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THE DEVELOPMENT OF A BIDDING AND AWARD PROCESS MAP FOR ROAD PPP PROJECTS IN GHANA

Submitted in Partial Fulfilment of the Requirements of the Degree of Doctor of Philosophy

University of Salford

School of the Built Environment

JARVIS TORNAM TCHORLY

@00350908

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Dedication

I dedicate this thesis to the Almighty God and my Parents.

Declaration

This thesis is submitted under the University of Salford rules and regulations for the award of a PhD degree by research.

I, Jarvis Tornam Tchorly declare that I am responsible for the work carried out in this thesis. Furthermore, I wish to state that no portion of the work referred to in this thesis has been submitted elsewhere for another degree qualification of this, or any other university.

Jarvis Tornam Tchorly
July, 20

List of Abbreviations

ABBREVIATIONS	MEANINGS
AIIB	Asian Infrastructure Investment Bank
ATP	Ability to Pay
BAFO	Best And Final Offer
BAPM	Bidding and Award Process Map
BOOT	Build Own Operate Transfer
BOQ	Bill of Quantities
BOT	Build Operate Transfer
BSI	British Standards Institute
BSS	Build System Selection
CAPEX	Capital Expenditure
CC	Concession Contract
CEO	Chief Executive Officer
CHSF	Caen and Centre Hositalier Sud Francilien
CI	Critical Infrastructure
COO	Chief Operating Officer
CSFs	Critical Success Factors
CP	Conditions Precedent
DCE	District Chief Executives
ECA	European Court of Auditors
EFL	External Financing Limit
EFP	Equity Financing Plan
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EOI	Expression of Interest

EPA	Environmental Protection Agency
EPC	Engineering, Procurement and Construction
EPEC	European PPP Expertise Centre
ESIA	Environmental and Social Impact Assessment
EU	European Union
FCM	Federation of Canadian Municipalities
GA	Granting Authority
GCI	Ghanaian Construction Industry
GDP	Gross Domestic Product
GPS	Ghana Police Service
GOG	Government of Ghana
GTAC	Government Technical Advisory Centre
HM	Her Majesty
ICRC	Infrastructure Concession Regulatory Commission
IFRS	International Financial Reporting Standards
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IPA	Infrastructure and Projects Authority
JV	Joint Venture
KPIs	Key Performance Indicators
LCC	Life Cycle Costing
MDA	Ministries, Departments, and Agencies
MERA	Multiple Estimating using Risk Analysis
MOF	Ministry of Finance
MOFEP	Ministry of Finance and Economic Planning
MMDAs	Metropolitan Municipal and District Assemblies

MRH	Ministry of Roads and Highways
MTTD	Motor Transport and Traffic Directorate
NAO	National Audit Office
NEDC	National Economic Development Council
NHAI	National Highway Authority of India
NPV	Net Present Value
NRSC	National Road Safety Commission
O & M	Operation and Maintenance
OECD	Organisation for Economic Co-operation and Development
OGC	Office of Government Commerce
OJEU	Official Journal of the European Union
PDC	Project Development Contract
PEI	Prince Edward Island
PFI	Public Finance Initiatives
PFU	Public Finance Unit
PF2	Private Finance 2
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public Private Partnership
PRG	Project Review Group
PSBR	Public Sector Borrowing Requirement
PSC	Public Sector Comparator
PSP	Private Sector Participation
PSNI	Public Sector Net Investment
PV	Present Value
PWC	PriceWaterhouse Coopers
RFP	Request for Proposal

RFQ	Request for Qualifications
RICS	Royal Institute of Chartered Surveyors
RM	Risk Management
RPPPs	Road Public-Private Partnerships
SCDI	Strait Crossing Development Inc.
SOPC	Standardisation of PFI Contracts
SOEs	State Owned Enterprises
SPV	Special Purpose Vehicle
STS	Socio-Technical Systems
TA	Technical Advisory
TASU	Transaction Advisory Service Unit
TIFU	The Infrastructure Finance Unit
TOR	Terms of Reference
UNDESA	United Nations Department of Economic and Social Affairs
VFM	Value for Money
WB	World Bank
WLCC	Whole life Cycle Costing
WTP	Willingness to Pay

Abstract

Road infrastructure plays a direct role in poverty reduction and income generation, as it supports all other sectors of the economy. However, the financial constraints of the emerging economy restrict the construction, maintenance and rehabilitation of Ghana's roads resulting in dire consequences. It has recently become necessary for private sector participation in the supply of this critical infrastructure to lessen the economic challenges of the country. However, very little has been accomplished in this regard due to scepticism, bankability issues, lack of standardised structures among others.

This thesis initially reviews the extent to which PPPs have contributed in the supply of road infrastructure globally to inform the nascent Ghanaian Road PPP (RPPP) industry. A critical analysis of global PPP implementation accentuated the need for the institutionalisation of a central PPP unit, a legal and political regulatory framework as well as the need for periodic reviews of the procurement method. This study however focused on the development of a Bidding and Award Process Map (BAPM) which standardises the bidding process and criteria of respective stages for the competitive procurement of these Public-Private Partnerships (PPPs) in the road sector. A typical PPP bidding structure was developed as a result of an extensive literature review which was tested in the Ghanaian context to develop the BAPM. The research highlights that evaluation criteria and bidding processes are context specific as the socio-economic factors and cultural factors underpinning specific jurisdictions are not constant.

The stakeholder theory was the main theory that underpinned this research, identifying and engaging stakeholders in a Ghanaian context. The Socio-Technical Systems (STS) theory provided the context with which this inquiry was conducted. This research identified the inter-dependencies of both theories in the investigation of the PPP procurement process. A qualitative study involving eighty-one semi-structured interviews was engaged among the identified stakeholders. The developed BAPM constituted a standard process from the official notice of the road project to signing of contracts with respective qualification criteria for each stage. The major stages of the bidding process were however: the Expression of Interest (EOI) stage, the Request for Qualification (RFQ) stage and; the Request for Proposal (RFP) stage. It is recommended that the BAPM is fully utilised to streamline and enhance the procurement of road infrastructure PPP projects amidst the current procurement challenges. This will go a long way to enhance the realisation of the much-needed socio-economic benefits of this infrastructure.

Chapter 1 Thesis Introduction

1.1 Chapter Introduction

This chapter introduces the context of this study. It commences with a review of the research study's background and proceeds to present a rationale for the research. Subsequently, the research questions are highlighted. The rest of the chapter is structured as follows:

- Aim and objectives of the study;
- Relationship between research questions and research objectives;
- Brief description of research methodology;
- Limitations and de-limitations of the research;
- Research structure;
- Chapter summary.

1.2 Research Background

1.2.1 Public-Private Partnership (PPP)

PPPs involve the integration of the public and private sector in an undertaking to achieve a common goal or project. The European Investment Bank (EIB) (2016) defines PPP as a generic term for the relationships formed between the private sector and the public bodies often with the aim of introducing private sector resources and/or expertise in order to provide and deliver public sector assets and services. Similarly, Eaton and Sundaraj (2013) state that it is a means of procuring public sector infrastructure and services using private sector finance and expertise. Korayem (2017) states that private sector participation in the development of economies and infrastructure around the world has significantly increased over the past decades. Many governments of both matured and emerging economies are engaged in partnerships with private sector entities as a prudent means to improve the supply of public infrastructure. Many studies have been conducted regarding governments' inability to raise massive funds for large-scale infrastructure projects that can be mitigated by private participation (Ross & Yan, 2015) Akintoye et al. (2011) argue that PPP is commonly used to accelerate economic growth, development and infrastructure delivery as well as to achieve quality service delivery and good governance. Cheung and Chan (2011) argue that the essence of PPP/PFI is the provision of a public service funded by private capital. The philosophy behind these partnerships was the intention to transform government departments from being owners and operators of assets into

the purchasers of services from the private sector (De Lamos et al., 2003). PPP is perceived as the most attractive procurement method in terms of its positive factors relating to better project technology, greater public benefit, public sector avoidance of regulatory and financial constraints, and public sector saving in transaction costs (Liu et al., 2014). The two issues that need to be considered within government are whether off-budget financing per se is less of a burden on the economy than public financing and whether private financing affects the cost of risk (Ng et al., 2012).

PPPs have gradually gained recognition as an effective way of delivering Value for Money (VFM) in the provision of public infrastructure and services (EIB, 2015). Ofori (2017) postulates a significantly lower cost in implementing PPP projects. Chowdhury et al., (2011) maintain that since PPP stimulates private sector efficiency, total project cost is reduced. In the UK for instance, PPP projects are delivered on budget three times more than non-PPP projects (National Audit Office, 2008; Eaton, 2013). Thus, it goes a long way to solve public sector budgetary allocations and cash restraints (Akintoye et al., 2011). Again, it is a preferred form of financial mechanism which has emerged to prevent the classification of financing arrangements as debt (Mysiorski, 2013). Yarygina (2014) postulates that this non-resource financing system is an integral part of PPP procurement and improves cash flow management. In the UK, this procurement route offered a sustainable solution to the issue of securing necessary investment at a time where there was severe public expenditure restraint (Akintoye et al., 2011). Roehrich et al. (2014) argue that the thrust of the PPP was not only to replace the provision of public services by government departments but also a means of financial support. It is an objective to attract private sector funds, resources, management skills, expertise and innovation to the provision of public sector infrastructure and services (ibid). HM Treasury (2012) states that the British government has used the model to finance the modernisation of Britain's ageing public and social infrastructure, including roads, prisons, hospitals and schools. PPP is also expected to offer benefits by countering some of the negative aspects in public project delivery: over-design, poor project management, time and cost overruns, over degradation of assets, higher maintenance and operation costs, and lower asset residual values (Babatunde, 2015).

Liu et al. (2014) argue that PPP is regarded as a means of raising additional funds for infrastructure investments but more importantly as a means to extend or leverage better budget funding through efficiency gains. They have led to the development of local capital and debt

markets and improved procurement of the public sector (ibid). Governments around the world, especially developed economies have therefore utilised the procurement route to reduce the strain on their respective budgets and utilised the private sector in delivering efficiency of public assets. Although, there are major PPP projects that have been implemented or are being implemented around the world, challenges of the model have made major projects complicated and problematic. There have been reported cases of problems associated with the initial stages of the process in terms of unduly high bidding costs and pre-contract time overruns due mainly to the protracted nature of the negotiations (European Court of Auditors, 2018). Some projects are characterised by controversies, revocation of concession agreements and massive failures resulting in loss of scarce resources (IMF, 2015). Liu et al. (2014) argue that countries that have a strong public policy and welfare policy have major difficulties in adapting to the PPP model. The lack of public sector structures and policies in PPP implementation also adversely affect successful project delivery (EIB, 2016). Gunnigan and Rajput (2010) argue that it is a political argument for the government to privately finance capital spending to get the expenditure off budget. However, this could not be the case as it is established that constraints of public financing do not apply to private financing (Farquharson & Javier, 2010). The government constrains its borrowing because of concerns about future taxation, demand in the economy, effects on the cost of borrowing, and the need for flexibility to respond to shocks (Mysiorski, 2013). Also, Osei Kyei and Chan (2015) argue that any claim of lasting macroeconomic gain is incorrect since liabilities to service PPP contracts are as binding as the servicing of conventional government debt. There have undoubtedly been challenges and issues of PPP implementation that have resulted in massive financial loss notwithstanding the serious impact PPP has had on public infrastructure delivery. It is critical therefore to engage best practice and critical factors necessary for enhancing the procurement route in the maximisation of its benefits (Akintoye et al., 2011).

1.2.2 The Justification and Emergence of Road PPP in Ghana

The Ministry of Roads and Highways (MRH) (2018) states that Ghana's road sector plays a direct role in poverty reduction, fostering regional integration and enhancing economic development by facilitating income generation activities linked to agriculture and all other sectors. However, due to the lack of financial resources and adequate planning, the sector is bedevilled with serious challenges (World Bank, 2015). Jedwab and Moradi (2012) argue that due to inadequate road maintenance in the past, substantial backlog of road maintenance works have developed. This includes not only periodic and routine maintenance but also rehabilitation

works (Owusu-Bio et. al., 2016). Tolls are the most significant source of revenue generation in this sector which is accumulated in the Road Fund. The revenue from this does not meet the demands of the sector considering the immense benefits of roads in the country (World Bank, 2015). The budget allocation for roads, and the total revenue of the road fund are deficit oriented and inadequate to solve the sector's issues (Asamoah & Decardi-Nelson, 2014). The World Bank (2015) asserts that efficient road networks will provide economic benefits that will result in multiplier effects such as better accessibility to markets and employment since citizens who are deprived of transportation infrastructure miss out on several economic opportunities. The Government of Ghana (GOG), (2018) state that it will also go a long way to reduce cost and comparative distances between trading partners, thereby increasing trade effectiveness and maximising returns on existing industrial investments, increasing Gross Domestic Product (GDP) and subsequently improving the economy. The road conditions, surface and overall infrastructure capacity need to be improved using financially sustainable approaches (NRSC, 2018). In the absence of this, the state of road infrastructure in Ghana is poor, causes avoidable deaths and impedes economic and social development, hence a critical need to ameliorate the situation (PWC, 2015).

The foundation of economic growth around the world has been in tandem with infrastructure development which is deemed as the catalyst for the provision of favourable conditions and stability of the economy (Akintoye et al., 2011). However, population growth and its respective demand for infrastructure development as well as the maintenance of existing infrastructure have been a major challenge for not only developing countries but developed countries around the world (World Bank, 2015). The Ministry of Finance and Economic Planning (MOFEP) (2017) state that the depreciation of the Ghanaian currency (cedi), high interest rate and inflation rates, and the high debt to GDP ratio cause major fiscal constraints that restrict the GOG from investing in road infrastructure. The macro-economic instability in Ghana directs an ad-hoc approach to solving this critical problem. For instance, as a result of the limited financial resources in this sector, only certain portions of roads are rehabilitated, hence traffic lessened in one area only builds up in another (MRH, 2018). It is crucial to engage private resources to develop and maintain Ghana's roads to create and sustain an accessible, effective and efficient transport network that meets users' needs (Owusu-Bio et. al., 2016; Government of Ghana, 2018). The government is working to integrate land use, transport planning, development planning and service provision as well as create a vibrant investment and performance-based management environment through the sector ministry to maximize benefits

of private sector investors (Jedwab & Moradi, 2012). There is an urgency to develop, implement and integrate policies to encourage private sector participation and ensure sustainable development in the road sector (ibid). The GOG subsequently adopted PPP in 2011 when a national PPP policy was enacted (MOFEP, 2011).

The wherewithal of achieving effective implementation in road PPP projects, taking into account its associated financial challenges is therefore an important step that needs serious attention in especially emerging economies such as Ghana that are relatively new in the adoption of PPP. PPPs improve project procurement environments by changing traditionally adversarial scenarios to partnerships that integrate finance, design, construction and operation. Many countries are still inexperienced in the complexities and implications of PPPs, however, the growing body of multi-country experiences in this domain need to be tapped through comparison and benchmarking (Osei-Kyei & Chan, 2015). Ghana is still at the early stages of the implementation of PPP with very few pilot projects at various levels of implementation across all sectors. The relatively novel procurement model requires constant review and evaluation for effective implementation to ensure success of road PPP projects. Despite the urgency of the PPP policy by the government and its driven significance in the country, it is important to acknowledge effective implementation and factors that will ensure this. The benefits of successful implementation of road PPP in Ghana will not only be immense to the economy of Ghana but also the country's social development.

1.3 Research Rationale

There has been a development of immense interest from several local and international construction firms after the adoption of PPP by the Government of Ghana (GOG). Despite the increasing awareness of PPP schemes in Ghana and the merits associated with it, there are still certain features that are weak and unclear (Osei-Kyei & Chan, 2015). Some of these challenges include perceived corruption and bias (Asamoah & Decardi-Nelson, 2014); bankability of projects and lack of identified criteria or specifications for prospective bidding contractors (MOFEP, 2015); the lack of transparency in the procurement process (Osei-Kyei & Chan, 2015). Two road PPP projects: Accra-Takoradi Dualization project and Accra-Kumasi Toll Road Project, were considered as pilot projects for the road sector in Ghana (MOFEP, 2014). MOFEP (2014) states that these projects were subjected to a restrictive tendering process because of the lack of interest of private sector entities. Babatunde (2015) argues that restrictive

tendering may undermine the realisation of the benefits of PPP. Ofori (2017) argues that the lack of private sector interest in the country is as a result of scepticism regarding bankability of PPP in road infrastructure delivery and the lack of transparency in the procurement system. Road contractors have been disinterested as a result of the lack of transparency in the award of contracts and the procurement breaches (Ofori, 2017). Majorly as a result of this, no other road projects have been procured under the PPP arrangement as a result (World Bank Group, 2019). Dagon and Schrag (2017) argue that some controversy around failed PPPs stem from governments around the world granting exclusive development rights to private proponents without a transparent tendering process. Failures of PPP contracts are often related to the procurement procedure (Alotaibi, 2016).

The bidding decision is the first stage of commitment to a project and has several implications of whether or not the project will be successful (Bageis, 2008; Zin Zawawi, 2014). Dinapoli, (2014) argues that the bidding process is often described as systematic, but it is rather complex and non-linear when ensuring effectiveness of the process. The bidding stage is a crucial step in the procurement process and strategic for the development and implementation of any PPP project (Alotaibi, 2016). The procurement process in choosing the private partner is a key issue for the success of a PPP project (Dagon & Schrag, 2017). The bid process is a key issue for the success of a PPP project (EIB, 2015). Experience shows that failures of PPP contracts are often related to the procurement procedure (EIB, 2015; EIB, 2017). In addition to transparency and fairness, which are essential in any bidding process, appropriate procedure consideration reduces the likelihood of problems arising in the future. Martins et al. (2011) argue that problems that typically arise are:

- Partners sign incomplete contracts that lack clear responsibilities for particular activities;
- The winning bidder is not necessarily the best partner. Due to 'lowballing' (i.e. submitting particularly attractive bids in the expectation that there will be ex-post renegotiation after contract award) and after strategic renegotiation the preferred bidders do not correspond to the best offers;
- The contract results in inappropriate or inadequate risk allocation;
- The bid documents inadequately account for contract management i.e., ex-post supervision and regulatory arrangements.

The strategic decision of bidding affects all project phases and results in either the success or failure of the project (Alotaibi, 2016). This is even more critical when the country is in the early stages of PPP development as this could determine not only the success of the project but the success and impact of the PPP model. In Ghana, several pilot projects in other sectors have collapsed after a few years of operation due to restrictive tendering and ineffective contractual arrangements (Apenteng, 2013). An example of this is the Teshie desalination water project which involved the desalination of sea water for domestic use in the Teshie township. PPP implementation has generally stalled for almost a decade with very few uncompleted pilot projects as a result. The procurement stage as stipulated in the National PPP policy does not identify the bidding criteria or the bid process. It is important to determine an appropriate process for selecting road PPP contractors in Ghana which will standardise the process and ensure transparency. In addition to transparency and fairness, which are essential in any bidding process, appropriate procedures can reduce the likelihood of problems arising in the future (Raisbeck, & Tang, 2013). Ross and Yan (2015) state that a major cause of PPP failure is the lack of competition in the procurement process. Roehrich et al. (2014) argue that competition in the procurement process provides VFM for the project which is frequently the justification for the PPP option. The National PPP policy stipulates that as much as feasible, all PPP projects should be subjected to a competitive procurement process so as to obtain VFM and efficiency (MOFEP, 2011). Consequently, one of the principles according to the National PPP maintains that there must be (MOFEP, 2011):

> *A well-defined procurement process for the PPP. Instructions to bidders must be clear and unambiguous to prevent manipulation or abuse of the process. The bid conditions and evaluation criteria must lead to the attainment of value for money, economy, and efficiency and must be made available to all interested private sector parties.*

A major challenge has therefore been the identification of a standard bidding process which outlines a preferred bidders' criteria to promote transparency and competitiveness for both the public interest and prospective bidders. This will enhance the successful and competitive procurement of Ghanaian road projects and individual project success. Bidding strategy is one of the most significant discussions in the construction management field (Zin Zawawi, 2014). There is a dearth of research that details PPP preferred bidder criteria in contractor or private

sector party selection and respective evaluation criteria. However, there is some research that detail bid or no bid decision from a contractor's perspective like Zin Zawawi (2014) and Alotaibi (2016) where a model is developed on set criteria to help contractors decide to bid for a project or not. Critical Success Factors (CSFs) of PPP implementation have indicated the selection of the right contractor as critical (Cheung et al., 2011; Alotaibi, 2016). Raisbeck and Tang (2013) argue contractor ability and contractor selection are critical in the successful delivery of projects. There is the need to investigate and determine an applicable approach regarding the procurement of road PPP projects suitable for the developing country, Ghana. It is important to avoid subjective decision making from individuals as a result of the lack of transparency and standardisation (Ng et al., 2012). Although certain developed countries have standardised PPP bidding processes, it will be inapplicable to other jurisdictions considering its culture and other social factors as well as evaluation criteria which will be context dependent. This highlights that there is no single model for bidding decision.

A standardised bidding process also requires award criteria or a qualification criterion for individual stages especially for the preferred bidder stage, prior to the award of contracts. Individual stages in the bidding process are evaluated by a set of criteria which must be known. A criterion for decision-making is defined as a discipline, rule, principle or standard which can be evaluated and judged (Hayword & Sparkes, 1990). Many studies have developed several sets of criteria for contractor selection which have also been largely context specific. Contractors' ability to succeed in the project must be assessed through diverse inherent attributes ranging from project complexity, technical expertise to organisational capability and risk management practices (Alotaibi, 2016). Traditionally, public procurement in the developing country Ghana has considered proposed costs of projects in bids as the most important factor in selecting contractors (Asamoah & Decardi-Nelson, 2014). Alotaibi (2016) argue that choosing the cheapest tender price may lead to a practice of false economy and grounds for poor performance, lower quality as well as disputes and unnecessary claims. Cheung et al. (2011) maintain that accessing the contractor's capabilities to meet the standard requirements allows contracts to be awarded to suitable contractors to achieve project success. Osei-Kyei and Chan (2015) argue that bidding criteria in PPP include effective risk management; meeting output specifications; reliable and quality service operations; adherence to time; satisfying the need for public facility/service; long-term relationship and partnership; and profitability.

PPP bidding criteria however involves a combination of factors and is dependent on the nature of the sector as well as the jurisdiction (Alotaibi, 2016). According to the approval IIIB stage of the Ghanaian National PPP policy, the winning bidder must demonstrate how the criteria of technical, operational and financial risk transfer and risk allocation, affordability and VFM are engaged prior to the award of contracts (MOFEP, 2011). The determination of the winning bidder is therefore hinged on the criteria: VFM, Affordability and Risk Management (RM). However, there has been little or no research on parameters of the concepts of risk allocation and transfer, affordability and VFM for the sole purpose of contractor selection or qualification of bidders. The identification of parameters under these concepts is important in identifying a preferred bidder before the final approval stage of the PPP procurement process in Ghana. Eaton (2013) defines RM as a process which integrates recognition of risk, risk assessment and its mitigation strategies. One major reason that projects are procured by PPPs is to enhance VFM by inviting the private sector to handle public works projects (Liu et al., 2014). This research focuses on developing a Bidding and Award Process Map (BAPM) for road PPP projects in Ghana. This will detail distinct stages of the bidding process, respective qualification that is necessary for advancement of successive stages and the parameters for preferred bidders' criteria at the stage prior to the award and signing of contracts.

1.4 Research Questions

a) How has PPP been beneficial to the delivery of road infrastructure around the world?

b) What are the processes and criteria for bidding?

c) What are the challenges of the road PPP procurement process in Ghana?

d) What are the parameters considered in the preferred bidders' criteria of road PPP projects in Ghana?

e) What is the process of bidding in the Ghanaian road PPP context and how can this be structured and improved for benefits of transparency and competition?

1.5 Aim

The aim of this study is to develop a Bidding and Award Process Map (BAPM) for ensuring competitive procurement of road infrastructure PPP projects in Ghana.

1.6 Objectives

1. To critically review literature on global PPP implementation to evaluate the extent of PPP as a financial model for road infrastructure delivery;

2. To review literature on bid processes/criteria and investigate challenges to the road PPP procurement process in Ghana;

3. To establish Value for Money, Affordability and Risk Transfer parameters for preferred bidder's appraisal at the Approval IIIB stage of PPP procurement in Ghana;

4. To establish stages of bidding processes and descriptive evaluation criteria for road PPP projects in the Ghanaian context.

1.7 Relationship between Research Objectives and Research Questions

Table 1. 1 shows the relationship between the underlying research questions and objectives of the study.

RESEARCH QUESTIONS	RESEARCH OBJECTIVES
Has PPP been beneficial to the delivery of road infrastructure around the world?	To critically review literature on global PPP implementation to evaluate the extent of PPP as a financial model for road infrastructure delivery.
What are the processes and criteria for bidding?	To review literature on bid processes/criteria and investigate challenges to the road PPP procurement process in Ghana.

What are the challenges of the road PPP procurement process in Ghana?	
What are the parameters considered in the preferred bidders' criteria of road PPP projects in Ghana?	To establish Value for Money, Affordability and Risk Transfer parameters for preferred bidder's appraisal at the Approval IIIB stage of PPP procurement in Ghana.
What is the process of bidding in the Ghanaian road PPP context and how can this be structured and improved for benefits of transparency and competition?	To develop descriptive evaluation criteria and bid process for road PPP projects in the Ghanaian context.

1.8 Brief description of Research Methodology

The research commenced with a critical review of literature on the PPP subject matter and related topics contributing to the aim of this study. This review of literature presented a theoretical insight and a foundation upon which this research was built. In the process, the Socio-Technical Systems (STS) theory, which advocates for the consideration of social factors including human capacity and culture of the context or environment in the introduction of new processes in that environment was engaged as it complemented the need of considering the particular context or environment in question for the development or introduction of the BAPM. As a result, the institutional theory, legitimacy theory, contingency theory, public choice theory and the x-efficiency theory were engaged to understand the underpinning unique factors and challenges of the public sector in Ghana accordingly.

The stakeholder theory however was the main theory engaged in this research. A stakeholder approach firstly identified key stakeholders of road PPP in Ghana relative to this research and sought multi-stakeholder perspectives in the development of the BAPM. To achieve the objectives of this research and ultimately the aim of this study, a qualitative survey was adopted among these key stakeholders with a total of 81 interviews. The qualitative inquiry as a reflective process underscores the strengths of a qualitative approach and provides methods for representing the details of the social and cultural aspects of individuals' lives (Geertz, 1973). The initial survey employed semi-structured interviews which were engaged among key players who were instrumental in the adoption of PPP in Ghana. This was necessary to ascertain the viability and practicality of concepts of the preferred bidders' criteria identified from the

National PPP policy and investigate challenges of the PPP implementation in Ghana. The challenges of the bidding process of road PPP projects in Ghana were identified via an engagement of professionals in the Ministry of Roads and Highways (MRH) who dealt directly in the bidding of road projects.

Subsequently, another group of stakeholders (PPP approval committee in Ghana) and professionals of the two road PPP projects in Ghana which served as point of entry for data collection were engaged to identify the parameters of which the preferred bidders' criteria were appraised. This involved an iterative process in identifying specific risks, mitigation measures and risk transfer and allocation parameters as well as a VFM assessment approach. The individual stages of the PPP bidding processes were then developed from engagements with all these groups of stakeholders. The four identified group of stakeholders and the research instrument engaged among them are categorised into Technique 1-4. This was critical in understanding not only the bidding process but the qualification of respective stages which led to the development and proposal of the BAPM for road PPP projects in Ghana. This was in line with the Abductive Research Strategy (ARS) adopted for this research. Figure 1.1 illustrates an overview of theories engaged in this research. Chapter 4 however presents an in-depth justification of the methodology of this study.

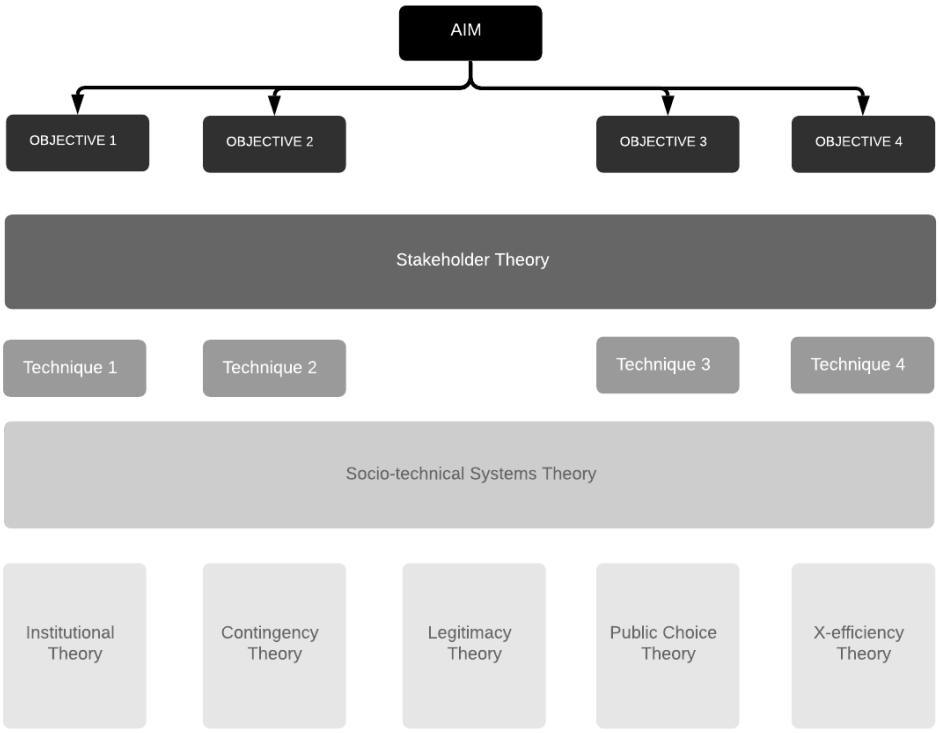


Figure 1.1 - Overview of theories engaged in the research

1.9 Research Limitations and De-Limitations

Overall, the significant constraint of this research is the dearth of data in the implementation of PPP in Ghana as a result of the novelty of the financial model. As a relatively new model, there are challenges of making some data accessible due to the scepticism attached to the viability of the PPP model especially in the road sector and the limited existing data. This is very critical as some projects may have been procured and implemented under certain distinct legal frameworks as the PPP bill has not been passed. Similarly, although PPP involves the public and the private sector, the public sector entity is mainly responsible for implementation. Hence, the development of aim and objectives of this research required research instruments that engaged government officials at the helm of affairs, taking into account the scepticism usually attached to data collection amongst government officials or politicians. There is also a risk of exclusion where government officials participating in the survey may be removed from their current positions or a likelihood of change in government before the end of this research. This research is fundamentally based on enhancing successful implementation of PPP road projects in Ghana. The focus of this research is the bidding of road PPP projects; hence stakeholders of the supply chain or end users were not engaged. Politicians responsible for shaping and making policies, public/civil service responsible for implementing the policies, consultants who advise the civil service and road contractors formed the groups of stakeholders engaged in this research. Gaining access to the interviewees was a constraint because of their positions in respective public offices and private capacities. The public officers mainly involved people at the helm of affairs hence securing interview dates were relatively more difficult. Owing to the fact that some of these interviewees from the private sector were senior managers and chief executives in their respective organisations, it was also difficult in trying to secure time slots for interviews and discussing their experiences on such strategic projects that were constantly under public scrutiny. However, this constraint was eased through good contacts the researcher had developed over the years in political circles.

Lastly, the road sub-sector of the transportation sector in Ghana is the focus of this research, therefore the parameters developed from these sectors may not be translated to conform to other sub-sectors of transportation as each sector may have unique set of factors albeit similar trends. Although PPP is considered as a financial model and not just a procurement route in Ghana and in this research, the issue of how financial resources are acquired falls outside the scope of the study. The study only establishes a form of private finance integration but not the source of the finance from the private sector. This research focuses on standardising the

procedure of individual stages and respective evaluation for the bidding process of road PPP projects in Ghana. The cost of bidding and the time duration or number of days typically involved in the different stages of bidding process was not a factor under consideration in this research. Also, this research provides a focus on the procurement stage of the PPP process on government originated projects in Ghana and not unsolicited projects which involves the private sector identifying a public project and approaching the government with an interest and proposal to develop. This is because such unsolicited projects are known to have unique contractual arrangements and criteria which might not necessarily be applicable to this proposed bidding process and award map.

1.10 Research Structure

A total of eight chapters were adopted to enhance this course and are described below. Figure 1.2 describes the structure of the thesis from introduction of the thesis through to the Findings and implications in the Conclusions and Recommendations chapter.

Chapter 1 - Thesis Introduction

In this section, the aim and objectives of this study are expounded. The background of the study and rationale are also presented. The chapter encapsulates the research limitations and delimitations of the study as well as the research structure.

Chapter 2 - The concept of PPP as the crux of the Research

This chapter reviews the concept of PPP and its global implementation regarding level of sophistication and value of contracts of PPP in public infrastructure delivery so as to provide a true representation of significance of PPP to infrastructure delivery especially in the roads sector. A country perspective on Ghana, fiscal constraints and the state of PPP in Ghana are lastly espoused in this chapter.

Chapter 3 - PPP Bidding processes and Evaluation criteria

This chapter presents a review of literature on bidding processes and evaluation criteria as well as the challenges of bidding process from the private sector perspective. The key concepts of the preferred bidders' criteria: VFM, affordability and RM are presented lastly in this chapter.

Chapter 4 - Justification of the Research Methodology

The methodology adopted for this research including the research process and philosophical underpinnings are presented to guide this research. It also encompasses reasons for and against the approach adopted and a justification for the instruments used as well as the method of data analysis. A discussion of the stakeholder theory and a well-structured categorisation of the stakeholders involved in this research is presented. It also comprises a context of the Ghanaian public sector according to theories and the perspective of PPP in Ghana according to critical factors adopted from lessons of global PPP implementation. In this chapter, all research instruments adopted to meet the individual objectives and the aim of this study are presented.

Chapter 5 - Challenges to road bidding process and Parameters of Ghanaian Preferred Bidders' criteria

A presentation of the findings of the semi-structured interviews engaged amongst the key stakeholders of road PPP bidding to identify the challenges in the PPP bidding process in Ghana is captured in this chapter. Factors that are external to the bidding process but restrict the overall success of road implementation was also presented in this chapter as a result of semi-structured interviews engaged among key players instrumental in the adoption of PPP in Ghana. This chapter also encapsulates a set of findings from the qualitative survey which identifies parameters of the preferred bidder's criteria: VFM, Affordability and RM.

Chapter 6 - Development of PPP Bidding and Award Process Map

This chapter presents the development of the BAPM for road PPP projects in Ghana. It encapsulates the distinct stages of the bidding process and its award criteria for respective stages. It lastly presents a questionnaire validation of the process map.

Chapter 7 - Conclusions and Recommendations

This chapter summarises the conclusion of the entire research and implications. It encapsulates findings and conclusions according to the objectives of this research. Recommendations underpinning the outcome of this research and the theoretical and practical contribution to knowledge are also expounded.

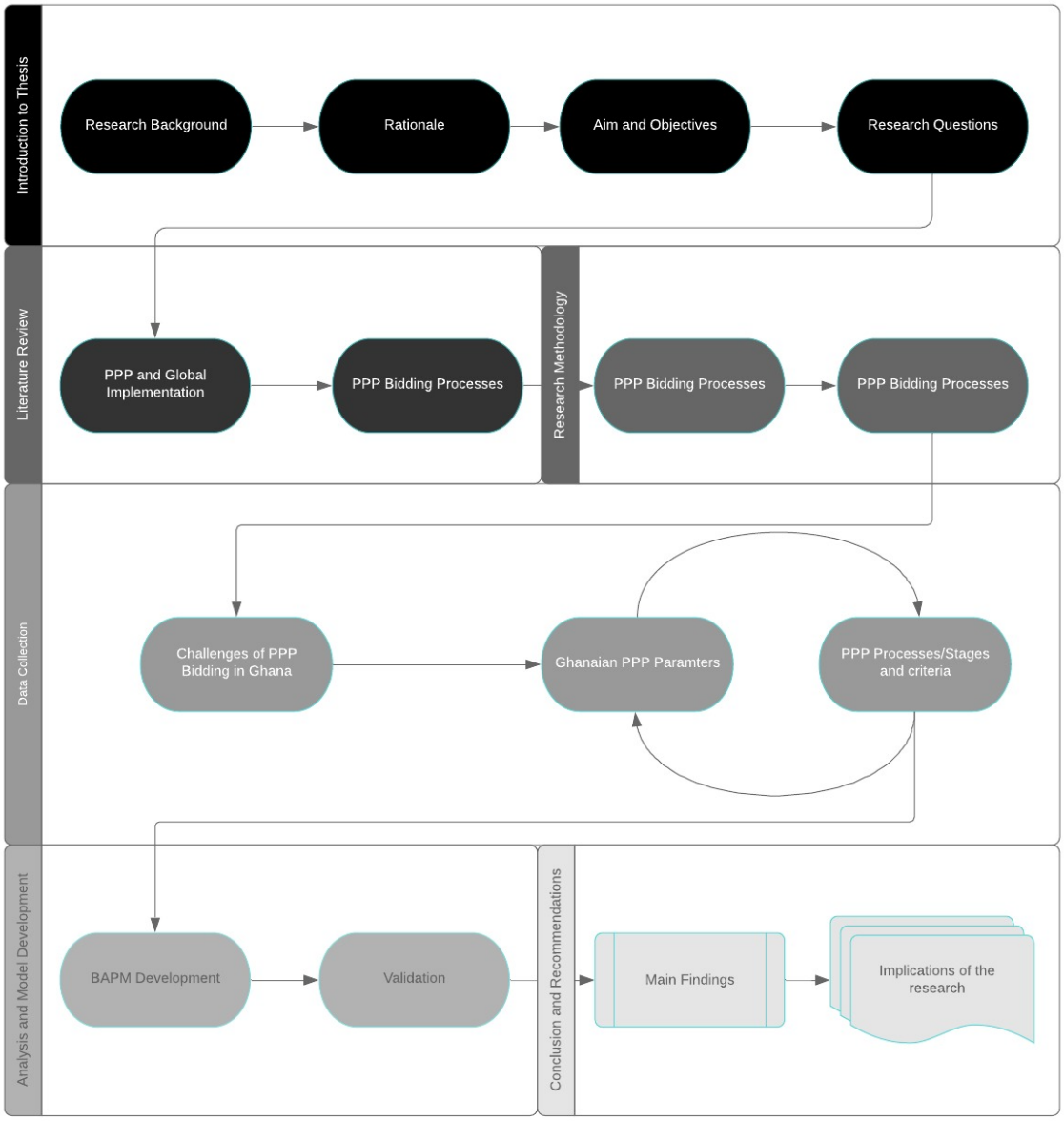


Figure 1.2 - Sequence of the Study

1.11 Summary of the Chapter

The rationale of this research, aim, objectives and research questions were elucidated in this chapter. This chapter presented an introduction to this study and paved the way for the rest of this research. The next section comprises a literature review of PPP in the delivery of road infrastructure and context of PPP in Ghana.

Chapter 2 The concept of PPP and Global PPP implementation

2.1 Chapter Introduction

This chapter firstly provides an in-depth description of PPP which is categorised into five major attributes of the model. A review and the state of global PPP implementation is presented to elucidate critical factors of effective PPP implementation and to investigate the extent of PPP in road infrastructure delivery. A section is also presented on the drivers for the emergence of PPP in Ghana and the state of PPP in Ghana.

2.2 Public - Private Partnerships

There has been a paradigm shift regarding how infrastructure projects are delivered in developed and developing countries around the world. It has been customary for the public sector to build, own and operate all public infrastructure predominantly because of the public interest monopoly in services (Timm, 2012). Traditional forms of funding infrastructure for instance are gradually being expunged from public sector development techniques due to increasing pressure on government budgets (Pretorius et al., 2008; Badu et al., 2011). Some of these constraints coupled with population growth and its related increase in the demand for infrastructure services have refocused concentration to various private sources of funding (Ofori, 2017). The growing tendency in many developing countries to develop innovative procurement methods and advanced funding approaches in the construction industry is an underlying factor in the initiation of Private Sector Participation (PSP) (Yarygina, 2014). There is a relatively well-developed infrastructure portfolio in developed countries where there exists a broad tax base as a result of well-developed economies and the high level of industrialisation (Eaton, 2013). Nonetheless, economic uncertainties have intensified the need for private sector funding and participation in infrastructure development to meet their ever-increasing demand (Loosemore & Cheung, 2015). The need for private sector involvement in the provision of infrastructure is even more serious in developing countries as public funds are simply inadequate to finance the vital infrastructure projects (Akintoye et al., 2011). This is as a result of low tax base, weak economies and public institutions as well as low levels of industrialisation and non-existent commercial investment (ibid). In most of these countries, governments rely on limited taxes and subventions to meet the huge gap between the demand

and supply of public services (Yarygina, 2014). The increasing limitations of government budgets especially in developing countries have led to a greater realisation of the need to gain more efficient methods in the financing and procurement of public sector undertakings. For adoption and implementation purposes, there has been the need for developing countries to draw concepts of best practice from developed countries who are more advanced in PPP undertakings (Ameyaw & Chan 2015). However, Gustafsson-Wright et al. (2017) argue that the adoption of private sector finance over public funding is only justified if the former offers a more cost-effective solution.

2.2.1 Conceptualising PPP's

There is some confusion regarding how PPPs and Private Finance Initiatives (PFIs) are used interchangeably amongst governments (Roe & Craig, 2004). Roe and Craig (2004) define PPPs as any alliance between public bodies, local authorities or central government and private companies whereas PFI is a more formal approach of PPP where these schemes generally provide the capital asset and services relating to that asset. PFI deals are focused on a single service or project and are structured to transfer the inherent operational risk to the private sector (ibid). PPP is a much wider generic term which covers all kinds of deals between the public and private sectors (Yarygina, 2014). In PFI, the public sector specifies a level of service in return for a unitary charge (Hacking, 2017). The private sector entity handles the up-front costs instead of the government where the project is then leased to the public, and the government authority makes annual payments to the private company over a period of time (ibid). PFI involves an infrastructure project being funded by private sector equity and debt funding which is being paid for by the public sector through periodic payments over the life of the project whilst a PPP project would not necessarily require or have such private sector funding (Timm 2012). PFIs are used primarily in the United Kingdom and in Australia but are called PPPs in the United States (Hacking, 2017). Similarly, PFI and Private Finance 2 (PF2) are financing routes of a PPP (National Audit Office, 2018). The PF2 model was introduced in the UK in 2012 as an enhanced model of the PF1. HM Treasury (2017) states key differences of PF2 from PFI as follows:

- The government acts as a minority co-investor to give greater visibility of the internal workings of projects;
- Measures have been put in place to reduce procurement times;
- The front-line services, such as cleaning and security, have been removed from the standard contract to give more flexibility to decide what level of service is required;

- Improved transparency including publication of equity returns and improving the information provisions within contracts.

The PF2 model therefore projects an enhancement in transparency, reduced procurement times and an improvement in the flexibility of private finance contracts (National Audit Office, 2018). Academic literature also uses PPP, PFI and PF2 interchangeably. For this reason and for intents of this study, PPP, PFI and PF2 will be used interchangeably as all three concepts connote a financial arrangement. Khanom (2009) maintains that there is no single accepted definition of the PPP phenomenon. Ofori (2017) postulates the insignificance of an accepted definition since PPPs are commonly defined as a cooperation between the public and private sector. Gunnigan and Rajput (2010) argue the need to re-examine the distinct meanings and concepts attributed to PPPs to investigate the use of the idea for empirical studies. PPPs are typically touted as a collaboration between parties of the public and private sectors to achieve a common goal or a series or goals as the term literally expounds (Mouraviev, 2013; Hacking, 2017). For the purposes of this thesis, the researcher simply describes Public-Private-Partnerships as a definite binding contractual arrangement between parties of the Public and Private sector where most often, private capital is used in delivering a public product or service for a specific period of time. In this next section, definitions and concepts of PPPs are characterised under broader attributes together with an assessment of the descriptions offered by academic literature.

2.2.1.1 Government/Public policy attribute

The central theme of PPP is a government policy, and the government utilises it to deliver goods or services to the public (Eaton, 2013). PFI has become a core feature of UK government policy in delivering infrastructure (HM Treasury, 2000). Chowdhury et al., (2011) espouse PPP as a tool of governance and management whereby both the public and private sector need to relate PPP processes to governance in order to assess its prospects or viability. PPP is also viewed as an essential mode of organisation or governing (Roehrich et al. 2014). Ross and Yan (2015) maintain that it has been a significant tool of public policy in the world since the 1990s. Again, Hacking (2017) defines PPP as a management tool for financial arrangements. Collectively, PPPs are recognised as a form of public policy. Timm (2012) argues that effective policy formulation and decision-making processes depend on the dissemination of information in the relative communities and the policy networks involved. PPPs have a goal of delivering a project and producing certain outcomes, a public policy together with a legal regulatory mechanism are necessary for its subsistence (ibid). PPPs are undertaken to provide some social

or public infrastructure or service to a group of people (Dixon & Pottinger, 2006; Akintoye et al., 2011; Gustafsson-Wright et al., 2017). That is to say, the end goal translates to a public asset hence an undertaking by the government. Pretorius et al. (2008) assert that governments place more emphasis on political or public opinion in such a procurement model than the private sector party, who typically focuses on financial returns and increased competitive positions.

2.2.1.2 Collaboration attribute

Another attribute of PPPs is the co-operation or alliance between the public and private sector as it is literally termed. Government support is usually in the form of equity, asset transfer or concessionary loans (Merna & Njiru, 2002; Pretorius et al., 2008; Eaton, 2013). An advantage of PPP has been the encouragement of private providers to supply public services at the expense of public organisations (Chowdhury et al., 2011; Ofori, 2017). PPPs are referred as inter-organisational or financial arrangements between the public and private sector parties. Similarly, Loosemore and Cheung (2015) identify PPPs as an organisational relationship between parties to develop products or services. Yarygina (2014) considers PPPs as an enabling environment where private organisations get a market share of public service provision. A collaboration of some sort involving the public and private sector in connection to service delivery (Broadbent & Leaughlin, 2003; Bovaird, 2004; Ross & Yan, 2015; Ofori, 2017). Eaton (2008) describes PPP as a partnering arrangement between the public and private sector. They are generally described as a sustainable cooperation which involves the design, construction, financing, maintenance or operation of public infrastructure over a period of time (Savas, 2000; Webb & Pulle 2002; Evans, 2003; Blondal, 2005) as Wettenhall (2007) maintains that the effectiveness of PPPs is highly dependent on an inter-organisational network such as a partnership board or forum. Eaton (2011) avers that PPPs involve long-term commitments lasting typically between 10 and 30 years. Paroski et al. (2013) describe it as a long-term commitment such as alliancing, subcontracting and joint ventures for the benefit of both parties.

2.2.1.3 Risk sharing attribute

Risk sharing has been at the core of PPP structures since its inception. Indeed, Eaton (2011) argues that it was a major reason *inter alia* government fiscal constraints and efficiencies for the subscription to the procurement model. PPP therefore is defined as a medium for risk sharing (Klijn & Teisman, 2003; Eaton, 2008; Akintoye et al., 2011; Timm, 2012). Hacking (2017) state that risk allocation is an integral part of PPP/PFI projects, and this allocation can

be categorised into two types: through payment mechanism and through specific contract terms. It indicates an important incentive for both the public and private sectors as it benefits both parties (Paroski et al., 2013; Loosemore & Cheung, 2015). RM is therefore an essential process for the success of a PFI project. However, the proper allocation of risk to the party best able to manage it is a complex process which is subject to uncertainty, intense negotiations and extensive usage of financial and legal consultants (Hacking, 2017). Each of the parties in PFI bears a different risk profile in the project. In Sweden, PPPs are defined to constitute an arrangement between one or more private entities and a city or governmental agency where all parties share risks and profits through joint ownership (Collin, 1998; Collin & Hansson, 2000). Klijn and Teisman (2005) also define PPP as a cooperation between the public and private actors for product or service development in which costs, profits and risks are shared. Although, Barrie and Mitchell (2011) argue that the model has been an effective mechanism of risk transfer to the private sector in recent years, Merna and Njiru (2002) postulate that there had been a great objection in the past where the private sector involved in PPPs felt they had borne too much risk. Hence, there is a structured agreement about risk and reward allocation where particulars are agreed upon to guarantee private sector returns (Barrie & Mitchell 2011). Again, there is a provision to allocate risks to private sector bidders in the UK contract guidelines (HM Treasury, 2014).

2.2.1.4 Product and Service delivery attribute

PPPs are characterised by the development of a product or service to the public which essentially is the purpose of the partnership. Pretorius et al. (2008) describe PPP as a relationship between the public and private sector players to produce or develop a desired public policy outcome. Similarly, PPPs are labelled as a sustainable integration in which risks, costs and profits are shared in order to deliver services (Eaton, 2011). HM Treasury (2012) state:

> *PFI was introduced in order to engage the private sector in the design, build, finance and operation of public infrastructure, with the aim of delivering good quality and well-maintained assets that provided value for money for the taxpayer. It has been used across a broad range of sectors.*

Khanom (2009) asserts that these forms of partnership usually generate new and better products or services which will not have been possible with either parties taking the initiative on their

own. Paroski et al. (2013) state that PPP is a form of cooperation aimed at providing specific products and services where costs and resources are shared as a process of delivery.

2.2.1.5 Financial arrangement attribute

As every project requires a financial backing, be it a public, private or a public-private undertaking, it is important to develop the right sources of funding to support the efficient implementation of the PPP project (Akintoye et al., 2011). Eaton (2013) opines that most definitions accentuate PPPs as a financial arrangement between the parties. According to Andrew Tyrie, chairman of the House of Commons Treasury Select Committee, PFI helps in the provision of basic infrastructure by an establishment of financial obligations by the private sector in most cases according to an agreed concession period (HM Treasury, 2012). Loosemore and Cheung (2015) state that this form of procurement definitely involves a financial agreement binding on both parties in which the private sector or sometimes both parties finance the project. According to Roehrich et al. (2014), PPP focuses on financial arrangements which involves at least the design, construction, financing and maintenance of public infrastructure facility by the private sector under a long-term contract. Ross and Yan (2015) maintain that the most common form of PPP financial arrangements is the BOT-Build, Operate, Transfer. As a result of the financial aspect of this model, it is usually associated with long term periods with a time frame planned to ensure mutual benefits on both sides. PPPs involve long financial term commitments or concession periods usually between 10 and 30 years (Eaton, 2011; Ross & Yan, 2015; HM Treasury, 2017).

PPP is a method of financing large-scale, capital intensive projects, in which the cash flows generated by the project usually serves as the source of loan repayment and the project assets serve as collateral for a loan (Yarygina, 2014). According to the International Finance Corporation (IFC) (1999), it is a form of financing in which lenders look solely or primarily to the cash flows of a project to repay debt service and to all the underlying project assets including all physical and contractual assets as collateral for a loan. There are two basic-types of financing: limited and non-recourse (Carrick, 2003). In the case of limited project financing, lenders look mainly at the cash flows of a project to repay debt service but allow creditors and investors some recourse to the sponsors for repayment. In non-recourse project financing, lenders look solely to the cash flows of the project to repay debt service and the assets of the property for security (Asenova & Hood, 2006; National Audit Office, 2018). It is much more common to arrange funding on a limited recourse basis in which the financing is structured to achieve the optimum trade-off between limited recourse and credit support, in the form of

guarantees or undertakings by the sponsor so that lenders will be satisfied with the credit risk (Akbiyikli, 2005). According to De Lamos et al. (2000), an important aspect of this form of project finance is that the risks are borne not only by the sponsors but also by different types of investors such as equity holders, debt providers, and quasi-equity investors. Since the risks are shared, one criterion of a project's suitability for financing is whether it is able to stand alone as a distinct legal and economic entity where project assets, projects related contracts and project cash flows need to be separate from those of the sponsors (Gustafsson-Wright et al., 2017).

Potential sources of private financing include commercial banks, leasing companies, insurance companies, pension funds, finance companies, export credits and private lenders and in the UK, it is usual for PFI projects to be funded by equity investment (Ross & Yan, 2015). The financial package should be designed to select from the various possible financial options that minimises the risks of financing. As a result of its reliance on the cash flows of the project, it requires detailed awareness, identification and assessment of all the risks (Eaton, 2013). In a PPP/PFI/PF2 project, the heart of the project finance transaction is in the Special Purpose Vehicle (SPV) which is created as an independent legal entity that enters contractual financial agreements with a number of other parties (Yarygina, 2014). The shareholders invest equity into the SPV, and the level of equity can vary depending on the project size and complexity. Strong projects with strong cash flows and low risks can be structured with a minimum of 10% equity and 90% debt and the SPV looks to the commercial banks and institutions to fund the remainder of the project costs (Pretorius et al., 2008). Debt from these lenders is referred to as senior debt, hence in the case of project default, senior debt lenders have first rights to the project assets and cash flow before providers of equity and subordinated funds (Paroski et al., 2013). Debt funding can either consist of bank debts, financing from bond issues or a higher rate and shorter loan duration that are not considered for this study as a result of the debt they exert on the public sector. Once a project has completed the development phase including construction, the risk profile changes, and the SPV can obtain better financing terms and lower rates for the rest of its projected life (Badu et al., 2011). These equity and debt funds are used to finance the project construction with funds generated from the project cash-flow covering the Operation and Maintenance (O&M) period (Asenova & Hood, 2006). Lenders will not normally demand repayment of capital on the loans until the construction phase has been completed and the project enters its operational phase (ibid). The third-party credit providers, lead banks and other financial institutions provide the majority of funding, which is

approximately 90 per cent, hence they are more risk prone than equity providers (Roehrich et al., 2014). Their important financial role in the realisation of a PFI project therefore leads them to ensure that proper due diligence is performed; all risks are identified, assessed and allocated to the parties best able to manage it (Ross & Yan, 2015).

