facilities	121	3.838	.8263	.0751
The demand for effective initiatives employing the skills and experience of the private sector	121	3.787	.9662	.0878
The need for Value For Money	121	3.594	1.2834	.1166
Traffic congestion reduction	121	3.566	1.1808	.1073
Whole of life cost savings required	121	3.662	1.2027	.1093

One-Sample Test

Test Value = 3.5

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Inability of public sector to assume all project risks	4.889	120	.000	.3661	.1822	.9731
Infrastructure demand that is increasing at a faster rate	3.381	120	.019	.1342	.0556	1.4275
Local economic development required	4.002	120	.002	.227	.1249	.7315
Requirement for improved project scrutiny	-1.949	120	.175	-.0788	-.3292	.9192
Requirement for improvements in the levels of services	3.757	120	.001	.2501	.0619	2.0244
Scarcity in government funding	4.902	120	.000	.4074	.2790	3.7151
Social strain on people due to poor road facilities	4.620	120	.000	.3381	.0071	.8485
The demand for effective initiatives employing the skills and experience of the private sector	4.005	120	.000	.287	.0683	1.7742
The need for Value For Money	3.006	120	.026	.0941	.0214	1.1965
Traffic congestion reduction	2.188	120	.031	.0663	.0035	1.6465
Whole of life cost savings required	3.482	120	.005	.1621	.0765	2.1691

b) One-sample T-test result for the “Desirable conditions”

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Adequate financial capacity of contracting authority	121	3.472	1.2732	.1157
Available and mature financial market	121	3.822	.9985	.0907
Competitive procurement process	121	3.851	1.3021	.1183
Existence of enabling policies	121	3.876	1.2781	.1161
Favorable existing economic policies	121	3.719	1.0071	.0915
Financial viability of projects	121	4.291	.8026	.0729
Government support in providing loan	121	3.446	1.3110	.1191
Government's willingness to share risks'	121	3.705	1.2932	.1175
Political stability	121	4.216	.7820	.0710
Political support and acceptability for PPPs	121	4.083	1.0962	.0996
Predictable currency exchange risk	121	3.772	.6892	.0626
Prevalence of PPP dedicated public agency	121	3.753	1.3100	.1190
Prevalence of PPP specific policy, legal and regulatory framework	121	3.975	1.2145	.1104
Stable macro-economic conditions	121	3.932	.8235	.0748
Tax exemption or reduction'	121	3.493	.9690	.0880
Technical competence of contracting authority	121	3.726	1.2252	.1113

One-Sample Test						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Adequate financial capacity of contracting authority	-1.921	120	.057	-.0275	-.3128	1.1573
Available and mature financial market	3.55	120	.007	.3222	.0852	2.3518
Competitive procurement process	5.060	120	.003	.3514	.1212	1.8085
Existence of enabling policies	4.981	120	.005	.3763	.0252	2.2895
Favorable existing economic policies	3.336	120	.030	.2195	.1447	1.2315
Financial viability of projects	7.248	120	.000	.7911	.2289	2.2375
Government support in providing loan	-1.842	120	.068	-.0534	-.3559	1.3235
Government's willingness to share risks'	2.609	120	.037	.2057	.0925	2.2185
Political stability	7.006	120	.000	.7165	.3214	2.1425
Political support and acceptability for PPPs	6.684	120	.000	.5834	.2078	1.8115
Predictable currency exchange risk	4.344	120	.009	.2722	.0925	1.7036
Prevalence of PPP dedicated public agency	3.617	120	.010	.2538	.1536	1.2778
Prevalence of PPP specific policy, legal and regulatory framework	5.966	120	.000	.4754	.1985	2.1885
Stable macro-economic conditions	5.839	120	.001	.4327	.2796	2.2045
Tax exemption or reduction'	-.296	120	.053	-.0075	-.9275	1.2322
Technical competence of contracting authority	4.384	120	.019	.2267	-1.2914	2.1127

c) One-sample T-test for the “Barriers”