2.3 Global Implementation of PPP

Private participation in infrastructure development is increasing rapidly as 159 developing countries have engaged the private sector in public service delivery (Gustafsson-Wright et al., 2017). Investments in PPPs/PFIs have grown in absolute terms since 1991 with two notable periods of expansion and one period of contraction (World Bank, 2016). Countries turned to PPPs throughout most of the 1990s, during which time there were massive commitments. The value of PPPs grew steadily from $7 billion in 1991 to $91 billion in 1997 (World Bank Group, 2016). However, there was a period of contraction until investments in PPPs reached a minimum of $21.9 billion in 2002 when governments felt the repercussions of the Asian financial crisis (1997- 1998) (ECA, 2018). When the global economy picked up growth, a second growth phase culminated in record investment of $158 billion in 2012 (ibid). This second growth phase was unaffected by the global financial crisis of 2008 because, many countries increased the public share in the financing of infrastructure projects to help boost investment (World Bank Group, 2018). A significant decline of about 40% occurred in 2013. However, since then, investment commitments in PPPs have grown, albeit slowly, reflecting the overall slowdown in key emerging markets, particularly in India. (World Bank Group, 2016). The total global debt and equity investment reached a significant $303.5 billion in 2014 from $287 billion in 2013 (IJ Global, 2015). Again, in 2014, the global deal count increased to 744 from 608 in 2013 but still did not reach 2010's 918 deals closed (ibid). Since this time, the number of PPP projects have grown albeit slowly. As at 2018, nearly 20000 projects have been implemented under PPPs globally representing over US$ 10 trillion (United States Dollars) (World Bank Group, 2018). The private sector has since been instrumental throughout the development of project finance approaches which has evolved to become an integral part of PFI singularly associated to the United Kingdom and PPP distinct to other parts of the world (Gustafsson-Wright et al., 2017). There is a distinction however between the number of PPPs that a jurisdiction undertakes and the maturity of its PPP market. The maturity of a market refers to the sophistication of its PPP mechanisms which is determined through its understanding of PPPs as seen through available framework and models (World Bank Group, 2018). It is influenced by contextual factors such as political climate, culture, capital markets

or policy frameworks (ibid). Table 2.1 illustrates the three stages of PPP maturity and their respective tasks or objectives for qualification.

Table 2.1 - Stages of PPP Maturity and respective KPIs (Source: Deloitte 2013)

Stage One
• Establish policy & legislative framework • Initiate central PPP policy unit to guide implementation • Develop deal structures • Get transactions right & develop public sector comparator model • Begin to build marketplace • Apply early lessons from transport to other sectors
Stage Two
• Establish dedicated PPP units in agencies • Begin developing new hybrid delivery models • Expand and help shape PPP marketplace • Leverage new sources of funds from capital markets • Use PPPs to drive service innovation • PPP market gains depth—use is expanded to multiple projects & sectors
Stage Three
• Refine new innovative models • More creative, flexible approaches applied to roles of public & private sector • Use of more sophisticated risk models • Greater focus on total lifecycle of project • Sophisticated infrastructure market with pension funds & private equity funds • Public sector learns from private partner methods as competition changes the way government operations function • Underutilized assets leveraged into financial assets • Organizational & skill set changes in government implemented to support greater role of PPPs

A descriptive analysis is engaged amongst major countries identified along the market maturity curve in order to accentuate the impact and influence of PPP in the delivery of critical infrastructure. Figure 2.1 also indicates the relative maturity of various countries around the world in the form of a market maturity curve which was developed based on the level of sophistication and the number of PPP projects implemented (Deloitte, 2013). This model guides the choice of various countries discussed, as all countries identified fall under a particular stage of the market maturity curve. At least one country from each stage is discussed, although most countries presented were in stage two and three as a result of their advancement in PPP undertakings. This is prudent for lessons to be drawn thereof for better interrogation regarding the extent to which private capital has enhanced public sector delivery in terms of

number of projects being implemented and its value, among others. This is also important as developing countries thrive to advance to higher stages on the market maturity curve. There was also a relatively low level of data available for countries in stage one.

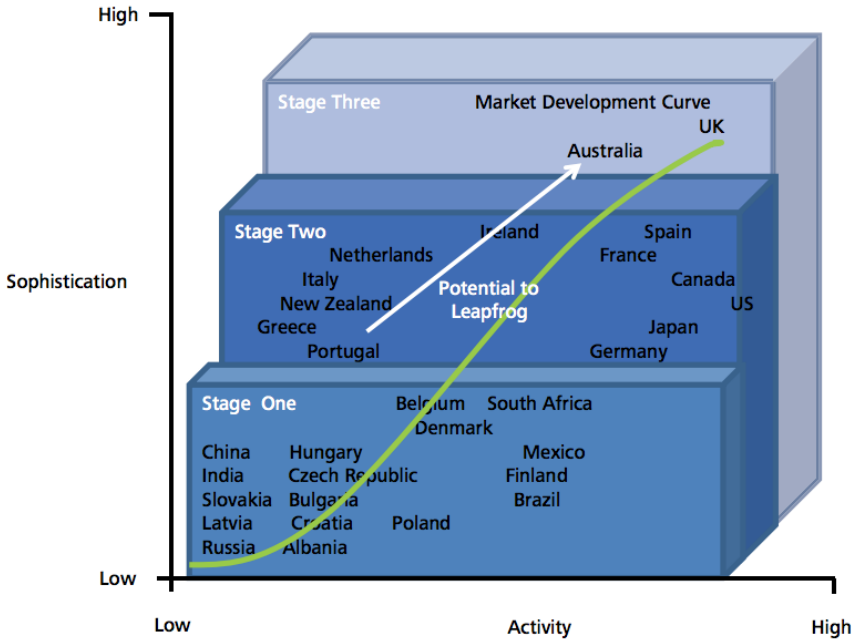


Figure 2.1 - PPP Market Maturity Curve (Source: Deloitte, 2013)

The analysis elicits a better understanding of their respective development stages of PPP, level of maturity, number of recorded PPP deals in recent years and its value. The UK has been at the forefront of the implementation of PFI/PF2 projects which makes it the leading country in terms of number of projects implemented and its value (Deloitte, 2013; HM Treasury, 2017; National Audit office, 2018; World Bank Group, 2018). For this reason, the development of PFI in the UK was accessed most critically. This ensured a comparative analysis to introduce best practice in the sector in order to foster development in this regard. Countries discussed under the respective stages of the maturity level include:

- **Stage 1 -** China, India, South-Africa, Nigeria;
- **Stage 2 -** Germany, Italy, USA, Canada, Spain;
- **Stage 3 -** Australia, United Kingdom.

However, these countries are categorised according to their respective continents for better clarity and presented in appendix A.

2.3.1 Common trends of Global PPP Implementation

This section presents a critical analysis of best practice and common trends of the reviewed literature on global PPP implementation in appendix A. There is no single best practice framework for PPPs because of the wide variation in the form that PPPs can take and the diverse contexts of various countries (geographical, social, economic etc.) (Deloitte, 2013). However, there are common attributes that lead to best PPP practices around the world (EY, 2016).

2.3.1.1 Legal and regulatory framework

The implementation of PPP projects requires an effective legal framework that is necessary to regulate the ability to apply PPP schemes, the procurement process and key contractual provisions (EIB, 2016). It is argued that although PPP-specific laws are not strictly required to make PPPs legal, they have been introduced to encourage them as a model for delivering public infrastructure (EY, 2015). Contrarily, a PPP law is sometimes considered a prerequisite especially in countries with civil code systems (Thieriot & Dominguez, 2015). However, PPP laws are sometimes insufficiently informed by experience from existing PPP markets and can inadvertently put inappropriate restrictions on PPP activity (ibid). For instance, PPP laws in certain jurisdictions in the EU like Finland and Slovenia, seek to define the quantum of compensation due to the private partner on early termination of the PPP contract (EIB, 2017). The law-making process did not foresee the consultation of stakeholders hence these have brought about VFM or bankability issues (EY, 2015).

The lack of legal clarity can be a disincentive and source of concern for both the public and private sectors when approaching PPPs, as they would wish to determine and mitigate their liability with certainty, which is already a challenge given the complex and diverse nature of PPPs (EIB, 2016). Consistent and transparent legislative and institutional frameworks however lower the risk of adverse changes that can reduce market confidence and deter investor participation (EY, 2015). Most European countries have a comprehensive PPP law in place, have been drafted or being proposed (EIB, 2017). The presence of the law and unit to a large extent facilitate the availability of private capital and the effective implementation of PPP projects taking note of the fact that Europe is one of the largest implementers of PPP globally (Deloitte, 2017). Similarly, in the US, immediately PPP gathered serious momentum, perhaps through necessity and convenience following the credit crunch in 2007, twenty-five (25) U.S. States pushed PPP-enabling legislation which is deemed as a necessity to provide the authority for transacting a structured finance deal (PWC, 2010).

2.3.1.2 Central PPP unit

Given the complexity and relative novelty of PPPs as an approach to deliver infrastructure, governments may need to create specific institutions to support their development (World Bank, 2015). In many economies, the creation of these institutional arrangements is a relevant component of the PPP regulatory framework (IMF, 2015). While the economies assessed have adopted diverse institutional arrangements to support the development of PPPs, the creation of PPP units is a common trend (EY, 2016). Such units can facilitate the development of PPPs by centralising PPP expertise in a single government agency (EIB, 2017). However, as with stand-alone PPP laws, the creation of a PPP unit is not in itself a guarantee of success. Furthermore, the practicality of establishing a single centralised PPP unit is contingent on the size and administrative structure of each economy (World Bank Group, 2018).

Eighty-one percent of 135 countries that have adopted PPP have a dedicated PPP unit (World Bank Group, 2018). Some are independent organisations akin to other governmental departments, such as the Public and Private Infrastructure Investment Management Center (PIMAC) in the Republic of Korea and the Infrastructure Concession Regulatory Commission (ICRC) in Nigeria (World Bank Group, 2018). In other cases, the PPP unit is part of a larger ministerial or departmental structure (EIB, 2017). The roles and functions of the PPP units include (World Bank Group, 2018):

- PPP regulation policy and guidance;
- Capacity building for other government entities;
- Promotion of the PPP program;
- Technical support in implementing PPP projects; and
- Oversight of PPP implementation.

In addition, about 59 per cent of the PPP units around the world are also required to approve PPP projects usually through their participation in the PPP feasibility assessment process (World Bank Group, 2018). The assessment of the fiscal risks borne by the government in a PPP is not usually a function attributed to the PPP unit but instead left directly to the Ministry of Finance or central budgetary authority (EY, 2016).

2.3.1.3 Periodic reviews and reforms

A clear indication of effective PPPs to infrastructure delivery is the reforms and reviews necessary at crucial timeframes to meet the dynamics of the political and economic landscape. In the UK for instance, several reforms have been made to the existing PFI structure to enhance

implementation, provide optimum benefits among others (HM Treasury, 2012). Since the 1980s, the UK has reviewed and reformed private sector participation in the delivery of public infrastructure until PFI was launched in 1992, and it continues to review the model (Hodge et al., 2018). The Treasury for instance established a committee chaired by Sir William Ryrie in 1981 to ascertain the function of the private sector finance in public sector development which stated that privately funded projects needed to be tested against a publicly funded one to show its cost effectiveness before it could be approved (Allen, 2001). There has been the need to take steps to address concerns and interests of PFI which has necessitated certain interventions by the government (HM Treasury, 2012). These include the abolition of PFI credits, the introduction of new integrated assurances, and approval arrangements (ibid). Again, the government took initiatives like co-lending to support PFI projects and an increase in capital contributions during the construction period to improve affordability. The government aimed at developing a contemporary approach to draw on industry skill and expertise so as to offer better value for government's investment in public infrastructure and took steps to introduce the PF2 (National Audit Office, 2018). As elucidated, several reforms have been put in place to enhance the procurement model and make it more efficient throughout the development of the model. In 2018, the Chancellor, Phillip Hammond announced that the UK Government will no longer use PF2, the current model of Private Finance Initiative as it did not fix the VFM issues of the previous PFI model. Therefore, a Centre of Excellence is to be established within the Department of Health and Social Care to manage some existing PFI contracts (ibid).

2.3.1.4 Economic conditions- A driver for PPP adoption

In countries where PPPs have traditionally played little or no role in meeting infrastructure demand, governments are seriously exploring the potential of the model and have taken definitive steps to establish policies, resources and partnerships with private sector providers (IMF, 2015). PPPs have served as viable tools for cash-strapped governments to deliver on their election mandates, invest in infrastructure and deliver a range of essential public services to even the most remote and marginalised communities (Spackman, 2002). It is argued that the introduction of the private sector into public service delivery was one of the strategies to overcome economic stagnation from the 1960s (HM Treasury, 1999). For this same reason, the Conservative Party administration championed a leaner and smaller government amidst expanding government deficits and bloated governments (ibid). HM Treasury (1989) argues that the Public Sector Borrowing Requirement (PSBR)-the amount that the government had to borrow in a particular period of time to cover the difference between the money it gets from

taxes and the amount it spends (PSBR) was exacerbated, especially as all the capital expenditure of nationalised industries and public corporations was accounted and recorded within the public expenditure in 1977. This brought about the 1978 White Paper which shifted focus to the External Financing Limit (EFL) – the cash limit of external financing outside the budget (Heald, 1997). During this era, the UK had to restrict borrowing in financing the PSBR. The 1980's recession introduced much public debate that restrictive EFLs designed to hold down the PSBR as a means of controlling monetary supply growth were frustrating profitable nationalised industry investment and thus needlessly exacerbating the recession (Webb & Pulle, 2002). As a result, The National Economic Development Council (NEDC) formulated the Ryrie rules which sought to establish criteria under which private finance could be introduced into the nationalised industries (Allen, 2003). The intention was to increase the flow of capital to projects against a background of restraint on public expenditure by utilising private sector money and management skills (Owen & Merna 1997; Chowdhury et al., 2011). Birnie (1999) argues that the Ryrie rules of the 1980s also served as a platform for introducing PFI in the UK.

2.3.1.5 Economic and financial benefits of PPP

Many studies have been conducted regarding governments' inability to raise massive funds for large-scale infrastructure projects (Cheung et al., 2012). Many governments of both matured and emerging economies around the world are engaged in partnerships with private sector entities as a prudent function to improve the supply of public infrastructure. Timm (2012) state that private sector participation in the development of economies and infrastructure around the world has significantly increased over the past few decades. Akintoye et al. (2011) argue that PPP is commonly used to accelerate economic growth, development in infrastructure delivery and to achieve quality service delivery and good governance. It is argued that PPPs have delivered immense benefits of cost savings on projects, delivery on time and VFM (Ross & Yan, 2015). Ofori (2017) postulates a significantly lower cost in implementing PPP projects. Loosemore and Cheung (2015) maintain that since PPP stimulates private sector efficiency, total project cost is reduced. Governments around the world have used PPP as a financial tool in supporting their budgets in public infrastructure delivery (Roehrich et al., 2014). Infrastructure projects implemented through a PPP are more likely to achieve efficiency gains than traditional projects by completing project construction on time and on budget (EPEC, 2015). However, it is argued that the maximum potential benefits of PPPs often fail to materialise when the infrastructure is not completed within the planned time and cost (ECA,

2018). PFI has incorporated private sector management skills, expertise and innovation to public infrastructure delivery (Yarygina, 2014) and has diminished inefficiencies such as cost and time overruns of the public sector party (Babatunde, 2015).

PPP is regarded as a means of raising additional funds for meeting infrastructure gaps in developed countries. PPPs should be allocated to the balance sheet of the economic owner of the asset, namely the party that bears the largest share of risks and has the right to most of the rewards associated with the asset (IMF, 2015). However, keeping PPPs off the government balance sheet means shifting most of the risks and benefits to the private partner, there is an inherent risk that the distribution arrangements will be influenced by the preferred statistical treatment rather than the principle that risks should be borne by the party that is better placed to manage them and maximise VFM (ECA, 2018). PPPs are mainly implemented in order to achieve potential benefits like providing an important additional funding to complement traditional budgetary envelopes. The impact of private investment and private capital for PPP implementation on the delivery of critical infrastructure is evident and its significance, major. PPPs have been implemented in all sectors of the economy which has gone a long way to meet the respective infrastructure gaps of these countries, and they have recorded massive reductions of public investment in infrastructure (MGI, 2016). The privatisation of infrastructure provision is most pronounced in Europe where private companies account for almost two-thirds of investment in these sectors (IMF, 2015). However, other jurisdictions like India have the private sector accounting for less than a third of infrastructure investment, therefore the public sector is still the main provider of social infrastructure (MGI, 2016). A school of thought maintain that the PPP/PFI approach offers the prospect of delivering the services required by public sector clients in a way that provides superior VFM than the conventional procurement method. According to the House of Commons (1999), PFI has given scope for (ibid):

- Innovation in how services are delivered: This is because the client specifies what is required not how it is to be delivered. The public sector client must not unnecessarily restrict suppliers' scope of innovation, by prescribing in excessive detail how services are to be delivered. For the higher cost of private expertise, the public sector must be open to innovate ideas offered by the private sector. Private sector bidders need to be given as much freedom as possible to determine the best way to provide the services required.
- Better Management of the risks associated with projects: The principle in the PFI is that risks should be allocated to whichever party is best able to manage them. Appropriate

allocation of risk between the parties is critical to the achievement of VFM in PFI contracts. Inappropriate risk transfer and risk creation is likely to reduce VFM as the party concerned will seek to mitigate the impact of the risks concerned. A proper understanding of where risks lie is also crucial.

- More effective exploitation of opportunities can be harnessed to benefit the taxpayer. Also, VFM is not likely to be achieved if the procurement process has not been competitive. Competition is a fundamental requirement for PFI deals.
- Better management - The PFI can be a method of finding the most effective management team for a particular service.

2.3.1.6 Significance of PPP to road infrastructure delivery

Investing in roads and their maintenance is essential for economic growth and the mobility of a region. Maintenance by itself is crucial since poorly maintained roads lead to a downfall of the road network value, resulting in higher future costs related to road safety, accessibility and operating vehicles (World Bank Group, 2016). In Europe, road transport is the most used means of transportation accounting for 82 per cent of inland transport in the EU (Maslova, 2016). However, total European road expenditure (investments, maintenance and other costs) in 2016 has decreased by 11 per cent compared to 2006, which is driven by a significant expenditure decline in Spain and France, partially offset by an increase in UK spending during the same period (IFR, 2019). Although it is practical for expenditure in the rehabilitation and reconstruction of roads to reduce as a result of the limited nature of roads in terms of roads that need to be built, Prats et al. (2018) argue that road maintenance expenditure in Europe also shows a decreasing trend. During the period of 2011 to 2016, the European region continuously decreased its spending on its road network, with the exemption of the period of 2014-2015 where there was a marginal increase of 1% (IRF, 2019). Multiple economic and policy factors are at the base of this decrease mainly driven by Spain and France which represent two of the main freight transport corridors in Europe (ibid). Roads remain at the top of the European PPP transport pipeline, representing 70 per cent of the planned projects (World Bank Group, 2018). There has been a continuous decline, with the only exception being 2015-2016 where maintenance expenditure was flat (IRF, 2019). The primary causes for this decline are periodic maintenance contracts and economic factors (EY, 2016). It is interesting to highlight that the UK shows a decrease in road maintenance expenditure whilst total road expenditure is increasing. There was a clear focus on new road investments during the 2011-2016 period, with

UK road investments being almost double their road maintenance expenditure (World Bank Group, 2018).

From a global perspective, the road sector has seen some of the biggest PPP deals in developed countries. From 2005 to 2015, an average of 60 percent PPPs in Italy were in the roads sector and the Pedemontana Veneta toll road for instance was valued at €2.1 billion (EY, 2016). In Australia, the country's transport sector was amongst the first sectors to go through procurement under partnerships which saw Victoria and New South Wales cities adopting a PPP model in a bid to develop the road infrastructure network (KPMG, 2014). The PPP models encapsulate toll roads and utilities which is distinct in its structure and arrangement as revenue risks are transferred to the consortium with no direct government revenue guarantee (RICS, 2011). One of the biggest PPP deals signed is the $3.9 billion phase 1 road project, which connects eastern freeway at Hoddle Street to CityLink in Parkville (ibid). A $3.3 billion bridge over the St. Lawrence river in Montreal closed June 2015 and the Eglington light-rail transit (LRT) project in Toronto closed July 2015 with a staggering C$5.5 billion ($4.4 billion) making these the biggest PPP projects in Canada (Prats et al., 2018). India's road sector is the major sector to receive capital investment under the PPP procurement method with Build, Operate, Transfer (BOT) as the predominant model used (EY, 2016). China's ADB projects an amount of US $8 trillion pumped into infrastructure development between 2010 and 2020 where 51 per cent will go into the electricity sector, 29 per cent to the roads sector and 13 per cent allocated to telecommunications sector respectively to be able to meet the infrastructure gap (AIIB, 2017).

The United Nations Sustainable Development Goals (SDGs), adopted by the UN General Assembly, identify Public-Private Partnerships (PPPs) as the key mechanism for achieving them (Maslova, 2016). The SDGs argue not only the need to increase the quantity but the quality of PPP projects in the road sector (ibid). The criteria and factors affecting the choice of an appropriate model in ensuring quality of a PPP road sector project include: The goals of the public partner and public needs; The level of the road construction complexity; Toll or toll free system of road operation; Forecast of traffic intensity; and The preliminary calculation of tariffs (KPMG, 2015). The Public Sector objective of PFI procurement in roads is to provide high quality public services that represent VFM for the taxpayer (HM Treasury, 2012). It is therefore VFM which is the key determinant of whether a project should be procured by PFI, and the focus should be on how procurement can achieve risk transfer in a way that optimises VFM (Akbiyikli et al., 2011). Although major road projects around the world have been delivered

via PPPs, there have also been major implementation problems amongst several challenges. PPP in the road sector have been fraught with failures and huge financial losses. An example is the long-running legal battle between Birmingham City Council and Amey Birmingham Highways Limited (Amey), where in 2019 both parties agreed a settlement for Amey to free itself from the 25-year PFI highways contract, worth an estimated GBP 2.6bn (Bettan, 2019). Deloitte (2013) argues that some of the challenges to effective road PPP implementation include:

- Demand uncertainty;
- Supply market constraints;
- Opposition to tolls;
- Transportation network impacts;
- Competing facilities.

There is therefore the need to ensure effective demand surveys and forecasts to enhance projections (Hodge et al., 2018). It is also critical for good education of PPP to citizens of countries newly implementing the model (Eaton, 2013) as this could reduce opposition to tolls. It is also important to check unrealistic bids, weak business cases and inappropriate assessment and effective mitigation or transfer of risks to ensure PPP projects do not suffer from these known banes (Deloitte, 2013; World Bank, 2014). It is argued that clearly defined service requirements tend to present better results from the public sector viewpoint (EY, 2016). The resources will not be wasted in generation of services adding little or no value to the public using the services (Ofori, 2017). This also results in reduced costs, better recovery, better selection process and completion of project construction in determined timelines (World Bank Group, 2018). It is important to ensure short tender processes which promotes a reduced time lag between the duration of projects bidding and when it actually commences the construction phase which leads to completion of projects within budgeted costs (World Bank Group, 2016). The rise in time and material cost due to inflation could also be controlled as a result (ibid). A greater co-ordination between partners during structuring and implementing PPPs is essential in combining experiences of the needs and priorities of its residents as well as service users as it is an important step to get a successful PPP agreement (Hodge et al., 2018).

2.4 Country Perspective - Ghana

2.4.1 Brief Description of Country Profile

Ghana's population is estimated to be 30.42 million at the end of 2019 which ranks 46th in the world and has an average growth rate of 2.3 per cent (Ghana Statistical Service, 2019). Ghana's land mass is 238, 535 square kilometres close to the 242,495 square kilometre land mass of the United Kingdom. The constitution of Ghana depicts the country as a secular one but prohibits a particular religion as a national or state religion. There are sets of religions in the country as it continues to be an integral part of the culture and existence of the Ghanaian people. Most Ghanaians are inherently given a choice to relate to their source of religion in a way they deem fit to satisfy spiritual or material life. Religious liberty therefore is a personal choice of the individual. Christians are about 68.8% of the total population, Islam is about 15.9%, traditional religion totalling 8.5% and 6.1% detailed as having no religious affiliations (Throup, 2011). Although Muslims are originally located in the northern part of the country, they are evenly spread across the country and have integrated in societies (UNPF, 2005). Religious tolerance in the country is also very high and it is evident in religious holidays for instance where in 2003, Islamic holidays were legislated as national ones (Quarshigah, 2009). Hitherto, only Christian holidays were recognised nationally (Throup, 2011). Ghana is a multilingual country with over eighty languages spoken (Gocking, 2005; Ball, 2005). The English language is the official language and lingua franca amongst the indigenous languages that existed in Ghana (Ball, 2005). However, there are over 100 ethno-linguistic groups in the country, and even though some languages are peculiar to a certain location or regional context, most of them are also mutually intelligible (Government of Ghana, 2015). The largest of these ethnic groups is the Akan, constituting 45.3% of the population with the most widespread language in the country also known as Akan (Throup, 2011). Although the diversity of ethnic divides may not be catalysts of division in Ghana, ethnicity is far from relevance when national development is concerned because of political loyalty (Dakubu, 2005).

2.4.2 The significance of the Ghanaian Construction Industry (GCI) to the Economy

Ghana's infrastructure platform is relatively advanced compared to nations in the West-African sub-region (World Bank, 2015) and the Ghana Construction Industry (GCI) is one of the fastest growing sectors in Ghana with an average growth rate of 7-8 per cent per annum (Ghana Statistical Service, 2016). Although the sector experienced a major decline in growth rate between 2012 and 2014 from 16.4 per cent in 2012 to 0.0 per cent in 2014 (Ghana Statistical Services, 2015), there has since been an increase of 2.1 per cent in 2016 rising to 4.3 per cent

in 2017 (Ghana Statistical Services, 2018) indicating a gradual recovery and increase of economic activity in the sub-sector. The Ministry of Finance and Economic Planning (MOFEP) (2016) argues that this relatively marginal increase in growth of the GCI is mainly due to increased private investment in the sector. The GCI's contribution to the Gross Domestic Product (GDP) by economic activity was 13.7 per cent both in 2017 and 2016 compared to 13.5 per cent in 2015 and 12.7 per cent in 2014 (Ghana Statistical Service, 2018). It is markedly the second largest contributor to the nation's economy, a sub-category of the industry sector whereas 'crops' under the agriculture sector is first at 14.7 per cent. The situation was vice versa in terms of positions in the previous year where the GCI was first and crops was second (Ghana Statistical Service, 2015): a strong indication of the GCI's importance and potential considering the predominance of agriculture and its sites in Ghana. It is worthy to note that the 2.1 per cent increase in 2016 to 4.3 per cent in 2017 for instance does not directly reflect the 13.7 per cent contribution recorded for both 2016 and 2017. This is because of the increase in Ghana's GDP from US $42 billion in 2016 to US $50 billion in 2017 (Ghana Statistical Services, 2018) which translates to an expanded base of calculations. There is a close relationship between economic growth and the construction industry which is characterised by the physical infrastructure and asset-based development upon which growth and development are achieved (Songwe, 2014). The increase in private sector participation in the GCI directly contributes to the increase in the overall GDP of the country.

Ghana has the largest GDP per capita in West Africa (World Bank, 2015) and its construction industry holds immense potential in growth stimulation and employment generation (Ofori, 2017). The contribution of the construction industry to GDP is significant as it employs over 10 per cent of the working population responsible for half of the gross fixed capital formation in Ghana (Ghana Statistical Services, 2018). Furthermore, the GCI is evidently responsible for the infrastructure development needed by other sectors of the economy like education, health and communication. As such, the reliance of these sectors makes it a vital tool for the nation's socio-economic development (Yirenkyi-Fianko & Chileshe, 2012). The outputs and outcomes of the construction industry is important as it contributes to national socio-economic development by providing the buildings which are used in the production of all goods in the economy (Lopes, 2012). Similarly, the labour-intensive nature of the GCI generates employment and affects total GDP which strengthens the economy as a result (Osei, 2013). The basis of a higher growth rate would depend on the undertaking of comprehensive and efficient infrastructure development (World Bank, 2015). Thus, improved working conditions

and worker satisfaction should be critically considered for sustainable productivity in the construction industry amidst its decline in growth rates (IMF, 2015).

As a major sector and contributor to the economy and entire citizenry, the GCI is however faced with a lot of challenges like other construction industries around the world. The economic weakness of such a developing country translates inadequate resources to devote efforts in improving it. Most construction projects fall short of targets set by stakeholders in terms of budget, schedules and specifications (Ofori-Kuragu et al., 2016). Maintainability, operability and durability are set to be the major challenges of the GCI as projects involve huge investments and are expected to last several years hence the need for a provision for maintenance (Owusu-Bio et. al., 2016). The Government of Ghana (GOG) however is hardly even able to release all funds of project cost to contractors on time years after the project has been completed hence an almost zero per cent maintenance provision (Yirenkyi-Fianko & Chileshe, 2012; Songwe, 2014). Another area where the construction industry performs poorly is with regards to environmental considerations which involve excessive resource consumption as well as air and water pollution (Djokoto et al., 2014; Ofori, 2017).

2.4.2.1 The road sector in Ghana

Road transport is a pillar of the Ghanaian economy which is estimated to account for 96% of passenger and freight traffic and about 97% of passenger miles in Ghana (PWC, 2015). According to Government of Ghana (2018), road transport is categorised into four main segments, namely: urban, express services, rural-urban and rural. The demand for urban passenger transport is mainly by residents commuting to work, school and other economic, social and leisure activities (ibid). Most urban transportation in Ghana are by road and provided by private transport including taxis, minibuses and private-supported bus services (PWC, 2015). According to the Ministry of Roads and Highways (MRH), Ghana's road transport infrastructure is made up of 63,122km of road network linking the entire country (MRH, 2018). There is 32,250 km of classified road and more than half (26,166 km) were gravel, laterite or unpaved as at the end of 2016 (ibid). Road transportation by buses is the main mode of transport accounting for about 60% of passenger movement whilst taxis account for only 14.5%, the remaining accounted for by private cars (MRH, 2018). A major trend in road transport between cities is that there has been a shift from minibuses towards medium and large cars with capacities of 30-70 seats (PWC, 2015).

According to the National Road Safety Commission (NRSC) (2018), more than half of road accidents are caused by the unavailability of good road conditions with regards to pedestrian walks, road markings and traffic lights with more than half of that figure resulting in fatalities. Although about 34 per cent of road accidents are caused by drivers (Ghana Statistical Services, 2015), most road accidents are attributable to the bad state of roads and general road conditions. The Motor Transport and Traffic Directorate (MTTD) of the Ghana Police Service (GPS) stated that an average of six (6) out of ten (10) people involved in accidents die annually as a result of the bad road conditions (NRSC, 2018). Thus, investment in this infrastructure is essential and could prevent a good percentage of these accidents (NRSC, 2018).

The poor state of road networks account for up to three times prolonged journey times which reduce general productivity occasioned by waste in fuel consumption and man hours (MRH, 2018). Another effect of the bad road network is the damage on vehicles and high cost of maintenance (PWC, 2015) even as over 90 per cent of imported vehicles in Ghana are used vehicles which are generally in a poor condition and often only maintained by used parts (MRH, 2018). Also, the lack of a good road network or problems associated with it is a major constraint to agriculture and rural development (NRSC, 2018). Agrarian communities are highly dependent on a reliable transport system for internal transportation and for linking rural communities to the market centres to sell their farm products and buy industrial goods (Jedwab & Moradi, 2012). Access to education hinges on the provision of a good road network that will link communities to certain educational facilities because of threshold reasons. Road transportation facilitates the movement of people, goods and services in all sectors of the economy, including tourism, mining, trade, health, education and agriculture (Jedwab & Moradi, 2012). There are two road projects in Ghana which have been identified as pilot PPP projects, namely:

- The Accra-Takoradi Road Dualization Project; and
- The Accra-Kumasi Toll Road Project.

Accra – Takoradi road dualization project

This project is a 185 km Trans West African Coastal highway (National Route N1) which involves the dualization of the entire length of the road through tolling revenues. Currently, it is majorly a single carriageway road with an average width of about 12.3 metres but has a small 10 km stretch outside Accra and offers a double lane service in all directions (to Kasoa), which has a government-run toll station. Traffic along the road averages around 18,000 vehicles per

day and the traffic volume on the project road, on account of the discovery & production of oil in commercial quantities in the Western Region has grown immensely. The private sector party is responsible for designing, financing and construction of new or expansion of existing traffic lanes and structures, operation and maintenance of the road, the construction and operation of toll plazas and collection of toll revenues. The project is estimated to cost about US$600 million under a DBFOM arrangement.

Accra – Kumasi toll road project

This road project involves a 230-km dual carriage highway with rest areas, toll plazas and intercity bus integration. The estimated construction cost in 2011 was $400m, to be undertaken over four years and a 30-year concession. The Accra-Kumasi Road would link the two major commercial centres of Ghana: Accra and Kumasi which should also provide primary access to the northern parts of the country as well as an international transit route for Ghana's landlocked neighbours such as Burkina Faso and Niger. This intends to reduce travel times from 5½ to 2½ hours.

2.4.3 Fiscal constraints of the Ghanaian Economy

The financial limitation of Ghana is the most challenging issue of the construction industry as problems concerning infrastructure stems on funds and the availability of resources (GOG, 2018). Ghana is dependent on international funding and technical assistance as it restructures its economy to strengthen and implement strong policies that can curtail its developmental inefficiencies (World Bank, 2015). The increasing demand for public infrastructure is unlikely to be met in the future (MOFEP, 2016). Nonetheless, Ghana has robust sectors that could support a solid economic base for funding (World Bank, 2015). However, the country's economic outlook in the medium-term depends largely on its power to tackle prevailing fiscal imbalances while the government maintains high fiscal discipline in the organisation of revenue and expenditure (IMF, 2015). There are insufficient resources to supply critical infrastructure in the country, hence the fiscal constraints of such a developing nation and the dearth of efficient structures make road development a challenge (PWC, 2015). Ghana requires a total of $2.5 billion annually to meet the existing infrastructure demand (MOFEP, 2016). The country faces a huge infrastructure deficit and the need for private sector participation in all sectors of the economy especially the road sector (MOFEP, 2016). Kpodo and Flynn (2015) maintain that the country needs $15 billion over the next decade to be able to plug its

infrastructure gap which can only be met by private sector finance integration because of the constraints of the government, some of which are discussed below.

An undeniable factor of Ghana's fiscal constraints is the intractability of the public-sector wage bill which is currently a high of 73 per cent of total government revenue (Ofori-Atta, 2017). Ghana's prospects are at risk as there are serious fiscal and external imbalances with an over-blown wage-bill (IMF, 2015). High interest rates coupled with the significant fall in oil revenue resulted in a fiscal deficit slightly above 10 per cent in 2014 (World Bank, 2015). These structural imbalances led to the depreciation of the Ghanaian currency (cedi), high inflation rates and a decline in the financial reserves (Bank of Ghana, 2016). Inflation rates recorded a high of 17.15 per cent in 2015 and 17.46 per cent in 2016 but a lower figure of 12.37 per cent in 2017 (Ghana Statistical Service, 2018; Bank of Ghana, 2018) an indication of a possible gradual decline as a result of a stimulation of economic activities and policies for macro-economic stability among others (MOFEP, 2017). The cumulative Ghanaian cedi depreciation to the United States Dollar (USD) increased from 14.5 per cent to 31.2 per cent in 2013 and 2014 respectively (Bank of Ghana, 2015). However, depreciation of the cedi has relatively dropped from 17.2 percent in September 2016 to 13.2 per cent in February 2017 against the USD (Bank of Ghana, 2017). The government tends to resort to the domestic banking system, divestiture proceeds and external sources to mitigate these issues which cripple private sector growth in terms of their access to credit, high interest rates etc.

Ghana has also been involved in several external programmes like the numerous World Bank adjustment programmes adopted since the early 1980's (IMF, 2015). In 2001, for instance Ghana entered the Highly Indebted Poor Country (HIPC) programme which was an IMF initiative to write off the debts of countries whose debt exceeded 70 per cent of their annual GDP (ibid). Although the programme is currently non-existent because the IMF argued that the programme failed to yield its intended results which was supposed to cut down the debt of member countries in order for them to increase spending to cut down poverty, Ghana's assessment by the International Monetary Fund (IMF) after the 2015 economic bailout showed the country's current debt to GDP ratio exceeded the erstwhile pre-HIPC levels (IMF, 2015). At the time the country joined the non-existent HIPC programme, the debt to GDP ratio was about 110 per cent of GDP standing at $6,025.6 billion (before redenomination of the cedi) whilst as at 2018, the country's debt had reached a striking, GH¢173,068.7 million (US$35,888.5 million) which is about 71.7 per cent to GDP (MOFEP, 2019). World Bank (2015) states that a debt to GDP ratio exceeding the 70 per cent mark is unsustainable and

dangerous for any economy. The debt to GDP ratio was marked as 73 per cent as at the end of 2016 (MOFEP, 2017) but 68 per cent in 2018 (Ofori-Atta, 2019). There are however concerns to strengthen the debt policy to enable an augmentation of debt sustainability levels in the country (Bank of Ghana, 2017). The debt to GDP ratio of the country is unsustainable and the economy could collapse as a result of further borrowing. Also, the total revenue of the country is such that 99.4 per cent goes into public sector wages, interest payments and statutory commitments (MOFEP, 2017). The remainder is therefore not enough to undertake developmental projects which indicates a worsening condition of the economy. The country has an ailing economy and lacks resources because of macro-economic instability. However, an investment in the industry will boost the economy, increase GDP by direct and indirect job provision as well create the space for all other sectors to function efficiently. This will provide a more stable economy in the long run as the cedi will be stabilised and inflation will decline amongst others. Set on the background of the significance of the GCI to GDP and its capacity to enhance all economic activities, against the fiscal constraints of the government resulting in the inability of the government to borrow to meet infrastructure deficits, the salient emanating issue has been financial. This has spurred the introduction and implementation of PPP as a financial model to support development in this regard.

2.4.4 The State of PPP in Ghana

Ameyaw and Chan (2015) argue that PSP has been an objective of the GOG since independence. Ghana adopted the Economic Recovery Programme (ERP) in 1983 and the tenets of this programme were based on the development of an open and liberalised economy, reduced state participation in trading activities and a growing economy which is private sector oriented (Osei 2013). An increasing awareness of the need to have the private sector participate in policy formulation led to the encouragement and emergence of private sector associations, which gave voice to private sector concerns (Asamoah & Decardi-Nelson, 2014). Therefore, while the state trading apparatus was being gradually and systematically wound down, active measures were taken to encourage private sector growth and development (ibid). However, the economic downturn of the country vis à vis the growing population and increase in demand on critical infrastructure drove the adoption of PPP in 2011. PPP is not only regarded as an alternative route of procurement but also a major financial model for the delivery of infrastructure as a result of the several fiscal constraints of the GOG (Ofori, 2017). The GOG has been driven to create a mutually beneficial enabling environment for the private sector to deliver public goods and services. It became necessary amongst respective governments to

overcome budgetary and fiscal constraints at the same time enhance economic growth and provide public infrastructure (Apenteng, 2015). The GOG's approval of a national policy on PPPs was to build a foundation for structured PPP contracts in the country. A legislation was put before the Parliament of Ghana to be promulgated to provide the essential legal framework pursuant to the National Policy (MOFEP, 2016) but this has still not been passed as at the end of 2019. This law was also necessary to legalise the PPP model and strengthen private investor confidence, standardisation and provide sustainable institutional framework for private sector participation in the delivery of public goods (MOFEP, 2011). With regards to the policy document, PPP is defined as:

> *"A contractual arrangement between a public entity and a private sector party, with clear agreement on shared objectives for the provision of public infrastructure and services traditionally provided by the public sector".*

Worthy of note in this description is the absence of privatisation pointers which has been a corollary effect of the inefficiencies of public institutions in the country. Ghana has very little evidence of contractual partnerships but rather a complete privatisation with somewhat negative effects (Oteng-Ababio, 2012). An example is the sale of a 70 per cent stake in the country's telecommunication company-Ghana Telecom to Vodafone in 2007 (ibid). GOG has also in the past encouraged the private sector to provide certain public infrastructure such as solid waste management (Oteng-Ababio, 2012) water supply, roads, telecommunications and most recently energy and rail transportation (GOG, 2015). These have resulted in several implementation issues as some projects lacked adequate contractual structures and profitability planning where the private sector companies or foreign companies fully own these facilities and control supply through determining charges (Apenteng, 2013). The country continues to suffer from post-construction problems of maintenance and facility management as a result of ineffective binding agreements that becomes an avenue for exploitation by the private sector (World Bank, 2015). PPP is a distinct phenomenon that has emerged as a means to infrastructure development although not a bane to the infrastructure challenges in the country. However, there are several implementation challenges that restrict the realisation of the objective of this policy (Ofori, 2017). The National PPP policy is structured to encourage the provision of a wide variety of quality and timely public infrastructure and services via PPPs (MOFEP, 2016). According to the policy, this will be achieved through faster project implementation, maximum leveraging of public funds, enhanced accountability and a shift to

whole-life cycle costing and infrastructure management by the private sector. The objectives of the PPP policy have been identified to (MOFEP, 2011):

- Leverage public assets and funds with private sector resources from local and international markets to accelerate needed investments in infrastructure and services;
- Encourage and facilitate investment by the private sector by creating an enabling environment for PPPs where value for money for government can be clearly demonstrated;
- Increase the availability of public infrastructure and services and improve service quality and efficiency of projects;
- Ensure attainment of required and acceptable local and international social and environmental standards;
- Protect the interests of all stakeholders including end users, affected people, government and the private sector;
- Set up efficient and transparent institutional arrangements for the identification, structuring and competitive tendering of PPP projects;
- Provide a framework for developing efficient risk sharing mechanisms;
- Encourage and promote indigenous Ghanaian private sector participation in the delivery of public infrastructure and services.

GOG has sought to stir policy and legal restructuring, finance mechanisms and institutional backing to promote private sector involvement in public sector infrastructure provision in meeting these objectives (World Bank, 2015). The World Bank has also been instrumental in the call for private sector participation in public service delivery in Ghana and is very well involved in the creation of a strong PPP policy that will bring mutual benefits to the parties involved (MOFEP, 2016). It is for this reason that the World Bank provided a US$ 30 million credit over a four-year period between 2012 and 2016 for capacity building at various levels so that there is a more comprehensive programme available for the adoption and implementation of PPP from 2017 (World Bank, 2015).

2.4.4.1 PPP Procurement process in Ghana

PPP projects are selected from sectors which have been identified within the National Infrastructure Plan (NIP) and have the potential for development under PPP (MOFEP, 2016). To improve credibility and transparency at all phases of project development, the input of both government and the private party must be assessed in terms of their compliance with the

legislation, regulations and the PPP process and its components, including the bidding process, local content and the formation of SPVs (GOG, 2017). According to the policy, the procurement procedure must be in accordance with a system that is fair, transparent, competitive and cost-effective as well as ensure that PPP activities are undertaken under the Public Procurement Act; and encourages the maximum use of local content and transfer of technology (MOFEP, 2011). There are five (5) stages in the PPP process of Ghana which are followed to ensure PPPs are carried out rigorously. These are (MOFEP, 2011):

(i) Project inception;
(ii) Pre-feasibility study – Approval I;
(iii) Feasibility study – Approval II;
(iv) Procurement – Approval IIIA and IIIB;
(v) Contracting PPP agreements/concessions – Approval IV.

Project inception

This is the first stage of the procurement process where the Contracting Authority (respective public sector authority/body under the respective sector ministry) identifies a project that may be concluded as a PPP. The institution then develops a project brief/concept note which includes the following (MOFEP, 2011):

- Register the project with MOFEP-Public Investment Division (PID);
- Inform MOFEP-PID of the expertise within that institution to proceed with the project;
- Appoint a Project Officer from within or outside the institution; and
- Appoint a Transaction Advisor if MOFEP- PID so requests.

Pre-feasibility study - Approval I

This stage requires the Contracting Authority (CA) to undertake a pre-feasibility study to determine whether the proposed PPP is in the best interest of the government**.** All sector ministries have the responsibility of the review and approval of prefeasibility studies under their respective sectors.

Feasibility study - Approval II

In this stage, and subsequent to the pre-feasibility stage, the CA shall undertake and submit a full feasibility study and appraisal of the proposed project to PID of MOFEP.

Procurement – Approval IIIA and IIIB

The CA must obtain approval from MOFEP-PID for the documentation, including the draft PPP agreement/concession which is referred to as approval IIIA. There is therefore a bidding process but during the evaluation of bids, but prior to appointing the winning bidder, the CA must submit an evaluation report for review and recommendation by the Approval Committee. This should include (MOFEP, 2011):

- demonstrating how the criteria of affordability, value for money and substantial technical, operational and financial risk transfer were applied in the evaluation of the bids; and
- demonstrating how the criteria of affordability, value for money, and risk allocation were satisfied in the winning bid, and including any other information as required by MOFEP.

This stage therefore is critical in the selection of the preferred bidder as these concepts: VFM, affordability and risk allocation and transfer will be evaluated besides any other criteria that may be dependent on the nature of the project or the sector within which it falls. This approval is regarded as approval IIIB and the bidding process is embedded at this procurement stage. According to the PPP Policy, the PPP approval committee comprise the following:

- Minister responsible for Finance (in the Chair);
- Chairman of the National Development Planning Commission (NDPC);
- Minister of Justice and Attorney General;
- Minister of Trade and Industry;
- Chief Executive of Ghana Investment Promotion Centre;
- Chief Executive Public Procurement Authority; and
- Minister of the Contracting entity or where there is no sector Minister, the Head of the contracting entity as co-opted member or their designated representatives.

Contracting PPP agreements/concessions – Approval IV

After the procurement process has been concluded there is a final conclusion of the agreement. This is done after all requirements have been met and due process followed.

2.4.4.2 A review of Ghana's perspective on critical factors of global PPP implementation

This section discusses a perspective of the critical factors developed in section 2.3.1 in relation to the state of PPP in Ghana. Firstly, it is important to recognise that the foundation of the GCI was built on the legal and regulatory orientation of the UK construction sector (Arku, 2009). A review of the Ghana Building Code (GBC) accentuated the similarities of the GBC to other

building codes of European countries (UNDP, 2012) especially the United Kingdom which is attributable to the constitution of Ghana being underpinned by the British common law, amongst other factors (Osei, 2013). The GBC is a regulatory document that is built by the Building and Rod Institute as well as the Council for Scientific and Industrial Research which is described to have similarities in the current UK Legislation-Building Regulations 2000 (512000 No 2531) developed under the Building Act of 1984 (UNDP, 2012). This sector is however akin to the UK system which dates to over 20 years (Ahadzie, 2009). The review of PPP/PFI implementation undertaken in the European states especially the UK or other parts of the world, is prudent in understanding the extent of the PPP model in infrastructure delivery and best practice associated with it. Ghana is undergoing similar economic challenges that justified for instance, the UK's adoption of PFI. The budgetary overruns and the constraint of borrowing are similar to the era of EFL in the UK discussed in 2.3.1.4. This has become a major driver for GOG involvement of the private sector participation in the public infrastructure delivery. Roe and Craig (2014) argue that another reason for the introduction of PFI was bring some much-needed reforms to public sector culture where there appeared to be little financial incentive to complete jobs on time and within budget. It was hoped that this "culture transfer" would spread across more of the public sector as PFI was implemented across several sectors (ibid). The Ghanaian public sector has similar challenges and the private sector participation is supposed to introduce the efficiency of delivery, innovation and technical skills into the construction and operation of such public infrastructure. Akbiyikli (2005) argues that the four major drivers for PPPs are:

- Need for better infrastructure;
- Demand in public sector services;
- Search for efficiency and creativity in public and in construction procurement;
- Financial need for infrastructure projects.

It is critical that periodic reforms and reviews are conducted for effective implementation especially in realising the benefits of PPP to road infrastructure delivery and maintenance. Ghana does not have a central PPP unit or a law. The significance of a central PPP unit which will be non-partisan and be void of government interventions or affected by changes in government could not be overemphasised in Ghana. GOG seeks to provide a credible and conducive legal and regulatory framework to guide the PPP process in the country. These shall be designed to ensure that relevant principles including competition, local content,

environmental safeguards, predictability and transparency are reflected in the PPP legal and regulatory frameworks (Apenteng, 2013). Until the PPP law is enacted, PPP projects shall be guided by this policy and to the extent applicable, existing public procurement regulations (MOFEP, 2011). Therefore, all projects for instance that have been implemented as a PPP model including the pilot projects are backed by the policy since the PPP bill has not been passed. It is argued that a government agency can be put in charge of the development of PPP as PPP expertise is centralised (EIB, 2017). Although, the MOFEP is the government institution responsible for leading PPP implementation in the country, it is important however to set up a central PPP unit that is distinct from government operations and immune to changes in government because of the culture of politics in the country and the public sector.

The economic and financial benefits of PPP are immense to the development of all sectors in Ghana. Although, PPP is not a bane to resolve the infrastructure challenges or the economic challenges (Ofori, 2017), it has the potential to firstly free up space in GOG's balance sheet to enable adequate allocations to other sectors of the economy. These benefits are therefore not only limited to the project level where VFM savings for instance could be made compared to the traditional procurement route (Eaton, 2013). PPP also has the potential to bridge the gap between the demand and supply of infrastructure. This will not only provide critical infrastructure needs but the expansion of the economy in terms of GDP which will therefore improve living conditions in the country.

With regards to periodic reforms, it is important for Ghana to continually engage stakeholders in the improvement of all facets of PPP implementation to enhance effectiveness, as it is a critical factor of effective implementation for many matured PPP jurisdictions. In 2007 for instance, the UK government indicated issues with the tendering process for PFI projects that required improvement (NAO, 2008). For instance, from 2004-2006, PFI projects in the UK took an average of almost three years (34 months) to tender (HM Treasury, 2012). Although there was substantial variation between sectors with schools, in particular, taking significantly less time to close deals (25 months), the average tendering period was no better than in the period 2000 – 2003 for any of the sectors examined (NAO, 2008). The PFI tendering did not follow good practice in all cases and was potentially risking VFM (ibid). The report describes the measures taken by the government to improve the PFI tendering process. These included: the development and enforcement of standardised contractual guidance; proposals to improve public sector skills and procurement support; and to reduce tendering times and costs (HM, Treasury, 2012). NAO (2008) argues that PFI projects are also receiving fewer developed bids

than previously where 85 per cent of PFI projects that closed prior to 2004 received three or more developed bids but reduced to 67 per cent of projects that closed between 2004 and 2006. The reasons for this were primarily the lengthy nature and cost of tendering (ibid). This is also an issue in Ghana as prospective bidders are disinterested in bidding for road PPP projects as a result of the lack of transparency and a structured process. It is important therefore for Ghana to be proactive and effectively review the model to meet the current challenges including bidding and its related issues.

2.4.4.3 Ghana and PPP Maturity

Many countries are still at the first stage of PPP development which involves the design of the partnership policy and legislative framework, getting the procurements and contracts right, and building the marketplace by encouraging the private sector to bid on these kinds of contracts (Deloitte, 2013). After a few successful deals, countries typically move to the second stage of maturity as they begin to expand their use of PPPs to multiple infrastructure sectors (ibid). It is an experimental stage of sophisticated hybrid PPP models to meet the unique needs of each infrastructure sector and they establish PPP units in each agency to drive PPP deals. At this stage, structures should be in place for standardisation and effectiveness as a result of lessons learnt. This would enhance implementation and provide strong pipeline of projects (KPMG, 2015). The third stage is characterised by a deep and sophisticated capital market, robust government capabilities to initiate and manage PPPs and the development of innovative new PPP models which is the stage many countries aim to reach (EIB, 2017). Only a few countries have reached stage 3 like Australia and the UK which have employed PPPs across infrastructure areas for many decades, making PPP a key mode of infrastructure delivery in the country (Deloitte, 2013). Countries at earlier stages of PPP development could benefit from the opportunity to learn from more countries who have moved to more advanced stages (Deloitte, 2013; World Bank, 2018). Ghana, which only has a bill and few pilot projects in place need to carefully consider other factors of stage one as critical milestones or KPIs for PPP development in the country and onward advancement to stage two. These are set out as requirements for PPP development which determine the level of sophistication of countries discussed in section 2.3. Factors that need to be institutionalised and practised in stage one include (Deloitte, 2013):

- Establish policy and legislative framework;
- Initiate central PPP policy unit to guide implementation;
- Develop deal structures;

- Get transactions right and develop public sector comparator model;
- Begin to build marketplace;
- Apply early lessons from transport to other sectors.

2.5 Chapter Summary

The chapter conceptualised five attributes of PPP/PFI/PF2 and defined the concept for purposes of this research. The Deloitte Maturity Model was adopted to assess the justification of the chosen and discussed countries as well as used to highlight Ghana's stage of PPP development at stage one. It illustrated the increased benefit of private sector participation in public infrastructure delivery and established an underlying essence of PPPs especially in developing countries such as Ghana with some specific macro-economic conditions. This chapter accentuated the significance of PPP or private finance capital in the delivery of public infrastructure in the road sector and discussed emerging trends of best practice from academic literature. This was necessary to direct the research and project an understanding of what Ghana aspires to reach in terms of the development of PPP. The essence of the PPP legal framework and PPP unit to steer affairs of PPPs was a critical finding as a result in enhancing sustainability of PPP in the country.

It was important to present a background to the construction industry of Ghana to demonstrate its importance to the Ghanaian economy. A focus was then drawn to the importance of the road sector, a sub-sector of the GCI and its challenges. As the importance of a robust economy could not be over-emphasised in a developing country like Ghana, it was necessary to link the GCI's immense contribution to the economy. Ironically, the potential contribution of the GCI is not realised as a result of its inefficiencies which stems from the inability of the economy to provide investment for the GCI's growth and development because of its fiscal constraints. This has informed the government's consideration of a PPP approach as a financial model to deliver public infrastructure. The state of PPP in Ghana was discussed taking into consideration the objectives and principles set out in the national PPP policy. It is therefore necessary for Ghana to develop its implementation of PPP to enable it advance to the next stage of PPP maturity until it becomes a fully developed PPP market. The procurement process of PPP, stakeholders involved, the PPP bill and pilot PPP projects in the road sector were presented. Ghana is however in the early stages of PPP adoption and is at the phase of implementation of pilot projects.

Chapter 3 PPP Bidding Processes and Evaluation Criteria

3.1 Chapter Introduction

This chapter reviews existing literature on the types of PPP bidding and stages of Global PPP procurement process. This was necessary to identify typical stages of PPP procurement among developing countries to guide this research in the development of a context specific bidding process and award map for the Ghanaian road PPP sector. Bid evaluation and bid evaluation criteria, as well as the challenges of the bidding processes from the private sector perspective are also reviewed according to literature. Lastly, the concepts of Risk Management, VFM and Affordability which are preferred bidders' criteria of the Ghanaian PPP procurement route are reviewed according to literature.

3.2 PPP Bidding

There exist a number of contract strategies, delivery systems or procurement systems which allow the PPP engaging parties to exchange their resources and experience in the delivery of a service or product. The selection of any delivery system is dependent on the owner's needs relating to type and size of the project in a specific situation (Love & Skitmore, 1995). Bidding involves the process of selecting the best contractor from many contractors to complete a project specified by the owner or their representatives (Alotaibi, 2016). A tender or a bid is a submission made by a prospective supplier in response to an invitation to tender.

3.2.1 PPP Bidding Procedures

There are two general approaches to the procurement of PPP concessions, which are: One stage procedure; and Two stage procedure (PPIAF, 2009). The one-stage approach involves the circumstance when the government or client has a precise idea on the technical options and specifications to be chosen (EPEC, 2011). Prequalified firms are asked to submit bids in strict accordance with the specifications imposed by the government. Final selection is made on a "financial" basis alone and little room for negotiation is left to the selected candidate (PPIAF, 2009). This procedure is often used for highway projects (ibid). However, with regards to the two-stage approach, it involves particular situations when uncertainties remain on the technical options that need to be retained, it may be undesirable or impractical to prepare complete technical specifications in advance (World Bank, 2012). This is typical for large and complex PPP projects. In such a case, a two-stage bidding procedure may be used. In stage one, unpriced

technical proposals based on a conceptual design or performance specifications are invited PPIAF, 2009). They are then subjected to technical and commercial clarifications and adjustments (ibid). In stage two, amended bidding documents are issued and final technical proposals and priced bids are submitted and evaluated (EPEC, 2011).

3.2.2 Distinguishing PPP Bidding Types

Bids are invited in one of the three broad procedures (Liston, 1999): Open Procedure; Selective or Restrictive Procedure; Negotiated Procedure. However, Dagon and Schrag (2017) argue that there are two more types of procurement: limited procedure and competitive dialogue.

3.2.2.1 Open Procedure

This procedure allows any interested contractor to submit a tender for the project. Typically, this procedure involves an owner/client or their representatives placing a public advertisement in the national and/or technical press, giving a brief description of the project and inviting contractors to apply or request for the contract documents before making a bid (Minchin & Smith, 2005). This invitation does not bind the owner/client to accept any tender (Liston, 1999). The procedure can be subdivided into the following simple steps (Dagon & Schrag, 2017):

- Inviting tendering;
- Receiving tenders;
- Evaluating tenders (usually based on the lowest bid);
- Pre-award meeting (including price negotiation);
- Awarding a contract.

3.2.2.2 Selective or Restrictive Procedure

This procedure consists of drawing up a short list of contractors that are known to have the appropriate qualifications to carry a project (PPIAF, 2009). Such a list can be drawn up from the experience of the owner/client and their advisors or from a prequalification exercise where there is an initial shortlist of candidates based on a certain criterion (Dagon & Schrag, 2017). This procedure can be subdivided into the following simple steps (Liston, 1999):

- Inviting contractors for entry to a short list;
- Receiving contractors' data;
- Prequalifying the contractors (optional);
- Having a short list of contractors;
- Inviting tendering;
- Receiving tenders;

- Evaluating tenders (usually based on the lowest bid);
- Pre-award meeting (including price negotiation);
- Awarding a contract.

3.2.2.3 Negotiated and Limited Procedure

The distinguishing factor of this procedure is that an acceptable tender is arrived at by negotiation between a client, a group of consultants and a single contractor without necessarily obtaining competitive tendering (PPIAF, 2009). The limited procedure involves an invitation to a closed set of bidders to present their offers (Dagon & Schrag, 2017).

3.2.2.4 Competitive Dialogue Procedure

In this procedure, a public communication is usually developed to invite bidders. This allows contractors/consortia to express their interest for the project (World Bank, 2010). A consortium or SPV consists of several companies like designers, construction contractors, subcontractors, suppliers and maintenance companies (Zhang, 2004). Then, there is a pre-qualification stage which shortlists a number of contractors who are invited for tender (ibid). The aim of this is to reduce the number of interested tenders which consists only of reputable and experienced tenders who are able to take over project risks (Dagon & Schrag, 2017). This ensures that unnecessary tendering costs of weaker bidders are avoided. The public sector party discusses the PPP contract and the corresponding technical specifications with the pre-qualified bidders. The number of shortlisted bidders is determined by the public authority (Liston, 1999). Tenders on the shortlist are invited to submit detailed proposals that are evaluated in accordance with the predefined evaluation criteria (Dinapoli, 2014). The government communicates separately with each candidate concessionaire for reasons of clarification or adaptation without sharing information from other bidders (World Bank, 2012). After the evaluation phase, the preferred tenderer is called to a final negotiation with the government before submitting the Best and Final Offer (BAFO) (PPIAF, 2009). This stage involves the negotiation prior to the final awarding with one or a few preferred tenders (Ho & Hsu, 2012). At this stage, provisions in agreements are carefully reviewed. Once the agreement is signed, a contract award notice will be published, and the contract is implemented (ibid). The competitive dialogue encourages better procurement practices and strengthen the competitiveness in the PFI procurement process (Adeniyi et al., 2011). It also helps to reduce the potential to make significant changes to the contract once competition has closed (Dagon & Schrag, 2017).

3.2.3 Typical Stages of PPP Bidding

Zhang (2004) argues that open competitive tendering is the most used and the most recommended procedure for PPP. Competitive bidding involves a combination of phases depending on the jurisdiction and nature of project (Shaoul et al., 2008). In the UK for instance, the PFI bidding process are categorised into three (3) major stages: The invitation to negotiate stage; Tender evaluation and negotiation stage; and the Award stage (CIC, 1998). In such developed countries like the UK and Australia, the PFI/PPP procurement process is an example of a multi-stage tendering process which includes almost all the major stages of typical PPP bidding but could be termed differently (Kwak et al. 2009). These typical stages are:

- Official Notification;
- Expression of Interest (EOI) phase;
- Dialogue with Bidders;
- Request for Proposals (RFP) phase;
- Negotiation and Completion phase.

3.2.3.1 Official Notification

In the first stage, the client develops the project brief into an output based specification and co-ordinates the preparation of the invitation to negotiate (Project Finance Panel, 1996). This is done by preparing the pre-construction information, pre-tender estimate in relation to the budget and amendments if necessary (Ahadzi & Bowles, 2004). Advertisement is one of the ways the public authority gains best VFM through the competitive environment created, which allows the private sector to participate in the tender or bidding exercise (HM Treasury, 2010). It can be considered as the core task in seeking competition, as the advertisement enables this to take place (Dinapoli, 2014). For EU member states including the UK, the procurement process starts formally with official notification by the public authority: advertisement of a procurement notice (EPEC, 2011). The official notification is required to be published in the Official Journal of the European Union (OJEU) (Andersen et al., 2010). The major reason for this official notification is announcing to interested companies and the public the intention of the authority to obtain the infrastructure (Craven, 2011). Braun (2001) states that the European Court of Justice ensured that competition was created through advertisement where every interested party is given an equal chance to bid for the project. The advertisement is also an opportunity for the public authority to demonstrate their commitment and capability to conduct an efficient procurement process, hence increasing the private sector's confidence to participate (HM Treasury, 2010). According to Gordon et al. (1998), the advertisement is also in line with

the principles of EU public procurement, transparency and non-discrimination. Although the content of the advertisement depends on the legal requirements of a country (Felsinger & Miranda, 2008), within the advertisement, the public authority should disseminate project information specifying the requirements, with enough information to elicit interest from the private sector (Farquharson et al., 2011).

3.2.3.2 Pre-qualification Phase

This phase serves as a process where the public entity advises the market about the project, the procurement process and related timelines (Farquharson et al., 2011). This seeks to confirm the level of interest of the market and other market feedback. Bidders submit documents in response to the government's request or official notice. The project team then evaluates the bidders and shortlists those most capable of meeting the project objectives. In Australian health and transport PPPs, Expression of Interest (EOI) phase has been utilised instead (PPIAF, 2009). Also, a study by To and Ozawa (2007) and Tiong and Alum (1997) highlighted the absence of a prequalification phase in some Asian countries like Hong Kong, Thailand and Malaysia. This is because immense effort and capacity is required for such projects, hence only large and experienced companies bid for such projects (ibid). However, many other contracting authorities in countries like Canada, Philippines, USA, UK use the prequalification of bidders (Tiong & Alum, 1997). In the UK for instance, the client develops the project brief into an output based specification and co-ordinates the preparation of the invitation to negotiate (Project Finance Panel, 1996). This is done by preparing the pre-construction information, pre-tender estimate in relation to the budget and amendments if necessary (Ahadzi & Bowles, 2001). A robust prequalification process in selecting the right contractor is an important first step for ensuring success in candidate projects. From the public sector perspective, the process of pre-qualification ensures that only those capable of implementing the project actually participate in the bid and it saves an unqualified firm the substantial investment required to prepare a bid on the part of the private sector (Andersen et al., 2010). It limits the number of competitors and eliminates inexperienced and unqualified bidders, thus reducing the risk of losing the project through an unrealistic bid (low balling) which increases the incentive to participate (ibid). However, in developing countries, the problem is often not that there are too many bidders but that there may be too few candidates for the PPP project (World Bank, 2010). Felsinger and Miranda (2008) argue that prequalification can lead to collusion between potential bidders. The aspects that are very important for pre-qualification are the information provided to interested private parties and the information to be provided by the potential

bidders (Farquharson et al., 2011). It is important for the public entity to provide sufficient information to attract qualified private parties and allow them to assess their capability to satisfy the demands of the project. These include (PPIAF, 2009):

- Short description of the project and main design features;
- Scope of responsibilities to be entrusted to the private party;
- Level of autonomy left to the private party;
- Outline of the cost recovery mechanisms;
- Project schedule and actual progress;
- Principles of the selection criteria and process.

Marketing the project is therefore of paramount importance to ensure that all qualified firms are aware of the project and feel confident they could benefit from it. The steps involved in the prequalification process for a PPP are usually no different from those for typical civil works projects. Information required from potential bidders typically include (Braun, 2001):

- Financial capacity and ability to raise private finance;
- Managerial and technical capacity and expertise;
- Certified experience of exercising similar responsibilities in similar projects;
- Knowledge of the context of the project country;
- Approach to the project and its specific conditions.

3.2.3.3 Dialogue with Bidders

Dialogue sessions in this phase helps both parties discuss matters regarding the formation of the contract and finalising the project specification (Shaoul et al., 2008). According to Sundaraj and Eaton (2011), the dialogue should be comprehensive, covering all aspects related to the project. These dialogues have the potential of benefitting both the public authority and the potential bidders. Adeniyi et al. (2011) suggested that interaction with bidders before the submission of bids is essential to ensure that the bidders are able to understand the requirements of the public authority. As PPP itself is complex, the public authority needs the dialogue to consult with potential bidders on available solutions to address their needs (Andersen et al., 2010). Through clear communication between both parties, higher-quality bids are expected as the end product. The introduction of competitive dialogue was publicised to fill the gap left by the absence of a proper mechanism to deal with the complexity of PPP; the gap includes the alarming misuse of negotiated procedure that is said to undermine the principle of competition (PPIAF, 2009). Burnett (2009) argues that bidders who obtain more information may have an

advantage over competitors. Hence, the dialogue in competitive dialogue process emphasises the principle of equality in dispersing information to all bidders to ensure a healthy competitive environment. According to the directive, the confidentiality of each bidder's solution and ideas should be preserved, and the information may not be transmitted to other bidders, as each bidder uses his own resources and invests time in participating in the dialogue stage (EPEC, 2011). This will create an environment in which bidders compete in proposing the best solution for the public authority (Hodkinson & Essen, 2015).

3.2.3.4 Request for Proposals (RFP) Phase

After the pre-qualification stage, the public entity issues the RFP documentation to the shortlisted bidders, which include the government's output and technical specifications and the commercial and contractual frameworks for the project (Drew, 1994). The RFP does not contain specific detailed technical requirements, but it is rather designed to elicit innovative approaches from service providers who provide their technical bids in accordance with their best proposal for providing the service (Ho & Hsu, 2012). The quality of the information made available to the bidders affects their competitiveness in putting forward a proposal to win the concession (Drew, 1994). The content of a high-quality RFP document should include the background of the project (World Bank, 2012), public authority requirements, performance expectations, how the shortlist will be compiled (Ho & Hsu, 2012) and the payment mechanism (Commonwealth of Australia, 2008). The bidding documents sent to the pre-qualified bidders will include instructions to bidders (PPIAF, 2009). The instructions outline the required content of the bid, the procedures for clarifying the bidding documents and submitting bids, security requirements, how the bids will be submitted, opened and evaluated and the procedure to be applied for contract award and negotiation (Braun, 2001). A two-stage approach allows bidders to submit initial bids without prices, after evaluating the technical bids, the government prepares the second stage detailed bidding documents based on response it received from the first-stage technical bids (PPIAF, 2009). The second stage invites bidders to respond with their financial bid. This two-stage approach is useful in instances where the government is unsure about the market response (example: bundling of areas or services, specific technologies, etc.), and the specific project design, hence wishes to be presented with various options of how to do a certain project (World Bank, 2010). This process is also the best solution when it is in the best interest of the government to allow bidder to bring new solutions (Craven, 2011).

Contrary to the procurement of works, supplies or services, international standards for PPP bidding documents have been slow to develop (World Bank, 2012). Some countries with long experience of PPPs such as the UK have compiled standard bidding documents for BOT or Concessions (EPEC, 2011). India and Pakistan are among a number of countries that have more recently developed standardised provisions (ibid). Along with other data, the evaluation criteria are included which detail the method for the evaluation and comparison of bids, including how such factors may be quantified or otherwise evaluated, and the method for evaluating alternative proposals (Alotaibi, 2016). In other words, the document notifies potential bidders of the governance of the proposed concessions, the expected submission from the bidder and the basis of selection of the bidders, sufficient for the bidders to conduct a due diligence in preparation of a comprehensive proposal (Low et al., 2015). The inclusion of the evaluation criteria in the RFP document is essential to demonstrate transparency. It will also establish that, although there is competition, the selection of an SPV is objective according to the evaluation criteria set out which attracts participation from the private sector (Zin - Zawawi, 2017). Zen et al. (2014) argue that an RFP document may also include a pro-forma concession agreement.

The EU's PPP bidding process focuses on dialogue in relation to defining the final terms of the RFP and the contract (Zin - Zawawi, 2017). In Australia and New Zealand, this stage details the development of the bidders' proposals and their interpretation of the RFP in ensuring that their bids address the RFP requirements (PPIAF, 2009). Hence the process in Australia and New Zealand influences the bids rather than the RFP documents (ibid). The financial component is the critical criteria at this stage for assessing RFP responses. In these cases, the technical component of the bid is used as a compliance test to ensure minimum requirements of the technical specification have been met (Zin Zawawi, 2017). In some cases, in particular highly complex or first-of-kind projects, a detailed technical proposal would be required and would form a part of the final evaluation (PPIAF, 2009). In other cases, a technical component will not be required at the RFP stage and the financial bid will be the sole selection criterion. This is often the case in the road sector (Ho & Hsu, 2012). Zin Zawawi (2017) argues that there is no agreed minimum number of bidders to achieve the required degree of competition; it is subjective. Multifaceted considerations need to be considered, including the nature of the project, the PPP market and the choice of procurement procedures (Raisbeck, 2008). This is where the role of the public authority in stimulating competition is vital. EU member states are governed by the public sector procurement directives to ensure genuine competition in the bidding exercise (Craven, 2011). It is stated in Directive 2014/24/EU that the minimum number

of candidates to invite for a restricted procedure is five, and for competitive and competitive dialogue procedures, three (European Parliament, 2014). Low et al. (2015) argue that the minimum number to achieve competition is five bidders. However, Hartmann (2006) argues that the number of bidders can be reduced if the number of participants is limited or there is evidence that competition is achieved with a lower number of bidders. Similarly, in the UK, under the recent Public Regulations Contracts 2015, the minimum number of shortlisted bidders for restrictive procedures is set at five, and three for competitive dialogue and negotiated procedures (UK Parliament, 2015). The importance of competition in EU public procurement can be seen with the requirement for negotiating with a suggested number of shortlisted bidders. The client may decide at this stage to deselect some of the bidders and request a BAFO from the remaining bidders which is not usually more than two (NAO, 2007). A reserve bidder is retained in the event that negotiations with the preferred bidder are not successful (Ahadzi & Bowles, 2004).

3.2.3.5 Negotiation and Completion Phase

During this phase, all outstanding design, legal, commercial and financing issues are finalised, followed by execution of the contracts and financial close. For contract negotiation and award (one-stage procedure), the bid evaluation process shall be concluded by the elaboration of a bid evaluation report summarising the outcome of the evaluation and the identification of the bidder to be called to negotiate (Felsinger & Miranda, 2008). Typically, the concession contract is signed upon agreement by both parties on all clauses and its enforcement is subject to financial closure being obtained by the concessionaire within a fixed period of time (PPIAF, 2009). There is no guarantee however that such a financial closure will be reached, and the contract shall become void if the concessionaire cannot mobilise sufficient funding. For larger and technically difficult projects, the two-stage procedure is recommended (Andersen et al., 2010). The two-stage procedure is made to allow the private sector to come up with technical alternatives and options that would improve the project design before conducting the actual selection (ibid). The main drawback of such procedure is the lack of motivation sometimes noticed from the bidders to prepare sound and comprehensive technical bids in the first stage while no selection is made, and the disclosing of information on their approach to the project to other bidders who could use it in the second stage (Zin Zawawi, 2017).

Figure 3.1 presents a list of five critical stages of global PPP procurement as reviewed from literature. This provides an illustration of these typical stages that are engaged in different forms or combinations under different contexts according to the distinct geographical contexts.

The titles of these stages could also differ in terms of the context. However, figure 3.1 essentially illustrates the stages identified in this section to serve as a basis for investigation and testing in this research towards the development of the Ghanaian BAPM.

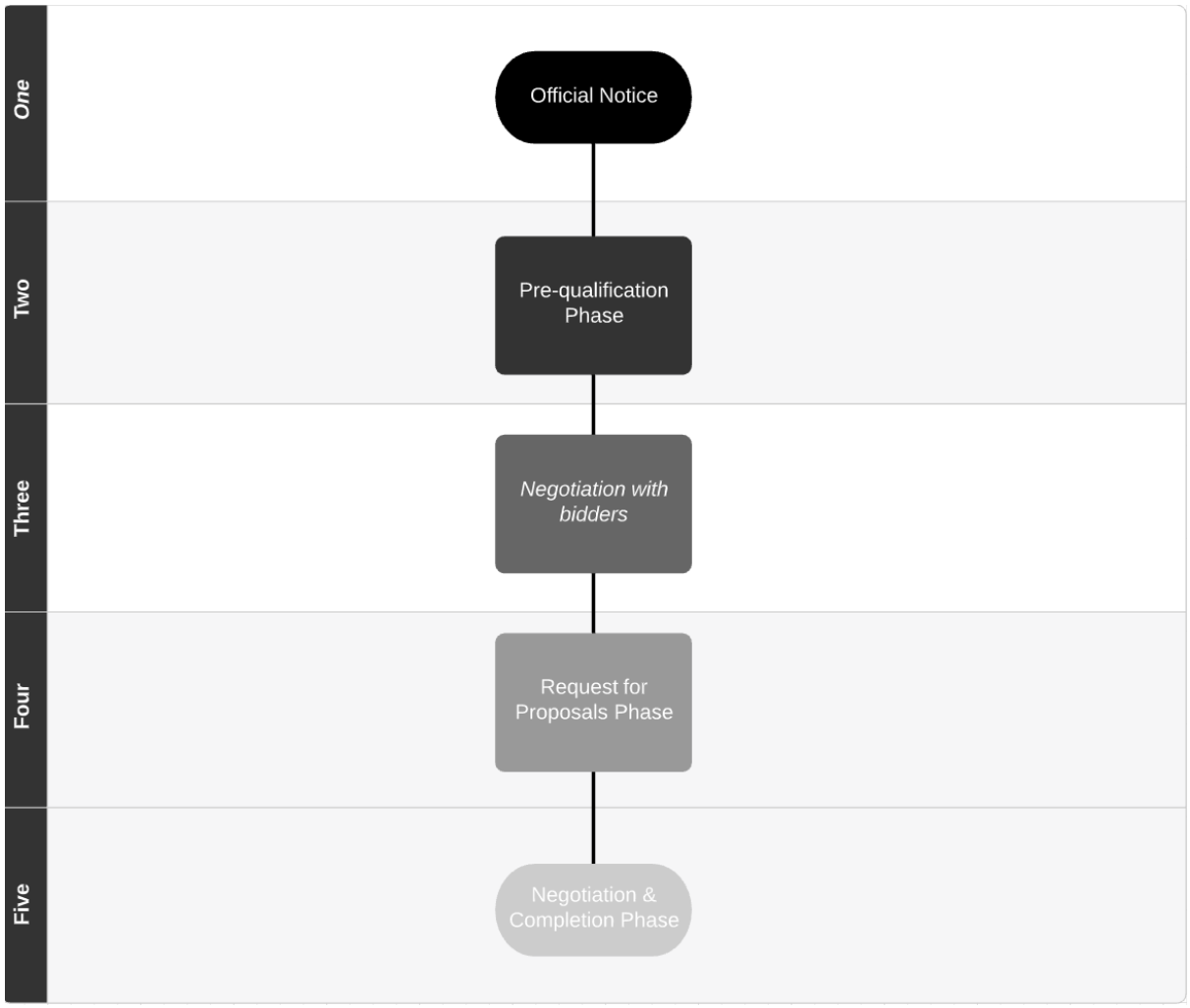


Figure 3.1 - Typical stages of the PPP bidding process

3.3 Bid Evaluation

Evaluating PPP bids is a more complex process than evaluating conventional contracts, and risks of non-compliant bids and the challenges to the process are accentuated in PPPs (Wang & Dai, 2010). The main corrective factors for these risks are having clear rules for evaluation and robust evaluation decision-making processes (Craven, 2011). Bid evaluation is the process that takes place after the tenders have been submitted. It involves the examining of the bids in accordance with the evaluation criteria or a selection methodology to identify the preferred bidder for the project. These criteria usually involve the specifications of a project and delivery

approach (Dagon & Schrag, 2017). Wang et al., (2009) argue that there are several stages of evaluation in the procurement process which is typically linked to every stage. In the prequalification stage, an initial review of the offers received is generally undertaken to determine their responsiveness and conformity to the conditions in the Invitation to Tender (ITT) documents. Subsequent to this, a more detailed evaluation of compliant bids is undertaken against a number of set criteria (PPIAF, 2009). A technical determination is made to ascertain whether the bidder's technical solution is feasible, appropriate and deliverable within the set requirements (World Bank, 2012). The final evaluation often focuses solely on the financial terms of the bids that made it past the technical cut-off. In other words, only selecting a suitable delivery system for a project does not mean selecting the best contractor to complete the project (Zin Zawawi, 2017). Therefore, to select the best contractor, a set of meaningful criteria, a form of gathering data according to these criteria and a rational approach for evaluating abilities of contractors are necessary.

3.3.1 Bid Evaluation Criteria

There are a number of criteria upon which a preferred bidder can be identified, these include: lowest price; most economically advantageous tender; mean value; and exclusion of the extremes (Alotaibi, 2016). While it is common for the bidder with the lowest priced tender to be awarded the contract, other factors such as relevant experience and the perceived quality of the solution should also be taken into consideration as the lowest price does not always result in the best long-term value (Mak, 2012). Many authors have proposed different set of criteria for choosing the best among the candidate sponsors for a PPP project. However, Iossa (2015) argues that a set of meaningful criteria is dependent on the specific delivery system, the owner's needs or objectives and a specific condition. The bid evaluation is grouped and conducted in two main criteria (PPAIF, 2009):

- Technical: The feasibility and standard of the proposed technical solution, covering the way in which the specified service outputs would be financed, produced, managed and delivered;
- Financial: The proposed whole-of-life cost or payment in the financial proposal.

3.3.1.1 Technical Evaluation

When a proposed technical solution is required, it is checked against the stated technical requirements including performance standards (Liston, 1999). The purpose is to ensure the bid can realistically deliver the project's output requirements and do so to the required standard. If

a minimum score approach is used, bids would typically have scores placed on individual technical aspects and these would be combined to arrive at an overall technical score that can be compared against the cut-off (Rudzianskaite et al., 2010). The relative weightings on different aspects of the bid would vary depending on their importance to the particular project (PPIAF, 2009). There is the need for the technical evaluation to take into account a degree of flexibility which is built into the proposed technical solution (Ansari, 2014). Arrowsmith et al., (2010) argue that the extent to which the solution can be made flexible will depend on the particular project. However, since the life of a PPP is typically long and changes can occur over this time period, inbuilt flexibility is a distinct advantage and should be noted at the evaluation stage (PPIAF, 2009).

3.3.1.2 Financial Evaluation

The financial components of the bids are entered into the financial model for the project and analysed against the financial criteria. The evaluation considers the WLCC or costs including regular payments outlined in the bid (Zhang, 2004). Net Present Value (NPV) is calculated to enable comparison between bids with different cash flow timing. Most often, the bidder making the best financial offer (lowest price, highest concession fee payment etc) would be selected as the preferred bidder (Ansari, 2014). If a formula approach is being used to assess the technical and financial components together, then the financial bid would usually be converted to a standardised score so that it can be combined with the technical score. Typically, the financial bid criteria would focus on one or a combination of the following, depending on the nature of the project (PPIAF, 2009):

- Price to be charged to users of the service;
- Price or payment to be charged to the public sponsor or to the users for provision of the service. This may be:
    - On a per-unit basis (eg, a shadow toll in a roads project);
    - As an ongoing lump sum payment (eg, an annuity);
    - As an ongoing fee based on performance (performance fee);
    - Upfront in the form of a grant.
- Price or payment to be paid to the public sponsor for the right to provide the service. For instance, a negative grant, revenue share (as is common in ports projects), license fee etc.

3.3.1.3 Multiple Criteria Evaluation

This process involves multiple criteria decision making which is also context specific and dependent on the nature of the project and jurisdiction (Zhang, 2004). In this case, bids are evaluated on the basis of multiple parameters where each bid is possibly scored using a formula that aggregates the various parameters with chosen weighting coefficients (Kwak et al., 2009). Such a system has the advantage of better taking into account the complexity of PPPs and balancing out the advantages and drawbacks of each proposal. Ideally, the technical and financial aspects of the bids will be used to test the VFM to the public sector (Mandri-Perrott & Stiggers, 2013). The impact of evaluation criteria in creating market interest is substantial (Kwak et al., 2009). Attracting the participation from the private sector requires a platform where they can have a greater certainty of the impartiality and transparency of the procurement process so they can compete fairly and estimate their chance of winning (Iossa, 2015). This includes openness in evaluating and selecting the best bid process where the evaluation criteria are known in advance to the bidders (Mandri-Perrott & Stiggers, 2013). Advance notification of the evaluation criteria and method makes the bidders aware of the basis on which their proposal is evaluated, so they can fairly determine their own score for the solutions they propose (Mak, 2012). In some jurisdictions such as the EU, advance notification regarding the evaluation criteria is obliged by directives to be included in the official notification and the RFP document (Arrowsmith et al., 2010). Furthermore, under the EU directives, the member states are required to disclose the evaluation criteria and the methods used in evaluating the proposal; even to the detail of the range of weighting fixed for each criterion (Ansari, 2014). Besides motivating the bidders to submit high-quality bids, the obligation for advance notification upholds the principle of transparency and equality of treatment between bidders (ibid). This is demanded by the Court of Justice of the EU (Sundstrand, 2012). Table 3.1 presents major criteria and significant parameters according to selected literature.

Table 3.1 - Criteria and parameters for bid evaluation

CRITERIA	PARAMETERS	SELECTED LITERATURE
Financial and Economic	•Sound financial analysis • Reasonable source and structure of funds • Innovation of financing method •Net present value •Tariff/toll setting up and adjustment mechanism •Ability to address commercial risk (e.g., supply and demand risks) •Minimal financial risks to the client •Internal rate of return •Financial strength of the participants in the project company •Financial guarantee	Zhang (2005), Rudzianskaite et al. (2010)

	•Total investment schedule •Concession period •Strong financial commitments from shareholders •Pay-Back Period •Profitability Index	
Technical	• Qualifications and experiences of key design and construction personnel •Experience in similar projects •Conforming to client's requirements •Competencies of designer/sub designers •Contractor/subcontractors •Conforming to design requirements •Construction programs and abilities to meet them •Design and construction quality control schemes •Use of advanced technologies •Maintainability •Design life •Design standard • Quality management and assurance systems	Zhang (2005), Wang et al. (2007)
Health, Safety and Environmental	•Qualifications/experience of relevant personnel •Management system of safety, health and environment •Conformance to laws and regulations •Construction/demolition waste disposal •Control of air and water pollution •Past environmental performance •Protection of items of cultural/archaeological values •Management safety accountability •Noise reduction and dust reduction	Wang et al. (2007), Zhang (2005), Rudzianskaite et al. (2010)
Social	•Importance of the project for public transport	Rudzianskaite et al. (2010)
Managerial	•Project management skills •Constitution of the management, their qualification and experience •Coordination system within the consortium •Success rate of cooperation among private consortium •Leadership and allocation of responsibilities in the consortium •Effective project controlling system •Working relationship among participants	Zhang (2005), Wang et al. (2007)

Zhang (2004) states that among the methods used in evaluating competitive PPP tenders are the NPV method, simple scoring method, Kepner-Tregoe decision analysis technique, multi-attribute analysis and the two-envelope method. There are also cases where multiple methods are combined. This is also supported by Wang and Dai (2010), who state the Least-Present-Value of Revenue (LPVR) as another method. Under the simple scoring method, each criterion is given predetermined maximum points (Rudzianskaite et al., 2010). The proposal is compared with the criteria selected and given marks against the predetermined maximum (Wang et al., 2007). The concession is then awarded to the bidder scoring the highest total. Multi attribute analysis also identifies criteria by which to evaluate bids, but it is more detailed and includes packages with sub-criteria (Zhang, 2004). The tender is compared with these packages and awarded scores, and the highest wins. The NPV method is used to evaluate financial packages and the commercial aspects of a tender, commonly for toll/tariff-related projects where the difference between the value of the concession is compared with the present value (Ansari, 2014). The tender with the lowest positive NPV is selected. The Kepner-Tregoe decision

analysis technique is the most difficult (Wang & Dai, 2010). It identifies the 'must' and 'want' criteria from the proposal, appropriately weighted, before a decision is made (ibid). There is however no right or wrong evaluation method. Through a survey conducted with experts and practitioners, Zhang (2004) identified that the NPV and multi-attribute methods are the most frequently used. The Kepner-Tregoe decision analysis technique has been used in Hong Kong projects (Wang & Dai, 2010), and the UK uses NPV and multi-attribute analysis in evaluating tenders (Kwak et al., 2009). Selected countries and their multiple evaluation criteria (technical, financial etc) are presented in table 3.2.

Table 3.2 - Multiple evaluation criteria according to selected countries (Source: World Bank, 2012)

COUNTRY	RELEVANT LEGISLATION FRAMEWORKS	PRACTICE
United Kingdom	Directive 2004/17/EC of The European Parliament The Public Contracts Regulations 2006	Choice between: • Price only (lowest price to the public procurer) • Price and economic benefits (value of features of the tender linked to subject matter of the contract)
South Africa	PPP Manual (published by PPP Unit of South Africa); Preferential Procurement Policy Framework Act 2000	Weighted average of the following factors: • Price (weight between 20% and 40%) • Technical Evaluation Score (weight between 50% and 70%) • Black Economic Empowerment Score (weight between 10% and 20%)
South Korea	Basic Plan for Private Participation in Infrastructure 2007	Weighted average of the following factors: • Engineering Factor- focusing on the content, plans and drawings (weight of 50%) • Price Factor- Net Present Value of all payments to be made by the public entity (weight of 50%)
Australia	Practitioners' Guide- National PPP Guidelines	Combination of the following: • Highest savings as compared to Public Sector Comparator (Bidder ranked accordingly) • Qualitative assessment of individual bids

3.4 Challenges of PPP Bidding Process from the Private Sector Perspective

Challenges in the bidding processes or environment creates tension in the competitive procedure which impacts the conduct of bidders (Zin Zawawi, 2014). The features of PPP such as bundled contracts, a long contract period, multiple number of stakeholders, the determination of specifications, technical requirements, the financial structure arrangement, makes the PPP procurement process complex. The need for a balance between enhancing efficiency and competition in the procurement process is imperative amidst several its several challenges. This section reviews literature on challenges of the bidding process from the private sector perspective.

3.4.1 High Bidding Costs

Iossa (2014) suggested that the PPP proposal is different from traditional procurement as it is more complex hence the proposal needs to address the complexity of the bundling nature and long term of PPP contracts, which requires more time, effort and huge resources. PPP bidders invariably incur high costs which impede private sector players from engaging in the PPP procurement route (Saussier et al., 2009). The cost of tendering grows in proportion to the size of the project (Yescombe, 2007). The cost of bidding in Australia can be 0.5 to 1.2% (winning bid) and 0.35-1.0% (losing bid) of the project's capital value (KPMG, 2010). It is higher in the UK at a rate of 5-6% and 2-3% for winning bids and losing bids of capital value respectively (ibid). Grieken and Morgan-Payler (2014) suggested that in preparing the proposal, the highest costs are for design, followed by the cost of conducting due diligence, and seeking legal and financial advice (Zhao et al., 2011). Farquharson et al. (2011) argue that it is still bearable by large companies bidding as a consortium. Proponents of PPP argue that the high cost of bidding is a disincentive and undermines its benefits (Wang et al., 2009). However, in Canada, losing bidders are reimbursed for the cost of design and the legal components, to a maximum of half the external bid costs (World Bank, 2014). Losing bidders may also be reimbursed for the design cost and according to the stages in which they participated (ibid). The costs of winning bids are often recovered throughout the concession, reflected in the concession agreement signed (World Bank, 2010). In the UK, bidding costs of PFI/PF2 project can only be recovered if the consortium wins the tender (Loosemore & Cheung, 2015). Another approach, apart from reimbursement, is the practice where the bid preparation is funded by a special budget or even a third party (Farquharson et al., 2011). Besides the transfer of capital expenditure costs incurred by the winning bid, the public authority might also need to bear part of the financial consequences incurred by losing bids (Pollitt et al., 2002).

3.4.2 Lengthy Process

Gunnigan (2007) argues that the PPP procurement process is not only complex but also protracted. Despite all the methods prescribed to ensure competition within the procurement process, the bidding and negotiation stage in a competitive exercise is deemed to be lengthy and demotivating (Yescombe, 2007). The longest duration of PPP procurement process in the UK took nearly five years, and the shortest just under two years (HM Treasury, 2012). In Ireland, average procurement process is almost three years and in Canada 16 to 19 months depending on the sector (KPMG, 2010). The risk of a lengthy procurement process is that it presents the bidders with an expensive bill and requires a discouragingly large amount of resources, financial and in personnel (Saussier et al., 2009). According to Craven (2011), besides the high cost incurred by bidders, other risks are associated with a lengthy process, including deterioration of the financial capacity of a bidder. For example, a prequalified bidder may be shortlisted with a strong financial guarantee, but the situation might be different by the time the bidder is awarded the concession. Another risk associated with this is the change of ownership or management in any of the companies, affecting the financial or technical capacity (Low et al., 2015). The longer the time taken in finalising the deal with the private sector, the higher the cost to the public authority, including construction costs and related fees (Yescombe, 2007). Prices submitted by the bidders reflect the actual market with forecast estimates. Nevertheless, they are still subjected to inflation indexing and variable interest rates charged by financial institution (Saussier et al., 2009; Romoff, 2017). Failure to start the project within a certain target date might lead to changes in the key terms and even renegotiation which might be passed on to the end-user or the public sector.

3.4.3 Lack of Standardised Structures

Deadlines associated with the different stages of bid processes are stringent and impedes effective planning (World Bank, 2011). Bid submission dates for instance are not under the control of the private sector parties hence the importance of their involvement. It is important for deadlines and duration for all stages to be structured properly to avoid unnecessary tensions from the private sector perspective (RICS, 2011). Bid Proposal may consist of many sections with various documents from various sources which is frustrating. In certain jurisdictions, there could be a range of documents required from different sources and at different stages which include: Power of Attorney, Joint Venture Agreement, Notarized Affidavits, Quality Certificates, Certificate from a Chartered Accountant, Attested copies of original documents, Income Tax/Sales Tax/Service Tax Certificates, Provident Fund related documents, ESI related

documents, Bank Solvency Certificate, Annual Reports, Memorandum & Articles of Association of the organisation, details of Board Members etc (EY, 2016). Some of these documents must be prepared well in advance by considering holidays as well as turnaround time required for their preparation, as they are mandatory and could lead to disqualification (Alotaibi, 2016). The individual stages of the bidding process itself and evaluation criteria should be standardised and communicated properly to avoid any ambiguity or perception of corruption (Zin Zawawi, 2014; Setiawan et al., 2015). Lowe (2007) argues that the lack of standardisation may lead to waste of resources and level of dispute or conflicts in the choice of a private partner, which are much serious in international partners than local ones.

3.4.4 Disincentive to Effective Management

The need for consistent engagement between the public sector and private sector players is critical. Dialogues before the award of the concession is acknowledged to address the complexity of PPP by being more flexible (Zin Zawawi, 2014). Competition is retained by conducting dialogues with more than one bidder which enhances the process (EPEC, 2011). The introduction of dialogue with more than one bidder before the award stimulates the competition between bidders. However, there are concerns over how these dialogues are conducted, especially with the possibility of unauthorised circulation of any intellectual property and any sensitive commercial information from one bidder to another (World Bank, 2010). Intellectual property include inventions, original designs and practical applications of good ideas protected by statute law through copyright, patents, registered designs, circuit layout rights and trademarks; also trade secrets, proprietary know-how and other confidential information protected against unlawful disclosure by law and through additional contractual obligations such as confidentiality agreements (UNECE, 2008; World Bank, 2012). In the event that a bidder may acquire any unauthorised transfer of intellectual property, the prospect of gaining a competitive advantage over rival bidders is high, undermining the competitive process (Cheng et al., 2011). This will discourage bidders from participating in any competitive dialogue exercise. Andersen et al. (2010) stressed the importance of protection of certain information, but it should not prevent any competition. Bid management is critical in ensuring request and receipt of required documents in a timely and efficient manner across all departments. This depends on availability of resources in other departments, the relationship with those teams and other intra or extra organisational factors (Wirtz, 2009).

3.5 Preferred Bidders' Criteria

The nature of the PPP model and its design requires a relatively higher number of stakeholders which presents significant challenges from both clients and contractors. It is important to select appropriate contractors or partners to enable successful delivery of the project (Babatunde, 2015). The selection of the appropriate contractor for the project increases the chances of the client being satisfied (ibid). Doloi (2009) argues that several studies have been reported on the various approaches and models in dealing with contractor selection over the years which mainly depend on the type of projects involved. For instance, Pan (2006) outlined and grouped the criteria for Build System Selection (BSS) into eight domains known as value for decision which include: cost, time, quality, health and safety, sustainability, process, procurement and regulatory and statutory acceptance. Kumaraswamy and Matthews (2000) also examined the potential of partnering principles for subcontractor selection and improvements in overall project outcomes. Sacks and Harel (2006) investigated the allocation of resources by subcontractors across multiple projects undertaken simultaneously and the impact in achieving project success. Singh and Kalidindi (2009) studied a total of 102 industry-based contractors' selection criteria and their perceived importance among the practitioners in the Singaporean construction industry where a total of 128 questionnaire responses were collected from quantity surveyors, developers, contractors and public and private clients. Based on lean principles and partnering practices, Maturana et al. (2007) proposed a model for main contractors for onsite subcontractor selection.

The relevant European community procurement law requires transparency of the award criteria for the appointment of the preferred bidder (winner) and the award of the contract (Martins et al., 2011). In the UK, the technical note 4 of the Treasury Taskforce (2017) clearly defines the means of choosing a preferred bidder and describes into detail what each criterion entails. According to the Treasury Taskforce (2017), before the appointment of a preferred bidder, procurers and their advisers must be satisfied that bidders have:

- Presented proposals that meet the output specification;
- Provided whole life value for money;
- Accepted the key contractual terms and the required transfer of risk;
- Confirmed access to finance that does not require underwriting by the public sector or revisions to the contractual terms;
- Quoted a unitary charge and specified other costs, if there are any, that are affordable to the public sector;

- If a consortium, demonstrated fully that it is a cohesive entity rather than a disparate collection of constructors and service providers.

In the PPP/PFI procurement model, the main features that ensure an effective and sustainable process are the identification of the Whole Life Cycle Costing (WLCC) perspective, the introduction of VFM Features, Risk Management (RM) and appropriate risk transfer (Akbiyikli, 2005). In Asia, a tender evaluation committee is established following the procurement procedure of every PPP project (UNESCAP, 2007; UNESCAP, 2011). The committee conducts a fair objective evaluation of the tenders received from the bidders following the criteria which were made known to the bidders in the first stage of tendering (Farquharson, 2010). In the process of evaluation, the committee may require and ask for clarifications from the bidders (ibid). Generally, the tenders that do not meet the requirements are excluded from the evaluation process. The evaluation committee then selects the preferred bidder and makes its recommendations to the concerned approving authority based on a set of criteria dependent on the type and size of project (UNESCAP, 2011). A public tender is normally compulsory when selecting a private partner and the norm is to choose the most economically advantageous bid (Farquharson, 2010). However, when there are several distinct criteria, the situation is more complicated and necessary to adopt a multi-criteria decision analysis to choose the winner (ibid). In this case, the awarding authority defines the criteria and the bid evaluation methodology before the tender call notice (UNESCAP, 2011). There are however several consistent criteria that are evaluated amongst many jurisdictions for the preferred bidders' criteria: Cost, Quality, VFM etc.

3.6 Review of the identified concepts of PPP

Several criteria may be evaluated amongst bids across diverse sectors in Ghana depending on the nature of the project. However, three concepts are identified with respect to preferred bidders' criteria of PPP (MOFEP, 2011). Attention is drawn to the aspect of the guiding principles of the national PPP Policy where the provision stipulates the evaluation of VFM, Affordability and Risk allocation and transfer as critical for the justification of the PPP procurement route hence the importance of its evaluation before contracts are awarded. The identification of parameters of evaluation under these concepts is therefore important in the award of any contract under PPP. This section will therefore provide a literature review of the

key parameters for the appraisal of preferred bidders' in the approval IIB stage of PPP procurement process in Ghana: VFM, Affordability and RM.

3.6.1 Value For Money (VFM) Concept

Achieving VFM is a key requirement of government at all stages of a project's development and procurement. It is a combination of the service outcome to be delivered by the private sector, together with the degree of risk transfer and financial implications for government (MOFEP, 2011). It is therefore important to provide evidence of achieving VFM which justifies the need for adopting a PPP option rather than the GOG funding the project itself. As much as it is a preferred bidders' criteria in Ghana, the extent to which VFM is demonstrated provides viability of implementing the PPP itself. There is a lack of a standardised description of VFM in relation to PPP/PFI projects of which some have argued that it is related to the uncertainty of achieving VFM in PPP projects (Pitt et al., 2006). However, HM Treasury (2009) defines VFM as the optimum combination of project life cycle and quality to achieve the user requirement. It is important for PPPs to give greater VFM than the best realistic public sector project designed to achieve similar service outputs (Toth, 2010). VFM is paramount and is a major driver for adopting the PPP approach, rather than the misallocation of resources that the private sector may take advantage of (Akbiyikli, 2005). Harris (2003) argues that the principal justification for a PPP route is VFM and is described as a primary objective in PPPs. Essentially, the PPP route should provide cost savings to the public authority as standard contractual agreements of PPP require the private contractor to manage and operate the public asset over a long period of time. There are many factors however that determine whether a project delivers VFM or not. These factors vary by type of project and sector. The OECD (2008) reports that achieving VFM in PPP depends on many factors including risk transfer; competition; private sector management expertise among others. Fitzgerald (2004) opines that VFM can be achieved in PPPs through risk transfer; greater asset utilisation; innovation; and integrated whole-life management. A major factor that drives the significance of VFM has been the complexity of PPP/PFI projects as compared to traditional procurement methods. This makes predictability challenging, as it becomes almost impossible to identify risks, hence a lack of an efficient management approach. Achieving VFM in PPPs depend on appropriate identification and allocation of risks between the public and private sectors (Akbiyikli, 2005; Eaton & Sundaraj, 2013). RM can decrease project costs and failure, if optimally done may generate increased VFM (Korayem, 2017). Some developed PPP market economies have

achieved VFM using PPPs in delivering public infrastructure facilities and services (Hodge et al., 2018). For instance, Hodge and Greve (2007) state that cost savings of 10-20% are recorded in government departments implementing PPPs in the UK. KPMG (2009) states that 83% of private operators/investors in PFI/PPP projects in the UK made profits, out of which 38% realised less profit than expected. Korayem (2017) has argued that factors that lead to effective VFM in PPP/PFI projects go beyond monetary savings but a combination of exogenous and endogenous factors.

There are several approaches in determining the VFM of a project or assessment of VFM of a project, which are standardised in developed countries (Toth, 2010). However, there is no standardised approach in Ghana, hence the need to identify parameters for its assessment. The UK's means of quantifying VFM is the utilisation of the Public Sector Comparator (PSC) which is a tool engaged to primarily determine the proper service provider for a public sector project and involves the estimation of the cost that the government would pay if it were delivering the project by itself (ibid). World Bank (2018) also state that PSC is used by a government to make decisions by testing whether a private investment proposal offers VFM in comparison with the most efficient form of public procurement. The VFM assessment process combines a quantitative and qualitative approach to VFM appraisal at three stages: programme, project and procurement level (NAO, 2007). It involves a quantitative assessment, supported by a standardised spreadsheet-based model, and a qualitative assessment – a set of questions for the authority to consider at each level of the three-stage process, around the viability, desirability and achievability of the project (ibid). The PSC is engaged in a context where a different procurement method such as a PPP is under consideration, there is a need to establish that these alternative commercial arrangements deliver good VFM (Toth, 2010). While a competitive market between bidders will ensure that, for any given commercial deal, the best value options are selected, the choice of the particular commercial arrangement must be tested to ensure that it is capable of delivering VFM (ibid). However, the determination of PSC of a PFI project has been argued as being theoretical since any attempt at a 'live testing' of procurement options, through running separate (or multi-tracked) competitions under two different procurement methods would unlikely be well received by bidders (Parker & Hartly, 2004). PSC is based on estimates of full costs, revenues and risks, set out in cash flow terms, discounted at a public sector rate to a Net Present Value (NPV) (PWC, 2015).

A prudent way of testing VFM is to undertake a full economic analysis of a feasible public sector option and a real PPP bid (Grimsey & Lewis, 2005). It is important to assess the Whole

Life Cycle Costs (WLCC) of the project in the determination of VFM of the project (Mahapatra & Dasappa, 2012). One of the earliest descriptions of WLCC has been the sum of all funds expended in support of the item from its conception and fabrication through to its operation to the end of its useful life (White & Ostwald, 1976). WLCC is an economic assessment considering all agreed projected significant and relevant cost flows over a period of analysis expressed in monetary value (Mahapatra & Dasappa, 2012). The projected costs are those needed to achieve defined levels of performance, reliability, safety and availability. Meng and Harshaw (2013) distinguish WLCC as a methodology for the systematic economic consideration of all whole life costs and benefits over a period of analysis whilst Life Cycle Costing (LCC) is the cost of an asset or its part throughout its cycle life, while fulfilling the performance requirements. Broadly, LCC involves costs associated directly with constructing and operating the building; while WLCC includes other costs such as land, income from the building, and support costs associated with the activity within the building (Green, 2009). The British Standards Institute (BSI) (2008) defines life cycle costs as costs of an asset or its parts throughout its life cycle and whole life costs as all significant and relevant initial and future costs and benefits of an asset throughout its life cycle (BSI, 2008). The LCC methodology focuses on costs only, whilst the WLCC methodology covers both costs and benefits during the lifetime of a project. In addition, WLCC includes other costs such as non-construction cost hence WLCC is wider than LCC as LCC can be considered as part of WLCC (Meng & Harshaw, 2013). WLCC is involved with the optimisation of VFM in the ownership of physical assets by considering all the cost factors relating to the asset during its pre-operational and operational life (Mahapatra & Dasappa, 2012). The augmentation of these cost factors will generate the minimum WLCC of the asset taking into account affordability (Akbiyikli, 2005). In Germany, it is a legal requirement that adequate economic feasibility studies be prepared to support public investment, and private companies may be required to demonstrate if and how far public duties can be executed by private parties to an equivalent standard and for comparable or lower costs (Akbiyikli, 2005). The problem with this approach is that it entails a greater amount of work, a much greater degree of subjectivity in arriving at the assumptions needed to evaluate economic costs and benefits, hence increased ambiguity as to which option will deliver VFM (PWC, 2015). A PSC represents the hypothetical, risk-adjusted cost of a project such as a road scheme when that project is financed, owned and implemented by the government (Korayem, 2017). Although it is certainly not the only way of evaluating VFM, some jurisdictions active in the PPP market have adopted the concept of a PSC in some form

to provide the core test as to whether a PPP achieves a lower overall NPV of cost or better VFM than it would if the project were traditionally procured and publicly financed (Pitt et al., 2006). Hui et al. (2011) state PSC as a benchmark cost that estimates the quality of services, price, time frame, risk apportionment and certainty of a publicly financed project to deliver equivalent benefits to the PPP option. The PSC performs the following roles (ibid):

- It promotes full costing at an early stage in project development;
- It provides a key management tool during the procurement process by focusing attention on the output specification, risk allocation and comprehensive costing;
- It provides a means for testing value for money;
- It provides a consistent benchmark and evaluation tool;
- It encourages competition by generating confidence in the market that financial rigour and probity principles are being applied.

VFM is practically accomplished by combining a competitive tendering process with an appropriate risk transfer. The client is expected to select the most cost-efficient bid, which may include innovative solutions, additional benefits or an element of income generation. As a major tool for demonstrating VFM, the PFI compares the cost estimates from the private sector bids with an independent PSC (Korayem, 2017). The PSC describes in detail all costs to the public sector, if the project were developed in a traditional way. The public sector client in conjunction with specialist advisors is responsible to prepare the base case PSC and subsequently adjusts it to take into account the dynamic risk factors (Eaton, 2013). The PSC is designed under the assumption of a high level of involvement by the public sector in terms of financing or management, and it is used as a milestone for benchmarking bids. As a clearer picture of the project risks emerges during the selection and negotiation processes, the PSC is reviewed and updated. Grimsey and Lewis (2005) postulate that in order to be a valid comparative model of traditional procurement, the PSC calculation must use the same assumptions as the PPP in respect of the following elements:

- **Timing:** The PSC assumes the same commencement date and project term as the PPP. It ignores the fact that, to opt for the public option after pursuing a PPP bid, the timing of the project would have to be deferred.
- **Funding:** The PSC assumes the capital funds are available for the up-front investment required to deliver the same output specification as the PPP.
- **Procurement cost:** Only the costs associated with implementing the reference project should be included in the PSC. The costs of running the overall PPP process need to be

considered but should not be included in the PSC. These costs and any associated risks should be added to the NPV of the PPP bids. As a general rule, these costs should only be taken into account at the level at which they would occur in a mature market.

- **Output specification and performance standard:** The reference project and PSC must be developed to achieve the same standards as under the PPP irrespective of whether past experience indicates that these standards have not been maintained by the public sector.

3.6.1.1 Affordability Concept

Affordability is a dimension of VFM hence VFM assessment requires the consideration of the notion of affordability. The need to satisfy the VFM factor alone is insufficient as it is the initial hurdle of two parts of the financial sustainability in a PFI project (Eaton & Sundaraj, 2013). The evaluation of a PFI project environment should account for both VFM and affordability simultaneously to provide sustainability (ibid). Affordability in the construction industry is a major subject matter especially in PPP projects and it is identified as a crucial issue for sustainable development and sustainable construction especially in developing countries (Akintoye et al., 2011). There has been international awareness on material costs, labour costs and other costs associated with construction, but cost rates are ever-increasing hence making achieving sustainability through efficient and affordable techniques challenging (Eaton & Sundaraj, 2013). Although, the PFI option offering a lower NPV justifies its use, an equally important factor that has to be considered by the public sector body is that of affordability i.e. in the light of the PFI option being cheaper, the public sector must be able to afford the service fees (unitary payments) (Eaton & Sundaraj, 2013). The affordability factor is critically important in PFI projects due to its long-term duration and the responsibility of the public authority as the purchaser of services to sustain the unitary payments to the service provider throughout the concession period (Fox & Tott, 1999; Shaoul, 2002). This reaffirms the definition by Grimsey and Graham (1997) that affordability is the ability for the granting authority to budget for the projected unitary service fee required by the PFI project sponsor when taking into account central government imposed financial constraints and the strategic and policy objectives of the public authority. Again, Grimsey and Lewis (2004) define affordability of PPP projects as the ability of the government to budget for the projected unitary service fee required by the PPP/PFI project sponsor when taking into account imposed financial constraints and the strategic objectives of the government. Korayem (2017) maintains that affordability is a measure of the ability to meet the public sector sponsor's annual expenditure

(the unitary charge payment) that is paid to the SPV on a yearly basis. What the public sector sponsor wants is a project from the private sector's side that is below its affordability (ibid). In principle, affordability is about whether or not a project falls within the long-term budget constraint of government. A traditionally procured project is affordable if (Whitfield, 2008):

> *The present value of the future revenue stream of government equals the sum of expected future interest payments and the present value of government's expected capital and non-interest current expenditure. Whereas, a PPP is affordable if the present value of the future revenue stream of government equals or exceeds the sum of expected future interest payments and the present value of government's expected capital and non-interest current expenditure.*

End user ability to pay is a key consideration for all PPP projects in Ghana, hence, the PPP alternative must demonstrate long-term affordability to the public and overall government budgetary sustainability, forward commitments in relation to public expenditure and the potential for returns on private sector investment, given other priorities and commitments (MOFEP, 2011). The first step in ensuring affordability of a PFI project is the setting up of an affordability limit by the public sector authority and ensuring it is not breached at any point during the period of the PFI contract (Eaton & Sundaraj, 2013). The public sector body would therefore need to build a realistic financial model of the costs that it would bear once it agrees on the PFI option. In a situation where the PFI option proves to be cheaper than the traditional procurement route but it is unaffordable, the public sector authority should seek to reduce the scope of the PFI project in a bid to make it affordable so that it does not lose VFM advantages (Mor et al., 2018). Yescombe (2007) argues that deliberately manipulating the unitary payments such that they are lower in the earlier years but higher in later years to make them appear affordable would potentially damage the VFM benefits of PFIs. A public sector department may inform private sector bidders of the affordability limit so that unrealistic bids are not made (Toth, 2010). The drawback of such an approach is that bidders might treat the affordability limit as the target price instead of offering their best bids (ibid). An alternative to this could be disclosing the affordability limit at a later stage as way of negotiating with bidders to bring their final prices down (Yescombe, 2007). Affordability should be considered on both sides of the partnership: the public sector; and the private sector. Thus, the ability and liability of the government or public sector to be able to sustain a consistent unitary charge payment

which is reasonably calculated is essential and as important as the amount the private sector or the service provider receives. Mor et al. (2018) postulate that the lack of affordability in a PPP project can lead to serious economic and commercial damages as in the case of Jarvis plc- the British company that provided support services to the British Railway industry, and the collapse of Carilion UK which cost UK taxpayers £145 million.