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Difficulty in obtaining foreign exchange/foreign exchange risk	121	3.822	.7425	.0675
Excessive participation restrictions	121	3.413	.9247	.0840
High participation costs and project costs	121	3.806	.6541	.0594
High risk relying on private sector	121	3.817	1.3120	.1192
Inadequate domestic capital market	121	3.941	.9272	.0842
Lack of confidence and mistrust in PPPs	121	3.701	1.0263	.0933
Lack of experience and expertise in both public and private sectors	121	3.972	.8150	.0740
Lack of strong political commitment for PPPs	121	3.539	1.0912	.0992
Lack of transparency and accountability	121	3.874	.7817	.0710
Lack of unified PPP management system at national level	121	3.517	1.1932	.1084
Lengthy delays because of political debate	121	3.748	.6145	.0558
Local institutions' inability to provide long-term finance	121	3.798	1.2031	.1093
Poor regulatory frameworks and enforcement	121	3.831	.6103	.0554
Public opposition	121	3.642	.8635	.0785

Societal discontent against the private sector	121	3.761	.9690	.0880
The absence of local government guarantees	121	3.828	.6273	.0570
Unclear government's decision-making process for PPP projects	121	3.526	1.1472	.1042
Weak institutional capacity and PPPs strategy	121	3.657	1.3125	.1193
Weak judicial framework/weak judiciary for resolving PPP disputes	121	3.424	1.0402	.0945

One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Difficulty in obtaining foreign exchange/foreign exchange risk	4.436	120	.000	.3224	.1151	1.1565
Excessive participation restrictions	-1.649	120	.102	-.0867	-.0084	1.0525
High participation costs and project costs	3.844	120	.005	.3062	.1225	1.7619
High risk relying on private sector	3.589	120	.003	.317	.0955	2.3858
Inadequate domestic capital market	5.941	120	.000	.4414	.2452	1.2563
Lack of confidence and mistrust in PPPs	3.222	120	.014	.2013	.0985	1.2283
Lack of experience and expertise in both public and private sectors	6.872	120	.000	.4723	.1555	1.3282
Lack of strong political commitment for PPPs	2.332	120	.021	.03933	.0093	1.2251
Lack of transparency and accountability	5.018	120	.001	.3741	.1232	1.2214

Lack of unified PPP management system at national level	1.999	120	.048	.0173	.0032	1.2181
Lengthy delays because of political debate	2.577	120	.011	.2482	.1223	2.2001
Local institutions' inability to provide long-term finance	3.477	120	.005	.298	.1056	2.2567
Poor regulatory frameworks and enforcement	3.944	120	.001	.3314	.0119	1.1128
Public opposition	3.025	120	.023	.1423	.0095	1.9021
Societal discontent against the private sector	3.257	120	.008	.261	.0942	1.5143
The absence of local government guarantees	4.614	120	.002	.3284	.029	1.0157
Unclear government's decision-making process for PPP projects	2.110	120	.037	.0261	.0051	1.3511
Weak institutional capacity and PPPs strategy	3.147	120	.022	.1572	.0063	1.2315
Weak judicial framework/weak judiciary for resolving PPP disputes	-0.221	120	.052	-.0757	-1.2122	1.5891

d) One-sample T-test result for the Measures

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Building expertise through trainings	121	3.917	.8362	.0760
Developing domestic capital markets	121	3.656	1.1078	.1007
Developing institutional capacity and PPPs strategy	121	3.627	.8695	.0790
Engaging local community in project development processes	121	3.531	1.2540	.1140
Establish Committed/responsible public and private sectors	121	3.562	.9656	.0877
Establish strong political commitment for PPPs	121	3.603	1.2689	.1153
Forming operative regulatory framework and enforcement	121	3.843	.7814	.0710
Government Providing guarantees	121	3.515	1.1788	.1071
Promotion of good governance	121	3.776	1.0825	.0984
Raise public awareness	121	3.503	.9812	.0892
Setting clear government objectives, decision making process and evaluation criteria	121	3.526	.9336	.0848
Setting clear timing and interval for political debate	121	3.586	.8168	.0742

One-Sample Test

Test Value = 3.5

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Building expertise through trainings	6.113	120	.000	.417	.2731	2.1822
Developing domestic capital markets	4.257	120	.000	.1562	.0556	1.4275
Developing institutional capacity and PPPs strategy	5.758	120	.000	.1271	.0249	3.3315
Engaging local community in project development processes	2.987	120	.028	.0313	.0192	1.9392
Establish Committed/responsible public and private sectors	3.529	120	.011	.0621	.0261	1.3024
Establish strong political commitment for PPPs	3.687	120	.000	.103	.0490	2.1715
Forming operative regulatory framework and enforcement	4.821	120	.000	.3433	.0771	2.2485
Government Providing guarantees	2.827	120	.025	.0152	.0013	1.1774
Promotion of good governance	5.268	120	.000	.2762	.0543	2.1965
Raise public awareness	1.998	120	.021	.0034	.0015	.9465
Setting clear government objectives, decision making process and evaluation criteria	2.241	120	.036	.0262	.0065	1.1691
Setting clear timing and interval for political debate	4.065	120	.000	.0861	.0021	1.0147

a) Kendall's Coefficient of concordance result for the "Driving factors"