3.6.2 Risk Management (RM) Concept

The GOG's principle with regards to risk allocation is necessary to optimise, rather than maximise the transfer of project risks to the private party (MOFEP, 2011). The allocation of risk determines the chosen method of private sector involvement and the allocation of responsibilities, which should take into account the protection of the public interest (Ahiaga-Dagbui et al., 2011). Toth (2010) asserts that adequate risk transfer is a prerequisite for successful partnerships and failure to do so reduces the likelihood that a PPP will be more efficient compared to traditional procurement. Optimal risk sharing between the public and private sectors is important as it creates incentives to improve risk management. Akintoye et al. (2011) opine that RM is core to the implementation of PPPs around the world as it is one of the mutual benefits of the model. An efficient RM model is one of the pillars of PPP implementation (ibid). RM is not a new concept as traditionally, it had been applied instinctively with risks remaining implicit, managed by judgement, and informed by experience (Li et al., 2005). The concept of RM was adopted from other disciplines rather than devised and it is argued that circumstances relating to inadequacies in construction led to the embracing of risk analysis and management (Akintoye et al., 2011). Risks are inherent in all construction projects as typically, an infrastructure construction project is large, fraught with uncertainty and complex in many respects (Eaton, 2007). A PPP project for instance requires huge investment of human effort and capital with several participating stakeholders. They therefore tend to face more internal and external risks more than other types of projects. Managing risks at the procurement and construction stages of privately financed public infrastructure construction projects is not straightforward as relatively more parties are involved. The involvement of several parties increases the frequency and impact of risk since the various parties have different objectives and goals (Luko, 2013). A risk is defined as an internal or external potential event of a project that may cause it to fail to meet one or more of its objectives (Eaton, 2013). Two aspects of risk however emerge: the expected likelihood

(probability) of the event; and the expected impact if it occurs (ibid). Risks may have a classification system which are characterised in relation to their locus of action. This is determined at the organisational level for which the risk will have the most impact, this may include: project risk; business risk; environmental risk and external change risk (Eaton, 2007). Luko (2013) defines risk management as understanding a project and making better decisions towards administration of that project in the future. According to Eaton (2013), the main aims of RM are to:

- Identify potential risks;
- Assess the probability and impact of each risk;
- Identify alternative actions that prevent the risk from happening (avoidance), or if it does happen ameliorate the impact (reduction), or provide a strategy for dealing with the accepted consequences of such a risk occurring (acceptance);
- Implement and monitor those actions that are cost effective and necessary to the successful delivery of the project objectives (project objectives not project);
- Provide feedback from experiential learning to improve the risk management of future projects and to inform the training and development of project managers.

Risks can also be broadly categorised as global or elemental. Global risks are those that are normally allocated through the project agreement and typically include political, legal, commercial and environmental risks (Eaton, 2013). Elemental risks are considered as those associated with the construction, operation, finance and revenue generation of the project (Luko, 2013). Korayem (2017) argues that it is important to look at the nature and quantities of risk from the different perspectives of the main parties to a PPP project. According to the World Bank (2014) the reference guide for PPP projects categorises PPP risks into ten groups. These are shown in table 3. 3.

Table 3.3 - Risk categories and description (Source: World Bank, 2014)

NO	RISK	DESCRIPTION
1	Site	Risks associated with the availability and quality of the project site, such as the cost and timing of acquiring the site, needed permits or assuring rights of way for a road, the effect of geological or other site conditions, and the cost of meeting environmental standards.

2	Design, construction and commissioning	Risk that construction takes longer or costs more than expected, or that the design or construction quality means the asset is not adequate to meet project requirements.
3	Operation	Risks to successful operations, including the risk of interruption in service or asset availability, the risk that any network interface does not work as expected, or that the cost of operating and maintaining the asset is different than was expected.
4	Demand, and other commercial risk	The risk that usage of the service is different than was expected, or that revenues are not collected as expected.
5	Regulatory or political	Risk of regulatory or political decisions or changes in the sector regulatory framework that adversely affect the project. For example, this could include failure to renew approvals appropriately, unjustifiably harsh regulatory decisions, or in the extreme, breach of contract or expropriation.
6	Change in legal framework	The risk that a change in general law or regulation adversely affects the project, such as changes in general corporate taxation, or in rules governing currency convertibility, or repatriation of profits.
7	Default	The risk that the private party to the PPP contract turns out not to be financially or technically capable to implement the project.
8	Economic or financial	Risk that changes in interest rates, exchange rates or inflation adversely affect the project outcomes.
9	Force Majeure	Uninsurable risk that external events beyond the control of the parties to the contract, such as natural disasters, war or civil disturbance, affect the project.
10	Asset ownership	Risks associated with ownership of the assets, including the risk that the technology becomes obsolete or that the value of the assets at the end of the contract is different than was expected.

In Ghana, only technical, operational and financial risk categories are specifically identified for evaluation and onward approval of PPP projects. (MOFEP, 2011). These are key categories that require critical assessment of allocation and transfer (ibid). The specific risks under the categories, risk allocation and transfer parameters therefore need to be identified. Li & Akintoye, (2003) postulate that risk management is primarily about ownership where specific stakeholders own definite risks that may affect the business or business case. The PPP procurement route necessitates predominantly a top-down approach where business risks are identified, evaluated and managed by management of the SPV at the preliminary stages of the project implementation so as to enhance an ongoing reiterative RM process (Akbiyikli & Eaton, 2006). The standard risk management model is divided into three main parts (Eaton, 2013):

- Risk identification;
- Risk analysis; and
- Risk response or mitigation.

3.6.2.1 Risk Identification

Eaton (2013) postulate that the development of a risk checklist is one of the major sources of risk identification. A school of thought have argued the need to classify project risks to enhance a clear-cut structure for sharing risks amongst stakeholders in PPP/PFI projects (Ibrahim et al., 2006). Li et al. (2005) proposed a meta-classification approach on the basis of three levels of risk factors for PPP projects. These three levels comprise macro level risks, meso level risks and micro level risks (ibid). The macro level of PPP/PFI risk comprises risks sourced exogenously, i.e., external to the project itself (Korayem, 2017). This level focuses on the risks at a national or industry level status and upon natural risks (Van Ham & Koppenjan, 2001). The risks at this level are often associated with political and legal conditions, economic conditions, social conditions and weather (Thomas et al., 2006). In essence, these risks arise from risk events occurring beyond the system boundaries of a project but whose consequences cross the project boundary to impact upon the project and its outcomes (Aven & Zio, 2018). The meso level of PPP/PFI risk includes risks sourced endogenously: risk events and their consequences occurring within the system boundaries of the project (Li et al., 2005). These represent the PPP/PFI implementation problem, involving issues such as project demand/usage, location, design and construction and technology. The micro level of PPP/PFI risks represents the risks found in the stakeholder relationships formed in the procurement process, due to the inherent differences between the public and private sectors in contract management (Luko, 2013). These are also endogenous risks, but differ from meso risks in that, they are party-related rather than project-related (Li et al., 2005). The main reason for proposing this risk category rests on the fact that typically the public sector has social responsibility, while the private sector is profit driven (Aven & Zio, 2018). Within each high-level risk grouping, it is possible to identify sub-categories relating to the nature of specific risks where the circumstances which give rise to them can be regarded as economic, social, legal, cultural, etc. (ibid). The benefit of grouping and classifying project risks is that it facilitates a strategic approach to RM for public and private sector project stakeholders (Li & Akintoye, 2003). It may also indicate situations where common approaches to risk analysis, risk treatment, and subsequent risk monitoring and control, can be adopted in the risk

management process (Li et al., 2005). Table 3.4 shows these classifications and their risk factors.

Table 3.4 - Meta Classification of risks (Source: Li, 2005)

RISK META-LEVEL	RISK FACTOR CATEGORY GROUP	RISK FACTOR
Macro level risks	Political and government policy	Unstable government Expropriation and nationalisation of assets Poor public decision-making process Strong political opposition/hostility
	Macroeconomic	Poor financial market Inflation rate volatility Interest rate volatility Influential economic events
	Legal	Legislation change Change in tax regulation Industrial regulatory change
	Social	Lack of tradition of private provision of public services Level of public opposition to project Force of nature Geotechnical conditions
	Natural	Weather Environment
Meso level risks	Project selection	Land acquisition (site availability) Level of demand for project
	Project finance	Availability of finance Financial attraction of project to investors High finance costa
	Residual risks	Residual risks Delay in project approvals and permits
	Design	Design deficiency Unproven engineering techniques
	Construction	Construction cost overrun Construction time delay Material/labour availability Late design changes Poor quality workmanship Excessive contract variation Insolvency/default of sub-contractors or suppliers

	Operation	Operation cost overrun Operational revenues below expectation Low operating productivity Maintenance costs higher than expected Maintenance more frequent than expected
Micro level risks	Relationship	Organisation and co-ordination risk Inadequate experience in PPP/PFI Inadequate distribution of responsibilities and risks Inadequate distribution of authority in partnership Differences in working method and know-how between partners Lack of commitment from either partner
	Third party	Third Party Tort Liability Staff Crises

3.6.2.2 Risk Evaluation

There is no guarantee that a risk may materialise in the course of a project, however, there would be a consequence if it occurred (Eaton, 2013). There are two features that characterise risks: the probability (chance) by which they can happen; and their ultimate impact on the project, if they do materialise (Eaton, 2013; Aven & Zio, 2018). An accurate assessment of these two aspects will enable an organisation or consortium to decide on a course or courses of action. Risk evaluation influences decision making, especially in the course of project formulation (Akbiyikli & Eaton, 2006). The probability of a risk occurring and its impact on a project are used in tandem as decision aids (Ahiaga-Dagbui et al., 2011). For example, if the chance of a risk happening is assessed to be high and its potential impact is equally high, then such risk is accorded high priority (Thomas et al., 2006). There are different ways in which the two features of risks can be assessed. The amount of information and time available, and the need for an assessment to determine the type of evaluation to be utilised. These include (Simon et al., 1997):

- Qualitative: Both probability and impact are assessed subjectively;
- Semi-Quantitative: Probability assessed subjectively but impact assessed objectively;
- Full Quantitative: Both probability and impact assessed objectively.

A qualitative assessment is employed when uncertainty is prevalent and in the absence of information, subjectivity prevails (Li & Akintoye, 2003). A semi-quantitative assessment can be employed where the impact of risks can be established fairly accurately (Luko, 2013). On the risk concerning a general change of law, a semi-quantitative evaluation can sometimes be

utilised because the impact can be assessed numerically, while the likelihood is often difficult to establish (World Bank, 2014). A full quantitative approach is adopted when enough information is available (Simon et al., 1997). Through safety reviews, use of databases and other sources, information can be generated to facilitate a quantitative assessment of risks (Babatunde, 2015). However, accurate information is scarcely and subjective, therefore, only a few risks get to be evaluated quantitatively while the numerous other risks cannot be assessed that way (Li et al., 2005). Quantitative methods of risk analysis include:

- **Sensitivity Analysis;**

This is the simplest form of risk analysis. It seeks to assess the effect on a project of changing a single variable within it (Grimsey & Lewis, 2004). In practice, this analysis is applied only to variables that are particularly important in terms of cost, time or economic return, or to the project as a whole.

- **Probability Analysis;**

It is a more sophisticated form of risk analysis specifying a probability distribution for each variable and then considering situations where any, or all of them can change their initial values at the same time (Simon et al., 1997).

- **The Monte Carlo Simulation;**

The Monte Carlo simulation is used to study the effect of the variability of input factors on an outcome (Newton, 1992). It consists of simulation by means of random numbers and provides an extremely powerful, yet conceptually straightforward, method of incorporating probabilistic data (Akintoye et al., 2011).

- **Decision Tree Analysis;**

The decision tree brings the information together graphically and sets out the possible courses of action and their probable outcomes (Flanagan & Norman, 1993). This technique has formed the basis of a number of developments in risk analysis techniques (Akintoye et al., 2011).

- **Utility Theory;**

Instead of using monetary values to weigh options, utility theory focuses on utility, which is somehow equated with desirability. The use of utility theory takes into account the attitude of the decision-maker towards taking risks (McKim, 1991). However, utility theory tends to be regarded as a theoretical technique which is difficult to apply in construction.

In evaluation, risks need to be allocated to the best party able to manage the identified risks. Risk allocation is as a form of risk transfer (Akintoye et al., 2011). Transfer of risks can take

two forms: transfer of the activity that creates the risks, and transfer of the financial losses arising from the occurrence of the risks (Sundaraj & Eaton, 2011). Two major mechanisms are common in this task, these are (Akbiyikli & Eaton, 2006).

- Contractual Transfer - An agreement between two parties where one party accepts the risk that normally would be borne by the other party;
- Insurance Transfer - An insurance policy is a contract between two parties where one party pays a premium and the other party assumes financial responsibility for a pure risk.

Transferring risk does not reduce the criticality of the source of risk as it just removes it to another party (Thomas et al., 2006). In some cases, such transfers can significantly increase risks of occurring because the party to whom it is being transferred to, may not be aware of the risk being transferred to them and may not be ready for it (Flaganan & Norman, 1993). The four most common routes for the transfer of risk in construction projects and contracts are: client to contractor or designer; contractor to subcontractor; client, contractor, subcontractor or designer to insurer and contractor or subcontractor to surety (Akintoye et al., 2011). Each risk contract is designed to allocate specific responsibilities and obligation to contract parties. Actual outcomes may be change from the presumed one due to uncertainties (Thomas et al., 2006). Therefore, a contract must allocate the responsibilities for dealing with these potential risks to the participants (ibid). The aim of an efficient risk allocation is to obtain the lowest overall cost for a service. Abrahamson (1989) developed five principles to be considered when determining who a risk should be allocated. A party should be allocated a risk if (ibid):

- It is within control;
- It can transfer this risk in an economically beneficial way;
- The economic benefit of the risk rests with that party;
- It is more efficient to put the risk on that party;
- If the risk eventuates, it falls on that party and there is no valid reason to try to transfer it.

3.6.2.3 Risk Mitigation

Risk mitigation involves finding solutions to counter risks. Although risk analysis is important, it is ultimately aimed at facilitating RM (Eaton & Sundaraj, 2013). Risk mitigation should last continuously throughout the life of a project as new solutions can emerge that will change previous actions (Van Ham & Koppenjan, 2001). Each time a risk is controlled, the overall risk

profile of the project is altered. When the consequence of a risk is very high, or when the risk falls outside the expertise of the firm, outsourcing of such risks to another party is explored (Luko, 2013). There are four general risk mitigation strategies, namely (Baker et al., 1999):

- Risk elimination: It is also often referred to as risk avoidance or risk aborting. Actions to avoid the risk can involve the complete elimination of the risk;
- Risk reduction: If not eliminated, risk or uncertainty can be reduced, by acquiring more information. In view of their adverse consequences, and given that risks are inevitable, attempts should be made to minimise their effects;
- Risk transference: Responsibilities for some risks can be transferred to other parties whenever it is possible and prudent to do so;
- Risk retention: It is also known as risk absorption and risk pooling. After reducing the potential impact of risks, those that cannot be eliminated or transferred away are absorbed by the organisation.

It is important for the parties involved in PPPs, particularly the public sector, the private investors and the financiers/lenders to strictly undertake due diligence to achieve good balance in identifying, sharing and mitigating risks as risks are inevitable in PPP projects and any other infrastructure projects (Aven & Zio, 2018). Table 3.5 illustrates major risk categories, respective phase of predominance, its description and mitigation measures (World Bank 2014).

Table 3.5 - Major risk categories and characteristics (Source: World Bank, 2014)

RISK CATEGORY	PHASE OF PREDOMINANCE	DESCRIPTION AND LIKELY EFFECT	MITIGATION MEASURES
Land acquisition	Construction	Delays in construction as a result of a dispute that arise in the acquisition of lands and problem of access to the right-of-way.	(a) All land issues should be resolved before the concession award. (b) Provision of alternative routes before construction commences. (c) The government should appropriately extend the concession period.
Sponsor risk	Construction/ Operation	Failure on the part of private party/ SPV to provide the required services as previously agreed (i.e. private party/ SPV is incapacitated).	(a) Due diligence on the private parties and their sponsors. (b) Performance bond i.e. Private parties/sponsors commitments are supported by performance guarantees among others.

Financial risk	Construction/ Operation	Shortages of funds to progress or complete the project as a result of financing mechanisms (e.g. equity) required by private sponsors are no longer available.	(a) Public sector agency should strictly ensure that all bids are supported by strong financial commitments with minimal achievable conditionality. (b) Host government should provide subsidies in the form of guarantee to the private party on the interest rate, tariff, and provision of loans among others.
Demand/ revenue risk	Operation	This risk is associated with some factors. For instance, insufficient revenue due to low demand, leakages, competing facilities, high price setting among others.	(a) Comprehensive demand studies to provide realistic demand estimates. (b) The concession agreements should be flexible to accommodate the appropriate extension of the concession periods. (c) The government is buying out the facilities if designated returns are not achieved over a period of years.
Time overrun risk	Construction	Non-completion of the project as it was agreed in the concession agreement.	a) Public sector agency should thoroughly verify the technical competence and experience of contractor and subcontractors. (b) Completion bond: Contractor and subcontractors should provide completion bond before the contract is awarded to them. (c) Penalty regimes i.e. liquidated and ascertain damages (LAD) should be paid by the contractors for the period the work is being delayed. (d) Review and monitoring of work by independent engineers.
Operating risk	Operation	This risk is associated with factors negatively impacting operation, thereby increased operation cost.	(a) The selection of operation and maintenance (O&M) operator should be competitive. (b) Technology provider should guarantee their products. (c) Maintenance bond: O&M operator should provide maintenance bond before selection. (d) Specification output should be cleared and comprehensive.
Force majeure	Throughout project cycle	This type of risk is called “Act of God”. This includes earthquake, flood, and storm among others. The effects can be minor, major or severe. It may lead to a total closure of construction/operation if not understandably addressed	(a) Provision of insurance cover. (b) Relief for short-term closedown. (c) Provision of compensation at the expiration of concession period.

3.7 Chapter Summary

This chapter reviewed literature on PPP bidding and its processes, which accentuated the fact that different phases of bidding are subjective and dependent on the jurisdiction and even the sector of the project. Several countries have a combination of stages which are labelled differently depending on the type of project, project size and its requirements. In Australia for instance, the EOI stage is utilised in the health and transport sectors whereas in the UK a distinct EOI stage is non-existent although the invitation to negotiate stage requires a pre-qualifications and clarifications step. This stage engages the issuance of the draft contract, output specification and evaluation methodology. Five main stages were identified that were typical to PPP bidding according to literature reviewed. These are: The official Notice stage, The EOI stage, the dialogue with bidders' stage, RFP stage and the negotiation and completion stage.

Bid evaluation criteria for PPP projects were also reviewed which identified the financial and technical parameters as the major evaluation criteria for PPP bidding. However, multi-criteria evaluation processes which involve a combination of criteria and its respective parameters were commonly used. Table 3.1 presented a list of common evaluation criteria and parameters according to the literature reviewed whilst table 3.2 presented a multi evaluation criteria according selected countries which indicates again the context specific nature of evaluation criteria. The review of stages of bidding as well as evaluation criteria proved context specific and provided a foundation upon which the Ghanaian PPP bidding was investigated. Evaluation methodologies available, such as the Kepner-Tregoe decision analysis technique were also discussed. Challenges of the bidding process from the private sector perspective were also elucidated to inquire factors that impede private sector participation in the process. An appraisal of preferred bidders' criteria and the concepts of PPP (RM, VFM and affordability) according to the Ghanaian PPP policy was also presented. The next section presents the research approach for this study, philosophical underpinnings as well as the research instruments adopted in meeting the objectives of the study.

Chapter 4 Justification of Research Methodology

4.1 Chapter Introduction

This chapter presents the research strategy adopted for this research. It serves as a link between previous chapters and findings of the research. In the preceding chapters, the knowledge gap and statement of the problem, hence the justification of this research was reviewed. A theoretical background to the concepts under study: PPP bidding processes as a background upon which an appropriate research methodological approach will be adopted was also presented. This chapter developed the methodology adopted for the study to investigate emanating concepts from the literature review by firstly elucidating the methodology of this research. This study relied on techniques that involved a variety of face-to-face interviews hence allowing for the use of qualitative content analysis.

Subsequently, the research process adopted to meet objectives as well as research techniques that have been adopted to meet the objectives and the overall aim of this research were discussed. The theories that underpin this study were also presented in this chapter. This chapter identified the sample population of this research, its justification as well as an overview of the research process. The data collection and analysis phases of the study spanned a total of two years, beginning from May 2016. It is expected that at the end of the chapter, the methodology applied in the collection of data and its subsequent analysis, and the rationale for the adoption of such a methodology will have been outlined clearly. The field work was carried out across several offices in locations across Accra, Ghana. The chapter is structured according to the following subjects:

- Overview of the study's preliminary steps;
- Research methodology;
- Philosophical stance of research;
- Research approach;
- Research strategy;
- Research process;
- Chapter summary.

4.2 Overview of the Study's Preliminary Steps

Most research activities often evolve from the researcher's experiential knowledge or from an extensive review of literature on a particular area of interest (Gray, 2009; Saunders et al. 2012). The researcher's experiential knowledge can be driven by personal experiences or observations about a particular phenomenon within the context of the society to which the researcher belongs and/or from work-place oriented interactions. In arriving at the decision to undertake this particular study, the researcher was motivated by both reasons: experiential knowledge and the extensive review of literature. The researcher is a Ghanaian who was born in an era of post military coups and revolutions which saw serious economic hardships upon the people of Ghana. The country has experienced and continues to experience several phases of economic challenges after the adoption of the constitution through a national referendum which was approved on the 28th of April 1992. These hardships have not been as a result of the lack of sound economic policies but the lack of resources and the effective management of the limited available resources. The economic policies of Ghana have driven a structural transformation and provided a diversification of the economy (World Bank, 2015). Also, Ghana's strong economic growth in the past two decades helped cut the country's poverty rate in half, from 52.6% to 21.4% between 1991 and 2012 (ibid). There is however an indication of the country's thrive to economic emancipation of citizens of the country. Ghana entered a new stage of development when it was designated a lower middle-income country in 2011. However, the fiscal challenges and limited resources limits the government's ability to tackle the major problems. World Bank (2015) have stated that:

> *Policies to stimulate the private sector, improve infrastructure and improve access to opportunities can consolidate Ghana's middle-income status.*

The research started initially by investigating Critical Success Factors (CSFs) that will enhance the implementation of the PPP model especially after several top government officials at the time, including the President recognised the financial challenge of the government and advocated for private sector participation to ease the government's resources that could be applied elsewhere. In January 2014, At the Consumer News and Business Channel (CNBC) Debate in Davos-Switzerland, the President, maintained that the country faces a huge infrastructure deficit and elucidated the need for private sector participation in all sectors of the economy. Also, on June 9, 2015, the Vice President stated that the country needs $15 billion

over the next decade to be able to plug its infrastructure gap (Ofori-Atta, 2017). Addressing a forum of financial sector operators and private entrepreneurs, he added:

> *"it is a huge challenge because the public sector budget will not be able to generate the required funds to close that funding gap, so we need support from the private sector, hence the government's emphasis on the PPP concept (Private-Public Partnerships)".*

Subsequent to the choice of subject of study, literature review conducted revealed the need to refocus the research. The choice of the road sector was informed by the teething problems of the sector and the potential of it which have been elucidated in the justification of this study. Also, an initial study refined the objectives of the study where the critical issues were the process of road PPP bidding, the unknown requirements of the concepts of the preferred bidders' criteria and in effect the overall procurement system. This was confirmed at the Internal Evaluation (IE) stage of this research to not only meeting the aim of this study but also the challenge of the country. The drive to assess the contemporary implementation process is enhanced by the increasing global advocacy for the utilisation of procurement to drive the attainment of social economic benefits for the local economy in many areas of the world (Arrowsmith, 1995; Thai, 2001; Macfarlane & Cook, 2002; Watermeyer, 2003; McCrudden, 2004; Wells & Hawkins, 2008; Snieska & Simkunaite, 2009; Foster & Pushak, 2011; Babatunde, 2015). Extant studies accentuated the need for a context-specific bidding process as some developed countries have standardised bidding processes although certain processes are dependent on the nature of the project and the sector in which it falls. The subsequent sections will discuss the methodology adopted in meeting the aim of this research.

4.3 Research Methodology

Research methodology is the philosophy or the general principle which guides a research (Dawson, 2007). Methodology is the guideline system for solving a problem or answering the question based on a set of premises, theoretical considerations and practical conditions (Jonker & Pennink, 2010). A methodology is often incorrectly associated with drawing up a research plan (ibid). It should be presented as a form of thinking and acting, rather than limited as a form of writing a questionnaire, collecting a limited set of data and learning to apply some simple statistics (Naoum, 1998). It implies that a researcher should be able to justify the reasons

for the choice of a specific research approach and make sensible choices based on different requirements of a particular question (Fowler, 2013). Robson and McCartan (2016) maintain that a PhD thesis aims to contribute to the advancement of science and knowledge as it seeks to answer 'why' questions, find explanations, generalisations and theories that can provide answers to develop the understanding involving decision making and policy formulation. Sekaran (2000) postulates three types of questions which are asked, these are:

- **The research considerations:**
  I. The what question. What is the research object (concept analysis, definition)? This is the ontological question.
  II. The why question. Why the research is needed.
  III. The how question. How the research can be answered. (The procedures to be adopted and design of the research). This is the epistemological question.
- **The research communications:**
  I. The what question. What concepts can be used in defining the research object (conceptual-ontological-metaphors)? These questions are for the information gathering.
  II. The why question. Why the research has been done. (Research interest-rhetoric). This is the understanding of the communication process.
  III. The how question. How to convince the reader of the scientific nature of the research text (Scientific rhetoric). This is the utterance communication process.
- **The research processes.**

The outcome of any study is directly linked to the research methodology adopted whereas the rationality of the research also depends on the implementation of a suitable research method (Naoum, 1998; Fellows & Liu, 2003; Gray, 2009; Saunders et al., 2009). Bellini and Rumrill (2009) describe research as a logical and systematic search of new or existing knowledge of a particular topic to advance awareness whilst Alvesson and Sköldberg (2009) define research as the use of a selected scientific method in the creation of true and objective knowledge. This is indicative of the fact that a research methodology should be methodical and pragmatic to engage accurate results. Fowler (2013) argues that a high-quality research demands an appropriate research strategy that establishes the approach of the research.

4.3.1 The Emergence of the Stakeholder Theory

The use of the word stakeholder came from the pioneering work done at Stanford Research Institute (SRI) in the 1960s (Phillips, 1997). However, in the mid 1980, the stakeholder approach to strategy emerged. One focal point in this movement was the publication of Richard Edward Freeman who is generally credited with popularising the stakeholder concept (ibid). Freeman indicated that his view of the stakeholder concept was done from the perspective of the company which was built on the process work of Ian Mitroff, Richard Mason and James Emshoff (Donaldson & Preston, 1995). Freeman (1984) defines stakeholder theory as an organisational theory of management and business ethics that accounts for multiple constituencies impacted by business entities like employees, suppliers, local communities and others. Wicks and Harrison (2015) argue that the word 'stakeholder' was chosen on the basis of the traditional term - stockholder which takes only a look at the economic point of view. Stakeholders are however defined as "any group of individuals who are affected by or can affect the achievement of an organisation's objectives" (Freeman, 1984). From this perspective, it implies that the term stakeholder has a broad meaning which goes far beyond the boundaries of the organisation and those that the organisation has a formal contractual obligation with (Freeman et al., 2007). It fundamentally indicates that there are various groups including shareholders whose expectations must be met (Freeman, 1994). The stakeholder concept has however evolved over time. Consequently, Freeman et al. (2010) defined stakeholders as "those groups who are vital to the survival and success of the corporation" adding a new principle to reflect a new trend in stakeholder theory. In this principle, the consideration of the perspective of the stakeholders themselves and their activities are also very important to be taken into the management of companies.

A major purpose of stakeholder management was to create methods to manage the different groups and relationships, which resulted in a strategic fashion (Freeman & Mcvea, 2001). Freeman (1984) suggests that managers must formulate and implement processes which satisfy all and only those groups who have a stake in the business. The central idea of the stakeholder theory process is to manage and integrate the relationships and interests of shareholders, employees, customers, suppliers, communities and other groups in a way that guarantees the long-term success of the firm (Phillips, 1997). A stakeholder approach is very much concerned about active management of the business environment, relationships and the promotion of shared interests in order to develop business strategies (Andriof et al., 2002). An argument for the use of the stakeholder concept in the early 1980s was the constant changes among workers,

students, consumer groups and environmentalists in the late 1960s (Freeman, 1994). There was the need for the planning process to become sensitive to the business environment and the need for good information about it. Freeman (1994) highlighted that planners did not have to attempt to influence specific stakeholder behaviour but rather needed to forecast the future environment in order to adapt it with the capabilities of the company. Stakeholder theory has however been extensively used in diverse disciplines such as construction management over the past decades. For instance, Omran and Ramdhony (2015) argue that stakeholder theory provides an explanation as to why such organisations feel ethically, morally and financially obligated to all stakeholders. The theory has been used to explore numerous relationships as well as identifying how a lack of stakeholder competency is a barrier to the successful implementation of innovation (Wicks & Harrison, 2015). Another study conducted a comprehensive literature review identifying 11 key stakeholders for construction organisations, before proposing a CSR indicator framework to allow organisations to identify those who impact upon their CSR (Zhao et al., 2012). Again, stakeholder theory have been utilised to better understand contractor and client CSR relationships (Omran & Ramdhony, 2015).

4.3.1.1 Justification of stakeholder theory for this study

Gardner et al. (2009) describe the term stakeholder engagement as any process that involves stakeholders in some form of collaborative effort directed towards a decision. It is sometimes used to describe the broad range of interactions between the researchers and stakeholders through information delivery, consultation, involvement or collaboration in the decision-making throughout the research process (Opoku et al., 2014). A major underlying theme of stakeholder theory has been the need for a broad consultation in the formulation or development of processes or policies to ensure enhanced adoption and better acceptance of it. It postulates the need to consider the business environment and all who may be affected by the process. The development of the BAPM requires contextualising the environment within which it will operate. The context is multi-faceted with its own unique underpinnings of operation and challenges as elucidated in section 2.4.5. The adoption of the stakeholder theory therefore involves the identification and engagement of key stakeholders in the development of the BAPM. Multi perspectives of identified stakeholders and stakeholder groups were critical in the development of the BAPM. This study employed the stakeholder theory in this socio-technical system to meet the aim of this research. The five theories that were engaged to distinguish the public sector by way of underpinning factors such as its challenges, the: Institutional theory; Contingency theory; Legitimacy theory; Public-choice theory; and X-

efficiency theory, identified the status quo of the dynamic and complicated system with particular regards to the challenges of the system. This was indeed a necessary step in the development of the BAPM so as to produce a process map or tool that was tailored to meet the current system taking into consideration the social factors such as the culture of the civil service.

The outcome of applying these methods is a better understanding of how human, social and organisational factors affect the ways that work is done (Klein, 1994). This understanding contributes to the design of business processes. The underlying premise of socio-technical thinking is that systems design should be a process that takes into account both social factors such as culture and technical factors that influence efficiency. The rationale for socio-technical approaches to systems design is that failure to do so can increase the risks that systems will not make their expected contribution to the goals of the organisation. Systems often meet their technical requirements but are considered to be a 'failure' because they do not deliver the expected support for the real work in the organisation (Carayon, 2006). The source of the problem is that techno-centric approaches to systems design do not properly consider the complex relationships between the organisation, the people enacting business processes and the system that supports these processes (Dankbaar, 1997). This study involves designing a process of bidding and developing criteria in a complicated and complex environment with several underpinning relationships of responsibilities. The argument therefore involves the recognition of the underpinning aspects of the public sector in a socio-technical system as this has the potential to affect the system. The consideration of this will ensure a context-specific process is developed to enhance its adoption and effectiveness as a whole. The stakeholder theory in this study therefore allows multi-perspectives of stakeholders in the development of the BAPM in such a system. It is widely acknowledged that the consideration of a socio-technical system theory considers the environment as a socio-technical system (Walsham, 1993). The development or introduction of new process enhances its success and implementation as it is more acceptable to end users and deliver better value to stakeholders.

Freeman et al. (2010) argue the notion that the overall body of stakeholder theory can basically be categorised into three distinct parts. The three distinguishing parts or approaches to stakeholder theory are the descriptive approach, instrumental approach and the normative approach. The descriptive approach refers to research that focuses on making factual claims about what managers and organisations actually do in terms of stakeholder relationships. The instrumental approach refers to research that focuses on the outcomes of specific managerial

behaviour; and the normative element refers to research that focuses on what managers and organisations should do (Friedman & Miles, 2006). The normative stakeholder approach therefore deals with engagement of multi-stakeholder perspectives in the introduction of what is supposed to be done. The enormous success of reengineering in the first half of the 1990s occasioned an era where many researchers and academics tried to highlight the sociotechnical nature of reengineering projects in order to render the construct of Business Process Reengineering (BPR) more appropriate and acceptable at the level of theory (Klein, 1994; Draheim, 2010). For example, in an article which sought to clarify, conceptually, what constitutes BPR, Ahmed and Simintiras (1996) stated: "there are three components to the BPR construct; first, a process-based approach to organisation design; second, the precept of radical change; third, an integrated involvement of human and technical aspects in the change". A study by Klein (1994) saw social design produce descriptions of the new organisation, staffing, jobs, career paths, and incentives employed via the approach for process mapping, wherein social considerations are conceived of as a control mechanism in the phase of developing new process design, which is preceded by a series of steps dedicated to representing and streamlining the "technical process structure" (Aldowaisan & Gaafar, 1999).

A process is a series of action taken to achieve a particular end. A process transforms inputs into outputs (Savory & Olson, 2001). A process map is a visual aid for picturing work processes and shows how inputs and tasks are linked, which highlights the steps required to consistently produce a desired output (Mullock, 2016). It encourages new thinking about how work is done, where it is done, who performs it, what problems frequently occur and how best to solve them (Savory & Olson, 2001). Process maps provide insight into a process, help teams brainstorm ideas for process improvement, increase communication and provide process documentation (ibid). The purpose of process mapping is for organisations and businesses to improve efficiency. Process mapping identifies bottlenecks, repetition and delays (Clark, 2011). They help to define process boundaries, process ownership, process responsibilities and effectiveness measures or process metrics (ibid). It entails a collection of tools and methods used to understand an organisation and its processes. Those tools allow organisations to document, analyse, improve, streamline and redesign business processes to realise organisational efficiencies (Biazzo, 1998). Process mapping spotlights waste, streamlines work processes, and builds understanding which allows a visual communication of the important details of a process rather than the writing of extensive directions (Mullock, 2016).

4.3.1.2 Stakeholder Identification and Classification

The process of identification and classification of stakeholders is highly diverse and contested which is dependent on the context. These factors are tied to the specificities of context and objectives over whichever classification makes sense (Shan et al., 2011). Classification allows an entity to consider its operations and people together in different parts of a descriptive process (Gibson, 2000). Also, considering stakeholders by using qualitative criteria such as distinct attributes to identify the crucial stakeholders may assist in focusing on salient employees (Donaldson & Preston, 1995). Categorisation of stakeholders can take various forms such as primary and secondary; internal and external; owners and non-owners of the firm; owners of capital or owners of less tangible assets; resource providers or dependents of the firm; those existing in a voluntary or an involuntary relationship with the firm; contractors or moral claimants (Céspedes-Lorente et al., 2003). Buysse and Verbeke (2003) argue stakeholders are typically understood in two frames of reference, primary stakeholders and secondary stakeholders. Primary Stakeholders - usually internal stakeholders, are those that engage in economic transactions with the business. For example, stockholders, customers, suppliers, creditors, and employees are primary stakeholders. Secondary Stakeholders - usually external stakeholders, are those who - although they do not engage in direct economic exchange with the business, they are affected by or can affect its actions. These could be the general public, communities, activist groups, business support groups and the media.

From previous research, stakeholders of PPP have been identified and classified in many ways. For example, Asian Development Bank (2008), identify PPP stakeholders in five categories, whilst Alfen (2009) categorises identified PPP stakeholders into seven groups. These are presented in table 4.1 and 4.2 respectively.

Table 4.1 - Role of stakeholders in PPP process (Source: Asian Development Bank, 2008)

STAKEHOLDER	ROLE
Political decision makers:	Establish and prioritise goals and objectives of PPP and communicate these to the public Approve decision criteria for selecting preferred PPP option Approve recommended PPP option Approve regulatory and legal frameworks
Company management and staff	Identify company specific needs and goals of PPP Provide company specific data Assist in marketing and due diligence process Implement change

Consumers	Communicate ability and willingness to pay for service Express priorities for quality and level of service Identify existing strengths and weakness in service
Investors	Provide feedback on attractiveness of various PPP options Follow rules and procedures of competitive and realistic bidding
Strategic consultants	Provide unbiased evaluation of options for PPP Review existing framework and propose reforms Act as facilitator for cooperation among stakeholders

Table 4.2 - Selected stakeholders in PPP infrastructure and their contributions (Source: Alfen, 2009)

OBJECTIVES	CONTRIBUTIONS
Project executing organisation	Concession/licences Service fee
Efficiency gain Leveraging of government budget Acceleration of the project Better service quality Compliance with requirement and regulations	
Sponsors	Equity Competence and experience
Adequate rate of return Strategic capability	
Investors	Private equity Monitoring of quality Financial competence
Maximising of return	
Lending banks	Debt Monitoring of quality Financial competence
Loan repayment Careful financial evaluation	
Development finance institutions (DFIs)	Debt Monitoring of quality Financial competence
Loan repayment Support of development goals	
Construction contractor	Required construction work Turnkey fixed-price contract
Sufficient margin	
Facility manager and operators	Required service Fixed-price contract
Sufficient margin	

For purposes of this research, which regard bidding process of road PPP projects, only primary stakeholders are engaged. The novelty of the PPP procurement route necessitates only social and economic benefits could be investigated among these secondary stakeholders. Primary research in the socio-economic benefits of PPP is not an objective of this research. Therefore, in this research, stakeholders are identified as individuals, groups or organisations who have professional interest in the subject area in bidding of Ghanaian road PPP projects. The level of stakeholder influence on the project varies, and those with significant influence on the research or significantly impacted by the work are described as the key stakeholders (Opoku et al., 2014). These stakeholders can be classified into three groups. The policy makers: public and private sector participants who are led the adoption of the PPP model as a policy for infrastructure delivery; The Policy Implementers - Public sector players at the ministry who are responsible for the implementation of the policy; Consultants- Private sector players who provide advisory services for stakeholders who are responsible for the policy implementation and; Contractors – Road contractors who will be engaged in the bidding process and will carry out the development of the project after. Identified key stakeholders responsible for road PPP in Ghana for purposes of this research are:

- The key players of PPP adoption in Ghana (Public and Private sectors);
- The PPP approval committee;
- The Public Authority or Ministry in charge of PPP implementation in Ghana (MOFEP);
- The Public Authority or Ministry in charge roads;
- The Departments in charge of road bidding processes;
- SPVs or management of road PPPs.

4.3.1.3 Criticism of stakeholder theory

Friedman and Miles (2006) argue that the term "stakeholder" has been deployed indiscriminately. The term is highly popular with businesses, governments, non-governmental organisations and even with the media. Despite this widespread usage, many who adopt the term neither define the concept nor provide any particularly clear understanding of what they mean as regards what a stakeholder actually is. Even in academic circles, countless definitions of "stakeholder" have been put forward without any of those suggested ever gaining consensus, and hence there is no single, definitive and generally accepted definition (Andriof et al., 2002). The works of Bryson (2004), Buchholz and Rosenthal (2005), Pesqueux and Damak-Ayadi (2005), Friedman and Miles (2006) and Beach (2008) contain a total of 66 different concepts

for the term “stakeholder”. Although each researcher defines the concept differently, they do as a rule reflect the same principle to a greater or lesser extent: the company should take into consideration the needs, interests and influences of peoples and groups who either impact on or may be impacted by its policies and operations (Freeman et al., 2010). One of the most salient characteristics of this theory is the diversity in the points of view that have been expressed within its scope, yet some academics have criticised the vagueness and ambiguity of this theory.

As a consequence of the booming of the stakeholder concept and the literature written about the topic, a lot of different definitions of stakeholder developed. The use of the stakeholder approach in the big variety of context brings some criticism to the concept with it (Friedman 2006). Criticisms of stakeholder theory from philosophical and theoretical standpoints have been thoroughly analysed and widely commented upon in the scientific literature (Donaldson and Dunfee, 1994; Weiss, 1994; Key, 1999; Moore, 1999; Gibson, 2000; Kaler, 2003). There have also been serious attempts to integrate theory with research from disparate areas to further develop the stakeholder theory (Jawahar & McLaughlin, 2001; Andriof et al., 2002; Venkataraman, 2002). The identification and selection of specific stakeholders has been criticised to be problematic. Indeed, some of the original hypotheses have never been fully justified: reality is far more complex than the simplified presentation. The members within a category are not at all homogenous; often quite the contrary, and stakeholder theory has largely ignored intra-stakeholder heterogeneity (Pesqueux & Damak-Ayadi, 2005). Stakeholder groups and subgroups may also have multiple interests and multiple roles (Sternberg, 1996). The heterogeneity within stakeholder groups, multiple inclusion or double appearances and the variability in the dependence among stakeholders leaves a non-structured way of identifying and categorising stakeholders.

One of the interpretations of the stakeholder theory incorrectly sees it as arguing that a firm should take into account the aspirations of all its stakeholders and that they must all be treated equally irrespective of the fact that some clearly contribute more than others to the organisation (Phillips, 1997). However, stakeholder management does not imply that executives have to direct equal amounts of attention to all their constituents (Harrison & Friedman, 1999). Freeman (1984) stated that prior to his work, the strategic planning literature did hardly consider and define stakeholders. The literature of that time just developed simplistic approaches for considering the environment, but the stakeholders of that environment were ignored. Porter (1990) for example was one theorist who dealt with the environment and split

it up into his SWOT analyses (strength, weakness, opportunities and threats). Stakeholder theory is hinged around the stakeholders in a specific environment; however, it is seen as inadequately addressing the environment surrounding the firm (Key, 1999). Stakeholders around the firm, especially those in the immediate business environment and those in the broader environment, are somewhat confused. Kaler (2003) have reacted to this criticism by proposing a new graphical model, the new stakeholder view of the firm. The consideration of the STS theory in this research is therefore a prudent way of contextualising the environment of the study.

4.3.1.4 Stakeholder theory and Socio-Technical Systems theory

The STS theory argues the need to consider social and technical factors of a system in the introduction of new processes or methods (Heiskanen et al., 2000). Similarly, the stakeholder theory outlines that there is a requirement to change the way and manner in which organisations operate or do business from the old models of thinking towards a consideration of the organisation's external environment. The argument therefore is that in the introduction of the BAPM, specific factors of the environment should be considered, as every bidding process and award criteria is context specific hence, it is impractical for a process to be lifted from another jurisdiction and applied in the Ghanaian context. The stakeholder theory advocates for the inclusion of all stakeholders of an organisation for decision making in a structured manner. The same way, a system is explained as a totality which means that a system is a whole that cannot be taken apart without the loss of its essential characteristics, and that the parts of the system should be studied and explained in terms of the whole, instead of explaining the whole in terms of its parts (Mullock, 2016). A system is defined as "a set of elements standing in interrelation among themselves and with the environment which together, through their interaction, form something more than the sum of the parts" (Heiskanen et al., 2000).

Innovation design, adoption and utilisation are integral parts of sociotechnical systems, and take on social significance through the way social actors intentionally or unintentionally use it to influence each other and the rest of their social world (Eason, 2007). There are aspects of systems theory which are concerned with changes of systems in time, and it uses two principal ways of description: internal and external (Von Bertalanffy, 1972). Internal description is fundamentally structural, and it aims to describe the system's behaviour in terms of its set of measures (or state variables) and their interdependence. External description is more functional and is used to describe the system's behaviour in terms of its interaction with its environment (Von Bertalanffy, 1972). Again, stakeholder theory advocates that streamlining processes

should be done by identifying internal and external stakeholders of the organisation in a bid to maximise output by satisfying all of them. Indeed, Gibson (2000) argues that systems theorists also contributed to the development of the stakeholder literature in the 1970's. Moore (1999) developed a methodology for stakeholder analysis of organisational systems. He argued that stakeholder participation is essential for system design and the support and interaction of stakeholders help in solving many societal problems. The systems model of stakeholders emphasised participation and argued that problems should not be defined by only focusing or analysing but also in the broader context (Mullock, 2016).

The origins of stakeholder theory draw on the literature on corporate planning and systems theory (Venkataraman, 2002). Stakeholder theory also requires a consideration of the relationships of stakeholders in the maximisation of the output of the organisation, whilst the concept of Socio-Technical Systems Theory (STST) is one such systems approach that "focuses on the interdependencies between and among people, technology and environment" (Cummings, 1994). In effect, stakeholder theory depends on the considerations of stakeholders and its' environment in a socio-technical system and Socio-technical Systems theory depends on the effectiveness of stakeholder theory of the system in solving or exploring an identified problem making both theories to a large extent mutually dependent.

4.3.2 Distinguishing the Ghanaian Public Sector according to theories adopted

The section contextualises the Ghanaian public sector with respect to its distinct factors. This section presents a discussion on the Social-Technical Systems theory which postulates the need for considering the socio-technical system (environment) in the introduction of new processes or technology. In exploring and attempting to contextualise the social, cultural and technical factors of the Ghanaian public sector administration, a number of theoretical perspectives were engaged. Scholars have employed theories in explaining organisational culture (Donaldson & Preston, 1995) strategies of corporations (Prakash, 2001) and economic drivers of a social context (Ahinful, 2017). This section provides the contingency theory, institutional theory, legitimacy theory, public choice theory and the x-efficiency theory in relation to the Ghanaian public sector/civil service, but firstly discusses the socio-technical systems theory.

4.3.2.1 Emergence of the socio-technical systems theory

The theory seeks the need to analyse both the social and technical elements of an organisation or work unit (Cummings, 1994). Socio-technical systems theory is the interrelation between social and technical factors creating the conditions for successful system performance (Trist &

Murray, 1951). Sociotechnical systems theory reflects certain specific methods of joint optimisation in order to design organisations that exhibit open systems properties and can thus cope better with environmental complexity, dynamism, new technology and competition. Sociotechnical systems involve (Von Bertalanffy, 1950):

> *the concepts and metaphors of general systems theory, in particular, the notion of 'open systems' (as a way of describing, analysing and designing systems) with joint optimisation in mind, particularly those that embody some degree of non-linearity within themselves as well as the environment they reside in.*

Socio-technical systems thinking grew out of work conducted at the UK Tavistock Institute into the introduction of coal mining machinery (Cherns, 1976). This identified the interrelated nature of technological and social aspects of the workplace (Trist & Murray, 1993). The introduction of new machinery into coal mines without analysis of the attendant changes in working practices highlighted the need for consideration of behavioural issues during the design and implementation of new technologies (Trist & Bamforth, 1951). These, and other similar studies, led to the emergence of the STS theory (Van Eijnatten, 1997). These early works reflected in the core philosophy of socio-technical systems theory, "design is systemic" (Clegg, 2000). The theory advocates consideration of both technical and social factors when seeking to promote change within an organisation, whether it concerns the introduction of new technology or a business change program (Cherns, 1976). Organisations can be considered complex systems, comprising many interdependent factors. Designing a change to one part of the system without considering how this might affect or require change in the other aspects of the system will limit effectiveness (Hendrick, 1997). Although the underlying philosophy has remained largely unchanged, the specific principles and applications have evolved to reflect the changing nature of work, technology and design practices. The emphasis has shifted from an early focus on heavy industry (Trist & Bamforth, 1951; Rice, 1958) to a gradual broadening of enquiry to advanced manufacturing technologies (Dankbaar, 1997), through to office-based work, services and processes (Clegg, 2000).

The application of socio-technical systems to socio-technical theory emerged in 1959 with a paper by Emery, expanding the field by drawing on the specific case of open systems theory (Kelly, 1978). Open systems theory gave sociotechnical theory a more tightly defined grounding as well as a unifying conceptual language. The characteristics of systems thinking

are the twin notions of "a complex whole" formed from a "set of connected things or parts" (Pasmore & King, 1978). Part of the appeal of industrial age thinking is that the 'set of connected things or parts' can be tightly defined (ibid). STS theory has benefited from over 60 years of development and application by both researchers and practitioners. For example, studies by Cherns (1976), Pasmore and King (1978); Mumford (1983), Eason (1988); Clegg (2000); Carayon (2006); Mumford (2006); Eason (2007); and Baxter and Sommerville (2011) engaged STS theory in their works. The over-arching philosophy, embracing the joint design and optimisation of organisational systems (incorporating both social and technical elements), has maintained its practical relevance and has seen increasing recognition and acceptance by audiences outside the social sciences (Eason, 2008). Such success can be attributed, in part to the continuing evolution of sociotechnical systems thinking and practice (Baxter & Sommerville, 2011)

STS theory has achieved some success in helping inform the design of new processes, technologies and technology-led change (Carayon, 2006). The principles have helped in guiding designers on the potential roles of users and on developing an understanding of how new technology may be used and integrated with existing (and planned) social systems (Mumford, 1983; Klein, 2005). The broad understanding gained through the continued study of technological design enabled a reinterpretation of socio-technical principles to reflect the challenges of contemporary information and communications technologies (Clegg, 2000). Also, the benefits can be seen in the way that socio-technical researchers have been able to offer critical reflection and constructive advice on the design of large scale IT projects in contexts such as the National Health Service (NHS), and National Programme for Information Technology (NPfIT) (Clegg & Shepherd, 2007; Eason, 2007).

Socio-technical systems methods are an approach to design that consider human, social and organisational factors, as well as technical factors in the design of organisational systems. They have a long history and are intended to ensure that the technical and organisational aspects of a system are considered together. STS theory has had a significant impact on the social aspects of organisational design, most notably on the design of jobs and ways of organising work. The redesign of jobs and work processes in line with socio-technical theory has helped to deliver both improved work experience for employees and more effective systems. For example, allowing employees the opportunity to resolve problems at source has been linked to a range of outcomes including increased productivity, motivation, and wellbeing (Birdi et al, 2008). Practice-based theorising of work contexts and socio-organisational studies of science and

technology have generated a broader renaissance of interests in sociotechnical studies within organisations (Bamforth, 1951; Trist et al., 1984). Since the development of the classical STS theory to the current contemporary approach to STS, it appears that the concept has become eclectic, drawing on a wide range of ideas from different contexts, thus the meanings given to the notion of sociotechnical system have been generally broad (Olerup, 1989).

Technology deployment unfolds within constantly changing contexts and conditions (Heiskanen et al., 2000). The approach is more likely to reveal shifting interpretations and the political nature of organisational activities, rather than retrospective rationalisations and legitimised interpretations (Rice, 1958). Clegg (2000) argues that a critical comparison of process mapping and sociotechnical analysis concerns the spread of a reductive simplified image of a firm: a linear representation of workflows which is assumed to be valid for every type of work (from managerial processes to operating processes). Theories are therefore engaged in subsequent sections to understand the context of the Ghanaian public sector (system) of which this research primarily influences. This will accentuate *inter alia* the conditions present, the inefficiencies, challenges of the sector and such social as well as technical capabilities of the sector. The context of bidding process can be examined from a systems perspective with the existence of the different operations and performance of the distinct units in the system. The system's analogy has been used to overcome the problem of fragmentation in the construction sector, where independent elements could never be regarded as a system (Maqsood, 2001).

4.3.2.2 Contingency Theory

The contingency theory is a critical approach that has contributed significantly to different research fields such as operations management (Zhang et al., 2012; Chavez et al., 2013). Contingency theory adopts the premise that any organisational, managerial and operational system cannot be equally applicable and/or effective in all contexts and environments (Drazin & Van de Ven, 1985). Therefore, a specific context can be more conducive for a specific system than other contexts, which positions the concept of fit at the heart of contingency theory (Jayaram et al., 2010). Generally, contingency theory argues that there is no theory or method that can be applied in all situations (Flynn et al., 2010). This means, that there is no one best way to design an organisation or its process. The environment that an organisation works forms its structures and activities which suggests that organisations should match their structures and activities to their environment in order to maximize performance. The culture of the context is very critical in its success.

Hofstede (2011) defines culture as: "The collective programming of the mind which distinguishes the members of one human group from another". The emphasis is that culture is not a property of individuals but of groups (Hofstede, 2011). It is a collection of more or less shared characteristics possessed by people who have been conditioned by similar socialisation practices, educational procedures, and life experiences (ibid). As a result of their similar backgrounds, people in any given culture may be said to have similar "mental programming". Thus, one can speak of the culture of a family, a tribe, a region, a national minority or a nation; culture is what differentiates the people in a given collective from people in other collectives at the same level (other families, other tribes, and so forth) (Brenyah & Darko, 2017). Culture is one of the important sources of competitive advantage as it affects organisational behaviour and corporate performance positively or negatively (Brenyah & Darko, 2017). Organisational culture is distinct from culture of societies and affects employee satisfaction and commitment, performance, as well as employee engagement. However, Hofstede (2001) argues that the prospect for changing organisational cultures, depends on whether the particular organisation has a strong or weak culture. The purpose and goals of any organisation influence its culture and significantly affect employee morale, retention and their level of engagement (Brenyah & Darko, 2017). The culture in the Ghanaian public sector will therefore be significantly different from other developed countries. The practices, conditions of service and level of operation and efficiency will differ and be dependent on specific contexts in the society.

The public sector in Ghana is vast and complex. It consists of the four categories of public services listed under Chapter 14 (Article 190 Section 1a-d) of the constitution stipulating that public services of Ghana shall include civil service and other 13 services, public corporation, and other public services constituted by law (GOG, 2018). Details are prescribed in the Public Services Commission Act 1994 and Civil Service Law 1993 which can be interpreted to include commercial State-Owned Enterprises (SOEs) and regulatory organisations including commissions, boards, agencies, subvented agencies, statutory corporations and joint ventures with government carried interest (ibid). The complexity is compounded by the diversity of functions and different nomenclatures for various organisations with different conditions of service (Ofori, 2012). In the implementation of new practices or processes, the contingency theory stipulates that organisations adopt structures in order to keep up with changing contextual factors (Rashidirad et al., 2015). It is important to redesign the process or restructure the bidding process according to a particular context taking into consideration culture and societal underpinnings of Ghana. Many systems that have been introduced into the public

sector by way of enhancing performance have been broad and expected to solve the distinct issues of the different segments of the sector. These have not been successful, and the inefficiencies of the public sector is still predominant leading to significant loss of resources (Dza et al., 2018). A study by Ofori (2017) argued that a one-size fits all approach will not address the public sector problem in Ghana and for all other organisations in the country. The culture of the public sector is diverse and distinct, hence tailored solutions with specific and targeted outcomes should be employed.

4.3.2.3 Institutional Theory

Institutional theory examines and explains how social change in organisations is affected by institutionalised pressures and norms. The theory is underpinned by the assumption that institutional environment exerts great influence on the development or adoption of formal structures deemed socially acceptable in the organisation (Hoffman & Jennings, 2014). The response of the organisation to the institutional pressures and expectations is necessary to ensure that the organisation's legitimacy is maintained (Meyer & Rowan, 1977). The predominance of these socially acceptable norms may become highly legitimised within the institutional environment such that failure by an organisation to adopt these may be seen as negligent and irrational (Meyer & Rowan, 1991). When the institutional environment reaches this point, all organisations (existing and new) will have a lesser choice than to adopt the procedures and structures even if it is at the expense of efficiency. Becoming part of the institutional environment through the adoption and display of institutionally acceptable norms, the organisation's action is preserved on the basis of good faith (Oliver, 1991). Rahaman and Lawrence (2004) stated that politics, trade unions, cultural factors, ethnicity and interventions from aid agencies are central to understanding the efficiency of the concept of governance in developing countries. Governance is critical in not only the implementation of policies but the creation, reinforcement or reproduction of social norms and institutions. In order to survive, organisations must conform to the rules and belief systems prevailing in the environment (Oliver, 1991).

The public sector over the decades have been influenced by the political environment and by extension, the public. The objectivity of the civil service is lost and their operations of determining right from wrong as well as operations of what needs to be done are largely affected by who is in power (Dza et al., 2018). There have been eras where the civil service have lost their power to condemn actions of the government and have been accused of being bias (Ofori, 2012). The public service have been found to wear political clothing in their

dealings in even data collection and dissemination (Owusu-Bio et al., 2014). For instance, the Public Procurement Authority (PPA) is responsible for the establishment of the five basic pillars of public procurement (World Bank, 2010): (1) comprehensive, transparent legal and institutional framework; (2) clear and standardised procurement procedures and standard tender documents; (3) independent control system; (4) proficient procurement staff; and (5) anti-corruption measures. The PPA establishes the legal and institutional framework for ensuring transparency, probity and accountability in public construction procurement (Republic of Ghana, 2018). The Head of the Authority is appointed by the elected President, hence tows a certain agenda which affects the entire staff of the authority. Staff could be dismissed or suspended for criticising actions of the Authority. Similarly, staff could sabotage policies of the current government if they are supporters of another political party. There are also instances of undermining leaders to fail in order to be appointed as the leader when another political party is in power. Public procurement is inherently a politically sensitive activity as it involves significant amounts of the taxpayers' money. However, the public civic service in Ghana is a distinct body and separate from government actions. The Ghana civil service is the biggest employer in the country and is mandated by law to support the government in the implementation of policies for the development of the country. According to the law, the Head of the civil service is not appointed by the president, but the Head of the Public Procurement Authority in Ghana is (Ofori, 2012). Party politics should not have any place in the civil service (Ofori-Atta, 2017). The action of politicising the civil service as the Presidents appoints Heads, breeds procurement breaches and is bad for democracy (Ahinful, 2017).

Ghanaian public sector performance has deteriorated over the years with poor service delivery as a result of such actions, bribery to get a job done and wanton disrespect in terms of client and stakeholder relationships (Osei, 2013). Successive governments have recognised that poor public sector performance undermined economic growth in Ghana (World Bank, 2017). For instance, the Senchi National Economic Forum in 2014 expressed dissatisfaction that civil and public servants display a lackadaisical attitude toward the work they do (Ahinful, 2017). Public sector reform is usually a component of structural adjustment programmes based on notions of economic liberalisation, free trade, competition, privatisation and limited government intervention (Opoku et al., 2014). World Bank (2017) argues that public interest satisfaction in terms of better services to clients will be realised from institutional reforms such as injections of private management styles (such as budget related performance) into the state-owned enterprises. These management styles, whether they operate in the public or private sector,

should produce more efficient enterprises serving all, including customers, employers, industry and society (World Bank, 2018). Despite efforts by previous governments to improve upon performance, much had not been achieved but it is believed that the adoption of the National Public Sector Reforms Strategy (NPSRS) for 2018 to 2023 will help the public sector in ensuring efficiency (Republic of Ghana, 2018). Primarily, efficiency and performance improvement come about when requisite resources in terms of labour and machinery are provided to serve as motivation in the public sector (Ofori, 2012). GOG has begun the process that would lead to the creation of a new public sector that is fit for purpose and would guarantee quality service delivery (Republic of Ghana, 2018). The reforms should consider systems, structures, processes and internal management functions with a view to modernising them to meet state priorities, create the necessary conditions for the private sector to thrive and create employment opportunities (ibid).

4.3.2.4 Legitimacy Theory

Legitimacy is a generalised perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions (Suchman, 1995). Legitimacy affects how people act in relation to organisations and their understanding of the organisations. In situations where organisations' activities are deemed to lack legitimate acceptability, they become more vulnerable to the assertion of being irrational, unnecessary or negligent (Meyer & Rowan, 1991). Social perceptions of the organisation's activities are reported in accordance with the expectations of society hence, in the situation when the organisation's activities do not respect social and moral values, the organization is severely sanctioned by society. This is evident in the conduct of the civil service and even government who project or advance only seemingly good development, solely to mislead the public when there are signs of serious malfeasance and misconduct. A study by Dza et al. (2018) revealed levels of inefficiencies in public procurement in Ghana. The research which focused on Metropolitan, Municipal and District Assemblies (MMDAs) across the country, revealed widespread corruption in the public service. Notable procurement related corrupt practices that were unravelled included: influence peddling, inflating contract sums, payment for non-existing contracts, deliberate contract splitting, multiple payments for contracts, use of phantom vendors and misapplication of public funds (Dza et al., 2018). Ofori (2012) has argued that there are no legal obligations that regulate other professionals and the functions of contractors and sub-contractors.

There is evidence of poor institutional capacity of Ministries, Departments and Agencies (MDAs) to formulate and implement policies for enhanced service delivery to the citizens. In Ghana, development plans and programs have a very poor record of implementation. Many people feel concerned about the waste of manpower and resources in formulating plans and programs that are not likely to be implemented (World Bank, 2018). Two of the major causes for the failure of past anti-corruption strategies in Ghana are lack of effective and sustained coordination, insufficient government commitment to, and limited support for the implementation of anti-corruption strategies (Republic of Ghana, 2015). Furthermore, limited coordination between sector MDAs emphasises the point that one of the problems identified as a cause of failure of past programs is individual ministry led programs (World Bank, 2018). These are however not perceptions but facts that are perceived by the general public. For example, obtaining a land title can take up to 24 months, and 86 per cent of Ghanaian citizens believe that government officials are involved in corruption (Afrobarometer, 2014). In many cases, citizens have to rely on middlemen who have built some relationships to officials and pay informal fees to bypass formal administrative steps in acquiring services (World Bank, 2018). Although there is a good anti-corruption legal framework in place in the constitution, there is a major difficulty in enforcing these laws especially in public procurement. Transparency in the procurement process is vital to foster bidding and tendering processes void of corruption, bias and partiality (Jefferies et al., 2002). The unfair award of contracts prevents healthy stimulations in quality and innovation (Ofori, 2012). The inefficiencies in the construction industry demands strict evaluations on all levels of the project lifecycle and the adoption of measures especially for the pre-construction stages where more detail is given to project analysis before the start and approval of projects (Asamoah & Decardi-Nelson, 2014). There is also the need for periodic reviews of policies and construction procedures that augment shortfalls to meet the construction dynamics (Ayarkwa et al., 2010; Ofori, 2012; Osei, 2013).

4.3.2.5 Public Choice Theory

Public Choice Theory modelled the government as comprising of officials who, aside of pursuing the public interest, seek to maximize their own self-interest, thereby replacing efficiency for personal gains (Tullock, 2003). It is therefore wrong to assume that the actions of these public officials are irrational, rather they are deliberate in order to propagate an agenda (Buchanan, 2014). Ofori (2012) argue that the lack of strategies and standardisation of procedures have caused considerable waste of public resources, especially in developing countries. This allows public officials in Ghana to use threats or bureaucratic bottleneck to

extort payments from private parties whose desire is to achieve competitive hedge over rivals. Studies have shown that transactions between the public and private sectors are tainted with fraud (Nellis, 2003; Bloomgarden & Blumenfeld, 2013; Ofori, 2017) and users have not benefited from the anticipated efficiency gained with private sector involvement in public service delivery (Dza et al., 2018). However, Devlin and Arneil (2003), through a study of health workers in the UK who transferred to the private sector as a result of a PFI provision concluded that the public sector is driven primarily by a concern for working in the public interest. In contrast, they suggest that private sector workers are driven primarily by output and profit targets set by the organisations. This results in a decrease in quality in service under PPP and shows a distinct difference in attitude between the two sectors (Buchanan, 2014).

Previous attempts at improving public sector performance and efficiency have been expansive, covering all facets of the public sector with only modest results. The Government's new approach elaborated in the NPSRS focuses on a selected number of areas designed to focus on responsiveness, quality and adaptability (World Bank, 2018). This strategy is designed to address specific constraints to public sector performance (Republic of Ghana, 2018). The NPSRS compliments other government strategic documents including the National Coordinated Program for Economic and Social Development Policies (2017-2024); Medium-Term Policy Framework (MTPF), 2018-2021 and the Government Result Framework (GRF), 2017-2020 (World Bank, 2018). All these key government documents outline some measures aimed at improving public sector performance. The World Bank's engagement supports these reforms in performance; measurement of efficiency and accountability in service delivery, strengthening the monitoring and evaluations systems; and improving administrative service delivery, by tackling the key governance constraints to the effective delivery of administrative services (World Bank, 2017). Three areas represent the most challenging aspects of public sector performance in Ghana, namely: performance, accountability, and service delivery (Dza et al., 2018). A fundamental problem of Ghana's public sector is how to convert broad aspirations contained in strategic plans and government pronouncements into tangible outputs and outcomes that show results and impact (Osei, 2013). The gap between what government proposes as outlined in several strategic documents and what it manages to accomplish can be explained by the ineffectiveness of public sector (Republic of Ghana, 2018).

The lack of strong performance culture at the upstream level and the absence of a culture of monitoring for results affects downstream performance of frontline entities in the delivery of administrative services (Ofori, 2012). There are three major weaknesses in the delivery of

administrative services to citizens: poor institutional capacity of the various MDAs to formulate and implement policies for enhanced service delivery to citizens; inadequate support from central agencies; and limited coordination between sector MDAs (World Bank, 2017). These structural inefficiencies have contributed to the low levels of service quality in frontline entities (Republic of Ghana, 2018). The delivery of basic administrative services is encumbered by several bureaucratic processes that are unnecessary and waste time causing excessive delays (Osei, 2013). GOG introduced and established Client Service Units (CSU) in Ministries, Departments and Agencies (MDAs) to receive and address citizen complaints (GOG, 2017). However, this effort did not translate into improvements in service delivery standards because not all MDAs established CSUs, and where they existed, there were not fully functional due to lack of resources, leadership and unclear mandates regarding mechanisms for interfacing with citizens (World Bank, 2018). In addition, the public-sector mind-set is yet to be fully attuned to citizens' needs (ibid).

4.3.2.6 X-efficiency Theory

The theory of X-efficiency developed by Leibenstein in 1966 postulates a non-allocative effect of market power, which he believes will not only drive a wedge between price and marginal cost but will also raise the firm's costs above the technologically minimum levels (Hammami et al., 2006). However, the precise nature of this inefficiency was unclear to him and hence, he named it 'X' (Frantz, 1992). Accordingly, Frantz (1992) argued that the existence of X-inefficiencies meant resource allocation could be greatly improved in excess of what is originally conceived. According to the theory, inefficiency in the public sector emanates from the bureaucratic behaviour of government officials who are considered to be motivated not only by their duties towards governance but also by their own aspirations (maximising power and status) and value systems (Fourie & Burger, 2000). Such bureaucratic behaviour is assumed to cause misallocation of resources and an oversupply of public goods (Brown et al., 1990). Vining et al. (2005) argue that x-efficiency theory could be attributed to the theoretical underpinning of the concept of PPP. De Vries and Yehoue (2013) state that the inefficiency in the public sector was the main reason for the emergence of the New Public Management in the UK under Margaret Thatcher, and in other countries as well. The main goal of this paradigm shift was to implicitly introduce in the public sector the functioning principles of the private sector (Hammami et al., 2006), with the notion that public sector inefficiencies can be grossly minimised through partnership with the private sector because a profit maximising private sector partner acting under competitive pressures is more likely to be efficient. Hammami et

al., (2006) argues inefficiencies in the public sector can however be overshadowed by official financial and monetary policies to bail them out or to limit their probability of failure.

MDAs in Ghana have begun the process of improving infrastructure and processes to strengthen their business offerings, but users still experience delay in the turnaround time for the services delivered (World Bank, 2018). The government attempted to address these problems by introducing ICT systems, such as online applications from the experienced private sector (ibid). However, behavioural issues and organisational cultures have undermined the success of these measures (Ofori, 2012). There are some e-Government foundational weaknesses which must be tackled before full benefits of the GOG digital investments can materialise (Osei, 2013). Some MDAs have progressed to a stage where, potentially, they could have paperless back-offices and e-services, while others are still heavily manual (GOG, 2017). But this 'digital divide' between MDAs means no agency can fully automate their systems because, on many business process stages, they depend on data from the other MDAs (World Bank, 2018). This means no single agency can reap the full benefits of digitisation when the rest are not similarly developed. It also means MDAs cannot realise such benefits when their digital systems are insular and not interoperable (Dza et al., 2018). However, Ahinful (2017) argue that dealing with delivery problems require going beyond ICT interventions to include the behaviour of staff, attitudinal change and emergence of a performance culture. Therefore, the short-to-medium term emphasis should be on dealing with performance management in the public organisations as practised in major private sector organisations in Ghana (ibid). Such a focus would address issues around the development of a culture of performance in various MDAs delivering administrative services, development of performance targets for each participating agency, rigorously collecting data to monitor performance and improving the work conditions and the environment to enable the delivery of high-quality services (World Bank, 2018). This would support the emphasis of government on ensuring that, just like the private sector not few but all public agencies meet their performance targets (Republic of Ghana, 2017). Further emphasis should be on improving the interface between the citizens and other users, and the frontline service providers through strengthening CSS and other user feedback mechanisms (World Bank, 2018).

4.4 Research Philosophy

Research philosophy represents different ways through which knowledge is developed and judged as being acceptable (Fereday & Muir-Cochrane, 2006; Robson & McCartan, 2016). The debate on the nature and philosophy of research in the social sciences revolves around two main research paradigms; positivist and interpretivist. Understanding the ontological and epistemological orientations help the researchers determine their personal paradigm (Guba & Lincoln, 1994). The determination of a research paradigm influences the methodological decisions which frame the research. This means that a research paradigm has implications for methodology that a researcher needs to employ in order to meet objectives of the study. The philosophy underpinning a research design is vital in determining the right approach, strategy, data collection and analysis technique that will make the research viable. Checkland and Winter (2006) postulate that research is based on philosophical principles that define various disciplines, hence giving a philosophical base which places the research in context. Sexton (2003) avers that the selection or adoption of a philosophical route should entail three important facets namely: Ontology; Epistemology; and Axiology as illustrated in figure 4.1.

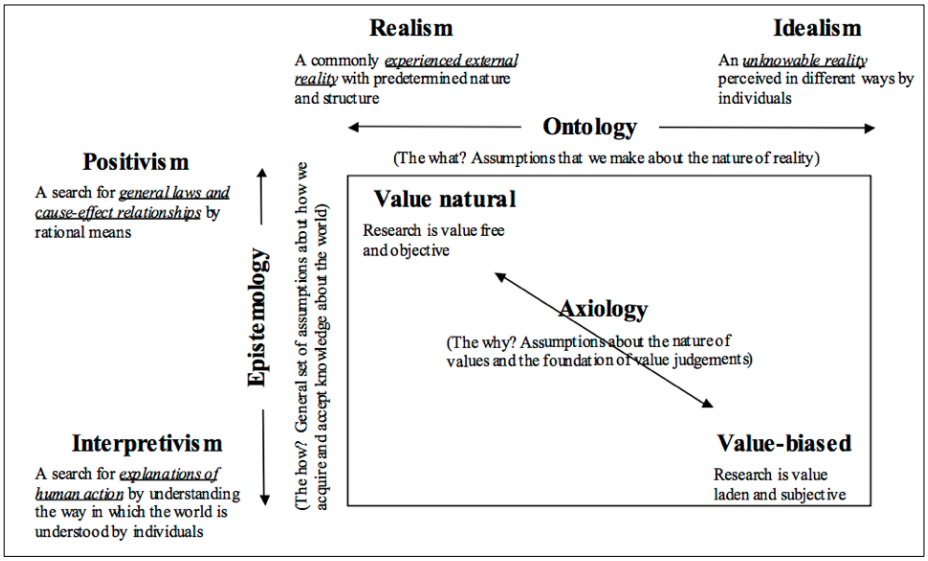


Figure 4.1 - Dimensions of Research Philosophy (Source: Sexton, 2003)

Sexton (2003) divides the philosophy into three parts: Ontology; Epistemology; and Axiology but Crotty (1998) argues that ontology and epistemology are mutually dependent and should be considered together. There is relationship between ontology, axiology and epistemology

which provides the orientation needed to produce a philosophically acceptable research. Epistemological and ontological stances are often inseparable because theories about the nature of knowledge are similar to theories about the real world creating a strong overlap between epistemology and ontology. However, for purposes of this thesis, all three facets and their respective chosen paradigms are discussed independently.

4.4.1 Ontology Considerations

Ontology describes the concerns of the nature of reality or a relation to reality (Sarantakos, 2005). All researchers have different viewpoints of reality and how they perceive it, hence the outcome of any research and how well the topic is investigated is heavily underpinned by the approach to reality that the researcher adopts. Bryman (2006) maintains that ontological concerns issues on whether social entities can and should be considered objective entities that have a reality external to the social actors, or whether they can and should be considered social constructions that can be built up from the perceptions and actions of social actors. Neuman (2007) argues that human social life is based on the ideas, beliefs and perceptions that people hold rather than objective, hard, factual reality. Saunders et al. (2012) posit realism and idealism as the two main philosophical paradigms of ontology. Ontological considerations are divided into two: objectivism and subjectivism, where objectivism deals with the fact that social phenomena and their meanings have an existence that is independent of social actors, and subjectivism is premised on the fact that social phenomena and their meanings are in a state of flux, being continually affected by the social actors (Bryman, 2006). The realism or positivist approach deals with the fact that the nature of reality is objective whilst idealism or interpretivist relates to reality being socially constructed (Neuman, 2007). The positivist sees reality as an organised method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic cause law, where it can be used to predict general pattern of human activity (Neuman, 2007).

The interpretivist views reality as subjective and multiple, as seen by participants in a study (Creswell & Clark, 2007). It perceives the world as constructed, interpreted and experienced by people in their interaction with each other and with wider social systems (Dainty, 2008). The positivist paradigm is seen to predominantly engage in 60 quantitative methods where theories and hypotheses on natural phenomenon are tested through the use of connections between empirical observations, mathematical and statistical expressions (Creswell, 2003). The interpretivist paradigm normally engages in qualitative methods as a way of providing an

in-depth appreciation of certain phenomena (Johnson & Onwuegbuzie, 2004). Carr (2006) maintains that in realism or positivism, reality is objective and external, thus information is derived from sensory experience, interpreted through reason and logic which forms the exclusive source of all authoritative knowledge. Lawson (2004) argue that realism is the belief that some aspect of our reality is ontologically independent of our conceptual schemes, perceptions, linguistic practices and beliefs. The realist approach has its shortcomings and it is argued that when the objective world is being researched, generalisations are not directly made out of findings, they are usually skewed and the research must also engage other tools to enhance comparisons and validate data (Flick, 2009).

4.4.2 Epistemological Considerations

Mkansi and Acheampong (2012) define epistemology as the philosophy which relates to how knowledge can be recognised, developed or acknowledged. Tsoukas and Hatch (2001) simply tout epistemology as the view on what constitutes acceptable knowledge. The epistemological perspective of research concerns the relationship between the knower and the known, or between the researcher and the researched (Collis & Hussey, 2003). Thus, it is significant for a researcher to define an epistemological position that will compel specific assumptions about how the researcher will learn and what they will learn during the study (Creswell & Clark, 2007), this is because epistemology will produce different facets of knowledge about the industry (Dainty, 2008). This influences the overall research approach adopted for the study and the contribution to knowledge (Creswell & Clark, 2007). Epistemology may be objective or subjective where objective epistemology recognises the outside world as hypothetical impartial, while the subjective epistemology suggests that the outside world is in the realm of clarifications from reflection (Collis & Hussey, 2003). For each of the two alternative ontological paradigms, a corresponding epistemological approach is adaptable, as shown in figure 4.1. One of the approaches assumes the researcher is independent from what is being researched (positivism) and the other (interpretivism) assumes the researcher's interdependent role with the research (Tsoukas & Hatch, 2001; Collis & Hussey, 2003). It is important to recognise that certain authors term interpretivism as phenomenology or constructionism/constructivism (Flick, 2009) or (Neuman, 2007). According to Johnson et al. (1984), positivist paradigm perceives that a reality exists independently of human consciousness and cognition (realist ontology) through 'the eyes of the researcher' or based on individual experience and test results (objectivist epistemology). Whereas the constructivist paradigm refers to nominalism reality (nominalist ontology), which is simply a product of the

mind, a projection of consciousness and cognition with no independent status. In the constructivist approach, the researcher focuses on meanings and tries to understand what is happening to develop ideas through induction from the data whilst the positivist approach focuses on facts to formulate and test hypothesis (Esterby-Smith, 1991; Silverman, 1998). However, Gill and Johnson (2010) argue constructivism to be associated with the study of how individuals understand and experience the world before applying subjective meanings to these experiences. With regards to constructivism, Dainty (2008) asserts that inferences from the social phenomena are developed through social interaction and are therefore in a constant state of revision. Gill and Johnson (2010) state that reality is subjective and has multiple dimensions in the constructivist stance. Furthermore, constructivist paradigm believes that a reality is perceived in different ways through the eyes of different individuals (subjectivist or idealist epistemology). The key distinctions of both paradigms are illustrated in table 4.3. The battle over the apparent division between the two paradigms resulted in the emergence of a new paradigm; pragmatism paradigm (Tashakkori & Teddlie, 1998). This paradigm uses mixed methods in its research enquiry (Johnson et al., 2007). It is a practical and outcome-oriented method of inquiry based on action and leads for further action and elimination of doubt (Johnson & Onwwuegbuzie, 2004). An important factor under this paradigm is what works in practice and the driver of method selection is the research question (Miles & Huberman, 1984; Miles & Huberman, 1994). The complex nature of the research necessitates the use of mixed methods (Newman, 2005).

Table 4.3 - Key feature of Positivist and Constructivist Approaches (Adapted from: Esterby-Smith, 1991; Silverman, 1998)

THEME	POSITIVIST APPROACH	CONSTRUCTIVISM (PHENOMENONLOGICAL) APPROACH
Basic Beliefs	The world is external and objective Observer is independent Social is value free	The world is socially constructed and subjective Observer is part of what is observed Science is driven by human interests
Researcher should	Focus on facts Look for causality and fundamental laws Reduce phenomena to simplest elements Formulate hypothesis and test them	-Focus on meanings -Try to understand what is happening -Look at the totality of each situation -Develop ideas through induction from data

Concepts	Social structure Social facts	Social construction Meanings
Methods	Quantitative Hypothesis testing	Qualitative Hypothesis generation

4.4.3 Axiology Considerations

This perspective relates with the philosophy that deals with general value which is important to any research because there is a tendency for the researcher to engage his experiences in the study (Saunders et al., 2012). Rudolph H. Lotze (1817-81), who became founder of axiology by introducing the clear concept of value into philosophy, made a distinction between value and existence where he described existence as comprehended with the intellect and regarded value as comprehended with emotion (Hill, 1984). Axiology is defined as the research paradigm that is concerned with the judgment of value and can be divided into value-free and value-laden (Saunders et al., 2012). The choice of the researcher's philosophical approach depicts the kind of value which he intends to bring to the research study. The concept of value-free and value-laden in a research has however been argued by social science researchers over the years. A value-laden research includes studies which adds personal emotions, feeling and past experiences of the scientist or respondent whilst a value-free research is objective and does not.

4.4.4 Philosophical Stance of the Research

In selecting an appropriate research philosophy, effort should be made by the researcher to take a retrospective look at not only the research aim, but more importantly, his personal views on knowledge creation and the nature of reality (Bryman, 2012). The previous section provided an understanding of the various facets of the research philosophy element. In selecting an appropriate philosophical stance for this study, it is pertinent to understand that the study is deeply embedded in social interactions. Dainty (2008) argues that construction management research is rooted in the natural sciences as science in itself seeks to provide understanding and knowledge through theories because no underlying true reality exists independently of perception. For the ontological position, the researcher adopted an interpretivist approach with regards to this research as it allows a significant knowledge acquisition on the bidding processes of road PPP projects in the Ghanaian (social) context. In this perspective, reality is subjective as data will be drawn from the experiences, knowledge and perceptions of the participants involved in this research in a defined 'reality' (Ghana). Knowledge therefore is not hard and definite rather subject to individual perspectives. For purposes of the epistemological position of this research, a constructivist

approach was adopted. This complemented the constructivist approach chosen for the idealism ontological position in determining how knowledge was acquired or formed in a subjective philosophical world. This approach was considered the best approach for this study as it addressed issues of the research and meet the overall aim of the study. This research is concerned with both the development of a bidding process for successful procurement and implementation of road PPP projects in Ghana in such a subjective, social context. The study was driven by perceptions and experiences of key stakeholders in PPP adoption and road PPP implementation in Ghana which provided in-depth knowledge and understanding for critical analysis. Similarly, it enhanced interaction between the researcher and what is being researched by realising and interpreting perceptions of those involved in the study. This position relates the world as subjective and research in this endeavour intends to discover and describe what is 'out there' (Sarantakos, 2005). Finally, this research adopted a value-laden approach. Maxwell (2005) identifies reactivity, which is the researcher's influence on the individuals studied as a threat in case study method. This is corroborated by Hammersley & Atkinson (1995) that the researcher's influence is impossible to eliminate. The fact that the researcher is part of the world being studied poses an influence. Valerio et al. (2012) opine that the researcher's 'feeling' for the subject may not be 'ruled-out', which affect the reliability of conclusions drawn.

4.5 Research Approach

Blaikie (2010) states that a research approach is important in the development of the best procedures or processes in addressing a research problem or answering research questions. The research approach links theory with the research and establishes the researchers' decision-making process regarding research design in methodology and data collection techniques. The research approach allows the researcher to make provisions for constraints which could arise throughout the research process (Easterby-Smith et al., 2008). Researchers are able to engage strategies that conform to the research process. Different types of approaches are aligned with the epistemological and ontological choices such as deductive, inductive and abductive approaches. Saunders et al. (2012) postulate deduction, induction and abduction as the types of research approaches available to a researcher. However, Blaikie (2010) argues retroduction as a type of research approach. The selection or adoption of a research approach is vital and is dependent on the theory addressed in the research and the purpose of the data being collected, hence, deciding whether the research will involve theory testing or development of a new theory (Bryman, 2012). Similarly, Blaikie (2010) defines the abductive approach as the process through which the researcher gathers lay accounts of the phenomenon in question,

understanding all the inherent gaps and deficiencies before proceeding, in an iterative manner, to develop his own account based on the understanding he has so obtained. The deductive approach entails research that is usually linked to the positivism school of thought, while the inductive approach is associated with interpretivism or constructionism. Therefore, the deductive approach applies to theory testing and the inductive approach for theory development. With regards to deductive approach, a theory and hypothesis are developed where a research strategy is designed to test the hypothesis. It entails the development of a conceptual and theoretical structure prior to testing through empirical observation (Gill & Johnson, 2010).

When the definition of what is going to be observed is made, indicators and measurements of the empirically observable instances are designated. Thus, the abstract concepts are linked with something that is observable and measurable in practice (Kothari & Garg, 2014). Generalisation is a significant characteristic of the deductive approach but in order to generalise regularities in human social behaviour, it is important to select samples with sufficient numerical size (Saunders et al., 2012). Thus, it is often expensive and time consuming to undertake a deductive approach. The inductive approach however is the opposite of deductive and has a more logical ordering where explanations and theories are created or constructed from what has been observed in the empirical world (Robson & McCartan, 2016). In the inductive approach tradition, people are more likely to work with qualitative data and to use various methods to obtain this data in order to establish different views of the phenomenon under study (Easterby-Smith et al., 2008). Similarly, inductive research is usually unstructured, thus, it is sometimes unreliable because it is not replicable and the presence of bias cannot be excluded (Gill & Johnson, 2002). The selection of an appropriate research approach depends on the problem the researcher seeks to solve (Kothari & Garg, 2014). In principle, different approaches could be combined to solve particular research questions (ibid). The deductive approach emanates from a scientific research background as this approach names existing theories which are the basis of explaining why a certain phenomenon occurs and it subjects the existing theories to rigorous testing (Meredith et al., 1989). The deductive approach therefore produces explanations using relevant theories through putting forward a set of ideas or hypothesis which would form a theory (Blaikie, 2010). However, in the inductive approach, data is collected, patterns emerge, characteristics named, generalisation achieved and then theories are developed on the phenomenon being investigated (Bryman, 2012). The objective of naming patterns is to provide a description of the social phenomenon being studied and

answer the research questions. Induction starts with collecting data about the phenomenon, understanding the problem better, depicting the characteristics through analysis and compounding the data into theories to achieve generalisations (Meredith et al., 1989). Inductive approaches are suitable for qualitative research more than quantitative research because researchers can deal with messy situations or less defined problems wherein researchers can adapt the process midway through undertaking the research or when dealing with additional issues (Saunders et al., 2009).

4.5.1 Justifying Abductive Research approach for this Study

After the review of approaches available to this research, the abductive approach was suitable for the research because of its ability to produce theories derived from social actors' (phenomenon populations) language and the meanings of everyday activities. Blaikie (2010) argues that the abductive approach answers research questions which cannot be answered by either the inductive or the deductive approaches independently through uncovering new variables and relationships of the phenomenon being studied. The approach proceeds from a lay account of how social actors describe their ways of life to technical, social scientific descriptions of that social life. It is useful in systematic combining and renders it a worthwhile approach (Dubois & Gadde, 2014). Systematic combining involves those procedures which allow for the simultaneous evolution of theoretical frameworks, empirical fieldworks, resulting in the development of new theories (Dubois & Gadde, 2014). The abductive process also lends itself to a "multifaceted treatment of change" which recognises that "multiple and conflicting representations of reality are generated in organisations" (Knights, 1995). The abductive approach deals with the process where the researcher gathers accounts of the phenomenon in question, understanding all the inherent gaps and deficiencies before proceeding, in an iterative manner to develop his own account based on the understanding he has so obtained (Winter & Checkland, 2003). The theory is generated as an integral part of the research process, hence, it is not invented at the beginning or just produced at the end as is the case in the deductive and inductive reasoning approaches (Blaikie, 2010). Abductive approaches are usually associated with interpretivism, and it is the mid-point between the inductive and deductive approaches (Saunders et al. (2012). Bryman (2012) describes it as a mixture of the inductive and deductive approaches. The abductive approach is concerned with the discovery of new variables and other relationships through the utilisation of an existing theory. The existing theory in the case of the latter is not tested as is the case in deductive logic, but rather it is used to enable an understanding of the phenomenon being studied. For purposes of this thesis, the abductive

approach was adopted as it produces theories derived from social actors' language and meanings of everyday activities which starts from the description phase and moves towards deriving concepts which form the base for understanding the problem situation. This was instrumental in the identification of processes of bidding and respective requirements for each stage. The approach however guided the research into developing bidding processes from social actors' views which enabled explanations and understandings.

4.6 Research Strategy

A research method is described as a process of collecting information from data that has been gathered through a systematic and organised approach (Jancowicz, 2003). Yin (2009) postulates that there is no hard and fast way in selecting a research method as it is dependent on the type of research, its objectives and context. There is therefore no perfect and direct rule which implies the use of one method of research over the choice of another (Jancowicz, 2005). Each method has its own distinct advantages and disadvantages (Smith et al., 2003). Saunders et al. (2009) state that research methods are inter-connected and certain factors may affect the choice of methods. Some of these factors include the nature of the study, the sources to be considered and the reasons behind them (ibid). Yin (2009) postulates a number of strategies in research methodology namely: Action Research; Case Study; Survey; Archival Analysis; Modelling; History; and Experiments. These are controlled by three main criteria: form of the research question, control of behavioural events and focuses on contemporary events as shown in table 4.4. Research questions are categorised as who, what, where, how, and why (Hedrick et al. 1993 cited in Yin, 2003). Yin (2009) maintain that there are two possibilities for the "what" question. The first is exploratory 'what' questions where any of the seven research strategies can be used (e.g. an exploratory survey, an exploratory experiment, or an exploratory case study) and the second type takes a form of the 'how much' or 'how many' type of inquiry. Similarly, Yin (2009) states that 'how' and 'why' questions are more explanatory since they deal with operational links needing to be traced over time rather than mere frequencies or incidences. Yin (2003) further differentiates various research strategies based on the extent of the researcher's control over behaviour and the degree of focus on contemporary events. For example, histories are a preferred strategy for how and why questions when there is no access or control. This is mainly because the historical methods deal with past events when there are no relevant persons alive to report (ibid).

Table 4.4 - Research Methods
(Source: Yin, 2009)

STRATEGY	FORM OF RESEARCH QUESTION	REQUIRED CONTROL OVER BEHAVIOUR EVENTS	FOCUS ON CONTEMPORARY EVENTS
ACTION RESEARCH	Who, what, why, how many, how much?	Yes/No	Yes
CASE STUDY	How, Why?	No	Yes
SURVEY	Who, what, where, how many, how much?	No	Yes
ARCHIVAL ANALYSIS	Who, what, where, how many, how much?	No	Yes/No
MODELLING	Who, what, how many, how much?	No	Yes/No
HISTORY	How, why?	No	Yes
EXPERIMENTS	How, why?	Yes	Yes

A case study method is ideal in examining contemporary events when the relevant behaviour cannot be manipulated (Alasad, 2015). Although case studies and history strategies can overlap, case study is more appropriate in dealing with a full range of evidence sources such as documents, interviews and observations beyond what is available in the case of histories (ibid). Yin (2014) postulates that there are large overlaps among these strategies and to some extent, the various strategies are not mutually exclusive as multiple strategies can be relevant to any given study. Yin (2009) argues that history does not focus on contemporary issues. History is indeed part of the purpose of this study where past policies and programmes are mentioned but this study has a greater focus on the future of road PPP implementation in Ghana by accurately referencing past occurrences to inform the future. Experiment strategy is conducted when the researcher can manipulate behaviour directly, precisely and systematically (Yin 2003). The researcher is incapable of doing this, hence did not consider it for the study

because of the tangibility and gravity of the subject matter. Action research is an approach employed to improve conditions or methods of the people involved especially in education and is systematic of teacher inquiry (Whitehead et al., 2003). Stringer (1996) identifies it as a tradition that links processes of inquiry to the lives of people as they come to grips with the problems and stresses that beset them in their day-to-day lives. Naoum (2008) states that a modelling strategy involves the simplification of a subject under study through simulation tools and could not be implemented for satisfaction of the aim of this study. Archival analysis involves the extraction of information from original archival records. A survey was however adopted for purposes of this research as it suited the line of inquiry in reaching the aim of this study.

4.7 Survey as a Research Strategy

Naoum (2007) categorises research into two types, namely: Qualitative methods and Quantitative methods. However, Bryman (2006) postulates that research paradigms or techniques can be quantitative, qualitative or mixed method in approach. The quantitative approach focuses on evaluating and measuring numerical data (Cohen et al., 2003). This is especially useful for comparing present and previous research findings. Quantitative research methods are employed for the empirical and systematic investigation of quantitative phenomena or properties (Bryman, 2006). It tests theories subjectively by interpreting experiences, meanings and descriptions which is used often to collect data verbally through interviews or focus groups whilst the latter is objective in nature and involves the gathering of information in numbers and conducting the analysis statistically to state whether the theory is verified (ibid). They rely on empirical data and the conclusions are based on statistical analysis. Contrarily, the qualitative method entails the evaluation and analysis of non-numerical data. It involves the collection, analysis and interpretation of the subjects' perspectives or opinions about the phenomenon under study (Denzin & Lincoln, 2005). The qualitative paradigm employs various methods for collecting and analysing data such as focus groups, observation, ethnography, in-depth interviews and open-ended questionnaires (Denzin & Lincoln, 2005; Marshal & Rossman, 2011). Semi-structured interviews are the middle ground between formal and free-range interviews where interviewers prepare questions based on the literature review, the research questions and the research methodologies to investigate the research context by using these questions as guidelines for the interview (Robson, 1998). Qualitative research is

the process of determining and defining the reasons behind a certain social or human problem arising among individuals or groups, eventually resulting in a final written report (Creswell et al., 2004). The qualitative research method deals with a preparation process, where the researcher develops theories or hypotheses, explanations, and conceptualisations based on available details (Fereday & Muir-Cochrane, 2006). This method of research could be applied in cases of unknown expectations, undefined issues or lack of understanding of the reasons why, and the ways in which affected populations are impacted by an emergency.

4.7.1 Justification of the Qualitative Survey adopted

The choice of adopting the qualitative survey was mainly due to the advantages of the research strategy and the means in meeting the overall aim of this study. The aim of this study is to develop a standard bidding process for road PPP projects in Ghana, case studies of projects outside the core population of public officers who handle bidding in this regard was not prudent in achieving the aim although these road projects served as a point of data collection for this research. Qualitative research is used to accumulate data based on peoples, ideas, opinions, beliefs, motivations and attitudes towards various subject areas (Gray, 2009). This helps in the inquiry of social factors or considerations of culture or beliefs. In the application of qualitative methods, research and analysis processes add value to the identification and exploration of intangible factors, e.g. cultural expectations, gender roles, ethnic and religious implications and individual feelings and provides an analysis of interrelations and perceptions of stakeholders. This kind of research relies on the response of a smaller sample population although it is harder to generalise its findings. However, it focuses on much more in depth information. Smaller populations of key stakeholders identified in this research allows an in-depth inquiry into the core objectives of this study. These investigations can be carried out through focus groups and interviews (Marshal & Rossman, 2011). Qualitative research is explored through open questions which in turn allow the responder to reiterate their opinions and ideas rather than a quantitative strategy type that allows closed answers where opinions are not given.

Naoum (2007) argues that the anonymity of certain surveys allows respondents to answer with more candid and valid answers. In order to obtain the most accurate data, respondents have to be as open and honest as possible with their answers (ibid). This method conducted anonymously provides an avenue for more honest and unambiguous responses than other types of research methodologies, especially if it is clearly stated that survey answers will remain completely confidential (Gray, 2009). Furthermore, qualitative research has a humanistic and inherently literary focus and even though talks and texts have meaningful representations, they

generally start from and return to words. Such words help with the description and understanding of the values, meanings and processes from real-life settings that include actual human interaction (Denzin & Lincoln, 2005). Qualitative research can provide robust insights from actions that have occurred in a real-life context and preserves the intended meaning which forms an understanding of underlying social processes and meaning in an environment to help reach the aim of this research. Furthermore, it can provide memorable examples of important issues that enrich the research. Denzin and Lincoln (1994) consider qualitative research to be a multi-method type of research that uses an interpretive and realistic approach towards its subject matter as well as an emphasis on the qualities of entities (i.e., processes and meanings occurring naturally. Furthermore, qualitative research is used to study an occurrence within the environment in which it naturally occurs and supported by social meaning from the individuals who were subjected to the occurrence ((Denzin & Lincoln, 2005). Qualitative research is particularly difficult to pin down due to its flexibility and emergent character, it is usually being designed at the same time as it is being done and requires highly contextualised individual judgements (Denzin & Lincoln, 1994). A Semi-structured interview approach also allows some comparable data to be collected, but also allow the freedom to expand in points as respondents can elaborate on their specialist interest. This data is mainly subjective, however, some level of triangulation to other techniques or sources such as documents and different groups of stakeholders adopted in this research is critical in obtaining quality data for meeting the aim of this research. These issues were critical for this research hence its adoption over a quantitative research. Marshal and Rossman, (2011) state that the researcher may use various procedures and methods (interviews, observations, surveys, etc.) to gather the required data over a period of time. It allows flexibility and it is possible to change the way questions are asked, to clarify any ambiguities to the interviewees and to tease out answers about the context. Semi-structured interviews are used with qualitative research because they provide a deep understanding of the event, why, and how it happened (Gray, 2009).

4.7.2 Research Techniques adopted for this study

This research engaged semi-structured interviews and unstructured interviews in meeting the aim of this research. The techniques were categorised according to the respondents identified and the population targeted. An interview is a data collection technique which provides deep understanding and insights to the researcher about the tacit knowledge of participants, and softer issues of the research (Marshal & Rossman, 2011). In-depth interviews are defined as discussions between two or more individuals with its main purpose being data/information

collection for research purposes. Gray (2009) argues that using in-depth interviews as the data collection technique helps explain what lies behind the respondents' actions, feelings and values as it allows the information inquiry to be modified according to the responses the interviewer gets. It helps the researcher provide data-rich answers to the questions and builds an understanding around the context in which the phenomenon being studied lies and of how the interviewee sees it. Robson (1993) argues that a formally structured interview is a form of questionnaire survey where questions are structured and used in a systematic approach and where responses to questions are listed and analysed in a quantitative manner. Informal or free-range interviews are unstructured conversations between two or more individuals where the interviewees give their general thoughts about the research topic without any structure being provided by the interviewer (Dillman, 2014).

The multi-stakeholder approach was adopted for purposes of this research primarily to identify the key stakeholders for data collection. Taylor et al. (2013) maintain that the multi-stakeholder phenomenon emerged because of the perceived need for a more inclusive and effective method for addressing sustainability issues. A lack of inclusiveness for which there is no broad consultation has resulted in many good decisions becoming void as implementation is difficult (Jarl et al., 2012). The term multi-stakeholder approach describes processes which aim to bring together all major stakeholders in a new form of communication, decision-finding (and possibly decision-making) on a particular issue. This is important in achieving equity and accountability in communication between stakeholders, involving equitable representation of three or more stakeholder groups and their views (Steurer, 2006). It has been stated that stakeholder engagement can improve the quality of research output resulting in rich and diverse knowledge through the involvement of people with diverse social value (Pahl-Wostl, 2007). It is important that the appropriate stakeholders are identified and engaged throughout the research process to play the important role of informing the design of the study as well as making good use of the results once the study is completed (Carney et al., 2009).

The legitimacy of findings from any research project can be enhanced through the engagement of the key stakeholders which will enhance accurate and rich data collection as well as meet the objectives of the study. The engagement of stakeholder approach allowed different perspectives and views of key stakeholders who operate directly in the Ghanaian PPP procurement space and the road PPP implementation in Ghana. Such stakeholder engagement helps ensure the relevance of the research to policy and also give credibility to the research outside academia (Carney et al, 2009). For a research project to be successful, the interests and

influence of the key stakeholders must be recognised (Gardner et al., 2009). A stakeholder's interest in a project can stem from the potential to influence the decision, and/or from the potential to be influenced by the results of the research (Allen et al., 2013). They can act as individuals or groups who have interest in an issue or a policy. Researchers normally engage with different types of stakeholders depending on the relevance of the research or the interest/power that these individuals, groups of people or organisations have on the project; for example, public, industry/practitioners, policy makers (Farell et al., 2001; Carney et al., 2009). The key stakeholders identified were:

- The key players of adoption in Ghana (Public and Private sectors): These included the legal team in charge of drafting the PPP bill, the Transaction advisory firm that dealt with the feasibility of adopting PPP in Ghana and the bankability of PPP Projects and Private Investment Bankers;
- The PPP Approval Committee;
- The Management (SPV) of the two Pilot Road PPP projects in Ghana;
- Associated Professional Bodies;
- The Public Authority or Ministry in charge of PPP implementation in Ghana (MOFEP);
- The Public Authority or sector Ministry in charge of road PPP procurement in Ghana.

There are numerous reasons why researchers engage stakeholders in research projects such as improving the policy relevance of the research (Durham et al., 2012). Carney et al. (2009) believe that researchers should plan the stakeholder engagement element of their research in a strategic and transparent manner to ensure that, how stakeholders have been engaged in the formation, execution and dissemination of research can be communicated more accurately. To achieve the full benefits of stakeholder engagement in research projects, a strategic approach should be adopted with clear objectives, milestones and an evaluation plan. O'Haire et al. (2011) suggest that researchers bringing together diverse stakeholders may require paying much attention to group dynamics in addition to the presentation of the research topics. Figure 4. 2 illustrates stakeholders that were involved in this research.

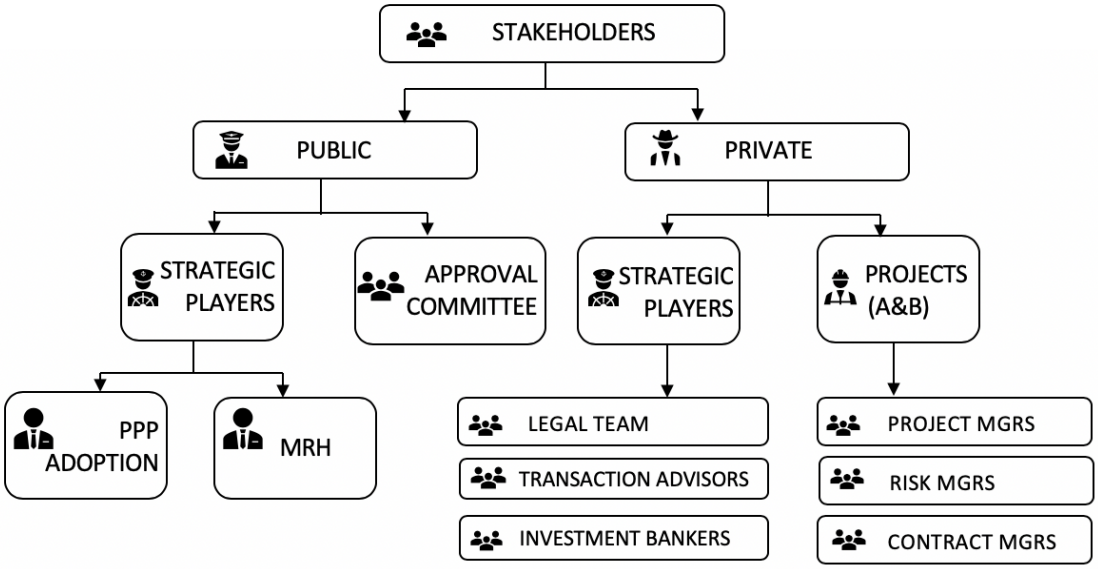


Figure 4.2 - Stakeholders engaged in this research

Researchers engage stakeholders using a variety of methods, including one-to-one meetings, advisory committees, public fora, focus groups, telephone interviews, email, conference calls or Webinars, citizens' juries, workshops, conferences and online questionnaire (O'Haire et al, 2011). The one-to-one method of stakeholder engagement is one of the most commonly used as it ensures a time of focused stakeholder attention to the issue under research (Opoku et al., 2012). It also promotes stakeholder researcher relationships ensuring a better understanding of each other's needs and priorities. In-person methods are helpful for brainstorming, clarifying and stimulating a deeper understanding of issues (O'Haire et al, 2011). However, regardless of the method used to engage stakeholders, it is essential to influence the contacts, establishing long-term partnerships, and building trust and credibility. A total of four techniques were adopted under this study which were dependent on the specific method used and the target population. However, it is important to note that these techniques will not necessarily be discharged exclusive of one another in meeting these objectives but will have a focal point around them. The research techniques that were engaged amongst the identified stakeholders are categorised in subsequent paragraphs.

4.7.2.1 Technique 1 (T1) – Strategic players

This technique involved the engagement of the strategic players of adoption of PPP in Ghana. These include both key private sector players and public sector players. A semi-structured interview was engaged among them mainly to ascertain the relevance of the parameters for the preferred bidders' criteria adopted for this research. The Ministry of Finance in Ghana is solely responsible for PPP undertakings in the country and drives all government agenda regarding PPP. It serves as an intermediary for the government and private sector entities rolling out several tasks including trainings and policies (MOFEP, 2014). Respondents engaged in the public sector are responsible for all policy enactment or implementation of PPP in Ghana. This provided an understanding from a perspective of policy makers and ministry experts engaged primarily in the advocation and adoption of PPP. The private sector participants included legal experts, investment bankers and professionals that are experienced in capital projects in Ghana. This included a major advisory firm; instrumental legal experts and private investment bankers. Astute private professionals experienced in capital projects who are at the forefront of PPP implementation were also identified in the population. The legal experts were heads of the firm that were contracted by GOG to formulate the PPP bill in Ghana and so are on top of all legal issues regarding PPP implementation in the country. Also, the heads of private investment companies responsible for funding for the major public sector deals from the potential private sector participants in major PPP undertakings were engaged. Table 4.5 illustrates the profile of respondents in this category that were engaged.

Table 4.5 - Respondents profile for T1

RESPONDENT'S CODE	BACKGROUND	SECTOR
CI 1	Finance	Public
CI 2	Accounting and Finance	Public
CI 3	Transport Engineer	Private
CI 4	Infrastructure Economist/ Transport Modeler	Private
CI 5	Project Finance-PPPs	Private
CI 6	Government Business & Policy Reform in Law,	Public
CI 7	Construction, PPPs	Private

CI 8	Business Consultant	Private
CI 9	Procurement, Banking & Finance, Energy, Oil & Gas	Private
CI 10	Accounting and Finance	Public
CI 11	Business Law/ Procurement law	Private
CI 12	Transport Management	Public
CI 13	Roads and Highways	Public
CI 14	Investment Banking	Private
CI 15	Banking & Finance, PPPs and Procurement	Public
CI 16	Business Consultant	Private

4.7.2.2 Technique 2 (T2) – Strategic players (MRH)

The second group of strategic players were key stakeholders in road bidding in Ghana. These were officials in the MRH. Semi-structured interviews were engaged among these stakeholders to meet objective two of this research in identifying barriers in the PPP procurement process. The ministry has three main departments, namely: The Administration Department; The Development Department; and The Maintenance Department. However, only the representatives of the Administration and Development Department were engaged as the Maintenance department deals with the maintenance of roads, plant and equipment. Seven divisions of these departments were engaged, these are outlined in the table 4.6.

Table 4.6 - Divisions of departments in the MRH

ADMINISTRATION DEPARTMENT	DEVELOPMENT DEPARTMENT
Finance	Road Safety and Environment
Human Resource	Planning
Legal Service	Materials
Training & Development	Contracts
Public Affairs	Quantity Surveying
MIS Division	Survey and Design
Internal Audit	Bridges

4.7.2.3 Technique 3 (T3) – Approval committee

This involved the adoption of a semi-structured interview of members of the PPP approval committee according to the National PPP policy to elicit findings for the preferred bidders' criteria. Factors developed were interrogated to confirm or reject applicability and relative importance within members of the PPP approval committee. This process accentuated parameters that are critical in the selection of winning bids. T4 was also employed amongst officials of the PPP Approval Committee or their representatives.

4.7.2.4 Technique 4 (T4) – Projects A and B

It involved the engagement of semi-structured interviews within the only two pilot road PPP projects in Ghana. These projects were: Project A- The Accra-Takoradi dualization project; and Project B - The Accra-Kumasi Toll road project. The extent to which the preferred bidders' criteria were engaged was analysed. This technique also involved some documentary evidence from both projects. It engaged an analysis of project documents especially regarding the pre-feasibility stage to financial close. It is important to employ documentary evidence as part of the data collection methods whilst studying organisations (Meyer, 2001). Documents are important in the data collection process as it enables the researcher to gain an insight into the historical evolution of the phenomena being studied and to provide information which serves as the interview guide. It enables the researcher to make some time savings and also serves as a premise for 'counteracting' any biases. Permission had to be sought and granted to engage such documents because of the strict confidentiality regulations. The documents also included internal bid processes and preferred bidders' criteria. The general purpose was to provide a better understanding on how these projects engaged documents throughout the bidding process in the PPP procurement process. The researcher engaged non-technical literature, such as reports and internal correspondence which is a potential source of empirical data for case studies; for example, data on the context within which the participant operates (Mills et al., 2006). The list of documents that were accessed to enrich data collected included:

- Financial due diligence;
- Legal due diligence;
- Pre-feasibility Document; and
- Feasibility studies Document

The above respective techniques adopted in meeting the aim of this research through findings are illustrated in figure 4.3. An illustration of techniques adopted in meeting the aim of this study respective to individual objectives of this study is also provided in figure 4.4.