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Inability of public sector to assume all project risks, Infrastructure demand that is increasing at a faster rate, Local economic development required, Requirement for improved project scrutiny, Requirement for improvements in the levels of services, Scarcity in government funding, Social strain on people due to poor road facilities, The demand for effective initiatives employing the skills and experience of the private sector, The need for Value For Money, Traffic congestion reduction and Whole of life cost savings required are the same.	Related-Samples Kendall's Coefficient of Concordance	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Related-Samples Kendall's Coefficient of Concordance Summary

Total N	121
Kendall's W	.204
Test Statistic	246.84
Degree Of Freedom	10
Asymptotic Sig.(2-sided test)	.000

b) Kendall's Coefficient of concordance result for the "Desirable conditions"

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Adequate financial capacity of contracting authority, Available and mature financial market, Competitive procurement process, Existence of enabling policies, Favorable existing economic policies, Financial viability of projects, Government support in providing loan, Government's willingness to share risks', Political stability, Political support and acceptability for PPPs, Predictable currency exchange risk, Prevalence of PPP dedicated public agency, Prevalence of PPP specific policy, legal and regulatory framework, Stable macro-economic conditions, Tax exemption or reduction' and Technical competence of contracting authority are the same.	Related-Samples Kendall's Coefficient of Concordance	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Related-Samples Kendall's Coefficient of Concordance Summary

Total N	121
Kendall's W	.512
Test Statistic	929.284
Degree Of Freedom	15
Asymptotic Sig.(2-sided test)	.000

c) Kendall's coefficient of concordance result for "Barriers"

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Difficulty in obtaining foreign exchange/foreign exchange risk, Excessive participation restrictions, High participation costs and project costs, High risk relying on private sector, Inadequate domestic capital market, Lack of confidence and mistrust in PPPs, Lack of experience and expertise in both public and private sectors, Lack of strong political commitment for PPPs, Lack of transparency and accountability, Lack of unified PPP management system at national level, Lengthy delays because of political debate, Local institutions' inability to provide long-term finance, Poor regulatory frameworks and enforcement, Public opposition, Societal discontent against the private sector, The absence of local government guarantees, Unclear government's decision-making process for PPP projects, Weak institutional capacity and PPPs strategy, Weak judicial framework/weak judiciary for resolving PPP disputes are the same.	Related-Samples Kendall's Coefficient of Concordance	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Related-Samples Kendall's Coefficient of Concordance Summary

Total N	121
Kendall's W	.317
Test Statistic	690.426
Degree Of Freedom	18
Asymptotic Sig.(2-sided test)	.000

d) Kendall's coefficient of concordance result for "Measures"

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Building expertise through trainings, Developing domestic capital markets, Developing institutional capacity and PPPs strategy, Engaging local community in project development processes, Establish Committed/responsible public and private sectors, Establish strong political commitment for PPPs, Forming operative regulatory framework and enforcement, Government Providing guarantees, Promotion of good governance, Raise public awareness, Setting clear government objectives, decision making process and evaluation criteria, and Setting clear timing and interval for political debate are the same.	Related-Samples Kendall's Coefficient of Concordance	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Related-Samples Kendall's Coefficient of Concordance Summary

Total N	121
Kendall's W	.214
Test Statistic	284.834
Degree Of Freedom	11
Asymptotic Sig.(2-sided test)	.000

a) Reliability test for "Driving factors"

Case Processing Summary

		N	%
Cases	Valid	121	100.0
	Excluded ^a	0	.0
	Total	121	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.832	.832	11

b) Reliability test for “Desirable conditions”

Case Processing Summary

		N	%
Cases	Valid	121	100.0
	Excluded ^a	0	.0
	Total	121	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.913	.913	16

c) Reliability test for “Barriers”

Case Processing Summary

		N	%
Cases	Valid	121	100.0
	Excluded ^a	0	.0
	Total	121	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.870	.870	19

d) Reliability test for “Measures”

Case Processing Summary

		N	%
Cases	Valid	121	100.0
	Excluded ^a	0	.0
	Total	121	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.809	.809	12

Sample size determination at 95% confidence level

Population Size	Sample Size per Margin of Error		
	$\pm 3\%$	$\pm 5\%$	$\pm 10\%$
500	345	220	80
1,000	525	285	90
3,000	810	350	100
5,000	910	370	100
10,000	1,000	385	100
100,000+	1,100	400	100

Critical values (percentiles) for the chi-square distribution

	<i>Percentage</i>								
	<i>2.5</i>	<i>5</i>	<i>50</i>	<i>75</i>	<i>90</i>	<i>95</i>	<i>97.5</i>	<i>99</i>	<i>99.9</i>
<i>D</i>	<i>Upper one-sided α</i>								
	<i>.975</i>	<i>.95</i>	<i>.50</i>	<i>.25</i>	<i>.10</i>	<i>.05</i>	<i>.025</i>	<i>.01</i>	<i>.001</i>
1	.001	.004	.455	1.32	2.71	3.84	5.02	6.63	10.83
2	.051	.103	1.39	2.77	4.61	5.99	7.38	9.21	13.82
3	.216	.352	2.37	4.11	6.25	7.82	9.35	11.34	16.27
4	.484	.711	3.36	5.39	7.78	9.49	11.14	13.28	18.47
5	.831	1.15	4.35	6.63	9.24	11.07	12.83	15.09	20.52
6	1.24	1.64	5.35	7.84	10.64	12.59	14.45	16.81	22.46
7	1.69	2.17	6.35	9.04	12.02	14.07	16.01	18.47	24.32
8	2.18	2.73	7.34	10.22	13.36	15.51	17.53	20.09	26.12
9	2.70	3.33	8.34	11.39	14.68	16.92	19.02	21.67	27.88
10	3.25	3.94	9.34	12.55	15.99	18.31	20.48	23.21	29.59
11	3.82	4.57	10.34	13.70	17.27	19.68	21.92	24.72	31.26
12	4.40	5.23	11.34	14.85	18.55	21.03	23.34	26.22	32.91
13	5.01	5.89	12.34	15.98	19.81	22.36	24.74	27.69	34.53
14	5.63	6.57	13.34	17.12	21.06	23.68	26.12	29.14	36.12
15	6.26	7.26	14.34	18.25	22.31	25.00	27.49	30.58	37.70
16	6.91	7.96	15.34	19.37	23.54	26.30	28.85	32.00	39.25
17	7.56	8.67	16.34	20.49	24.77	27.59	30.19	33.41	40.79
18	8.23	9.39	17.34	21.60	25.99	28.87	31.53	34.81	42.31
19	8.91	10.12	18.34	22.72	27.20	30.14	32.85	36.19	43.82
20	9.59	10.85	19.34	23.83	28.41	31.41	34.17	37.57	45.31
21	10.28	11.59	20.34	24.93	29.62	32.67	35.48	38.93	46.80
22	10.98	12.34	21.34	26.04	30.81	33.92	36.78	40.29	48.27
23	11.69	13.09	22.34	27.14	32.01	35.17	38.08	41.64	49.73
24	12.40	13.85	23.34	28.24	33.20	36.42	39.36	42.98	51.18
25	13.12	14.61	24.34	29.34	34.38	37.65	40.65	44.31	52.62
26	13.84	15.38	25.34	30.43	35.56	38.89	41.92	45.64	54.05
27	14.57	16.15	26.34	31.53	36.74	40.11	43.19	46.96	55.48
28	15.31	16.93	27.34	32.62	37.92	41.34	44.46	48.28	56.89
29	16.05	17.71	28.34	33.71	39.09	42.56	45.72	49.59	58.30
30	16.79	18.49	29.34	34.80	40.26	43.77	46.98	50.89	59.70
35	20.57	22.47	34.34	40.22	46.06	49.80	53.20	57.34	66.62
40	24.43	26.51	39.34	45.62	51.81	55.76	59.34	63.69	73.40
45	28.37	30.61	44.34	50.98	57.51	61.66	65.41	69.96	80.08
50	32.36	34.76	49.33	56.33	63.17	67.50	71.42	76.15	86.66