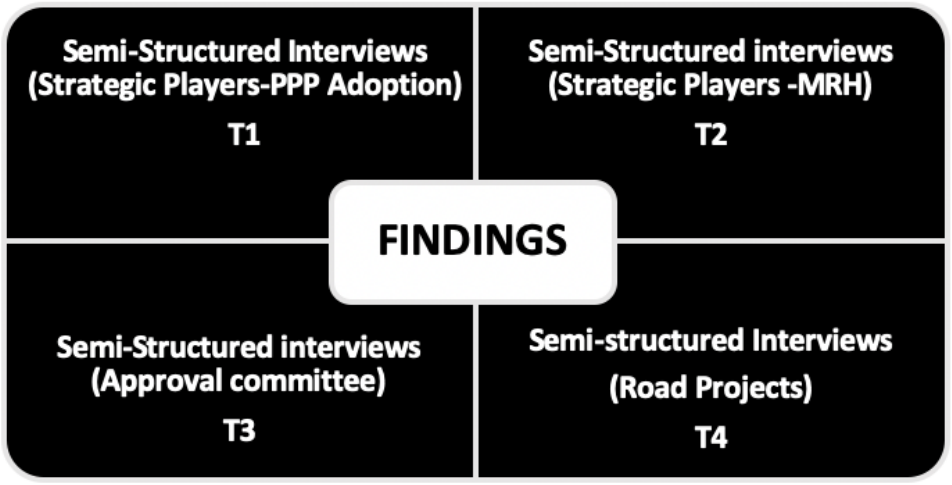


Figure 4.3 - Techniques adopted for this research

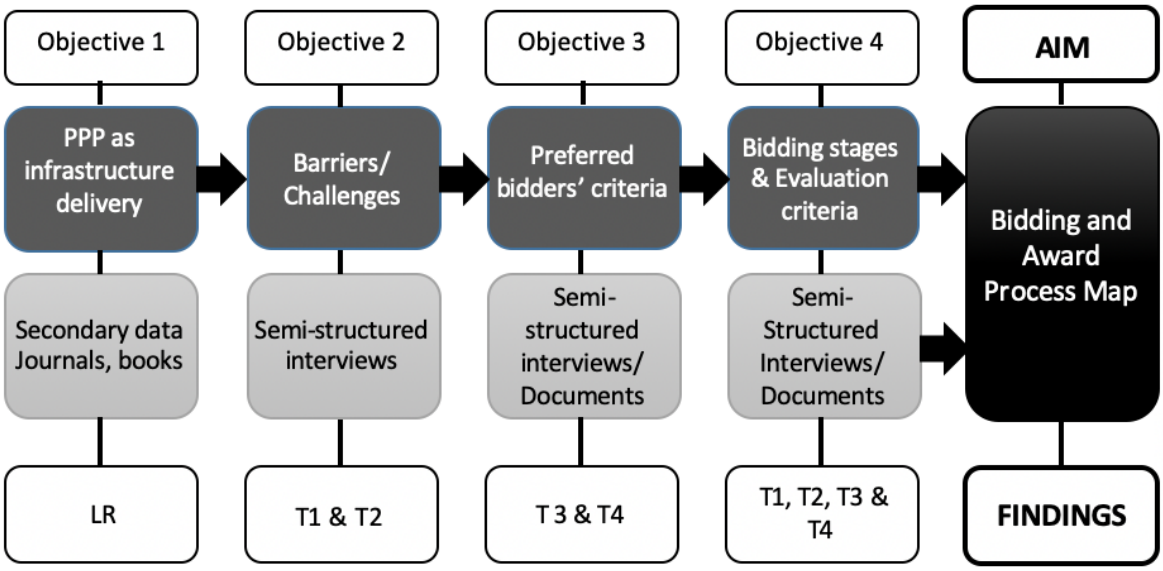


Figure 4.4 - Research objectives in relation to techniques adopted

4.7.3 Sampling Technique and Population Justification

Kumar (2011) categorises the sampling techniques in survey research into three main types which are: Random/probability sampling; Non-random/non-probability sampling; and Mixed sampling. However, Creswell and Clark (2007) argue that the main sampling techniques in surveys are non-probabilistic and probabilistic sampling where each category has sub-divisions with respective steps for arriving at the desired selection. Probability sampling methods are simply random, stratified, systematic, cluster sampling and multi-stage area sampling (Creswell & Clark, 2011). Purposive or non-probabilistic sampling targets the population with adequate knowledge and experience. The drawback of purposive sampling method is that experience and knowledge can be difficult to measure (Creswell & Clark, 2007). Marshall (2011) argues that smaller sample sizes are generally chosen for qualitative research and the reasons are outlined below:

- When the sample size for qualitative data collection is large, the analysis will be more complex, time-consuming and multi-layered;
- When selecting a true random sample, the studied characteristics of the whole population should be known, which is rarely possible at the early stage of the research;
- A representative sample could be generated from a random sampling of a population only if the features under investigation are evenly distributed within the population; and
- The researcher could receive greater insight and understanding of the impact of a new method from specific respondents, owing to factors including their social, economic, educational and cultural position in the population.

To ensure a homogenous sample, using random or probability sampling technique is not feasible in this study. This is because, probability sampling requires a large population which is known and adequately distributed (Saunders et al., 2012). It is against this backdrop that Li et al. (2005) assert that none of these criteria is possible in current PPP/PFI studies but advocate for nonprobability sampling in PPP research. This research adopted a non-probability sampling technique precisely 'purposive sampling' technique for the selection of respondents among key stakeholders to be engaged. Purposeful sampling is widely used in qualitative research for the identification and selection of information-rich cases related to the phenomenon of interest (Creswell & Clark, 2011). In addition to knowledge and experience, the importance of availability and willingness to participate, and the ability to communicate experiences and opinions in an articulate and reflective manner (Marshall & Rossmann, 2011; Alvi, 2016). Purposive sampling is best adopted if there are only limited number of primary data sources

who can contribute to the study (ibid). Palys (2008) argues that stakeholder sampling as a type of purposive sampling is useful in the context of evaluation research and policy analysis. This strategy involves identifying who the major stakeholders are, who are involved in designing, giving, receiving and administering the program or service being evaluated and who might otherwise be affected by it (ibid). In this study, purposive sampling allowed the identification of key respondents to be chosen based on the experience on the subject matter, their respective professions and the identification of stakeholders engaged. In T1 for instance, the target population comprised public sector authorities in charge of PPP (Finance Ministry) and private sector players who were directly involved in the adoption of PPP in Ghana. Easterby et al. (2002) argue that a disadvantage of the purposive method is that the researcher exercises judgment on the informant's reliability and competency. This is a relevant concern especially regarding key informants on whom much of the data quality rest. It is critical to be certain of the knowledge and skill of the informant when doing purposive sampling, as inappropriate informants will render the data meaningless and invalid.

A total of eight-one (81) interviews were conducted in this research (T1-T4). This comprised sixteen (16) key stakeholders in the advocacy and adoption of PPP in Ghana from the drafting of the PPP bill, feasibility of PPP and the public-sector professionals of PPP implementation in MOFEP (T1). Twenty-eight (28) public servants from the MRH who were interviewed to understand the processes of bidding in road PPP as well as identifying challenges of the procurement process (T2). These key stakeholders were identified from two out of the three departments of the ministry where 2 representatives of each of the seven divisions of the departments were interviewed. These are professionals who handle bidding of road projects, contracts and its administration in the ministry. Badu et al. (2012) assert that purposive sampling technique enables the researcher to select the study participants consciously. Blaxter et al. (2006) argue that non-probability sampling is appropriate when the researcher lacks a sampling frame of the target population for the study. Marshall (1996) asserts that purposeful sampling technique enables the researcher to select actively the most productive sample to answer the research question(s). In T3, members or their representatives of this committee were interviewed to understand the evaluation of road PPP bids and the specific factors of the parameters identified for the preferred bidders' criteria. In T4, there were 14 officials engaged in Project A and 16 officials in Project B, who were key in the bidding of these specific contracts and the construction and overall management of the projects. This was necessary to

engage the professionals who are directly involved in the implementation of these PPP road projects.

4.8 Research Process of this study

A research process is described as a logical sequence that links the data or information collected to the research objectives, its analysis and recommendations (Yin, 2009). Greener (2008) states that a research process is a grand plan of approach that is linked to a research topic. A research however is a set of activities for the advancement of knowledge to justify the truth to be believed as knowledge. A sound research should therefore be designed in such a way through constant reasoning. Thus, a research design is important to be justified before conducting a research project. In order to justify the research design, it is critical to define its elements (Robson, 2002; Gray, 2009). The researcher's experiential knowledge and observation of the road infrastructure deficits in Ghana vis à vis the state of road infrastructure around the world was one of the factors that informed the research interest. This raised questions of the means that provided such infrastructure. Coupled with the identified challenges of the Ghanaian road infrastructure delivery, the rationale of this research was established (as discussed in section 4.2). Jonker and Pennink (2010) define a research process as flexible set of assumptions and considerations leading to specific contextualised guidelines.

The extensive literature conducted on PPP and global PPP implementation accentuated concepts of PPP based on its attributes, critical factors necessary for effective implementation and PPP in the Ghanaian context. Bidding processes and factors identified in Ghanaian PPP bidding as preferred bidders criteria were also reviewed by literature. This also identified typical stages of PPP bidding which was presented in chapter 3. A theoretical review also presented five theories engaged in the Ghanaian public sector. This review contextualised the sector in the Socio-technical system at the same time identifying the challenges of the sector. A review of the stakeholder theory, the sociotechnical system theory and its relationship was also presented in section 4.3.1.2. These formed the basis of the research process and clearly mapped out the knowledge gap. Jonker and Pennick (2010) maintain that a research design or process connect theoretical notions and elements to a dedicated strategy of inquiry supported by methods and techniques for collecting empirical material. Consequently, an initial study was conducted to investigate the practicability of the concepts of the preferred bidders' criteria (T1) and provided an insight to the challenges of the bidding process from the perspective of

the key stakeholders (T2). The main stages of the road PPP bidding process were elicited among (T1-T4) and the parameters of the preferred bidders' criteria were identified through (T1, T2 & T3). Findings from all techniques engaged therefore formed the development of the Bidding and Award Process Map (BAPM) for road PPP projects in Ghana which subsequently underwent a validation phase. The above description forms an overview of the entire research process and has been illustrated in figure 4.4.

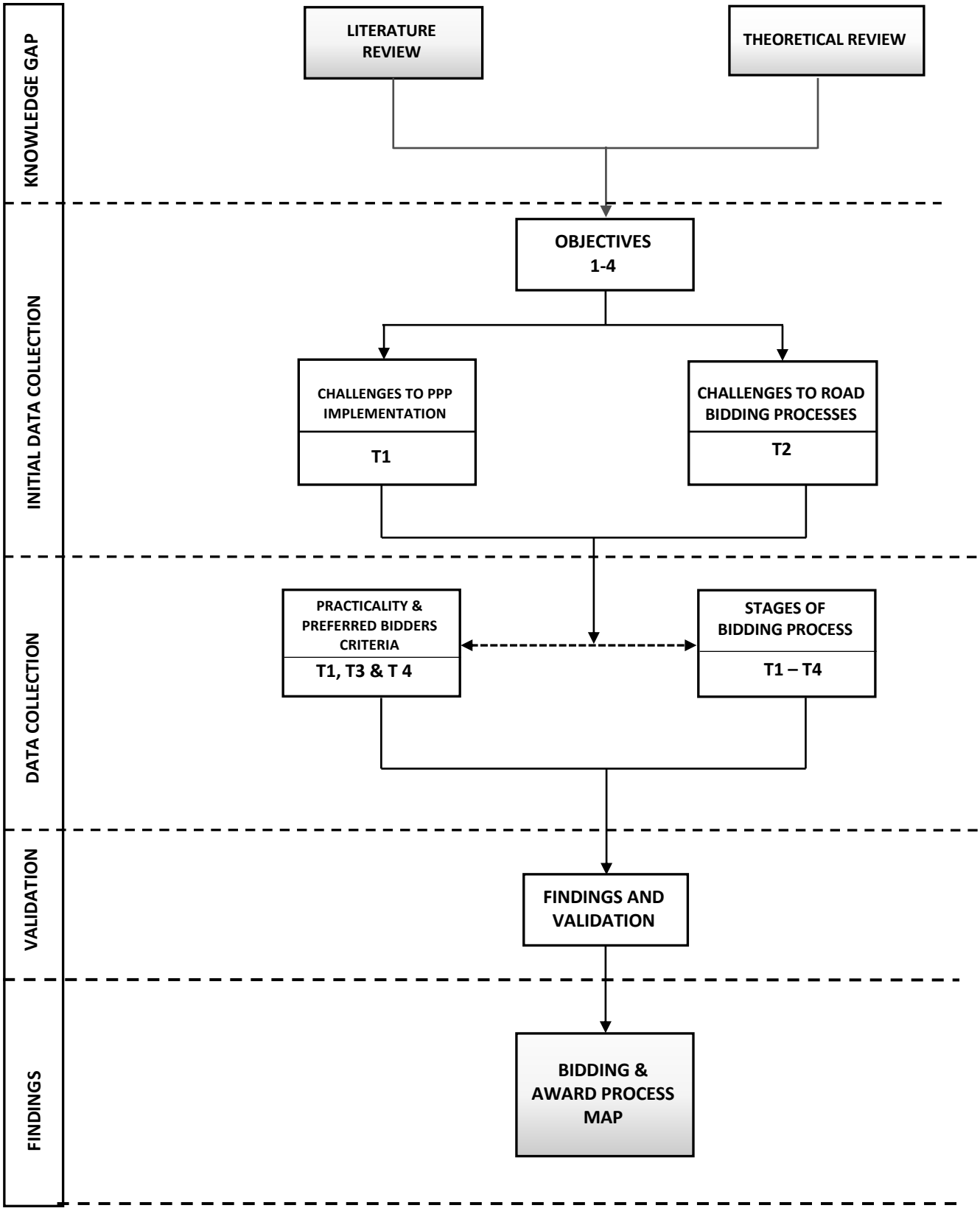


Figure 4.4 - Overview of research process

4.9 Qualitative Data Analysis

It is argued that there is no formal or universal rule to follow in analysing, interpreting and evaluating data (Saunders et al., 2012). Yin (2009) define data analysis as consisting of examining, categorising, tabulating or otherwise recombining the evidence to address the initial propositions of a study. Dawson (2007) states five types of qualitative data analyses:

- Thematic analysis;
- Comparative analysis;
- Discourse analysis;
- Conversational analysis; and
- Content analysis.

Discourse analysis is described as a general term for a number of approaches to analyse written, vocal, or sign language use (Dawson, 2007). Conversation analysis is the dominant contemporary method for the analysis of social interaction (Braun & Clarke, 2006). Conversation analysis begins from the notion that conversational interaction involves 'doing things with words,' and that, for example, describing, questioning, agreeing and offering are all examples of social actions that words are used to perform (ibid). Comparative analysis is the item by item comparison of two or more comparable alternatives, processes, products, qualifications, sets of data, systems and the like (Dawson, 2007). Thematic analysis is also useful for summarising key features of a large data set, as it forces the researcher to take a well-structured approach to handling data in helping to produce a clear and organised final report (Creswell, 2003). While thematic analysis is flexible, this flexibility can lead to inconsistency and a lack of coherence when developing themes derived from the research data (Holloway & Todres, 2003). However, Braun and Clarke (2006) argue that consistency and cohesion can be promoted by applying and making explicit an epistemological position that can coherently underpin the study's empirical claims. Also, data collection and analysis processes run simultaneously, in other words, the data analysis process starts at the same time as the data collection process which means that further data collection should be grounded on what has been previously analysed (Strauss & Corbin, 1990). Mouraviev (2014) argue that this approach is unsuitable for the researchers who seek to compare two separate sets of data that are gathered at different times. Badu et al. (2012) argue that thematic analysis performs coding and category construction based on data characteristics to uncover themes pertinent to a phenomenon. The codes used in interview transcripts for instance may be applied to the content of documents (Bowen, 2009). Bowen (2009) states that predefined codes may be used especially if the

document analysis is supplementary to other research methods employed in the study. Fellows and Liu (2008) define content analysis as an analytical approach involving a scrutiny of discussions to establish meanings and intentions of the data. Saunders et al. (2012) argue that content analysis of the literature involves an analytical method to categorise themes whilst thematic analysis is performed through the process of coding in six phases to create established and meaningful patterns. Content analysis is a widely used qualitative data analysis method that focuses on identifying patterned meaning across a dataset (Manning & Callum-Swan, 1994).

4.9.1.1 Justification of Qualitative Content Analysis adopted for this study

Content analysis was adopted for this research as it was the best option in meeting the aim of this study. Researchers regard content analysis as a flexible method for analysing text data (Kurniawan, 2013). Research using qualitative content analysis focuses on the characteristics of language as communication with attention to the content or contextual meaning of the text. It is a method for identifying, analysing, organising, describing and reporting within a data set (Braun & Clarke, 2006). It was used in analysing the qualitative data from the semi-structured interviews and documents data. The object of a qualitative content analysis can be all sort of recorded communication: transcripts of interviews, discourses, protocols of observations, video tapes or documents. Content analysis however involves an analysis of not only the manifest content of the material. Becker (1986) has differentiated levels of content: themes and main ideas of the text as primary content; context information as latent content. The analysis of formal aspects of the material belongs to its aims as well. Content analysis embeds the text into a model of communication within which it defines the aims of analysis. Krippendorff (1980) defines "content analysis as the use of replicable and valid method for making specific inferences from text to other states or properties of its source. The semi structured interviews adopted engaged content analysis for better interpretation. Content analysis is an observational research method that is used to systematically evaluate the symbolic content of all forms of recorded communication (Hsieh, 2005; Badu et al., 2012).

The process involves a careful, more focused re-reading and review of the data (Kolbe & Burnett, 1991). All interviews were recorded and transcribed to enhance efficient analysis. It included the quantification of the analysis where the researcher had the opportunity to measure the extent of emphasis of each research theme with standardised measurements. The use of the 'record and dictate' mobile application enhanced the transparency and reliability of the analysis. It automatically transcribed recordings from interviews and also provided a more

structured approach to analyse the attributes assigned to each document. Software allow researchers to import and code textual data, edit text, retrieve, review and recode data (Creswell & Clark, 2011). Marshal and Rossman (2011) postulate that objectivity is associated with the process of developing analytical categories. Provision of operational definition for each of the categories was crucial to address the mentioned requirements. These definitions assisted the researcher in implementing tasks more efficiently and objectively. It also removed vagueness from the categories and measures.

4.10 Validity and Reliability of Research

It is necessary to validate the appropriateness of the techniques as a data collection instrument to minimise errors and omissions as administered (Joppe, 2000). Validity determines whether the research truly measures that which it was intended to measure and the truthfulness of the research results (ibid). The validation of the techniques of this research is the final step of the measure development (McDaniel & Gates, 1999). This term is used to mean demonstration of the measures' validity and reliability (Olsen, 2002). Validity could be understood as measuring the success of what was intended to be measured (Valerio et al., 2012), while reliability means the internal consistency of the items that are used to measure a latent construct (Valerio et al., 2012). Fulcher and Davidson (2007) have argued that validation is a fundamental condition for theory development. Validity is defined as the extent to which differences in scores on a measure reflect true difference among individuals on the characteristic that are supposed to be measured, rather than constant or random errors (Taylor et al., 2013). Sekaran (2000) states validity as the ability of a scale to measure the concept that it was set out to measure. According to Nina-Politimou (2018), measures that are relatively free from both random and systematic errors may be called valid. Yin (2009) asserts that the quality of any given design can be judged by four tests:

(i) Construct validity;
(ii) Internal validity;
(iii) External validity; and
(iv) Reliability.

Internal validity deals with the measure which ensures that a researcher's experiment design closely follows its principle (Shuttleworth, 2009). There is the need to investigate if an alternative cause or causes may explain the observations or results (ibid). Yin (2009) postulates that internal validity is mainly a concern for explanatory case studies when a researcher

explains why and when an event leads to another. External validity is about generalisation which seeks to verify to what extent an effect in research can be generalised to populations, settings, treatment variables and measurement variables. Techniques such as pattern matching, explanation building, time-series analysis and logic models are applicable (Hughes, 2017). Construct validity is a measurement technique that deals with the relationship to the concepts that are expected to be measured, and independent of those things of which the concept should be independent. Reliability is concerned with the question of whether the results of a study are repeatable (Bryman & Bell, 2003; Valerio et al., 2012). Jarl et al. (2012) postulate that in order to achieve reliability, the researcher must engage in a prolonged exposure in the field of research. It was important that a lot of time was spent on the field by the researcher especially for meeting objectives three and four of this study.

4.10.1 Validity and Reliability considerations of this study

Lincoln and Guba (1994) are cited by Shenton (2004) as insisting that the credibility of a research study is essential in portraying the trustworthy nature of the research. This is supported by some notable researchers. For instance, Yin (2003) identifies six sources of evidence as follows: survey; archival records; interviews; observations (direct and participant); documentation; and focus group. Similarly, Liyanage & Villalba-Romero (2015) undertake quantitative measures to support qualitative approach in four PPP case studies investigated to reduce bias among others. The semi-structured interviews enable analytical and inferential skills which reduce any form of scepticism and bias (Yin, 2014) as line of information or questions could be altered. Saunders et al. (2012) opined that in order to enhance the validity and reliability of a study, the adoption of diverse techniques is vital. The four techniques adopted for this research formed multiple sources of data collection in order to ensure validity. The researcher adopted semi-structured interviews, documents and observations in the conduct of this research.

The identification of the key stakeholders of road PPP in Ghana from both the public and private sectors was instrumental. Experts at the core of bidding, professionals at the helm of affairs at institutions responsible for PPP in Ghana, private practitioners of major international PPP advisory bodies in Ghana as well as projects under this sector provided a rich source of relevant data for this research. Stakeholder identification is based on democratic principles of transparency and participation which aims to develop partnerships and strengthened networks among stakeholders (Taylor et al., 2013). This approach covered a wide spectrum of structures and levels of engagement. Harrison and Freeman (1999) postulate that it initiates dialogues on

policy to include consensus-building, decision-making and implementation of practical solutions although Steurer (2006) argues that the exact nature of any such process will depend on the issues, its objectives, participants, scope and timelines, among other factors. In this study therefore, the opinions of interviewees were compared with one another to eliminate bias and ensure validity among the interviewees. For instance, data gathered on bidding processes and requirements of the distinct stages (T2 and T3) were confirmed from data and procurement documents of projects A and B (T4). Convergent lines of inquiry were developed since multiple sources of evidence were employed. Creswell and Clark (2011) argue that multiple sources of evidence are a process of triangulation. Thus, triangulation technique in this study with a view to facilitating generalisation of the findings and enhancing validity is imperative and beneficial.

The objectives of this study which involves the identification of bidding processes, evaluation criteria and the establishment of parameters of preferred bidders' criteria provided quality of information to be collected and also enhanced reliability. In this study, the researcher employed direct observation as one of the evidences to enhance reliability and generalisation requirement of the findings. Joppe (2000) defines reliability as:

> *"the extent to which results are consistent over time and an accurate representation of the total population under study, if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable".*

The techniques employed for this research were formulated as neutral and standardised as possible to reduce bias or partiality This provided a better approach at interviewing the participants and ensured the protocol of this project is effective and practical. Reliable instruments provide stable measures at different times under different conditions (Vreede, 2011; Jarl et al., 2012). Similarly, Fulcher and Davidson (2007) argue that a key issue regarding reliability is measuring the same phenomenon over again with the same measurement device which will amount to the same or highly similar results, the device is reliable if the answer is in the affirmative.

4.11 Ethics Considerations of this Research

Ethical issues go through the entire process of research (Saunders et al., 2009). Hence, potential ethical concerns were taken into consideration from the very start of this research through to

the end. Ethical issues that could have arisen during this study were considered in advance before embarking on the fieldwork. Saunders et al. (2009) argue that the safety and rights of participants should be a major concern in a research activity. The researcher followed the university's checklist of ethical issues as a starting point in thinking through ethical issues in design, data collection, and analysis. In addition, confidentiality was maintained in handling data collected from individuals and organisations (respondents) involved in the interview. The researcher also avoided the direct mentioning of names of respondents involved in the processes assessed in this research. Anonymity and confidentiality issues of participants were considered in this research respective of their engagements. Political sensitivity could occur as the research investigates local or national plans (Hammersley, 2010). Consent to record all interviews were sought before the start of each interview. The code of conduct of the researcher drove at the security of participants providing information during the survey. Consequently, all ethical issues were considered, and an approval gained from the academic audit and governance committee of the science and technology research ethics panel with a reference number CST 15/21 provided in appendix C.

4.12 Chapter Summary

This chapter established a justification of methodological approach for this research. The stakeholder theory and the STS theory adopted in this research were reviewed in this chapter. Similarly, Ghana's public sector reviewed according to theoretical perspectives in this chapter to conceptualise its operations and provide a specific context or background for the purpose of this research. The contingency theory, which proposes the uniqueness of every environment described the public sector and the context of it. The institutional theory argues the influence of this environment in performance whilst legitimacy theory adds that people in this environment give a perception of what is being done rather than what is done or what is supposed to be done. Government officials and civil service among other factors have personal and selfish interests in their dealings (Public Choice theory). The x-efficiency theory advocates the need to improve the performance of the public sector by for instance engaging structures or processes of the private sector

The various philosophical underpinnings for this research were espoused under the ontological, epistemological and axiology perspectives. The qualitative survey adopted as well as the reasons under which others could not be considered under this study were presented. The

various techniques from T1 – T4 and their purposes were discussed. For instance, T1, which dealt with key players or stakeholders responsible for the adoption of PPP in Ghana as well as T4 which engaged mainly road PPP respondents in Ghana were espoused. The analytical structure for this qualitative research was also presented. This chapter also espoused the overall research process and considerations for the validity and reliability for qualitative data.

Chapter 5 Challenges to road bidding process and Parameters of Ghanaian Preferred Bidders Criteria

5.1 Chapter Introduction

The previous chapter presented a justification of the adopted research methodology upon which the research is premised. This chapter firstly presented the findings of the surveys conducted among the identified strategic players of PPP adoption in Ghana (T1) and professionals of the MRH who are responsible for bidding (T2). The semi-structured interview engaged among the key experts of PPP adoption was necessary to investigate factors that are external to this system but could restrict the adoption and utilisation of the BAPM. The key experts were best placed to undertake this exercise as the group had been instrumental in the adoption and the development of the foundation upon which PPP can be built. For instance, some of these experts were instrumental in the drafting of the PPP bill. Also, T2 was necessary to identify challenges of the bidding and procurement system in the road sector that could inhibit the introduction and successful utilisation of the BAPM. This was again important to investigate current conditions that possibly restricted the bidding in traditional procurement and factors that could be limiting bidding of road PPPs. Similarly, in identifying the parameters of the preferred bidders' criteria, T1 was engaged. This was conducted to investigate the assessment of the concepts VFM, affordability and RM in the Ghanaian PPP environment. There was the confirmation of the practicality and relevance of the concepts of the preferred bidders' criteria for PPP implementation. This was necessary to ascertain the viability of the concepts of the preferred bidders' criteria as stipulated in the National PPP policy. T1 was best placed as they were instrumental in building the foundation of PPP in the country. The relevance of the concepts of preferred bidders' criteria provided a background for the investigation of parameters of these concepts for appraisal purposes.

The semi-structured interview is designed to access information that other research instruments like the questionnaire will normally not do (Briggs & Coleman, 2002). It allows a semi-formal interaction which dismisses certain sensitive issues in the case of inefficiencies or barriers for instance. Taylor-Powell and Renner (2003) describe narrative data as resulting from: open-ended interviews and written comments on testimonials; individual interviews; discussion group or focus group interviews; logs, journals and diaries; observations; documents, reports

and news articles; stories; and case studies. A content analysis was then conducted to present findings. The objective of engaging content analysis to the data collected was to analyse the content of the discussion in a systematic classification of the text through previously identified concepts. The duration of the interview was between forty-five and sixty minutes. This allowed time for asking the interview questions based on the guideline, asking supplementary questions for clarification and soliciting more details if required, without interrupting respondents chain of thoughts. The most important advantage of these semi-structured interviews is its flexibility and the fact that it allows the researcher to probe deeper into the questions when required in order to gain valuable information from participants (Flyvbjerg, 2011). Throughout the semi-structured interviews, guidelines for conducting effective interview procedures were followed. Questions were kept open ended and were designed to gather the respondents' feedback surrounding the topic. The findings of this chapter are presented in the following sections for clarity:

- Challenges of the bidding process of road PPPs;
- External factors that could mitigate against the BAPM;
- Practicality of VFM;
- VFM Assessment;
- Practicality of RM;
- RM Assessment;
- Chapter summary.

5.2 Challenges of the Bidding Process of Road PPPs

Organisational culture does not only play a significant role in the introduction of reforms or new processes but is also critical in the compliance process and associated outcomes. For instance, a specific type of culture in an organisation characterised by openness, trust and honesty is more likely to engage in compliance behaviours. The influence of challenging factors underpin the implementation of new methods or procedure. Furthermore, resistance to change is assessed by understanding the challenges of the system to enhance the adoption of the change needed, bearing in mind factors of resistance to change. Perspective of the public sector is important as this entity is the owner and administrators of the system. The next section presents findings of challenges of the current bidding process (T2).

5.2.1 Political Influences

Government influences on what entity should win a contract for instance is detrimental to the full and effective functioning of the public sector. The high level of political influence in administrative processes of MMDAs has an important bearing on the efficiency of the public sector. Common malpractices in procurement include public officers who are often controlled and are under the influence of politicians. They are forced to invite only preferred firms, favouring certain firms at the short-listing stage, designing tender documents to favour particular firms, as well as releasing confidential information to desired firms. Similarly, this practice affects project success of these road projects. Government is also not able to effectively implement public sector reforms because they are undermined by same officers who are influenced by some politicians. Political interference within the procurement process is a big challenge to the successful implementation of public procurement reforms.

> *Civil servants are transferred or punished when they seem to want to voice out the abnormalities. (Interview with respondent)*

Some civil servants also become corrupt as a result and resist any change or reforms to the sector. They prefer the status quo to remain so the system is still manipulated. This is definitely a factor that will cause a resistance to the introduction of standard bidding processes. Compounding the issues implied by the political and business dimensions are widespread misunderstandings and even gross ignorance within the executive structures of civil service. Ethics in the bidding process is critical for effective implementation of road PPP projects. Ethics are the moral principles or values that guide officials in all aspects of their work. It includes avoiding conflicts of interest, and not making improper use of an individual's position as it supports openness and accountability in procurement with the result that bidders have confidence in participating in the public dispensation. It also reduces the cost of managing risks and enhances trust in public administration. Ethical behaviour is important in public procurement as it involves the expenditure of public money and is subject to public scrutiny. There is every need for these public officials to be ethical and not be influenced in the carrying out of their duties.

5.2.2 Inadequate Budgetary Allocation

Budgeting provides the platform for effective management of bidding processes in the ministry. Perhaps, as a result of the lack of financial resources of the government, very little budgetary allocations are committed to the development and administration of bidding in the

ministry. Most of the administrative tasks carried out with regards to bidding are tedious and cumbersome. In the event of bidding of complex PPP projects, administrators are restricted as a result of the lack of efficient tools and technologies that enhance responsibilities. Budgets serve as tools for allocating funds to accomplish the objectives of the ministry. The lack of appropriate software and computers for instance diminishes efficiency in record keeping. It will identify the financial resources allocated to products, services, departments or divisions of the ministry.

> *The government needs to allocate enough resources as part of the budget to the ministry for not only bidding but procurement as well. (Interview with respondent)*

There are several tools that enhance bidding, for instance, online advertisement of tenders can lead to computerised selection on a set criterion which will cause an improvement of flow of information and decision-making. It is also important for reducing ordering time and follow up mechanisms. Online communication and tender advertising have the capacity to enhance transparency and influence performance of the procurement function as they offers smoother, faster process flow and efficient distribution of information. Cost-effective procurement ensures that criteria are reliably determined, appropriate contract strategies are developed, contracts are well managed, and opportunities are seized to secure the best deals at the right time. These require enough resources that will implement and institutionalise these reforms. However, the ministry lacks these essential resources for effective management. It is under resourced and is predominantly manual in its operation.

5.2.3 Lack of Capacity Building

Capacity building has become one of the recurring themes in institutional literature and in the agenda of public administrations. There is the need for proper structures to be put in place by the Heads of the ministry and government to provide periodic capacity building of stakeholders of bidding as well as the entire procurement outfit. Capacity building is an evidence-driven process of strengthening the abilities of individuals, organisations, and systems to perform core functions sustainably, and to continue to improve and develop over time. With the ever-emerging new technology, it is appropriate that capacity building is prioritised so as to improve on the knowledge base of staff and enhance efficiency as a result. Currently, most employees lack any professional training in the field but have gained some experience after the years of bidding administration. There is regardless a challenge of staff being trained on industry best

practice among others to enhance career progression. Sound procurement capacity for the institutions is imperative for successful procurement implementation and sustainability.

> *It is important for the ministry to invest in us, through seminars and training sessions so that we can be periodically educated on new systems. (Interview with respondent).*

Capacity building has immense benefits to not only the enhancement of bidding processes but the overall productivity of the ministry and development of the country. It provides enough qualified staff to drive long-term objectives of the ministry and government. Capacity building is an intervention that strengthens an organisation's ability to fulfil its mission by promoting sound management, strong governance, and persistent rededication to achieving results. The added value that people can contribute to an organisation is emphasised by human capital theory which regards people as assets and stresses that investment by organisations in people will generate worthwhile returns. Competency is defined as a capability, ability or an underlying characteristic of an individual, which is casually related to effective or superior performance. Competency refers to applied knowledge and skills, performance delivery, and the behaviour required to get things done very well. Technical and behavioural competency are necessary among public officials in achieving efficiency and effectiveness. The bidding professionals need a set of flexible skills due to changing local government contexts as no single skill can be adequate to manage the procurement portfolio of PPP.

The use of teams, cross-functional managers, broad process and extensive information systems enable individuals to balance conflicting objectives and improve processes. Professional qualifications are core to performance management. The lack of well-motivated and well-trained staff can cause the more brilliantly conceived plans and strategies to fail. A motivated team whose members work with each other is more effective than a less motivated team with qualified individuals. To improve procurement performance, it is essential to understand the roles that are to be performed, the standards to be achieved and how performance is evaluated.

> *To be honestly speaking, there are sometimes conflicts about roles and responsibilities of some people. There is some lack of training and sometimes lack of understanding of what needs to be done. (Interview with respondent)*

The value-based procurement management paradigm requires a rethinking of the management of human resources. Education must cross necessary boundaries and motivate procurement team performance. However, simply possessing knowledge is less important than applying it. Attention should be moved to skills of doing jobs and demonstrating competences.

5.2.4 Non-Compliance with Policies and Regulations

The Public Procurement Act outlines procedures to be followed during procurement of general public goods and services. The general procurement of roads require certain regulations under various actions or procedures such as: open tendering, two staged tendering, restricted tendering and direct tendering. However, some of these procedures are hardly complied with and are performed in secrecy. Bidding procedures or regulations for road PPP projects are likely to be misapplied especially as they seem to be more complex and require certain approvals from different sets of stakeholders and the like.

> *Regulations in tender documents must be strictly adhered to in order to realise project success and the benefits of PPP generally. (Interview with respondent)*

These procedures need to consider the legitimate interests of bidders and ensure that all potential bidders are treated equitably. An important and effective way to maintain compliance in agencies is to provide training for employees. Regular reviews or audits of procurement processes can also be done to ensure probity is being considered and achieved. The governments suffers from inadequate procurement planning, lack of pre-qualification of suppliers, failure to follow due process, lack of adequate numbers of qualified procurement professionals and poor inventory management. The true level of compliance with public procurement regulations in Ghana has not been clearly determined. Public institutions' attitude towards compliance keeps changing.

> *Consequently, the effects of non-compliance have resulted in offences of financial misconduct, low absorption of resources, delays in project implementation, wasteful spending and unauthorised spending.*

The first step in assessing noncompliance is to undertake a detailed written description of the relevant facts. The purpose of this is to document the circumstances of the non-compliance and provide a basis for determining the recommended remedial. A periodic analysis and evaluation of the process is necessary to identify the weak spots in processes in order to implement actions

that aim for the continuous improvement of compliance processes and adjusting routines to follow the latest laws and legal norms. Compliance has become a major challenge in the implementation of procurement regulations. Investigating partners and stakeholders for compliance is a necessary step before closing contracts in order to avoid legal issues. Regular audits are necessary in the procurement sector to find weaknesses or potential risks in that sector. Audits are constantly required in the procurement departments to detect possible weaknesses in the area. Furthermore, no procedures are followed whereby the contractors can be monitored and reasons for failure of some projects can be deciphered. This has a negative effect with respect to time, cost and quality because, due to shortage of time, some of the projects are unable to reach acceptable limits in quality and several others can overrun time and cost.

5.2.5 Incomplete Bids

Certain bidders provide insufficient information which does not meet set criteria for assessment or qualification which has been a major challenge confronting bidding in this sector. There are several circumstances where this could be the case. For instance, there could be incomplete information on the costing or pricing that is not satisfactory. Certain bidding entities also provide bid documents with extremely high or low prices. In the case where the bid is too low, it is regarded that the bidder does not have the necessary resources to complete the work, the bidder is therefore made aware of the situation, and requested to possibly review the bid. Similarly, high bids are reviewed against the scope of work of the government to confirm the excessiveness of the pricing. Inconsistencies in the technical evaluation may reveal that a bid is not in strict accordance with all the requirements and specifications hence subject to disqualification.

> *The bidder is sometimes asked to offer alternative designs or specification depending on the number of other bids, nature of the project and so on. (Interview with respondent)*

There is also a possibility of bidders underestimating the value of the contract in order to avoid disqualification or artificially splitting the contract into smaller parts which makes the document less transparent in a bid to avoid the application of specific rules. This is essential to maintain the integrity of the bidding process and protection against any legal liability. In all cases where a bid is officially disqualified as a result of the tender review, the bidder is notified

in writing. A tender is qualified or conditional when a bidder submits a bid that does not comply with the requirements of the call for tenders. There have also been times when bidders are disqualified as a result of missing information or unanswered questions. Sometimes, such bidders are allowed to provide the missing information although this cannot be guaranteed.

> *Even wrong filing of tender documents under different company names happen sometimes. (Interview with respondent)*

> *Some bidders have too much information which are wrongly formatted according to the Terms of Reference. The bid administrators will have to go through these painstakingly to identify and grade them. They may also be required to submit multiple document packages in different formats. (Interview with respondent)*

Ideally, bid documents must be broken down into a series of packages, each with its own design, drawings and specifications suitable for the specific bid. It is important for this to be done to ensure that the interfaces between packages are properly identified and clearly allocated to one package or another. Typically, a pricing document will be provided to be completed by tenderers. This makes it easier for those reviewing the bids to compare the various submissions. Adequate time must be taken to fully review the plans and specifications to be able to provide accurate measurements. Care should be taken to ensure that measurements are made according to the appropriate tender documents, and that the notes are carefully consulted. For example, some plans may provide instructions as to whether or not to scale the drawings or use separate dimensions included in the specifications. It is also important to obtain accurate and competitive prices from subcontractors to include in the bid price. This means that the scope of the work and services that are being requested from subcontractors are clearly defined in order to avoid unnecessary or inaccurate prices being incorporated within the tender. Any costings that are incorrect will cast doubt on the suitability of the bidder to successfully complete the project. There is the need to ensure accurate and complete information are published at the right time to furnish prospective bidders with enough details on bidding requirements, deadlines, as well as evaluation methodologies. The lack of these cause an infringement on transparency rules and guidelines.

5.2.6 Incorrect Bidding Procedure

Improper procurement procedures and the lack of clarity of the system is a criterion that affects the process of preferred bidder selection. It is considered to be one of the major reasons of project failure. The form in which the bidding is conducted is paramount and distinct to the type of project involved. A restrictive tender may be considered for projects with huge contract sums which may not necessarily be appropriate for local construction companies. An incorrect description and application of the object and mode of bidding have had a detrimental effect on bidding processes in the past.

> *There are certain procedures that have become a default procedure in the ministry, every project is just done one way. (Interview with respondent)*

The authorities may choose between an open, restricted or negotiated procedure as long as there is evidence of a level of competition. All other procedures are exceptional and may be applied under specific and special circumstances. The time-consuming and costly process involved in the open and competitive dialogue procedures, combined with the limitations of the negotiated procedure, means that the most commonly used procedure is the restricted one which might affect the bidding process. In some cases, pre-bidding procedures are engaged to narrow the specification of a project to the exclusion of some bidders on unclear grounds. There is the informal tendering procedures like parallel tendering procedures, whereby a formal process often gives way to closed-door negotiations.

5.2.7 Inadequate Monitoring and Evaluation of Procurement performance

Monitoring and evaluation of the procurement process should be enhanced such that the competitiveness of the tender process can reveal valuable information about the specific challenges faced by bidders. Depending on the quality of data collected by governments, these sets of data can often be used to understand how many bidders bid on various procurement types, the prevalence of disparities between procuring entities and other factors influencing the capacity of qualified bidders. Internal processes should be streamlined to engage enough consultations at the beginning of the process to identify best practice and avoid misapplication. Government agencies are usually very slow in the payment of certificates raised by contractors because of the bureaucracy usually associated with the public sector. This culture affects contractors who have sourced several funding mechanisms like bank overdraft facilities to be able to deliver projects. It may take several years for checks and transfers to be honoured which creates an environment for bidders to build informal relationships with authorities that leads to

bribery and corruption. This has been happening for years through the different political administrations; hence such relationships breed conflict of interest situations where certain contractors want favours on subsequent projects. This only leads to distortions in the bidding procedure to suit certain bidders or contractors. These actions discourage prospective bidders hence impacts on VFM. It also results in over-pricing of bids to incorporate these bribes and interests' charges. Poorly functioning public financial management systems result in long lead times of payments and reduce the appeal of international or qualified firms thereby impacting project success.

5.2.8 Lack of Standardisation

The lack of standardisation is a critical problem that is facing all stakeholders of bidding in the road sector. There are several fragmented procedures with long turnaround times and requirements which are complicated. There is the fear that these factors coupled with the complex nature of PPP projects will be adverse for road PPP procurement.

> *There is a lack of clear process and procedure which does not tell administrators what exactly to do. In one instance, something is done and in another a different process is adopted. (Interview with respondent)*

It is vital that some standardisation approach is considered to incorporate features that can be replicated, seen as PPP bidding processes are complicated and can sometimes take years. Standardisation underpins the consistency and accuracy of processes regardless of project size, thereby mitigating exposure to risk. A true multi–user system simplifies and streamlines the standardisation of evaluating data as well as presents a corporate approach to the bidding process. Bidding processes require standardisation and participation of all stakeholders.

Standardisation enhances collaborative and sustainable procurement.

> *Standardisation has the capability to reduce duplications in tendering and provides supplier management efficiencies.*

Standardisation ensures similar goals are shared across departments and organisations, enhances regulatory environments, structures and procurement needs, which arguably increase their potential for collaborative procurement (RICS, 2011).

> *There will also be the need to ensure standardised product cost and quantities according to market considerations.*

Standard processes are advantageous because of their simplicity, so that even when processes are well known it can be replicated and similar results will be obtained. This is also important for purposes of evaluation as criteria will be standardised and well communicated to encourage investment in the road sector. Confidence on the part of prospective bidders or contractors will enhance efficiency and promote innovation as a result. Standardisation also creates an avenue for reduced costs of tendering on the part of government and complaints of the private sector. It has the capability of reducing marketing and advertisement costs because it ensures fixed costs at various levels. It also leads to spending less public money or spending it efficiently to increase VFM from the taxpayers' perspective through efficient and streamlined procedures. Ensuring standardised procurement processes is a way of reducing gaps for illicit acts, curtailing the actions of malicious people who want to benefit at the detriment of the government.

5.2.9 Over-Emphasis of Price Criteria

In evaluation of road tenders solely on the basis of price, authorities award the contract to the tenderer offering the lowest bid for a compliant bid. However, the lowest tender price refers to the prices set out in the tender, rather than the actual cost of those prices to the contracting authority. In the road ministry, there has been a growing tendency over reliance of the bid price which has led to several uncompleted projects, delays in execution, poor quality of project performance as well as legal disputes among entities and contractors. Authorities are more concerned about the cost of the project rather than the design or durability.

> *There is some sort of perception that roads are roads, all you need to do is to calculate the length of the project. Meanwhile, there could be other processes of road construction that needs to be carried out as a result of the nature of the land. This is not resurfacing, asphalting or just road marking. (interview with respondent)*

> *In cases where price serves as the main criterion for evaluation, there are always problems. (Interview with respondent)*

The evaluation of price can involve a number of different aspects like the internal costs of the contractor and other estimations. Hence, the ministry does not need to use a fixed price evaluation methodology. The MRH could come up with a maximum price after estimating the market price for the works, services or supplies involved, taking into account the contractual conditions and its own budgetary constraints. This fit-to-budget method is based on the maximum price the authority is willing to pay for a particular contract. This method assumes that the highest price will attract no marks and all bids above this maximum price shall be excluded. Indeed, this maximum price restricts competition. Bidders therefore compete for the best price score below the threshold and are ranked comparatively to that maximum price. However, a standard evaluation criterion is necessary for efficiency.

> *If the evaluation criteria is not standardised, the ministry will spend more time and money in consultations for every project. At least certain criteria and its evaluation methods should be standardised. (Interview with respondent)*

In multi-criteria, once tenders have been assessed against the technical criteria for instance, a financial evaluation of the prices tendered are then undertaken. The results of the financial assessment are documented before moving onto the next stage of the evaluation. Having separately assessed tenders against technical and financial criteria, a comparison of technical worth and price is undertaken in accordance with the established criteria to determine which tender represents the best combined offer.

5.2.10 Lack of Effective and Open communication

Open communication between the public authority and the bidders as well as between government stakeholders is a basic tenet for effective bidding and procurement. A provision of ample and good information on the processes involved on works and services are healthy for effective competition. Currently, the dissemination of information from the ministry to prospective bidders and among stakeholders in the ministry is problematic. It causes a lot of issues including the waste of time and resources. The procurement process should provide mechanisms that effectively provide details of the project delivered and encourage innovation by the bidders. Effective communication enhances the knowledge, experience and technical know-how of contractors. A mechanism must be engaged to allow bidders play a role in the decision process, especially during the procurement of such complex systems. This should especially be encouraged and appropriately accommodated during the establishment of

specifications. For example, it may be appropriate to ask the market solutions that are currently or potentially available before advertising a tender. Market sounding can be beneficial as a long-term strategy, even if procurement is not imminent. Further, stakeholders should also be presented with avenues to suggest innovative methods to improve the procurement process to the benefit of both the procuring entities and the suppliers. Effective communication is a prerequisite of the realisation of VFM and all the benefits of competitive bidding. Consequently, it makes effort to optimise price and quality for the procuring entity. It encourages prospective bidders to be proactive and professionally apt to get the best possible outcome from the market.

Effective communication is critical and provides a regulated environment which safeguards favouritism and profiteering to a large extent. Communication of the needs of the government to the end users creates a better opportunity at contractors or bidders delivering what is required and needed for project success. Avenues must be established to allow disputes that may arise between bidders and the procurement entity to be resolved in a timely manner. The process must be seen to be transparent and impartial. In addition, procuring entities should have in place a formal process to ensure that any bidder complaints are handled in a professional, objective and timely manner. Accountability is also enhanced in effective communication as bidders and individuals are required to be transparent and undertake effective reporting. Openness and transparency in administration, by the external scrutiny through public reporting, is also an essential element of accountability. Collaboration among the entities of bidding administration in the road ministry, and the integration of tasks and responsibilities of professionals increase exploitation of the opportunities associated with effective bidding. It ensures better utilisation of procurement skills and resources; greater purchasing leverage through aggregation of spend; and spread of best practice.

Other ways of enhancing effective communication include the publication of contract award notification. This requires information on the preferred bidder, the reasons for selection of that offer, the number of offers submitted and rejected, the lowest price submitted and the price of the winning tender. Most of these are hardly complied with, although extremely important in encouraging prospective bidders in subsequent tendering. It also provides an enhancement of transparency, as bidders who lost the contract are provided with enough details on reasons why bids were disqualified. It is argued that the principles of transparency and competitive procurement would be ineffective if information sharing is biased. This restricts access to the procurement system in such a way that only privileged bidders would be able to meet some

required conditions. Therefore, the objects of the procurement should be described in terms of technical specifications, affording equal access to bidders and preventing the creation of unjustified obstacles to the opening of the public procurement to competition. The object of the procurement contract should be described in an unequivocal and exhaustive manner by using sufficiently precise and comprehensive wording, taking into consideration all of the requirements and circumstances that could have an impact on the preparation of a tender.

5.3 External factors that mitigate against the BAPM

Factors that affect the implementation of PPP challenges the effective utilisation of the BAPM in the bidding and procurement of RPPPs. These external factors to the system that could impact the BAPM or new system being developed is investigated via T1. This section therefore enumerates these factors based on findings from semi-structured interviews engaged, for purposes of understanding the factors that restrict the success of PPP and in effect the implementation of the BAPM hence successful procurement of road PPPs in Ghana.

5.3.1 Lack of Education

The lack of education and training hinders the development of road PPPs. It is argued that the knowledge of end-users on PPP mechanisms from the onset is an incentive that enhances adaptability and acceptance of the model. It is for no reason that the World Bank granted Ghana a $30 million facility for capacity building. There have been problems with this as it has not been very effective. Again, there is a perception that the public sector in Ghana is slow and inefficient, so it is important that these measures are carefully implemented. Capacity building should be continuous and should trickle down to the people in the districts and smaller municipalities rather than just stay at the helm. The competency, skills and knowledge of PPP players are critical in structuring deals that are acceptable by all stakeholders and are implementable.

> *"It is important that people involved are educated, even the general public so that the citizenry understand the model. There are many people who come to us and you can clearly tell they do not understand what PPP is. There have also been concerns about people fighting against PPP because they feel PPP is a means where the country's resources and assets are privatised so, they claim the country's future is being mortgaged" (CI 12)*

There is also a perception that the current procedure is enough for managing road projects in the country. This has been attributed to a cultural barrier which is simply resistance to change or reluctant to initiate new workflow.

> *"The old traditional procurement system is cherished by workers. Change is naturally difficult so the training should not only be about processes of road PPP but its importance and an incorporation of effective change management." (CI 7)*
>
> *"PPP is deemed to be complex and complicated and takes too much time which brings out the limitation of the roles and responsibilities of these people, making it more difficult for a smooth transition. Some form of education is needed". (CI 1)*

5.3.2 Political Will and Commitment

Political will and commitment is a major issue that was mentioned by most respondents as a critical factor for effective implementation. The government needs to push the agenda for PPPs by building capacity that will support and facilitate road PPP dealings. If the government was not in full support or did not recognise potential benefits of road PPPs, any steps to foster growth or enhance the model could not possibly work. It is important that any government in power will provide the necessary authority and support for road PPP projects.

> *"For instance, the government at the moment cannot give guarantees to these projects because of a clause in an IMF condition since the government sought a bailout from them. We are under what we call the IMF Extended Credit Facility (ECF) which is a 3-year program that we signed on to. During this period, we cannot give guarantee or any form of contingent liability and that's one of the factors that is inhibiting PPPs now." (CI 3)*

Political will and commitment was raised as a critical barrier in the implementation of PPPs in the road sector. The commitment of the government to allocate technical and financial resources to PPP in this sector is absolutely important for the road sector to benefit from PPPs. Currently, many private investors are not motivated to bid or prepare proposals for development in the sector. It is argued that the need for political will in the introduction of PPP legislation in the provision of public services, the lack of it is dire to the success of the model.

"I strongly believe that although there is some lack of education among several government officials regarding this model, it will be perfect if the highest authorities put their foot down and pushed this thing. It is the way out of this unsustainable borrowing and infrastructure deficit. The government cannot do this on their own and they should focus on implementing PPP so that the private sector comes in". (CI 8)

5.3.3 Lack of Clear-cut Structures

The lack of clear boundary of responsibilities between stakeholders also possess some threat to this model and need serious consideration in the effective implementation of PPPs. Eaton (2013) argue that the long-term nature and the complexity of PPPs require designated responsibilities of all stakeholders to avoid mishaps or further complications. This is even critical for risk allocation and transfer, as responsibilities will clearly be designed. Clarity is essential for accountability in PPPs. Similarly, the lack of specific requirements of distinct stages of the procurement process is a barrier that impedes the development of PPPs in this sector. Although some private sector funders could demand a particular company to undertake the projects, it is necessary that the process is still opened up to other stakeholders so as to ensure transparency and provide efficiency.

"In the various road projects around Accra which demand millions of dollars, the local private sector cannot raise such funds hence an international player is invited, and this company may for instance demand that a construction company that is resident in its country takes over the project as a condition for releasing the funds. This however makes such projects sole sourced rather than a competitive process". (CI 15)

This is critical in ensuring confidence from prospective bidders that will allow them to prepare properly and also be well informed about the evaluation criteria for successful bidding.

"Stakeholders are not certain from beginning of the process to exactly what the other party is expecting, it is rather a general notion that is painted. This long way wastes time and especially resources. Clear cut boundaries will definitely go a long way to reduce risk and maximise resources". (CI 13)

Most respondents opined the lack of standards in PPPs and that it was more prudent to streamline whatever procedures were currently available so as to save time and limited resources.

> *"It is important that specific guidelines are outlined for specific sectors. There is a bit of inefficiency in the contractual documentation, but I think that is minor and all these problems will be curtailed if there is a clear standard". (CI 1)*

> *"What you need to do, what it means, all of that is missing in the PPP policy. The policy is fine, but we need to make sure that it becomes an Act, that would give the people a bit of comfort. Apart from the policy, you will come up with a standard that tells you what goes into the feasibility report. Normally the Terms of Reference spells out what needs to be done. The problem I have there is that I think we spend too much time doing all these things. So, the thing is that for me is, we need to think about another way of doing this, carrying out these things. We need to bring in some standardisation so that we can get a more structured way of doing or carrying out these things, that's something we need to think through. (CI 3)*

> *For instance, for such projects, a private investor would also do his own studies as well, so why then will the public sector want to spend too much and get your own study. It could just be a high-level thing but at the end of the day, that's to give you just an idea of what the cost is, whether the project is feasible or not you will know. I would just say, from inception, go straight to high level feasibility. You don't need a pre-high level, maybe just a pre-feasibility should do". (CI 5)*

5.3.4 Lack of Experience and Capacity of the local Private Sector

The local private party is not really equipped, and they can't really handle these huge projects in the country in terms of financing and technical know-how. The lack of knowledge and expertise of private sector players is a major factor that hinders any PPP undertaking. Robinson et al., (2010) argue that PPPs are complex long-term arrangements hence, the need to have experienced parties in the modelling and implementation of projects is critical.

"PPP is a huge issue in the country which simply means that quite apart from the fact that the private sector may not have some requisite experience in such large and long-term contractual arrangements, it is almost impossible to mobilise resources domestically to support these PPP projects". (CI 7)

5.3.5 Bankability of Road PPP Projects

Bankability emerged as a major constraint or barrier to PPP implementation. Specifically, with regards to road projects, the current tariffs are too low as there is a lack of credit-worthy support. It requires financial performance guarantees by the GOG and the need for the government to take up some risks. Because of the low tariffs for instance, such projects are economically viable but not financially viable. Road PPPs do not need to be commercially viable on their own but need to become financially viable to reach financial closure. Certain projects worked on in the past have not been bankable hence has not attracted the private sector meanwhile these projects are economically viable and solid projects which the government should support.

"The projects are economically viable but not bankable on its own because it's only when a project is financially bankable and financially viable on its own, that gives the private investor the confidence to come in, but even the studies we've done shows that government needs to support it before it becomes bankable. Most of the projects we are currently undertaking studies on are not bankable. For instance, the issues of time and toll rates when it comes to roads are very low and you don't have the volumes there to make up a huge revenue. Revenue should be more than your cost but here's a case where revenue is way lower than the actual total cost of the project so it's very difficult to make the project bankable and viable to get the private investor because the private investor would only pump money into a project if the project is good. And the lenders, financiers would not support a project if it's not viable. You want a project to be bankable on its own, viable on its own and that gives the investors and the banks a bit of confidence but all the projects we are pursuing now are not bankable. They would only be bankable if government supports it". (CI 16)

> *"Tolls in Ghana are too low such that when the private sector wants to construct a road for instance, the revenue that will come in as a result of tolls will take the private sector almost a hundred years to re-coup its investment hence, he will not be interested anymore. So, if the government is ready to make annual payments to support operation and maintenance or make a lump sum payment during the construction phase, this should help the investor or private sector to implement the projects. Otherwise the law guarding toll rates in Ghana should be reviewed so they become more realistic like other developed countries. I know in the United Kingdom and elsewhere, you could pay as much as £5 for toll but here in Ghana it is 50 pesewas which is about 1p in the United Kingdom. Ghanaians should honestly be ready to pay realistic rates if they want good roads. Most people can afford it anyway and will like to spend that amount of money and drive on a smooth, well maintained road that will save them money from buying shock absorbers, new tyres etc. and spending so much on servicing their cars rather than driving on such bad roads and paying less for tolls. People would have to pay for the realistic type of toll rate to cover the cost of the projects, otherwise we will always be in this struggle". (CI 11)*

The absence of sovereign guarantees in Ghana currently, and the lack of tight and specific policies in regulating operations does not provide the right platform for effective PPPs.

> *"Government departments and agencies could probably collect fees from the public and make unitary payments to the private partner as long as they meet performance standards. The private partner therefore does not face a risk of change in demand and is not bothered if there is enough confidence from the government. Also, private investors usually will not be willing to bear many commercial and demand-based risk which require more public financial supports when there is not a clear level playing field, so the need for specific policies binding both parties for bankability of these projects". (CI 3)*

5.3.6 Lack of a Legal Framework

One of the major barriers of PPP implementation in Ghana as touted by most of the respondents is the inability of the government to pass the PPP bill. A favourable legal framework was

mentioned by all public sector respondents as very important for the smooth and effective transition of the traditional procurement to PPP which will go a long way in the development of the model.

> *An effective legal framework is essential in avoiding legal battles which are very common among international private partners.*

Respondents alluded however to the fact that the passing of the PPP bill laid before parliament will further solidify the grounds of PPP projects that will be undertaken in the country and will provide confidence to the private sector.

> *"The reason it had taken so long was because the first bill that was sent to parliament was deemed to be voluminous and had to be reduced hence it was sent back to the law firm for due amendment.". (CI 7)*

Appropriate risk allocation and risk sharing is a major factor that the government policy and the PPP bill had to address as it is the major benefit or principle of the procurement route. It is however important to ensure engagement of all stakeholders in the process.

> *"It is mandatory that in risk management, multi-benefit objectives for both the public and private sector is also taken into consideration". (CI 8)*

5.3.7 The Lack of a Central PPP Unit

The need for the setting up of a central PPP unit which will be void of government machinations and political interference is critical. This is because the practice of deserting a particular government's policy when another government is in power is common in the country.

> *"It is important that a non-partisan committee made up of technocrats or experts in different fields, representatives of the private sector etc. are put in this unit to propagate the functions of PPP in the country. We need to recognise that PPP has a long-term nature hence different governments will come into power when a single concession is taking its course, this will also encourage the private sector and its participation as it will guarantee security and sustainability. This is complementary to the bill that needs to be passed. It will go a long way to strengthen PPP dealings and activities in the country". (CI 6)*

The delivery of infrastructure and public services has usually occurred without competition and the individuals and organisations responsible for managing and delivering public services are not given incentives nor are they accountable, hence the difficulty in fully implementing the model. There are too many distinct organisations that have overarching responsibilities, a central PPP unit will solve this problem and remove bottlenecks in processes and procedures. This will to a large extent streamline processes and cut out waste.

> *The delivery of public services should be managed more like a business rather than a bureaucracy, moving from performance-based to approval-based. Stakeholders should also be engaged in the decision-making process from the beginning, and government should apply corporate and commercial principles and incentives whenever possible". (CI 5)*

5.3.8 Lack of Macro-Economic Stability

A stable macro-economic condition is necessary for good PPP implementation especially as the exchange rates for instance are key in determining costs and revenues of such projects. The inadequacy of liquidity in financial markets may cause credit crisis which will limit project success (Farquharson et al., 2011). There is the need for the government to ensure stability in the economy to reduce inflation and stabilise the currency. This will go a long way to provide the needed financial resources from the banks and financial institutions to the private contractors which will in turn develop the economy.

> *"When the cedi has depreciated at a rate of over 23 per cent for a particular year for instance,, the SPV will need more cedi to change to dollars to be able to meet interest payments etc., whereas solid economic conditions will create the enabling environment for the private sector to thrive and be able to support such projects". (CI 7)*

> *Access to capital is a major concern for the contractors. Even the current interest rates over 30 percent is just too much to work with, so just imagine a situation where the capital is increased because of increased exchange rates over a short period. Most contractors are getting discouraged by this and the international companies or those contractors with international sources of funding are advantaged but we have to bear in mind that proceeds of that money*

goes back outside the country which affects the economy in the long run. (CI 12)

5.4 Parameters of Ghanaian Preferred Bidders Criteria

The engagement of semi structured interviews among key stakeholders of PPP adoption in the country (T1) also confirmed there was adequate data that could be gathered to make a significant contribution. Similarly, it confirmed the need to identify these parameters in enhancing transparency in the evaluation of the criteria. Preliminary studies are typically conducted to develop pertinent subjects and propositions for further inquiry (McDonough & McDonough, 1997). This chapter further presents an assessment of the parameters of VFM and RM. Semi-structured interviews were engaged among the identified road projects (T4) and the approval committee (T3). The researcher also had access to internal documents and memos of the road projects which enhanced the quality of data collected.

5.4.1 Practicality of Value For Money (VFM)

VFM is paramount, and PPPs should give greater value for money than the best realistic public sector project designed to achieve similar service outputs. Achieving VFM is a key requirement of the GOG at all stages of a project's development and procurement. It is regarded as a combination of the service outcome to be delivered by the private sector, together with the degree of risk transfer and financial implications for the government. Value for money is the driver for adopting the PPP approach in Ghana, rather than capital scarcity or the balance sheet treatment. VFM is widely accepted as essential and incorporated in the procurement route. The approval committee is required to finally review bids on the demonstration of VFM in the project before the selection and subsequent award of contracts to the preferred bidder. There is however the need to shed more light on the parameters which are looked out for in the evaluation of these bids.

"In the reports submitted, all documents are required to demonstrate the anticipated Value for Money to be achieved by the PPP project, so all projects require a VFM assessment. Similarly, after the evaluation of bids, the Contracting Authority must submit an evaluation report for review and

recommendation by MOFEP-PID demonstrating how value for money was applied. It is a crucial step before any approvals can be given." (CI 1)

In Ghana, even major projects surpassing a total cost of about GH¢ 100 million (£20 million) that are to be procured traditionally need a Value for Money assessment carried out before the loans are passed in parliament. Value for Money in PPP projects is in the public interest and is critical in the determination of the viability of the projects and its attractiveness.

"In fact, one of the major objectives stated in the National Policy is to encourage and facilitate investment by the private sector by creating an enabling environment for PPPs where value for money for government can be clearly demonstrated". (CI 12)

In the assessment of VFM, Whole Life Cycle Costing (WLCC) of the project is critical. WLCC is considered in all PPP projects especially as PPP is a long-term project relative to traditional projects. All costs including maintenance and operation costs are considered during the feasibility stages. These have to be considered before any form of finance is introduced in the project. All respondents recognised the importance of WLCC and to a large extent alluded to its consideration in any PPP project. Subsequent to VFM assessments and reports, the suggested PPP model is compared with the public sector procurement model through present value of the total life cycle costs. Factors that could affect the WLCC of the project in efficiency gain or loss is also factored into VFM assessment of projects. This estimation is based on factors that directly impact the life cycle cost of the project.

"Feasibility reports entail all these costs, because feasibility report includes the financial model, your economic assessment, your risk assessment, your engineering, technical, what kind of design they want to do and the costing". (CI 3)

"Sometimes they give you an idea of what the operational cost would be, maintenance cost would be, so all those give you the whole life cycle cost. So, it's not just only the cost that you need during the construction but also during the operation. You need to know what the cost would be when you do the operations as well. So, all that goes into your financial model". (CI 5)

> *"The financial model has a spreadsheet. So, if it's a 30-year agreement, you have year 1, year 2, all the way to year 30. Then you have other costs like the capital costs, so you work out the operation cost. Your financial model is the last thing after the technical guys have done their work, they know the cost. After all that, you start considering your ratios where you will be looking at NPV, the debt service cover ratio etc. Those are the things that are performance indicators. Those are indicators that more of the banks even look forward to see". (CI 4)*

> *"There is a spreadsheet that allows a calculation of the Net Present Value or the Internal Rate of Returns, auditing is done per year and you looking at all that up till the end of the concession. Sometimes after multiple calculations, the first 15 years records a loss, then maybe after 15 years, that is when you will end up making a bit of profit. So, they want to see the cash flow before supporting the project. So, if it doesn't look good, they know what to do. There are certain simulations and financial modelling approaches that are engaged to make the project attractive and viable which is presented to the client. So, most of the time, when a certain fixed amount like a toll charge is being determined, the number of years in the concession, the total cost of the project etc are all taken into consideration. So, maintenance, operation etc. are all considered which forms part of whole life cycle costing". (CI 7)*

The Project and Financial Analysis Unit (PFA) under the Ministry of Finance is mandated amongst other things to ensure financial viability and economic soundness, this entails VFM of both unsolicited projects and solicited projects. Unsolicited projects require a private sector candidate who writes to the ministry of an intention to undertake that project with their own proposals. If the project is viable, it moves to the financial assessment stage which is also submitted to the ministry. In order to ensure VFM in unsolicited projects, the project is listed after this, and other private entities are invited to bid so that other costs are brought forward for comparison. If another party wants to undertake that project with a lesser cost, the initial company is contacted and informed of the new development in a bid for it to revise its financial

proposals taking into consideration other project factors or deliverables. They then have a choice to review their cost or leave the project. On the other hand, solicited projects entail projects that are identified and sought by the government who then invites bidders.

A qualitative and quantitative assessment is identified as critical in carrying out VFM. It is necessary to ensure utilisation of optimum combination of project life cycle as well as quality, in order to achieve maximum user requirement. For quantitative assessments, there will be the need to establish the: Quantification and calculation of external costs to MRH (including concessions, viability gaps, future commitments, project support components, fiscal and non-fiscal support and guarantees) and; Non-financial benefits of PPP comparison including accelerated project delivery, enhanced delivery and ability to create wider social, environment and health impacts. Contrarily, with regards to the qualitative assessment, this generally analyses the rationale for using PPP which involves knowing whether a proposed project is suitable for private financing; checking that the PPP project has been well structured based on some competitive principles; and checking that the project has generated competitive interest of which affordability should be considered.

Affordability is key in VFM assessments and the government or public sector must still be able to afford to pay for the project, regardless of whether it is a traditional pubic project or a PFI. Full analysis of this service must be performed to benchmark current performance levels and compare with not only traditional procurement methods but other competitive bids to ensure affordability and better value for the public money. It is also important throughout the concession period as maintenance and other post construction charges need to be considered. Although the VFM and Affordability concepts are separated according to the stipulation of the National PPP policy, affordability must be calculated as part of VFM assessment in Ghana.

> *"Affordability assessment must be incorporated in VFM analysis of any PPP contract before the contract is signed to ensure that the actual performance delivered does not drop below planned & contracted output levels" (CI 7)*

> *"There is no doubt about the importance and benefits of value for money. It is actually critical to the successful achievement of PPP objectives and is also a key component of the evaluation of PPPs. However, it requires diligent management of project risks during the execution phase of PPP projects hence*

the monitoring and supervision functions must be integrated into PPP processes to achieve value for money". (CI 5)

It was revealed that VFM needed to be more standardised in terms of determination so as to ensure transparency and an unbiased assessment. It is also necessary for efficient time management when assessments are being done.

"In the United Kingdom for instance, the Public Sector Comparator is used, I think we need something like that in Ghana and I understand the Ministry of Finance is developing a template for quantities in construction so as to have a standard that can be referred to in determining or having an idea of how much some projects should cost. PPP value for money should be evaluated against a Public Sector Comparator. The most important thing however is to compare the value for money of implementing the project as a PPP or through public procurement". (CI 2)

5.5 Value For Money Assessment

One of the main objectives of the GOG in implementing PPPs is to achieve VFM in providing needed infrastructure. VFM regards achieving the best combination of benefits and costs in delivering services road users desire. In road PPPs in Ghana, the public sector's aim is to procure a service that is acceptable VFM and subject to its affordability. Affordability is a critical element of VFM assessment for the successful implementation of any project. Two forms of VFM assessment in Ghana were identified from T1 in previous section: Qualitative and Quantitative assessment. Both the qualitative and quantitative assessment approaches are necessary to demonstrate VFM. Affordability is determined to be a key component of the qualitative aspect of VFM. This section seeks to identify and develop an approach for the VFM concept.

5.5.1 Qualitative Component Approach

The qualitative approach should involve the ascertaining of whether or not the project is firstly being procured under the right procedure of the PPP policy in the absence of the PPP law and the project guarantees competition as a result of price or cost comparison of bids received. This

has been assigned as the qualitative aspect of VFM assessment which End user ability to pay is the key consideration for the project's implementation, taking into consideration, the ability of the private sector investor to recover its investment. Affordability should concern not only the ability of the public to pay for the road services whilst it is being operated but the overall government budgetary sustainability, forward commitments in relation to public expenditure given other priorities and commitments. It is considered as a measure of the ability to meet the public sector's annual expenditure (the unitary charge payment) that is usually paid on a yearly basis. The public sector expects a project from the private sector that is below what it can afford. In the road sector, it will be normal and practical to allocate toll revenues to the project company albeit expected shortfalls relative to costs. These are usually recovered through a subsidy, but this action will not necessarily meet VFM expectations of stakeholders.

> *This approach however only favours the bidder with the most optimistic traffic forecasts rather than the one with the most cost-effective solution. (Interview with respondent)*

5.5.1.1 Affordability Approach

The toll regime in Ghana is substantively low which does not make road PPP projects economically viable. As a result of this, affordability considerations have been a major issue in the assessment of VFM for road projects in Ghana. However, a number of approaches were revealed that could determine affordability depending on the nature of road projects: its location, economic and financial feasibility, which are determined in the initial stages of the procurement process. Firstly, the ministry undertakes an assessment between stakeholders to provide an affordability ceiling. It becomes imperative for prospective bidders to state an affordability ceiling and the assumptions that underlie this which is lower than the ministry's ceiling. The most economically advantageous bid that is developed below the stated ceiling therefore receives the highest mark under VFM assessment. However, this approach will only be employed for road projects which have good volume projections and can be economically viable. This determination will be revealed from the feasibility study and market survey of the project. There is however a requirement associated with both the toll level (depending on the flexibility required) and the volume of traffic which carry significant risks for the private sector. There is the need to develop low, high and most likely traffic demand forecast scenarios

in bids to be used in assessing the impact on the design, timing and cost of the project. It is important that the traffic demand forecasts used in the project analysis would not exceed the proposed design capacity and the future demand is consistent with the proposed tariff or tariff scenarios. The toll regime or survey should reflect Willingness to Pay (WTP) and Ability to Pay (ATP). The WTP and ATP elements will be determined from the critical surveys.

> *Based on WTP and ATP studies, a viability funding gap between the cost recovery and affordability for road users will be determined. In case there is a gap, the bidder must suggest nature and timing of the viability gap funding and /or any revenue support guarantees to make the project viable and bankable. (Interview with respondent)*

> *In addition to assessing the level of traffic, which will be the main source of revenue, additional commercial opportunities can be identified and explored related to land development, franchising around the right of way for the road to cross-subsidise project affordability to Government that is, if there are viability gap issues. (Interview with respondent)*

Another approach that was developed as a result of this study relates a strategic decision to allow the private sector party to charge a pre-determined usage fee (i.e. road tolls) that will bridge revenue and expenditure gaps. This payment mechanisms will mean allowing the private sector to set and adjust the toll level on that particular road project in order to maximise their overall revenue or using an availability payment that is dependent on keeping lanes open and the road surface sound. The calculation of this will however involve the determination of these charges by identified project stakeholders and will be presented to the ministry as part of their bid documents and subsequent approval by the approval committee. Although, this approach is the most practical and most efficient in terms of recovery of debts by the private sector, it is a bit more complicated. This is because, the current legal regime require a parliamentary approval to allow adjustments of road tolls. Usage fees carry more risk for the private sector (and their lenders) because the project cash flow is influenced by usage/volume (elasticity of demand). Over-optimistic traffic forecasts combined with any slowdown in economic growth can result in road projects running into difficulty. Other risks include toll

collection enforcement and (from the private sector perspective) political interference in setting toll levels. This method does however reduce the affordability risk to the public sector.

The final approach identified is the alternative to usage fee, which is the willingness of the government to provide an availability payment or performance payment. Hence, rather than road users paying a higher than usual toll, government pays the private sector a fee linked to the availability and/or the condition of the road, or alternatively linked to the number of road users (a shadow toll). All these are developed according to adjustment of duration (years) on the concession agreement. The greater the flexibility required, the greater the uncertainty for the private sector and the higher the risk for the private sector, the higher rate of return required – which may result in spill over cost impact to the end user. The final approach with regards to affordability therefore is the case where there is the need for government to provide some incentives and guarantees to bridge the gap and encourage private sector participation in this sector. In the assessment of providing guarantees or fixed annual payments, both parties must take into account WLCC and explore innovate approaches leading to cost reduction and quality improvement in the realisation of VFM. Essentially, when government determines the payment mechanism to the private partner, the private partner must receive adequate compensation for its investment and operational cost. This approach therefore requires the road projects that are economically viable but not financially viable. Examples of these roads could be town/city roads which cannot be tolled. Although this approach requires financial investments from the public sector which is a disincentive, it was touted as the best approach if the government was not willing to adjust toll charges. The factors that are considered on the qualitative aspect of VFM assessment are therefore developed from objectives of PPP and affordability approach adopted. These are the guiding principles upon which the approval committee will assess qualitative VFM. All projects should therefore demonstrate fair and due process in the development of bid documents according to these principles. The assessment of these factors are however objective and does warrant a disqualification of bidders as compared to the quantitative aspect of VFM assessment as no weightings will be attached to them. Table 6.1 presents factors of qualitative VFM assessment. This involves ensuring accountability, transparency and competition. The Contracting Authority (MRH) must also have full ownership and commitment to the project which has not been influenced by other authorities

of the government. A broad stakeholder consultation and environmental considerations must be ensured. Lastly, the affordability approach must be identified in this assessment.

Table 5.1 - Qualitative VFM assessment factors

GUIDING PRINCIPLES	Accountability
	Transparency
	Competition
	Contracting authority ownership and commitment
	Stakeholder Consultation Process
	Enironmental, climate and social safeguards
	Affordability Approach

5.5.2 Quantitative Component Approach

The quantitative assessment approach involves comparing the estimated cost of procuring the project via PPP against the estimated cost of procuring the project traditionally. There is an assessment of the estimated life cycle cost and efficiency gain to the public sector to deliver the road project using the traditional route and a WLCC calculation of the government implementing the same project using a PPP model. VFM for the project is the cost of Present value of PPP costs subtracted from the Present Value of traditional procurement costs.

> *In developing countries within Africa, there tend to be several inefficiencies associated with public sector procurement owing to cost and time overruns as well as long-term asset management practices. (Interview with respondent)*

> *VFM assessment involves finding out whether a PPP project is likely to offer better value for the public than conventional public procurement. (Interview with respondent)*

> *The difference between Public Sector Comparator and the PPP life-cycle cost is then referred to as Value for Money. Instances where the PPP cost is lower*

than Public Sector Comparator, indicates a positive value for money and hence making a case for procuring the project via PPP. (Interview with respondent)

The private sector is expected to reduce the costs associated with inefficiencies of the traditional procurement method. Therefore, by comparing the traditional and PPP costs, payments made to the private concessionaire must be lower than private contractors through traditional contracting. If the analysis returns a positive VFM value, it indicates that PPP is a cheaper procurement mechanism, making a case for procurement through PPPs. This is summarised in figure 5.1

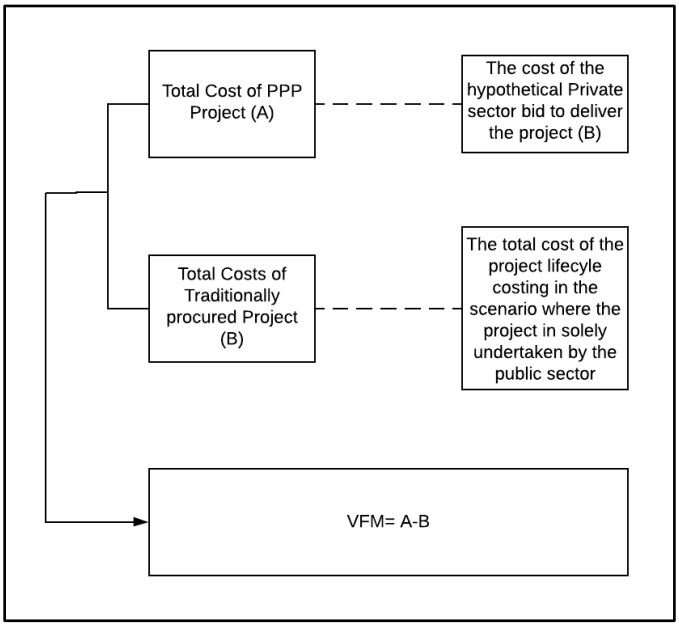


Figure 5.1- Quantitative VFM assessment approach

Five major factors are considered in the determination of VFM in road PPP projects. These are assessed in the development of bid documents and should be reviewed periodically during the implementation and operation of the project. These five major factors have been developed as a result to be the key components of WLCC determination of a road project. The major components that add to the WLCC or the value of a road project are listed in the table 6.1. These factors have been developed as critical in the assessment of PPP via T4 and T3, hence, need to be addressed by prospective bidders for the subsequent assessment of the approval committee.

Table 5.2 - Components of WLCC

COST COMPONENT	SUB - CATEGORY
Development Cost	Pre- Development cost Transaction costs
Construction Cost	Base Project cost
Construction time	Monetary loss due to delay
Operation Cost	Operational cost Routine Maintenance / Periodic Maintenance Raw material costs Manpower costs Other recurring costs
Financing Cost	Interest rate Return on Equity Discounting Factor Insurance Tax

Factors that could affect the WLCC of the project in efficiency gain or loss are also factored into VFM assessment of projects. This estimation must be based on risk factors that directly impact the life cycle cost of the project. The four main risk factors that impact the life cycle cost of a project are: estimation bias, quantity variation, inflation, design as well as delay in completion. These are indicated in table 6.3 with brief descriptions. They must therefore be assessed, with appropriate weights attached to them by the approval committee. In inflation risks for instance, payments of the contractor in traditional contracts are inflation indexed to assess costs according to agreed contract value. Hence, inflation risks in the determination of VFM in PPPs should as much as possible be calculated to estimate variations that may occur throughout the life cycle of the project.

Table 5.3 - Risk factors that affect WLCC

RISK TYPE	REMARKS
COST IMPACT	
Design	Design change leads to the introduction of new items in the Bill of Quantities ("BOQ"). There can also be instances where items required for certain designs are missed out in the initial BOQ item list

Quantity Variation	In an Item-rate contract, the actual BOQ during construction may often vary from the estimated quantity. This leads to extra cost in traditional contracts
Inflation	As a general practice in road Engineering, Procurement and Construction (EPC) contract, if the quantity during construction exceeds the estimated BOQ, the contractor could be eligible for rate revisions.
Estimation Bias	Variation between the estimated cost and actual cost.
TIME IMPACT	
Delay in completion	Variation between that actual and planned date of completion

5.6 Practicality of the Concept of Risk Management (RM)

Risk management is core to any PPP arrangement and aims at identifying all the risks involved in the endeavour so as to calculate the financial consequences, establish mitigation procedures and to allocate the risks to be transferred to the party best able to manage them. It is an interdisciplinary process where all stakeholders are involved throughout the concession period of the project. Due to the long concession period of PPPs, the temporal aspects of the risk are particularly important. The impact and probability of occurrence of a particular risk type changes as the project advances through the different project stages. As a result of this, the uncertainty can either increase or decrease and the uncertainty attached to each risk is the key factor in managing it. With regards to high uncertainty, few mitigation measures are realistically available and if uncertainty can be reduced, the risks can be better managed thereby increasing the possibility of project success.

> *The PPP projects are viable only if reliable, long term revenue stream can be established. The risk that the predicted revenues do not materialise is the greatest risk to commercial viability which is borne by those providing finance or financial guarantees. (CI 12)*

As expected, risk should be allocated to the party best able to control the likelihood of the risk event occurring, the impact of the risk on project outcomes and one that is best to absorb the

risk at lowest cost. All projects require a risk management assessment and is done through workshops for the identification, analysis and mitigation of the risks.

> *"All PPP projects require a workshop that involve all stakeholders which will list the potential risks of all categories and discuss them. This is done to allocate the risks to the best parties ready to control or manage it. For an environmental bid of a road or railway for instance, issues regarding right of way and compensations of land issues are best managed by the public sector, which is government, rather than the private sector. The government can give an order and make sure they clear the land and so on. The risk is on government. On the other hand, the risk is on the private sector with regards to finance". (CI 6)*

> *"With all the reports we have worked on, we list all the risks under construction, the things that need to be addressed and who has to manage it. Whether the private or the public entity. For instance, when the private sector takes over a poorly functioning utility network, there is a higher risk of unknown condition of assets to the private sector player so ways of mitigating that are explored. Then, if it's low to the government since every risk is firstly likely to be pushed to the private sector, then both parties will take the risk, but one party definitely takes more than the other. This is usually done after the workshop when the risks are identified.". (CI 7)*

Risk Management is a key component of PPP as equal risk sharing and effective mitigation are core to this model and provides an enhanced implementation. This notion was shared by all respondents interviewed. General risk category including site risks, pre-contractual risks, operational risks, force majeure risks etc. are adhered to by all interested parties of any PPP undertaking. However, it was argued that rather than a template or generic categories to be looked at, a more tailored risk register should be developed for all PPP projects.

> *"Each PPP project is unique. Thus, a model list of typical PPP risks can only cover a portion of the risks for any given project. Customised risk identification is necessary". (CI 7)*

> *"Model PPP Risk Matrixes can greatly help foster a culture of PPPs with a common vocabulary when it comes to identifying, analysing and allocating PPP risks. However, we need to avoid broad, vague categories like political risk. We need to be very specific". (CI 8)*

Even with clear, detailed institutional & regulatory frameworks, government decision-makers often do not follow their own procedures & regulations (political interference & non-transparency). It is important that regulations are put to fully necessitate a robust analysis.

> *Too few proposed PPP projects are being fully analysed and structured by the government before they are offered to the private sector. Many are offered based only on traditional technical feasibility studies without detailed PPP risk allocations or bankable contract structures". (CI 6)*

Apart from what is being done at the moment in terms of labelling risks and attaching parties best able to mitigate or control them, there is the need to also consider perceived risks when talking about risk management. PPP projects require more forms of public risk-sharing and supports, both contingent and non-contingent to become bankable. The government must develop systematic frameworks for analysing, approving, funding and monitoring public sector risks in PPPs.

> *"In addition to budget allocations, the government may make further contributions on existing assets; or providing various forms of guarantees that enable risk to be shared effectively between the government and the private company". (CI 5)*

The cost to the government under the most likely outcomes (modal value) should be estimated and assessed in especially conducting sensitivity analysis for instance to estimate how the cost to the government could change if assumed risks changed and assessing the likely cost and risk scenarios against fiscal priorities and existing commitments.

> *"Risk mitigation strategies should be cost-benefit justified". (CI 3)*

5.7 Risk Management Assessment

Risk management aims at identifying all the risks involved in the endeavour in order to calculate the financial consequences, establish mitigation procedures and to allocate the risks to be transferred to the party best able to manage them. It is an interdisciplinary process where all stakeholders are involved throughout the concession period of the project. Due to the long concession period of PPP roads, the temporal aspects of the risk are particularly important. The impact and probability of occurrence of a particular risk type changes as the project advances through the different project stages. As a result of this, the uncertainty can either increase or decrease and the uncertainty attached to each risk is the key factor in managing it. High uncertainty limits mitigation measures that are realistically available and if uncertainty can be reduced, the risks can be better managed to increase the possibility of project success. According to the National PPP policy, the critical aspects of RM that need to be demonstrated for appraisal of preferred bidders' criteria are risk allocation and risk transfer. Also, the risk categories identified under this stipulation is the technical, operational and financial categories. This section presents the parameters of these risk categories via T3 and T4.

5.7.1 Risk Allocation and Transfer Parameters

Three general procedures of representing risk factors in bidding documents were identified: Risk identification; risk allocation and evaluation; and risk mitigation. Firstly, an investigation was conducted to identify significant risk factors categorised under the three distinct risk categories. The researcher also had access to the risk registers and key respondents of both projects who were instrumental in the preliminary stages of the procurement process. These included Risk Managers, Contract Managers and key Project Managers. This process identified risks that were addressed in risk registers of both road projects. Risks were recorded from the beginning of the procurement process through the bidding and financial closure stage. These risks formed the foundation of which the final list of risks were built. These risks were refined via the semi-structured interviews engaged among the respondents of the road projects (T4), however new introductions by way of identification of risks were also made. A total of 54 risk factors were identified which were refined via engagements with the approval committee on their relevance. It was evident that all risks that were identified were important but had diverse critical levels that could impact the success of the project negatively. Finally, a total of 34 risk factors were identified as critical to the qualification of any road PPP bidder. A total of 11 risks

constituted the technical risk category, 15 were operational risks, and financial risks were made up of 8 critical risks.

Respondents from the private sector were asked how they will primarily represent these risk factors and their respective allocation schemes in the bidding documents for PPP road projects as compared to the public sector's (approval committee) preferred allocation. Three methods of risk allocation were presented in interviews: allocation to the public sector; allocation to the private sector; and shared allocation. The principle of analysis was based on the level of majority opinion (>50%). If over 50% of the respondents were in favour of allocating the risk factor to the public sector, then the allocation approach of this risk factor was categorised as ''allocated to the public sector''. Similarly, if the majority of respondents classified the risk factor as allocated to the private sector or shared category then the same principle applied. This principle had been adopted by previous research such as Li et al., 2004 for risk allocation purposes. A total of 19 risks representing 55.8 per cent were allocated to the private sector. This suggested that road PPP projects in Ghana had achieved the objective of risk transfer from the public sector to the private sector according to the three risk categories of preferred bidder's criteria. This result contrasts with a survey of PPP procurement in China, which showed that contractors are only assigned 40 per cent of risk items (World Bank, 2014). A total of 5 risks under these three risk categories representing 14.7 per cent were allocated to the public sector, the rest were marked as shared risks.

Further analysis was engaged to determine the level of impact to the respective parties should the risk occur. The risks were analysed based on the probability of its occurrence and the criticality of the impact on the project if it occurred with respect to the public sector and the private party. The risk matrix detailed the scale of severity and scale of likelihood from low to high as shown in table 5.4. The scale was acceptable, tolerable or generally unacceptable for severity on a scale of one to three respectively. Not likely, possible or probable were also chosen for level of likelihood on a scale of one to three respectively. Respondents were asked to choose a level of scale for both severity and likelihood for every risk factor which was calculated individually and represented as a majority of responses received. Also, suggested risk mitigation measures were identified for each risk factor based on the level of experience of respondents relative to this subject. The impact and probability of the risks after they had occurred regardless of mitigation measures were also investigated. These remaining risks were analysed according to their impact and probability. This task included analysis on the risk and allocation strategies of both projects of how allocation of risks were suggested as the project

evolved. Table 5.5 presents the risk factors categorised under the risk categories, criticality of the allocated risks to both parties, suggested mitigation measures, and criticality of the risks to both parties after they occurred (remaining risks). It was also important to ascertain whether or not these risk factors before commencement of the project changed during construction or whether allocation from remaining risks of stakeholders changed if they actually occurred. Risk factors were allocated a low, medium or high ownership to either the public or private sector before and after mitigation measures could be instituted. A low, medium and high ownership were represented by green, low or red colours respectively.

Table 5.4 - Risk Matrix for assessing risks

SCALE OF LIKELIHOOD	SCALE OF SEVERITY			
	ACCEPTABLE	TOLERABLE	GENERALLY UNACCEPTABLE	
NOT LIKELY	LOW	MEDIUM	MEDIUM	
POSSIBLE	LOW	MEDIUM	HIGH	
PROBABLE	MEDIUM	HIGH	HIGH	

Table 5.5 - Risk allocation and suggested mitigation measures

RISK CATEGORY	RISK FACTORS	RISK ALLOCATED		SUGGESTED MITIGATIONS	REMAINING RISK ALLOCATED	
		PUBLIC SECTOR	PRIVATE PARTY		PUBLIC SECTOR	PRIVATE PARTY
TECHNICAL RISKS	Inadequate designs	**LOW**	**MEDIUM**	Review and inspection of designs by third party experts. Cover with a performance bond or a contractor's insurance.	**LOW**	**LOW**
	Poor quality of construction	**LOW**	**MEDIUM**	Review and inspection of design by third party experts. Agreement on quality of raw materials and construction methods to be used. Monitoring and evaluation of project once construction starts.	**LOW**	**LOW**
	Equipment and material unavailability	**LOW**	**MEDIUM**	Sign supply agreements with potential suppliers. Have back up plans for equipment and materials suppliers.	**LOW**	**LOW**

	Construction accidents	**LOW**	**HIGH**	Enforcement of health and safety standards agreed with contractors. Use of Contractors' All Risk Insurance.	**LOW**	**MEDIUM**
	Construction force majeure events	**MEDIUM**	**MEDIUM**	Pre-agreed clauses on what happens in case of a force majeure event, with clearly defined triggers. Force majeure insurance to cover events.	**LOW**	**LOW**
	Relocation of utilities infrastructure	**MEDIUM**	**MEDIUM**	Engage with utility companies and develop a plan agreed by all parties for relocating the infrastructure. Adjust model and financial estimates to include the added cost of relocating infrastructure.	**LOW**	**LOW**
	Unforeseen site conditions	**LOW**	**LOW**	Detailed site investigations should be undertaken.	**LOW**	**LOW**
	Failure to meet agreed milestones	**MEDIUM**	**HIGH**	Strict adherence to schedule. Planning for inefficiencies in labour and equipment utilisation.	**LOW**	**MEDIUM**

				Increasing working hours, including weekends, holidays, night and shift working.		
	Third party objections	**LOW**	**LOW**	Allow transparency to allow third parties to understand the project concept and processes	**LOW**	**LOW**
	Completion risk	**LOW**	**HIGH**	Cover with a performance bond. Have regular monitoring, reviews and discussion of project status. Comprehensive project planning, preparation and mobilisation. Reduce time between planning or mobilisation phase and implementation stage.	**LOW**	**MEDIUM**
	Project Delays	**MEDIUM**	**HIGH**	Accelerate work by redefining critical procedures. Monitor work done by contractor and make sure delays outside your control are recognised and documented.	**LOW**	**MEDIUM**
OPERATIONAL RISKS	Revenue/ Demand risk	**HIGH**	**HIGH**	Rigorous financial forecasting, with realistic estimate of key drivers.	**MEDIUM**	**LOW**

				Scenario planning and analysis to include higher than forecasted tariff increases.		
	Maintenance cost overrun	**LOW**	**HIGH**	Rigorous financial projections Implementation of routine maintenance clauses to reduce the risk of major damage.	**LOW**	**MEDIUM**
	Breach of contract or expropriation	**MEDIUM**	**MEDIUM**	Penalty clauses for breach of contract Procurement of political risk insurance by the concessionaire	**LOW**	**LOW**
	Operator performance issues	**LOW**	**HIGH**	Comprehensive due diligence on the operator and confirmation of capability Agreement of performance standards and targets Procurement of a performance bond to cover operator delivery of the project	**LOW**	**MEDIUM**
	Operational force majeure	**HIGH**	**HIGH**	Clear definition of force majeure events and agreement of action steps in case of a force majeure event	**LOW**	**LOW**

				Procurement of operational force majeure insurance		
	Residual value risk	LOW	MEDIUM	Agreement between parties on expected state of asset at transfer Enforcement of routine maintenance and major maintenance contracts	LOW	LOW
	Wage Inflation	MEDIUM	HIGH	Fixed wages should have a flexibility clause to accommodate currency inflation	LOW	MEDIUM
	Accident risk	MEDIUM	HIGH	Compliance with health and safety rules and regulations. Regular health and safety checks.	LOW	LOW
	Labour issues	LOW	LOW	Improved working conditions for workers. Increased incentive for contractors.	LOW	LOW
	Customs risk	MEDIUM	LOW	The investor and Government should engage with customs prior to implementation of the project to receive their input and buy-in regarding the implementation of customs Procedures	LOW	LOW
	Environmental and social impact risk	LOW	MEDIUM	Comprehensive review and validation of existing Environmental Management Plans and Social	LOW	LOW

				Management Plans. Identification and mitigation of environmental impacts of the project.		
	Concession risk	**MEDIUM**	**HIGH**	Concession agreement should set out penalties for inability of each party to meet obligations to ensure approvals.	**LOW**	**MEDIUM**
	Government withdrawing from PPP	**HIGH**	**MEDIUM**	The contract for the project should have the necessary clauses built in to prevent any Government from backing out of the PPP contract without any justifiable reason. Guarantees or Insurance can be used to cover the default by a sovereign or corporate entity	**LOW**	**LOW**
	Future laws and directives	**MEDIUM**	**MEDIUM**	Obtain all necessary cabinet and parliamentary approvals before project commencement.	**LOW**	**LOW**
	Government changing terms of the contract or not fulfilling their contractual obligations	**HIGH**	**MEDIUM**	The contract for the project should include compensation to be paid to the investor if Government does not fulfil its obligations.	**MEDIUM**	**LOW**

FINANCIAL RISKS	Interest rate risk	**MEDIUM**	**HIGH**	Lock in rates for project loans. Forward Rates Agreement which would serve as a way to maintain a fixed rate of interest over long concession periods. Smoothing of Interest Rates to allow loans to be divided and part being a fixed rate and the other being a variable rate within the construction and operational phase of the concession periods.	**LOW**	**MEDIUM**
	Inflation risk	**MEDIUM**	**HIGH**	Benchmark tariff to inflation. Obtain insurance cover for inflation above a certain baseline.	**LOW**	**MEDIUM**
	Exchange rate risk	**MEDIUM**	**HIGH**	Borrowing of Cedi component of debt to cover local currency denominated expenses. Forward contracts to sell or purchase foreign currency amounts at a future time and a given exchange rate. Credit Guarantees to cover losses in the event of a debt service default	**MEDIUM**	**MEDIUM**

				regardless of the cause of default. Partial Credit Guarantees (PCGs) should be used to cover "part" of the debt service of a debt instrument regardless of the cause of default. Multilaterals and a few bilateral agencies offer PCG instruments.		
	Lack of equity and debt funding for the project	**HIGH**	**HIGH**	Provision of sovereign guarantee to potential lenders. Escrow of equity by private partners prior to beginning of construction.	**MEDIUM**	**MEDIUM**
	High finance costs	**MEDIUM**	**HIGH**	Lock in rates. Provision of sovereign guarantees to lenders.	**LOW**	**MEDIUM**
	Project cost overruns	**LOW**	**HIGH**	Create a contingency account to cover potential overruns. Obtain insurance to cover unexpected increases in equipment and material cost. Have regular reviews, monitoring and discussion of budget and projected costs.	**LOW**	**MEDIUM**

	Government's failure to implement tariff increases	**HIGH**	**MEDIUM**	The contract for the project should include compensation to be paid to the investor if Government does not fulfil its obligations.	**MEDIUM**	**LOW**
	Viability gap risk	**HIGH**	**LOW**	Comprehensive financial projections should indicate any viability gap. Parties should agree on Government's viability gap funding arrangements.	**MEDIUM**	**LOW**

5.7.1.1 Discussion on technical risk category

Failure to meet milestones, completion risks and project delays were the risk factors that had high allocations to the private sector. There were no high-risk allocations to the public sector under this risk category. The unforeseen site risk factor had low allocations to both the public sector and private sector. The Victorian State government in Australia identified conditions under which the government should reserve site risks for itself (PPAIF, 2009).

- Where the site is an existing government site, perhaps with existing defects or environmental liabilities;
- Where the government wishes to retain ownership of the underlying land asset, or is to acquire it at the end of the contract term;
- Where site approvals are likely to be particularly complex, as in the case of linear infrastructure projects involving an environmental impact assessment; or
- Where indigenous title/ownership issues arise over the land proposed for the project.

All risk factors including inadequate designs, poor quality of construction, equipment and material unavailability and construction accidents had a low allocation to the public sector after mitigation measures set in, which were considered remaining risks. The third-party objections and unforeseen site risk factors were shared risks in this category with low allocations to the public and private sector parties. The construction force majeure events, and relocation of utilities infrastructure risk factors were also shared risks with a medium allocation to both parties and low allocation to both parties as remaining risks.

> *Such risks have moderate impact on PPP/PFI projects. It is therefore suggested that the public and private sector partners need to consider them carefully when making risk allocation decisions. (Interview with respondent)*

5.7.1.2 Discussion on operational risk category

Under this risk category, only revenue/demand risk factor had high allocations both to the public and private sector parties. The two suggested mitigation measures were: Rigorous financial forecasting with realistic estimate of key drivers and; Scenario planning and analysis to include higher than forecasted tariff increases. Also, maintenance cost overrun risk, and operator performance issues risk had high allocations to the private sector and low allocations to the public sector. Accident risk, wage inflation risk and concession risk had high allocations to the private sector and medium allocations to the public sector. Government withdrawing

from the PPP had a high allocation to the public sector and a medium to the private sector. In conventional procurement, the public sector is responsible for operational risk, however, PPP/PFI procurement places operational responsibility in the SPV (li et al., 2004). The SPV should seek a balance in project design, construction and operation in order to reduce the operational risks of a PPP/ PFI project (ibid). Revenue/ Demand risk and operational force majeure risk factors were shared risks with a high allocation to both parties. Force majeure as a shared risk was consistent with a study by Li et al., 2004 which suggested all force majeure risks should be shared risks. The nature of this risk factor is such that public and private sectors may be not able to deal with it alone. Hence, a shared mechanism would appear to be the best option (Li et al., 2004). These relationship risks are caused by both sectors working in partnership hence, neither the public nor the private sector could manage them without the other party's commitment and contribution. (Eaton, 2013). It is generally recognised that force majeure risk could be severe but has a low probability of occurrence (li & Akintoye, 2005). Lastly, future laws and directives risk, and breach of contract or expropriation risk were shared risks with medium allocations to both parties. Labour issues risk factor was also a shared risk with low allocations to both the public and private sector parties.

5.7.1.3 Discussion on financial risk category

All risk factors under this category had a low to medium ownership to the public sector but the private sector allocations fluctuated between low to high risk ownership. For instance, inflation risk, exchange rate risk and the lack of equity and debt funding for the project were high risks allocated to the private sector. The rationale for adoption of PPPs justifies the need for the private sector party to retain more risks especially in the financial risk category.

> *The PPP projects are viable only if reliable, long term revenue stream can be established. The risk that the predicted revenues do not materialise is the greatest risk to commercial viability which is borne by those providing finance or financial guarantees. (Interview with respondent)*

In financial risk management, the critical question is whether revenue streams can cover operating costs, service debt finance and provide returns to risk capital (Eaton, 2013). However, the profits of enterprise are a reward for facing this uncertainty. Under the financial risk category, the private sector players absorbed all risks with a high ownership except two risk factors: government's failure to implement tariff increases and viability gap risk which

were high ownership marks to the public sector. These risks that are allocated to the private sector makes the government respond favourably to the respective bids.

> *The government can only be comfortable if the private contractor is covering more financial risk. (Interview with respondent)*

However, effects of the risks after mitigation measures were identified, had a low and medium ownership to both the public and private sectors which is preferred in the parameters of appraisal of bids. These are categorised under remaining risks as shown in table 6.5. The only shared risk in this category was the lack of equity and debt funding for the project which had high allocations to both the public sector and private sector parties.

5.7.2 Correlation between Preferred Bidders' Criteria Concepts and Risk Factors

This section presents findings on the impact of the identified risk factors on the concepts of preferred bidders' criteria. The discussion on the assessment of all concepts of preferred bidders' criteria accentuated the interrelations between them. Although VFM and RM are separate concepts that are accessed separately according to the Ghanaian PPP policy, they are mutually dependent, and affordability is assessed as part of VFM. VFM relates primarily to the public sector who has a statutory duty to demonstrate that their expenditure is being managed effectively and efficiently. This is typically done in cost comparison to the conventional procurement of the project. It should also be noted that the private sector parties within a PPP project all have a requirement to conduct profitable business, thus the private sector party require its own VFM evaluation requirements. The overall affordability of the project relates to the ability of all parties to complete the project with the available resources. The public sector must ensure availability of funds and that the expenditure of the available funds provides an adequate return when compared with other alternative investments. The private sector parties need to ensure availability of financial resources to successfully complete and operate the road project and at the same time obtain adequate revenue during operation of the facility over the concession period. Risk transfer and allocation refers to the balance achieved within the agreements between all the parties in relation to accepting the financial consequences should a risk occur on a PPP project. PPP projects are supposed to generate win-win opportunities rather than the more orthodox win-lose situations (Eaton, 2013). VFM is practically accomplished by combining a competitive tendering process with an appropriate risk transfer. These concepts work towards the effective implementation of PPPs. This is

because RM involves the management of risks which are unexpected occurrences that could be detrimental to project success affecting VFM. The VFM assessment also considers transferrable risks to the private party which otherwise would have been kept by the public sector and efficiencies that the private party can provide through modern operating practices, design and competitiveness in market. In order to achieve VFM objectives in public project, and service delivery development, the public and private sector partners need to reach a mutually acceptable risk allocation scheme before the contract is awarded.

This approach constituted the second stage of analysis in this chapter. The combination and balance between VFM, affordability and risk transfer and allocation are reviewed based on an impact of the identified risks should they occur. An occurrence of a risk factor may impact VFM of the project and constitute a change in the risk transfer or allocation to the other party. This approach elicited interrelation underpinnings of the concepts of the preferred bidder's criteria and enhanced the importance of RM in the successful implementation of road PPP projects because of the criticality of the risk factors to the impact of the preferred bidders' criteria. Therefore, public sector clients should be better able to establish effective risk allocation strategies and develop suitable allocation frameworks for road PPP projects, with a view to achieving a more efficient process of contract negotiation during bidding. Subsequent to the allocation of all 34 risk factors that were identified under the three major risk categories, the impact of these risk factors on the concepts of preferred bidder's criteria were investigated. The majority principle was also applied in this approach, hence, when more than 50 per cent of respondents thought a risk factor had an impact on a particular concept, then it was categorised with an asterisk. This was also necessary to allocate weightings to risk factors identified for purposes of analysis. The results of the correlation are presented in table 5.6 and discussion thereof.

Table 5.6 - Risk analysis for private sector

RISK CATEGORY/ RISK FACTORS	VFM	AFFORDABILITY	RISK TRANSFER & ALLOCATION
TECHNICAL			
Inadequate designs	*		*
Poor quality of construction	*		
Equipment and material unavailability	*		
Construction accidents	*	*	
Construction force majeure events			*
Relocation of utilities infrastructure			*
Unforeseen site conditions	*		
Failure to meet agreed milestones	*	*	
Third party objections		*	
Completion risk		*	*
Project Delays	*	*	
OPERATIONAL			
Revenue/Demand risk		*	*
Maintenance cost overrun		*	
Breach of contract or expropriation	*	*	*
Operator performance issues	*		
Operational force majeure	*		
Residual value risk	*		
Wage Inflation		*	
Accident risk	*	*	
Labour issues		*	
Customs risk	*	*	*
Environmental and social impact risk	*	*	*
Concession risk	*	*	
Government withdrawing from PPP		*	
Future laws and directives	*		

Government changing terms of the contract or not fulfilling their contractual obligations			*
FINANCIAL			
Interest rate risk	*	*	*
Inflation risk	*	*	*
Exchange rate risk		*	*
Lack of equity and debt funding for the project			*
High finance costs	*	*	
Project cost overruns	*	*	*
Government's failure to implement tariff increases		*	*
Viability gap risk	*	*	*

It was recorded that all factors were composite indicating that all the risk factors had a significant impact on at least one of the concepts. This was to be expected as the risk factors identified under these categories were critical to the successful procurement of any road PPP project. Another finding was that risk factors that had high allocation to the private sector and low to the public sector had no likelihood of transfer to the public sector in the event of the risk actually occurring hence no impact on the risk transfer and allocation concept. Remaining risks of this nature were not allocated to the public sector showing no asterisks recorded in table 6.6. Again, it was noticed that most remaining risks that were recorded as low for both the public sector and private sector recorded an asterisk for risk transfer and allocation.

In the technical risk category, seven out of the ten risk factors will have an impact on VFM should the risk occur. Construction force majeure events, relocation of utilities infrastructure, third-party objections and completion risks will have no impact on VFM should they occur. For instance, project cost overruns will significantly impact on VFM as that is calculated based of WLCC of the project compared to the traditional procurement route or when the project was procured by the public sector, therefore, any distortions in that regard will adversely affect these figures rendering VFM problematic. Project cost overruns, construction accidents, failure to meet agreed milestones, third-party objections, completion risks and project delays also had a significant recording on affordability. Affordability will be affected by this risk factor when the private sector needs to adjust critical cost components to make profit for instance. Four risk factors under this category recorded an impact on the risk transfer and allocation. Project cost

overruns will have an impact on risk transfer as the private sector could share some remaining risks with the public sector so as to salvage the cost implications in the form of tax reductions, increases in toll charges, provision of extra guarantees among others.

The operational risk category had fifteen risk factors in total where all risk factors in the exception of revenue/demand risk, wage inflation and labour issues, government withdrawing from PPP and government changing terms of the contract or not fulfilling their contractual obligations recorded significant impact on the VFM concept. Similarly, all risk factors had a significant impact on affordability apart from five: operator performance issues; operational force majeure, residual value risk, future laws and directives, and government changing terms of the contract or not fulfilling their contractual obligations. Residual risk value representing the value of the asset developed after completion of project throughout maintenance to hand over or transfer has a significant impact on VFM but not affordability. A total of five risk factors will have a significant impact on risk transfer: Revenue/Demand risk and maintenance cost overrun, customs risk, environmental and social impact risk and government changing terms of the contract or not fulfilling their contractual obligations. This is attributable to the fact that operational risks are hardly transferrable to the public sector during the concession period (Korayem, 2017).

The financial risk category recorded all risk factors having an impact on risk transfer apart from high finance costs. Although unexpected, as this deals with financial resources, it will be attributed to the fact that most risk factors in that category including interest rate risk, inflation risk and exchange rate risk are mostly determined by operations of the public sector. Both interest rate risk and exchange rate risk had an impact on VFM and affordability as well, whilst exchange rate risk had an impact on affordability. Lack of equity and debt funding for the project only had a significant impact on the risk transfer and allocation concept.

5.7.2.1 Interrelations of parameters

The interrelations of the individual parameters were subsequently collated, and percentages developed to demonstrate the summed weights of these parameters. This collated summary table is a representation of the arithmetic count of the identified relationships. However, no work was executed to quantify the proportional contribution of each feature in this thesis, the number of identified critical risk factors were analysed on the individual totals not an accurate division among all three categories as all three categories had different totals (11, 15 and 8). The technical risk (11) had a total impact of 16 on the concepts of preferred bidder's criteria

should the risks occur representing 47.05 percent of total impacts. Operational risks had a weighting of 24 representing 70.025 % of the total weighting of risk categories. This was the highest parameter indicating the need to ensure maximum attention is given to all risk factors in this category (the operational stage). It also indicates the high severity of impact to the success of the project if these risks actually occur. It is important to note that a generalisation can be made here signifying the need to address risks in this category properly as they are most considered in bids and evaluated by the approval committee. Next, financial risk category recorded a total of 19 (55.88%). On the other hand, the affordability concept was most impacted by the risk categories with a total of 22 out of 59 representing 64.7%. This was followed by VFM and risk transfer and allocation with 21 (61.75%) and 16 (47.05%) respectively. The least impacted was risk transfer and allocation which indicates the unlikelihood of risks affecting opposite parties when they occur. This is illustrated in table 5.7.

Table 5.7 - Summary of critical collated features of the private sector

RISK CATEGORY	PARAMETERS			TOTAL
	VFM	AFFORDABILITY	RISK TRANSFER	
TECHNICAL	7	5	4	16 (47.05%)
OPERATIONAL	9	10	5	24 (70.5%)
FINANCIAL	5	7	7	19 (55.88%)
TOTAL	21 (61.75%)	22 (64.7%)	16 (47.05%)	59 (100%)

5.8 Chapter Summary

This chapter firstly presented a discussion of the challenges of road PPP bidding and factors that could impact road PPP success and the implementation of the BAPM. The semi-structured interviews engaged key players of PPP implementation in Ghana who are key players at the helm of affairs and make key decisions with regards to the implementation of PPP. All respondents affirmed the need for a structured approach not only to biding processes but to responsibilities of key stakeholders. The over-emphasis of the price criteria of road projects was also a major challenge to procurement which translates to the need for other evaluation criteria in the development of the BAPM. Open and effective communication among key stakeholders was a critical factor that is necessary for effective adoption and utilisation of the BAPM which affirms the need for multi-stakeholder perspectives for in the development of the BAPM.

Respondents advocated the need for avenues for bidders to report and resolve issues as part of the bidding process. There is also the need to communicate information of bidding: number of bidders, reasons for selection and disqualification of bidders among others. All these factors are critical in the development of the BAPM and should be considered. A competitive procurement process is also needed to provide transparency in the entire process so as ensure that the best party wins the contract. This will mitigate against the corruption that engulfs such tendering processes in the country as it will limit the political influences of the award of contracts. Toll charges were considered to be too low as compared to the West-African sub region and other parts of the world, making the implementation of road PPP projects economically viable but not financially viable. Government support in terms of guarantees and any other instruments to encourage private sector investment in the development of the much-needed critical road infrastructure is important. This was identified as a critical factor of PPP implementation which could undoubtedly affect the successful utilisation of the BAPM.

Subsequently, the concepts of the preferred bidders' criteria in the appraisal of road PPP bids in Ghana were presented. T1 was firstly engaged to investigate the practicality of these concepts. T3 and T4 were engaged in this chapter to elicit findings for the parameters of the concepts that were presented. The affordability concept was identified to be part of the qualitative assessment of VFM. However, three approaches were developed for affordability assessment which largely depends on the project. The first approach requires an affordability ceiling set up by the ministry which is then compared to bids and rated. However, this approach

is suitable for already financially bankable projects determined via feasibility studies. Such projects are usually highways and motorways that could easily be tolled.

The other two approaches regarded allowing flexibility in toll charges or the provision of guarantees and annual payments by the government to support development. It was imperative for the government to make some payments towards the projects or allow flexibility in setting toll charges which are critical for roads that could not necessarily be tolled. The factors of Quantitative assessment of VFM were also presented in this chapter. Risk transfer and allocation were also developed for 34 identified risk factors under the three risk categories as stipulated in the National PPP policy. The mutually independent relationship of the VFM and RM concepts was espoused as well as results of the impact of the risk factors on all three concepts: VFM, affordability, risk transfer and allocation. The parameters of these concepts provides an assessment at the penultimate stage of the bidding process as elucidated in the national PPP policy. The next chapter however presents the discussion and development of the road PPP bidding and award process map.

Chapter 6 Development of Bidding and Award Process Map

6.1 Chapter Introduction

This chapter presents the development of the Bidding and Award Process Map for purposes of meeting the overall aim of this study. The previous chapter presented the parameters of the preferred bidders' criteria which is paramount in the development of the BAPM. In this chapter, T1, T2, T3 and T4 were engaged in eliciting data that was built into the discussion. The strategic players for the adoption of PPP, approval committee, and respondents of the road PPP projects were engaged. This chapter presents a development of bidding stages from start to finish and the respective evaluation criteria for road PPP projects.

The use of multiple techniques adopted for data collection in this research provided quality data as triangulation of data gathered from semi-structured interviews of the approval committee was employed with the semi-structured interviews conducted in the road projects and documents. For instance, a criterion of a process or stage identified by a respondent via the interviews was triangulated with the information provided by the other respondents. Again, if multiple respondents provided a similar account in the requirements of the stages or qualification of processes responded with a similar account, it added to the development of the process map. The main justification was primarily to increase the reliability of the evidence.

The researcher was particularly fortunate to get access to some of the confidential documents related to the contracts and bid documents. The unpublished literature related to the projects under study was also assessed in this study. Some of the internal correspondence, memos, and file notes gave a very useful insight into how some criteria could be presented and why some issues were addressed in a particular way. This technique also enabled cross checking of the awareness of the respondents regarding general procedural issues of bidding and procurement with the information gathered by initial studies. Lastly, a validation process was engaged to test the appropriateness of the BAPM in meeting its objective. The chapter however adopted the following outline:

- Introduction to Bidding and Award Process Map;
- Developed Bidding and Award Process Map;
- Stages and criteria of the BAPM;
- Validation of the Bidding and Award Process Map;

- Chapter summary.

6.2 Introduction to Bidding and Award Process Map

Techniques of representation define the language used in modelling both in terms of syntax (the set of symbols that can be used to build the model and the rules concerning their use and combination) and in terms of semantics (the meaning that must be attributed to each symbol). Exactly what is eventually "captured" by the process model will depend on which specific technique is adopted. Curtis et al. (1992) stated that "the perspectives that a process model is able to present are bounded by the constructs of the language used for modelling". Four of the most commonly represented perspectives are:

- the functional perspective, which represents both the constituent elements of the process (i.e. the fundamental activities) and the flows of informational entities that are relevant for such elements;
- the behavioural perspective, which highlights when, and how, the elements of the process are carried out;
- the organisational perspective, which shows where, and by whom, the elements in the process are performed and;
- the informational perspective, which shows the structure and the relationships of the informational entities that are being manipulated by the process.

Fellows and Lui (2009) argued that modelling is the process of constructing a representation of reality in a practical manner where it includes the essential features of reality that would construct the model to achieve what it was designed for. The model should have a purpose (a reason for existence) and who it is constructed for, where a diagram of reality would benefit the construction of variables and their relations. Common models in construction research are graphical models which are visual and logical and represent the relations between different variables.

6.2.1 Purpose of the BAPM

The selection of a preferred bidder is critical to the overall implementation of any PPP project. The long-term nature of PPP and the financial arrangements that underpin it require that the best private sector partner is selected for the implementation of the project. Also, the nature of road PPP projects demand that financial arrangements are made such that most often the majority of financial resources are produced from the existing infrastructure. Hence, the ROI for the private sector is critical to not only the development of the project but the sustainability

of it and the effective implementation of this requires a competent and viable private sector partner. The mode of selection is therefore one of the important stages of the entire process. It is implied that the choice of a bad partner can hinder the progress of a project. The wrong selection of contractors can also be attributed to the absence or the non-application of the selection criteria for the same. The essence of this BAPM is to ensure a standardised approach to not only the procedures or stages of road bidding but the determination of a set of criteria for selection in order to promote transparency and enhance selection of partners based on merit. The BAPM maps out conferences, clarification process, setting-up and management of the data room(s) areas requiring the key legal items from the bidders' input, and the manner in which the tender should be carried out. These factors for instance enhance evaluation of bids to avoid procurement risks and probity concerns. Each activity and milestone clearly highlights the associated resource involvement. The BAPM however does not entail the weighting associated with evaluation criteria identified at respective stages. This is because the process is considered to be mainly reliant on subjective judgment of the decision makers especially when cost is not the only criterion utilised. Tender evaluation and contractor selection for the delivery of major projects and services is acknowledged as a complex undertaking that embodies many uncertainties. The findings therefore provided descriptive criteria and sub-criteria for assessment purposes. Standardising and establishing the processes of bidding also determines the context with which bidders should operate.

6.3 The developed Bidding and Award Process Map

The major stages of bidding process identified were engaged and evaluation criteria sought. From the acceptance of the project to be delivered or procured via PPPs, an official notice is given by the ministry for advertisement purposes in local newspapers which is similar to projects procured under the traditional method. An invitation to bid is therefore expressed as part of the advertisement process which initiates the main bidding process. The bidding process commences with the EOI stage where interested bidders submit first proposals as a way of expressing interest to carry out the road PPP project. As discussed, a distinct pre-qualification stage is non-existent, however, tasks carried out are akin to the EOI stage. In the event of bidders not meeting criteria at this stage, one opportunity is given them to amend or clarify details. A data management room is developed for qualified bidders who then move to the RFQ stage. The technical and financial criteria are evaluated at this stage. Qualified bidders progress

to the RFP stage where VFM, Affordability and Risk Allocation and Transfers are evaluated. Two bidders are chosen at this stage and negotiations commences. In the event of a successful negotiation, the preferred bidder is engaged, and all necessary documentations are signed and financial close reached for preparation of the project. However, the second-best bidder is engaged when negotiations with the preferred bidder does not reach a successful closing. Figure 6.1 presents the Bidding and Award Process Map and table 6.1 presents a description of symbols used in the BAPM.

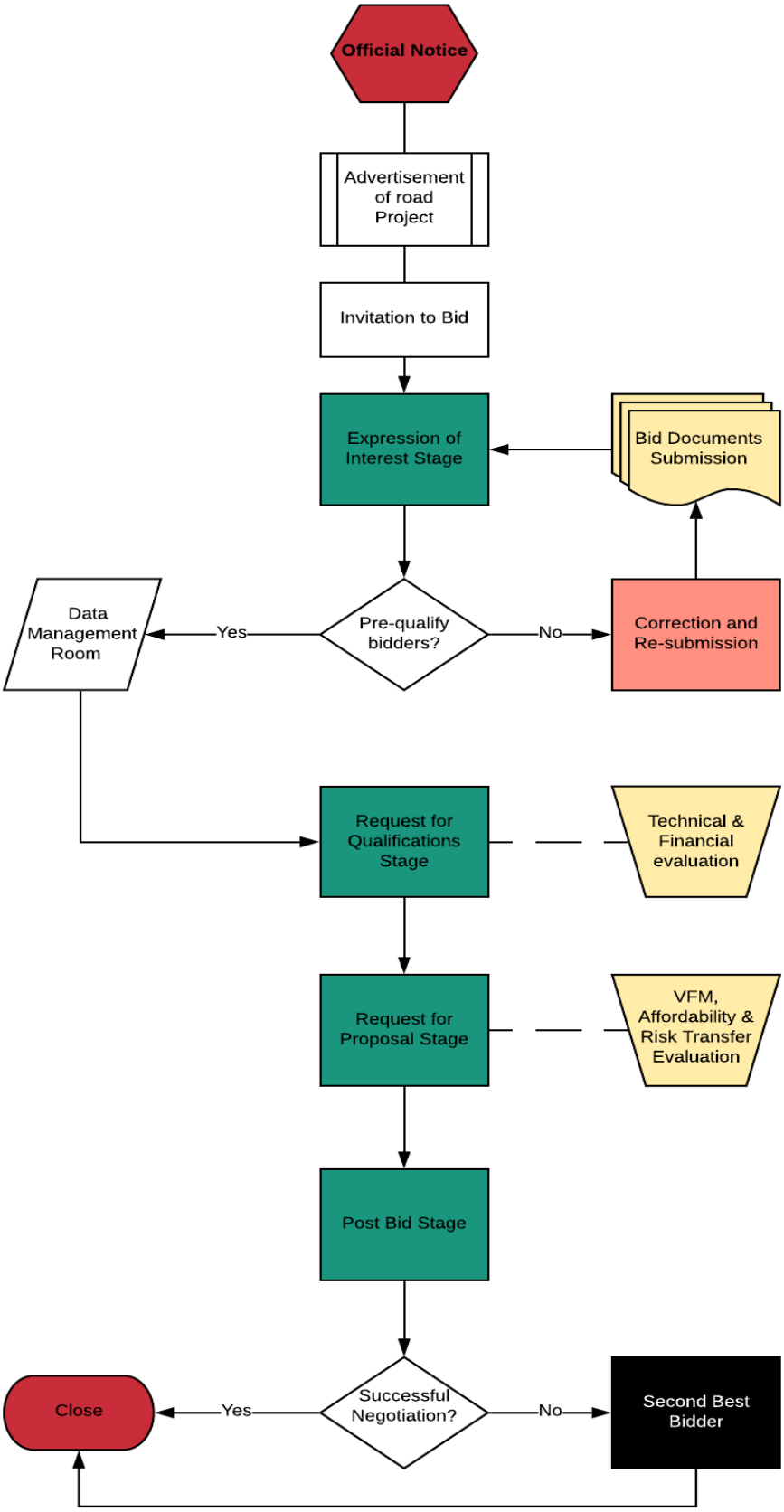
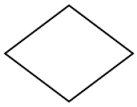
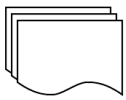
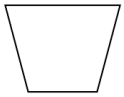
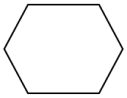


Figure 6.1 - Developed Bidding and Award Process Map

Table 6.1 - Description of symbols used in Process Map

SYMBOL	SHAPE NAME	SYMBOL DESCRIPTION
	Terminator	Shows start of a process/flow chart or its end
	Process	Shows a process or action step. Indicates any processing function
	Decision	Shows decision point between two or more paths
	Pre-defined process/Sub-routine	Indicates a pre-defined process such as a sub-routine or module
	Multiple Documents/Review	Shows multiple documents which are reviewed
	Manual Input	Shows a secondary action that requires a manual routine
	Preparation	Shows a particular beginning or start point in the process
	Flow line	Shows the direction where the process flows.
	Secondary connection	Shows another action or process within main process or action

6.4 Stages and Criteria of the BAPM

This section presents the distinct stages of the BAPM, step by step guidelines investigated and evaluation criteria of these stages for typical road PPP projects in Ghana. The preparation of the bidding process for road PPP projects in Ghana involved establishing distinct phases which require key decisions and signoffs in order to progress. This bidding process engages the processes of bidding which is situated in this procurement stage. It includes various activities such as establishing the bidding parameters, agreeing to risk allocation, service level parameters as well as key terms which are consistent with the specific projects. This section espouses the steps adopted in the BAPM, taking into consideration the sub tasks of the individual stages. It begins with the Invitation To Tender stage (ITT) to the close of all contractual arrangements post bid, and prior to the commencement of the project. The bid execution stages are characterised to encapsulate all bidding processes after the recognition of a viable project, its advertisement and receipt of bids. Hence the bid execution stages are the Request for Qualifications (RFQ) stage and the Request for Proposal (RFP) stage. At the bid execution stage, the criteria for selection of a preferred bidder to be adopted for the project is developed. This enables the evaluation of the best means of approach undertaken in the interest of the private sector and the end users. Private sector players will need to demonstrate sufficient technical expertise and financial capability to go beyond this stage. The structure is however determined by three main stages: Expression of interest (EOI) stage; Request for Qualifications (RFQ) stage; and the Request for Proposal (RFP) stage which are discussed subsequently.

6.4.1 Invitation To Tender Stage

This strategy is developed based on the inputs from the earlier stages. The outcome of the initial tender meetings will be compiled and shared with the implementation authority after project approval for onward procurement. The road ministry's purpose at this stage is to formally inform the larger market and prospective bidders of the project, the procurement strategy and approach to allow bidders express their interest. It is needed for the gathering of information on each member of the bidding consortium to enable the process short-list bidders to those best suited to meet the needs of the project. This stage will allow further stages of the bidding process to be tailored on the basis of the immediate response from the market.

> *The EOI stage will allow bidders to express interest after MRH has informed the larger audience, with the aim to expand the market understanding beyond*

> *the market sounding workshops, to ensure more participation and increase the level of competition. (Interview with respondent)*

Having developed an optimal solution and procurement timetable, the invitation will be sent to the interested bidders at this stage. The public sector at this stage is responsible for preparing invitations, follow-up on invitations, preparing marketing materials, the project Information Memorandum (IM) and brochures. The IM, will contain basic facts and details of the project to the bidders (project description), including the vision and objectives regarding the development of the project. It will describe key elements of the project, without being over-descriptive or input based.

> *Based on the interests shown during the ITT stage, a marketing strategy must be developed to promote the project and to draw interest in the market. Apart from conducting these marketing events, there is the need to support conducting bidder conferences and respond to any clarification raised by the bidders on the procurement document. (Interview with respondent)*

The marketing strategy pre-defines prospective bidders even before bids are received. If required, at this stage, changes are made to the bid documents considering any clarifications issued or feedback gained. A list of interested parties will then be prepared to bid.

6.4.2 Expression of Interest (EOI) Stage

The pre-qualification stage for PPP projects in Ghana was dismissed as a distinct stage compared to other jurisdictions. The non-existence of a distinct prequalification stage for PPP projects have however been argued to be as a result of the low number of bidders for an advertised project. It is argued that strict criteria is engaged in the EOI stage as a way of preselecting competent bidders. The main objective of the pre-qualification process is to reduce the risk of default bidders increasing the eligibility of bidders winning contracts. This is an essential task that is carried out by a contract administrator due to the complexity involved. This improves client satisfaction and optimises contractor selection in terms of attaining a better balance between price and performance parameters. In some cases, it is required not only to judge whether the bidder fulfils the essential criteria, but also to what degree they are fulfilled. Reducing the list of bidders who are able to meet performance requirements is essential to successful bidding of a project. In the absence of formal contractor rating that shows previous performance, blacklisted companies and corporate

decline, it is essential for this task under the pre-qualification to not only be done right before the initiation of the bid execution stages but periodically so as to ascertain good-standing contractors. However, it is argued that currently only few identified road contractors in Ghana are considered as competent in road PPP arrangements hence few contractors are likely to bid for projects. Regardless, it is important to ensure some level of pre-qualification in terms of general tasks conducted in the BAPM. This will enhance sustainability when processes are streamlined, and more bidders are engaged.

The objective of the EOI stage is to design and prepare all the necessary documents to undertake a competitive and transparent bidding process. At this stage, the aim should be for the private entity to agree on process, strategy and the stages involved in the process and to prepare for it. It is appropriate that all bid documents are prepared by a legal representation to ensure compliance with legal requirements for the process under the National PPP Policy or relevant bill or law in place. Together with other members of the Transaction Advisory (TA) team, the legal team liaise with all relevant regulatory and oversight bodies to assist in obtaining approvals, opinions or timelines for the project. During this process, issues emanating from the financial due diligence and legal due diligence reports are addressed relating to the structuring of the project from a legal perspective. A summary of all legal and regulatory requirements are analysed at this stage as well as steps that need to be undertaken in the project to ensure legal and regulatory compliance. Subsequently, recommendations or mitigation of any legal issues are resolved at this crucial stage. This stage is predominantly marked by the preparation of proposals to meet the specifications of the project that is being procured. In general, this stage constitutes the prequalification stage which encapsulates pre-bid meetings or conferences, the preparation of amendments, and finally the evaluations of the documents and announcements of pre-qualified bidders.

> *It will be appropriate if possible, for a pre-bid meeting to be held to discuss the various technical and financial aspects of the projects as well as the prospective bidders at this stage. (Interview with Respondent)*

This is an important step in the procurement process as it determines whether or not any further proposals in the bid documents will be considered at subsequent stages. There are important tasks that need to be carried out to meet the criteria, these guidelines cover the following:

6.4.2.1 Output Specifications for the Road Project

The bid documents should contain the expectations of the MRH/GHA which is the granting authority from the concessionaire regarding the project. They specify all the relevant output performance parameters and standards expected from the concessionaire during the concession period.

6.4.2.2 Requirements for Compliant Bids

The bid documents clearly stipulate the compliances that should be met by the bidders at the time of submitting their bids, in order that their submission is considered "responsive". The compliances will include key elements like the submission deadline in terms of date and time, place of submission, bid security and submission formats.

6.4.2.3 Submission to Showcase Commitment

These submissions include documents that convey the commitment of the bidders to achieve the objectives of the road project if awarded. This indicative list shows the key submissions which may form part of such a submission, namely:

- Power of attorney to sign the proposal or power of attorney for lead member (in case of a consortium);
- Memorandum of Understanding (MoU);
- Board resolution;
- Other affidavits; and
- Bid security.

6.4.2.4 Submission to Showcase Capability

The submissions should include the documents to confirm briefly, the technical and financial capabilities of the bidders for the execution of the project, if awarded. The key components of this submission should be as follows:

- Experience in similar projects: will present the experience of the bidder in executing infrastructure projects;
- Financial strength: will showcase its financial capability to execute the project in terms of net worth and cash flow amounts; and
- Equity Financing Plan (EFP): Here, the financial capacity of the bidder and the bidder's commitment of equity for a project is demonstrated.

6.4.2.5 Approval and Issue of Bid Documents

The documents prepared are then submitted for consideration. On receipt of these documents, the bidding process for the selection of developer for the project will start with the issue of notice inviting Request for Qualifications (RFQs). There is the need to ensure that the bid documents clearly communicate the qualification criteria to the bidding applicants. This will clearly detail the following:

- The format for submissions;
- The requirements to be met by those submissions; and
- The minimum experience and financial capability required.

6.4.2.6 Evaluation of EOI stage

This is the first stage of qualification of bid documents. At this stage, bids are subject to an initial check to confirm the documents were submitted on time and correctly met basic requirements for submission at the Invitation to Tender (ITT) stage. This is necessary to ensure that tenders are sufficiently complete to enable a further evaluation. Similarly, tenders are checked to make sure they do not contravene any terms of the bidding process. This ensures that tenders are capable of being accepted so as to qualify bidders to the next stage. Hence, if bidders do not meet any of these criteria of submission, they are disqualified. The term sheet is evaluated at this stage before any qualifications are made. A term sheet should outline the material legal terms of the project, the project structure and guide the preparation of a more detailed agreement.

> *This term sheet should also take into account the findings from the market sounding and the discussions/workshops with the ministry (Interview with respondent)*

The preparation of the term sheet considers the project scope, implementation arrangements, reasonable rate of return and the terms and conditions of the draft contract for the unsolicited proposal. All documents for tender and PPP arrangements are reviewed in conjunction with the MRH. The performance standards, specifications and Terms of Reference (TOR) of the proposal are also reviewed to ensure that the technical aspects and requirements are met. Most importantly, the document needs to be prepared in accordance with the laws and policies of Ghana. Definitions and interpretation of the terms of the agreement should be clearly stated to avoid any ambiguity between the private sector and the public sector. At this stage therefore,

key issues need to be addressed. The scope of the project must be detailed. This involves the justification of the project and the specifications involved in making it a success. It addresses the business need and makes clear what will be done in a concise manner. Deliverables and milestones are also included in the tracking of progress when the scope of the project is detailed.

Furthermore, there should be the finalisation of all deliverables which are developed into Conditions Precedents (CP) which specify the requirements that the Authority as well as the winning bidder need to fulfil before signing the contract at the final stage of the process. It also specifies the period set for the completion of these requirements. Any financial penalty in case any party is not able to meet the required obligation is also stated as part of the CP. In the term sheet, obligation of the concessionaire and obligation to the authority are stated. It illustrates any obligations of the private developer with respect to the project. It specifies the obligation in case there is any change of ownership during the implementation of the contract. Obligation to the authority identifies all obligations of the implementing agency (road ministry) with regards to the project. It outlines the ministry's stance with respect to the successful completion of the road project which is done in conjunction with the authority. There is the need for both the private sector and public sector parties to outline due representation and warranties to ensure the smooth execution of the contract in the term sheet. The development and construction of the contract is briefly outlined, which specifies all the necessary steps required by the respective parties during the development and construction of the contract. This section specifies the way the contract would be monitored, operated and maintained by the concerned parties. The section would also specify the procedure for dealing with change in scope of contract. The financial covenants section is critical as it highlights all details related to financing of the project. This may include the grant provided by the government authority, user fee to be charged by private developer, effect in case of variation of traffic, insurance, accounts and audit of the SPV formed by private developer to implement the contract. Lastly, force majeure and termination stipulations are outlined to demonstrate the obligations of the developer as well as implementation authority in the case of project termination should be specified. A summary of this is illustrated in table 6.2.

Table 6.2 - Key factors in term sheet preparation

TERM SHEET PREPARATION	Definitions and Preparations
	Scope of the Project
	Concession Details
	Obligations of the MRH
	Representatons and Warranties
	Preparation of Project Development Contract (PDC)
	FInancial Covenants
	Force Majeure and Termination Documents
	Conditions Precedent (CP)

If the bid documents lack any of these requirements, the bidder is given one opportunity with a deadline to amend the documents and re-submit otherwise the bidder is disqualified and does not move to the next stage. Subsequent of bidders' qualification of the EOI stage, there is a development of a data room which must be managed throughout the bidding process. The data room can be physical or an electronic/virtual data room. Under this task, all analysis, findings, proposed structure and terms of the transaction are developed into a clear set of documentation which is used to monitor transactions. All documentation related to the project will be housed in the data room where bidders have access to. The data room is a location where materials relevant to the project are placed to allow inspection by prospective bidders as part of a due diligence process. The preparation of the data room will involve a number of steps to be performed and also offers suggestions on the detailed steps that would need to be performed. The tasks that could be undertaken after the establishment of the data room include:

- Response to queries from Tenderers;
- Updating of procurement plan for RFQ and RFP stage;
- RFQ evaluation report;
- RFP evaluation report;
- Completion of the commercial, financial and technical parts and providing input into other aspects of the Concession Contract (CC) and schedules as may be required.

The first task is to define the roles and responsibilities of the Transaction Advisors and the MRH in relation to the virtual data room. This task allows the preparation of the data room

with Transaction Advisors and MRH steering committee; and the appointment of a data room manager from the MRH. Another task relates to the organisation of management location and other resources. It involves the installation of equipment with the data room manager covering facilities for photocopying, communications and sitting arrangements. It is important at this stage for the TAs of the project to discuss with the MRH on what type of documents to make available in the data room to ensure that bidders have sufficient information to submit documents for subsequent stages. Table 6.3 illustrates key tasks of the data management room.

Table 6.3 - Key tasks carried out in establishing data management room

DATA MANAGEMENT ROOM	Define the roles and Responsibilities of the Transaction Advisors and the Client
	Organise the venue and venue facilities
	Data preparation and document assembly for the data room

6.4.3 Request For Qualification (RFQ) Stage

The RFQ stage requires subjecting qualified bidders of the EOI stage to a more rigorous evaluation process based on their bids or tenders. Requests are made to these bidders according to pre-approved timelines. These proposals are subject to key technical and financial parameters prior to a final shortlisting. At this stage, information is gathered on the bidders' reference projects; how successful their operations are and whether their operations can meet expectations. This is critical in determining the capacity of the bidders on how the road project will be delivered and operated. The formal requirements for qualification/short-listing and a better understanding of the range of technical and service offerings that bidders bring to the project are achieved. Shortlisted bidders can then be invited to the bidding stage after evaluation has been carried out. Short-listing is executed based upon the bidders that meet MRH requirements. The RFQ stage evaluates the financial viability which determines the long-term viability of each bidder and the financial capability of the bidder. Financial ability requires the ability of the private sector parties to raise enough financial instruments for the full development and operation of the projects.

> *These two financial criteria will be most critical at this stage as it is the main justification of the public sector inviting the private sector party in the delivery of the road project. (Interview with respondent).*

There is a general assessment of how the bidder's vision of the project ties in with the level of the MRH vision. Compliance with the bid instructions in terms of documentation provided, authorities and bid security is the initial assessment carried out at this stage. The RFQ document should contain a number of detailed requirements and instructions that each bidder must comply with in order for their bid to be considered valid. These will typically include:

- Provision of a Bid Security;
- Bid submission in prescribed format and containing all required information;
- Power of Attorney to submit bids on behalf of consortium;
- Consortium/ Joint Venture (JV) agreement between consortium members;
- Confirmation of acceptance of bid instructions.

The long-term nature of the road PPP project requires that the ministry short-lists bidders who are most able to work for the long-term. The ability to respond to both service and technical requirements is crucial for every bidder at this stage. It is important to determine whether the bidder has the technical experience and technical resources to meet the needs of the project, including its track record in delivering similar projects in Ghana or developing countries and/or developed countries around the world. Two main documents are issued at this stage, the invitation to bid after qualification of EOI stage, and the qualification report. The invitation to bid after qualification details instructions including all terms and forms required for qualification at this stage, the evaluation criteria and a recommendation for short-listing. The qualification report provides information on the:

- General project information and objectives;
- Summary of the bidding procedure;
- Bidding plan against the actual bidding process; commentary on the issues and problems encountered during the bid process and the corrective action taken;
- Draft risk matrix;
- Summary of key observations and recommendations and;
- Any other specific indicators of the MRH.

6.4.3.1 Evaluation criteria for RFQ stage

The criteria for evaluation at this stage is mainly hinged on the financial and technical eligibility. However, there are key sub criteria that should be evaluated under these main criteria. These include:

- **Technical parameters**
  - Technical and Management Ability;
  - Contractor experience;
  - Quality of work;
  - Culture;
  - Reputation;
  - Health and Safety.
- **Financial Parameters**
  - Availability of financial resources;
  - Financial Stability.

Contractor experience

Whilst some of these criteria will have been examined at the EOI stage, it is important for another review at this stage because it is not unusual for a bidder's consortium to be strengthened between the EOI and RFQ stages. Also, given that some potential consortium members particularly financial partners often only team up after shortlisting, it is necessary to carry out an evaluation against other bidders at this stage, as opposed to a simple pass or fail evaluation which is appropriate for the EOI stage. The experience of the contractor is considered as a critical factor in the award process. The experience of contractors will be evaluated depending on project size, current and completed contracts, type of the projects and experience in region. Therefore, the sub-criteria that are evaluated under this criterion are; the size of work, current workload, experience in the region; and the type of project. The project type undertaken by a contractor is a determining factor in identifying the contractor's capability. It is argued that lack of experience is a major cause of project delays around the world (Zin Zawawi, 2014). Therefore, considering experience in the same type of project is necessary and ensures competitive advantage. Experience in similar size projects is also identified as a significant sub-criterion which is critical in the evaluation at this stage. The size and number of similar accomplished projects reflects the contractor's experience and capability to finish the projects. This information can be obtained by

contractors providing the history of completed projects of similar size as part of their bids. Consequently, bidders could be asked to provide a list of the projects they have completed in the past ten years according to size. This criterion is informative on whether the candidate contractor has previously struggled in the previous projects or not, especially in financial requirements and the maximum workload which can be carried out by the contractor. This helps in determining the present workload, competency, and the commitment to support the new project which can become a way of identifying contractors who are overloaded with work. Experience in the region can also be investigated by identifying and investigating the number and nature of the projects in the region with both the company's past completed and uncompleted projects.

Culture

It is important to consider the contractor's position and adaptability in relation to social or historical aspects of cultural factors. The contractor has to provide proof of familiarity with the culture in Ghana and should have a positive experience on working in a variety of weather conditions, especially relating to working in hot weather conditions. These can be evaluated by classifying the number, size type and the location of completed projects. Culture criteria for assessing contractor selection process is essential as the communication and understanding of the local culture have an influence on international contractor performance (Alotaibi, 2016).

Health and Safety

Health and Safety compliance of bidders is an important evaluation criterion at this stage due to the need for compliance with international standards and systems, and the need to reduce unnecessary accidents associated with the construction projects. There is the lack of compliance and enforcement of Health and Safety (H & S) law in the country. There are enough guidelines and legislations that detail Health and Safety compliance, however, very little compliance is considered in the traditional procurement. There is the need at this stage to ensure and check compliance of contractors. Contractor safety records and the reported accidents including injuries or fatalities are a critical issue which provide a significant insight into the company's health and safety record at site. This sub-criterion can be measured and evaluated by the number of accidents recorded per project and the company's health and safety record. A high rate of the accidents certainly impacts on the reputation, project life cycle and project completion time, which generally leads to disputes between the clients, the contractor and the other parties such as victim's family for instance. This sub-criterion can also be

evaluated by inspection of the contractor's accident logbook. The H & S policy documentation provided by the company can also be assessed as well as the employees training and induction plan record. The significance of health and safety material and instrumentation should also be illustrated on the project to reduce any health and accident risks.

Quality of work

The quality of work of contractors is a critical evaluation criterion that determines contractor success. The experience of the contractor in relation to the quality of work engaged in the last few years by way of projects must be assessed. Incapable financial stability of the contractor and lack of experience of the staff and labour force usually leads to late achievement and unacceptable quality of work. Quality assurance increases the contractors' capability to consistently deliver a project to the necessary specifications of time, cost and quality. It is the key system for how a contractor can avoid errors or faults in the project especially in huge projects. This criterion should generally evaluate records of sample tests of materials that have been done by contractors to meet the required quality. A quality management system for the contractor is essential to reduce risks and avoid unexpected hazards. The quality management systems seek to determine the most effective record of the quality of work to reach the client's needs by using one of the International Organisation for Standardisation, ISO 9000, which deals with the fundamentals of quality management system.

Reputation

The reputation of the contractor makes the construction project owner confident about their tender decision.

> *A known contractor who has completed several projects without a failure, makes us relaxed and confident in the final decision. (interview of respondent)*

The identification of the number of past project failures definitely provides an indication of the contractors' reliability in completing the project. The relationship of the contractors with business stakeholders is important and also needs to be identified and assessed during the bidding phase (Alotaibi, 2016). These relationships include contractor-supplier, contractor-client, and contractor-subcontractor. Past interactions can be a predictor of potential good relations in the proposed project. A good relationship helps in completing the project successfully. These criteria can be assessed by reference letters provided by stakeholders in the contractors' previous projects. Bad relationships can cause serious court litigations which is

one of the main problems in the construction industry stakeholders need to avoid. Claims and disputes are major issues that impact the project accomplishment in terms of time and cost. From the client's opinion, a project free of claim and disputes is an important factor in the contractor selection procedure. Project stakeholders seek to avoid any claim disputes with the contractor and all project parties including local partners.

> *There have been projects wherein poor co-ordination and relationship between the contractor and the sub-contractor led to the failure of the entire project. A major cause for this failure could be the way in which the sub-contractors are selected. (Interview with respondent)*

Therefore, the choice of sub-contractors is an important step for contractor selection in terms of experience, knowledge and skills.

> *The appointment of subcontractors is simply done through the bureaucratic rules and regulations, without keeping in mind the comfort level between the contractor and subcontractor or considering whether the subcontractor possesses any special expertise in a particular area or not, like resources, knowledge, skills, experience and background for instance. (Interview with respondent)*

An objective is to appraise bidders of environmental and social issues that impacts the proposed development, operation and maintenance of the road project. There is the need to ensure that these environmental and social aspects of the project comply with Ghanaian laws and regulations.

> *It is important for this exercise to be performed in order to deduce the severity and possible measures to mitigate. A contractor with a good or bad reputation on environmental impacts is something that needs to be considered. (Interview with respondent)*

Such road projects should require that an Environmental and Social Impact Assessment (ESIA) be carried out at the planning stage of the proposal to ensure that significant impacts on the natural and social environment are taken into consideration.

> *Environmental concerns now need to be part of the planning and development process and not an afterthought and in compliance with the law so as to avoid unnecessary conflicts that could impact development in the country. (Interview with respondent)*

The exercise can be carried out via gathering information of the constitutional provisions, conventions and protocols in Ghana as well as guidelines for community, social, ethnic and economic indicators of the affected population. A preliminary environmental study could be carried out to focus on the environmental assessment on key impacts, issues and alternatives including information necessary for proposal development. The main issues include appropriate local settlements and communities' traffic and access to agriculture, ecology landscape, land-use and soils, water, archaeology heritage, cultural and religious sites and planning issues. This will then determine any significant social or environmental issues which require further in-depth study.

Technical and Management Ability

It is impossible to disassociate technical and management capability from Human Resource Management as they play a significant role in ensuring effective delivery of projects (Raisbeck, 2008). This can be assessed by investigating the competence of senior manager's technical capability and the project management team, as well as the company management structure and company equipment. Company equipment is associated with the contractor's capability to provide appropriate and effectual equipment to accomplish the task and on time. This could be evaluated by the number and type of equipment to be used in the project. The relationship between managers of the company and the SPV is also important and is taken to be a key factor for the success of any project. They are the ones who are directly responsible for any outcome of the project, hence the need to critically evaluate the prospective constitution of these SPVs.

Company management structure demonstrates the contractor and staff roles and responsibilities. It illustrates the contractor's bureaucratic and decision-making procedures. Contractor management structure is an indication of the company's management system and capability and assists in determining the efficiency of the contractor's management structure. Contractors should be evaluated based on their knowledge on project management and PPP understanding. This includes skills on optimum risk allocation, PPP innovation, team integration, internal and external communications; and experience on management of

multidisciplinary development projects. The performance history of a contractor needs assessing to define whether or not the contractor has undertaken similar projects in the past or is currently undertaking one. This indicates that having experience in similar type, size and degree of complexity projects is considered an essential assessment criterion in terms of accomplishment to a predetermined time schedule, within specific budget and required quality. The technical eligibility requires the assessment of the:

- Total cost of projects executed and completed as contractor in the road sector;
- Total cost of projects executed and commissioned as concessionaire in the road sector;
- Total cost of projects executed and completed as contractor in any other infrastructure sector.

A cut-off value of this total cost of projects is then specified for qualification of the bidders, depending upon the concerned project's cost and intention of the GOG to widen the base of interested bidders or otherwise. The approach to evaluating the technical capabilities during this stage is based on a set of parameters regardless of the nature of the RPPP project. Staff experience and skills of the team are indispensable to successful running of the project. The experience and skills of staff need to be determined and illustrated before project commencement. Finishing the construction project needs high skill, competence and experience of project management staff. Contractors need to provide proof of staff' experience in the specific project as this will reassure the public sector party. To identify the strengths and weaknesses of this sub-criterion, past experience and Curriculum Vitae (CV) of staff should be submitted in order to be checked and investigated. Team members should be well qualified with regards to training and experience. Furthermore, when evaluating CVs, staff should have exceptional skills in other areas such as problem solving as well as technical background, sound knowledge of project management implementation processes, administration and supervision skills and ability of risk management assessment.

The Engineering/technical evaluation of the construction itself needs to be based on criteria in four key areas – design, construction of roads, toll infrastructure, maintenance and cost. Traffic strategy should also be assessed. This involves the credibility and robustness of the bidders' revenue projections covering both their traffic projections and their toll strategy. There is no right or wrong answer concerning the traffic projections, since it is impossible to predict with precision what future traffic levels will be. So typically, what is evaluated is whether the

traffic projections (base point and growth rates) for each stretch of road/highway appear credible and whether they are consistent with the traffic surveys which have been undertaken to date, as well as the anticipated growth due to economic development and increased trade in the future or lifecycle of the project. There is the need to determine how much thought and analysis the bidder has engaged in developing traffic projections and how robust the projections are. Another important factor is how the bidder has considered the impact on traffic volumes of the introduction of tolls (price sensitivity) and the possibilities of leakage through use of alternative routes. At this stage, the consideration for sensitivities is also assessed. The mix of traffic (classes) addressed and the consideration of the design and maintenance plans for heavy vehicles for instance should also be evaluated as part of the technical capability of the bidder.

In case of tolling, toll levels will be assessed as part of the financial evaluation. However, the evaluation will involve technical parameters which include:

- Plaza locations, number, spacing, sizing;
- Plaza design;
- Method of tolling, technology, systems, payment methods, road user convenience;
- Toll structure – rates, discount structures, frequent user discounts;
- Enforceability.

6.4.3.2 Financial Stability

The availability of financial resources is crucial to any PPP undertaking, and the evidence of this is crucial to being awarded a project as it shows evidence of the fact that the contractor can undertake a project and ensure success. The case is even more crucial in a road PPP undertaking as financial arrangements underpin this. It gives an indication that might be utilised as an indicator of the contractor's capability to cope with the financial activities and commitment required of a project throughout the life cycle of the project. Consequently, many delays and failures have been caused in road projects due to the lack of contractor's liquidity to support commercial activities. Thus, in order to avoid a cash flow problem, the construction contractor must maintain a satisfactory and adequate cash flow level (Korayem, 2017). Road PPPs require high financial commitment due to the size of projects. Evidence of banking arrangements, Letters of Credit (LCs) and, facilities or statements could all be considered as sources of evidence that prove bidders' ability to comply with financial requirements of the project. Also, a good credit rating can provide an insight of the contractor's financial ability to cope with the project and fulfil its commitment to the project

in terms of raising the required funds for it. It is critical to prove commitment to the contractor's financial stakeholders which can be sought by providing a bank reference and bank credit rating certificate. The financial eligibility of the bidder is initially assessed generally by:

- Average net worth during last three years; and
- Average net cash accrual for the last 3 years.

For the financial capabilities of the bidder, the parameters that are considered for qualification is illustrated in Table 6.4.

Table 6.4 - Financial Parameters

FINANCIAL PARAMETERS	
Capacity to invest equity	This includes evaluation of access to equity, liquid assets of investors, credit capacity and financial commitments. The mix of debt and equity in the capital structure of the Bidder's project investment company (at inception and over time).
Financial commitment from shareholders	The extent of financial commitment from shareholders to the equity contribution, including the terms of the shareholders' agreement.
The level of support from funders (debt providers)	Letters of support from bankers, indicative term sheets (tenor, rates, and covenants). It is essential that funding for the project include both foreign as well as some local funding.
Bonding and insurance capacity	The bidder must submit an original confirmation letter from a surety of its ability to obtain bonding in respect of the project. Similarly, there is a need to submit also an original confirmation letter from a recognised insurance broker so that the bidder will be able to obtain appropriate insurance coverage.
The financial robustness of the projections	Typically, bidders will be expected to provide their financial models as part of their bid to enable evaluation of the assumptions underlying their financial projections and the extent to which they have considered the impact of variations in key financial and operating parameters (e.g. demand levels, construction cost overruns and delays and operating cost inflation). There is the need also to evaluate the financial robustness of the model including alternative costing and funding scenarios and 'stress testing' to evaluate the logic and mathematical accuracy of the model.

In evaluation of toll strategy or projections, the criteria however assesses the bid proposals on whether or not there is:

- A continuing annual concession payment – fixed or percentage amount;
- A toll level (this can be set by the government, or bidders can be invited to bid against them in order to introduce competitive pressure into their setting);
- A combination of all the above, although this can become complex because of the inevitable interplay between them.

There are two identified approaches for purposes of scoring depending at this stage. Firstly, the financial bid is weighted alongside the technical bid and the best combined score is selected, or the best financial bid is simply selected among all bidders who passed the minimum technical requirement. Failure to meet the criteria at this stage however results in termination of the process of the bidder even without formal notification.

6.4.4 Request For Proposal (RFP) Stage

This stage is the most critical evaluation stage as it identifies the preferred bidder for the project. Most of the tasks and responsibilities of the approval committee lies in this stage. The RFP stage is the second stage of the bid execution phase and it is the final stage of addressing issues relating to the project. VFM, Affordability, Risk allocation and transfer are reviewed at this stage before the Draft agreement and its commercial terms are finalised. At this stage, the bid stage documents are updated from all angles including the data management room based on the interaction with the stakeholders and with the qualified bidders. The key task however at this stage is the evaluation of bids according to the preferred bidders' criteria: VFM, affordability and RM. To ensure a clear and transparent bidding process that will result in submission of competitive and compliant proposals and the selection of a winning bidder, it is important to engage in an interactive pre-bid conference with the selected bidders. This is an opportunity for MRH to engage with qualified bidders to explain the approach and proposed commercial structure articulated in the RFQ stage as well as allowing bidders to be able to prepare an optimal response. At this stage, there are a lot of clarification queries from bidders. It is important that there is an interaction with the bidders during the process to ensure that bids are prepared with the maximum information with as few qualifications as possible. Responses to clarifications will be provided to all bidders, unless they can convince the MRH that the release of the clarification question would compromise specific bidder's commercial position, hence it should remain in confidence.

> *It is suggested that a one-on-one meeting with the pre-qualified bidders or shortlisted bidders is conducted to seek feedback on the outstanding issues and*

> *even the key terms and conditions of the draft concession agreement and output specifications. (Interview with respondent)*

The RFP document details instructions, including all key commercial, financial, technical and legal requirements for the bid. A great deal of clarity is given to the output specifications which details the minimum standards that must be achieved by the bidders. The case of the review of designs, construction, operation and maintenance requirements, and consideration of the balance between the input and output specifications as well as compliance with procurement regulations on works and product specifications are checked at this stage. At this stage, learning from other projects is incorporated. It includes the final review of the KPIs and calibrating the performance deductions and determining parameters for persistent failure that would lead to a default event. The Draft Concession Agreement (DCA) forms are produced at this stage. This encapsulates the rights, responsibilities and obligations of the parties and will be the foundation for future contract administration through the life of the project. Key terms in the concession agreement will include contractor responsibility, limits on liability and liability caps, principles of Liquidated Damages (LD) application, supervening events/force majeure events and equivalent project relief. The DCA is critical in detailing default events with appropriate grace periods and buffers, payment mechanism, toll concession arrangements, toll regulations/uplift, performance bonds, retention monies and any guarantees, site risk allocation, interface issues, indemnities, and common dispute resolution procedures.

Dialogue with bidders is a critical task at this stage in order to avoid the perception of bias. Negotiated and competitive dialogue procedures permit interaction between the public authority and the qualified bidders before final evaluation of the bids. Bidders have the opportunity to review their bids before final submission. The interaction process is commonly known as dialogue and negotiations (Hodkinson & Essen, 2015). Therefore, the dialogue is used as a platform to discuss the proposal especially with regards to VFM, affordability and Risk transfer to meet the needs of the public authority. Dialogue sessions within competitive dialogue were designed for the parties to discuss matters regarding the formation of the contract, and finalising the project specification (Shaoul et al., 2008). According to Sundaraj and Eaton (2013), the dialogue should be comprehensive, covering all aspects related to the project. These dialogues will benefit both the public authority and the bidders. Chen et al. (2011) suggested that interaction with bidders before the submission of bids is essential to ensure that the bidders are able to understand the requirements of the public authority. As PPP

itself is complex, the public authority itself needs the dialogue to consult with potential bidders on available solutions to address their needs (Andersen et al., 2010). Through clear communication between both parties, higher-quality results are expected as the end product. However, bidders could obtain more information which may have an advantage over competitors hence, the dialogue process should emphasise the principle of equality in dispersing information to all bidders to ensure a healthy competitive environment as this will be the first official dialogue beyond the engagement via the data room. The confidentiality of each bidder's solution and ideas should be preserved, and the information may not be transmitted to other bidders, as each bidder uses his own time and resources in the dialogue stage. This will create an environment in which bidders compete in proposing the best solution for the public authority.

6.4.4.1 RFP Evaluation Criteria

On receipt of the bids from these selected bidders, the MRH will evaluate and score the bids in accordance with the approval IIIB of the PPP process, demonstrating VFM, Affordability and Risk transfer. Evaluation of proposals will involve assessing the technical capability and financial strength of the bidders. Once the bid evaluation is complete, a detailed bid evaluation report which will identify the preferred bidder and the second ranked bidder will be submitted. The bid evaluation report recommending the selection of the winning bidder and a final version of the contract documents following the clarification sessions and any agreed changes will be provided at this stage. The bid process report upon the finalisation of the bid evaluation report will also be submitted. The final concession agreement will be customised to suit the local conditions, unique facets of the project and the particular requirements of the MRH and the PPP regulations. Important announcements will however be communicated via an agreed medium in the dialogue process for communication to the bidders at this stage.

6.4.5 Post Bid Process

After the review and approval of the bids and evaluation reports by MRH/GHA, the preferred bidder will then be invited for discussions, negotiations and finalisation of the PPP project agreements with support from the Transaction Advisors. Typically, during this stage, no negotiations or compromise is permitted on any of the mandatory items provided. This stage shall however involve negotiations on other aspects including those related to technical, financial and contractual issues, and the concession agreement in an accepted manner. A discussion with the MRH is done to determine how negotiations will be handled and role/capacity all parties will take in the negotiation including the Transaction Advisory team.

However, executive decisions will only be taken by the GOG in conjunction with the MRH. The MRH in discussions for contract finalisation with the preferred bidder will include categorising issues appropriately and developing timelines for completion. The Transaction Advisory team will then ensure that all documents are finalised and executed by the parties on closing. The legal closure involves the signing (execution) of the project agreements by all parties. Typically, this will be done in a single meeting with all parties present. However, the project and lending agreements will contain a list of CPs – documents to be provided, approvals to be obtained, tasks to be done – which need to be completed before completion can occur. These must be followed diligently to ensure successful completion. In addition, the private sector team shall also confirm that all the regulatory approvals have been obtained and conditions precedent met. In the event of both parties not satisfying the conditions precedent or failing to reach a final agreement which results in the disqualification or pulling out of preferred bidder, the second-best bidder identified at the RFP stage is invited. This is certainly one of the reasons a bid dialogue process is critical at this stage. The transaction at this stage is not complete until financial close is reached. Typically, financial close will include the disbursement by the project sponsors of their equity and the execution of the lending (including any guarantee) agreements; and finally, the disbursement of the first tranche of the project lending. Both parties agree on functions that need to be met related to signing of the final concession agreement. A close-out report will be submitted which will report all the stages that must be followed in achieving the objective of development of the project.

6.5 Validation of Bidding and Award Process Map

Creswell & Clark (2007) state that there are many perspectives regarding the importance of validation in research, its definition, terms to describe it, and the techniques for establishing it. Checkland and Winter (2006) argue that validation is not a single, fixed or universal concept, but rather a contingent construct, inevitably grounded in the process and intentions of particular research projects and methodologies. Unlike model verification, which is concerned with developing the model right, validation is concerned with developing the right model (Valerio et al., 2012). Validation is the process of defining whether a developed model, tool or framework is a meaningful and accurate representation of the real system in a particular problem (Sekaran, 2000). This section presents the findings of the validation of the Bidding and Award Process Map developed for purposes of this study. Validity therefore pertains to

how well the BAPM adopts the perceived reality of the user. There was the need for the model's usability to be determined by the stakeholders for whom it is meant for. Joppe (2000) argues that it must be developed for a specific purpose so its validity should be determined with respect to that purpose. The determination of the practicality of the BAPM was paramount in reaching the aim of this study.

The main purpose of validation is to get a better understanding of its capabilities, limitations and appropriateness in addressing the problem being modelled (Taylor et al., 2013). Another justification of validation was the fact that it has the capacity to improve the model to an acceptable standard. In addition, validation allows the researcher to meet certain criticisms such as omissions and assumptions used; and help instil confidence in output. Sekaran (2000) argues that models are inherently unable to totally reproduce or predict the real environment and it is often too costly and time-consuming to determine the absolute applicability of the model. The validation process must be aimed at achieving operational validity (Creswell & Clark, 2007). This concerns the process of establishing that the model's output behaviour has sufficient accuracy for the model's intended purpose over the domain of its intended applicability (Sekaran, 2000). The core elements of operational validity include establishing whether the model offers a reasonable improvement of the situation, and whether it is robust enough that a user would find it difficult to make it yield an ostensibly wrong solution. Validation is critical to ensure the quality of the research outcomes (Cheung & Cheung, 2011). Liyanage & Villalba-Romero (2015) refine and validate the performance management of PPP transport projects using views of practitioners. Cheung and Chan (2011) validate a best practice framework for implementing PPPs in Hong Kong using nine respondents comprising PPP experts and academia.

6.5.1 Validation Instrument Adopted

The appropriate technique to use for validation mainly depends on the real world being analysed and the type of model being used (Taylor et al., 2013). Although there was a general acceptance of the bidding processes during its development, the engagement of the experts who were external to the development of the BAPM also showed a good acceptance. It had the potential of identifying whether there was a significant difference between the views of those that have participated in the study and those that did not participate in the study. The feedback from the experts who participated in the study served the purpose of establishing the internal validity, while the input from experts that did not participate in the research confirm the external validity of the BAPM. Internally, respondents' inputs on procedures of the BAPM

were triangulated with other techniques, there was the need to engage an expert group that were potential beneficiaries of this BAPM. For instance, in the development of the bidding stages, data from the approval committee was triangulated with respondents of the road projects and project documents.

The use of focus groups, interviews and surveys were options considered for carrying out the validation exercise. The use of focus groups or interviews was handicapped by the time and cost constraints of the research. Questionnaires were therefore adopted in validating the BAPM to determine its accuracy and practicality as no real-system data too was available. An aim of the validation was to test the BAPM on the suitability of the road PPP industry. The objective of an expert group validation is to assess the feasibility of the model in terms of its adequacy and clarity, and to ensure that the model is reasonably robust and will be acceptable to users (Creswell & Clark, 2011). Problems associated with postal surveys such as the restrictive nature of the questions and the lack of opportunity to clarify respondents' doubts was to a large extent overcome by the structure of the interview which required respondents to provide feedback on the BAPM rather than just rating it on a scale. The validation of the developed BAPM was conducted through a range of users in both public and private sectors. Feedbacks received on various issues that are pertinent to bidding processes, and each of the qualification criteria of the distinct stages of the BAPM through face-to-face interviews were used in the validation process. Yeung (2007) adopts a rating scale in a questionnaire survey to validate the partnering performance index model. Cheung & Chan (2011) conduct same to validate the best practice framework for implementing PPP projects in Hong Kong. Awodele (2012) employs a Likert scale to validate the framework for managing risk in the privately financed project in Nigeria among others. Against this backdrop, this study adopted a scale of 1-5 in the questionnaire for validating the BAPM for road PPP projects. Experts engaged in this exercise were eight in total of both the public and private sectors. The public officials were professionals in the MRH whilst the private sector respondents comprised managers of road construction companies who were likely to engage the requirements of the stages of the BAPM. There was the need for careful selection of the respondents to represent a sample of potential users of the BAPM. Thus, the validation and evaluation provided by these respondents are reliable and a valid assessment of the newly developed model. An expert group which were constituted by the potential users was constituted for this reason. The following criteria were set-up to select the respondents among the prospective users:

- Being involved in the PPP implementation in Ghana;

- Having extensive involvement in the bidding processes and procurement of PPP projects in Ghana from the public sector perspective;
- Being at a managerial position of the road SPV or professional of a road project involved in bidding or procurement of the project.

The validation instrument (questionnaire) was divided into three sections. The first section elicited background information from the respondents. The other section comprised the BAPM and validation criteria, where respondents were required to provide responses on the validation criteria on a scale of 1-5, and the third section detailed responses of experts where they were required to provide further information which they wished to add in criticising the BAPM. The respondents were asked to rate the BAPM based on six assessment criteria: comprehensiveness; objectivity; practicality; replicability; reliability; and overall suitability of the BAPM for its intended purpose (Awodele et al., 2010). The respondents rated their extent of satisfaction of the BAPM based on the validation criteria with a scoring scale from 1-5: Where, 5- Excellent; 4- Above average; 3- Average; 2- Below average; and 1- Poor.

6.5.1.1 Profile of experts

The details of the participants with regards to their respective categories, the code assigned to each participant, stakeholder sectors, the current position of the validation respondents, and their years of experience are detailed in table 6.5. A total of five out of eight respondents were from the private sector. All respondents have a broad professional background and progressive experience in the road construction industry. Some respondents had however dealt with traditional road bidding and were equipped to provide insight on the BAPM. Majority of the respondents were rooted in the road construction industry whilst the others were skilled at the procurement of capital projects and infrastructure which gave a good balance on the expert group. For instance, a private sector respondent engaged was responsible for transaction advisory services for several major government capital projects and a public sector respondent was experienced in the procurement and bidding of several road projects at the respective ministry.

Table 6.5 - Profile of validation respondents

EXPERT NUMBER	SECTOR PRIVATE/PUBLIC	DESIGNATION	EXPERTISE	YEARS OF EXPERIENCE
V1	Private	Senior manager	Infrastructure Management	12
V2	Public	Director	Supply Chain Management	14
V3	Private	Managing Director	Capital Projects	8
V4	Private	Senior consultant	Contracts/ Commercial Management	21
V5	Private	Senior Associate	Transport Engineer	7
V6	Public	Administrator	Procurement	16
V7	Public	Director	Public Administration	19
V8	Private	Manager	Highway risk assessment Management	14

6.5.1.2 Findings on evaluation criteria of BAPM

The findings of the BAPM against the validation criteria was the next section which sought the experts' views of the BAPM against the criteria rated on a scale of 1-5. A copy of the BAPM was administered as part of the structured interview to enhance the rating process. On a rating of the BAPM, there was an indication that the practicality criterion scored the highest mean score of 4.5 amongst the six validation criteria. The survey was not intended to predict that BAPM needed to be adopted and applied but rather to obtain expert opinion on the applicability and practicality of its practicality to the road PPP project especially with the criteria for evaluation purposes. This indicated the simplicity of the BAPM and how applicable it was to the bidding in the road sector. The BAPM was easy to follow and could be adopted in the context. Next highest mean score was the reliability criterion. It scored a mean value of 4.4. This could be attributed to the stakeholders that were involved in the research which reflected a true representation of major stakeholders of road PPP bidding. The suitability criterion followed with a mean value of 4.1. The comprehensiveness criterion was necessary to ensure that the BAPM covered all important stages or processes as well as evaluation criteria and parameters especially with regards to the concepts of the preferred bidders' criteria. The

criterion scored a mean value of 3.9. The objectivity criterion scored 3.6 and the replicability criterion however had the lowest mean score of 3.6. Table 6.6 presents the results of the validation of the BAPM.

Table 6.6 - Results of framework validation

VALIDATION CRITERIA		AVERAGE SCORE (1-5) 1= POOR 5=EXCELLENT								MEAN VALUES
		RESPONDENTS								
		1	2	3	4	5	6	7	8	
1	Comprehensiveness	4	4	3	4	3	5	4	4	3.9
2	Objectivity	4	3	4	5	4	2	3	4	3.6
3	Practicality	4	5	4	4	5	5	5	4	4.5
4	Replicability	3	4	5	3	2	3	5	4	3.6
5	Reliability	4	3	4	5	4	5	5	5	4.4
6	Suitability	3	4	4	4	5	5	4	4	4.1

6.5.1.3 General experts' comments on BAPM

The final section of the structure of the questionnaire elicited general comments on the BAPM. All experts gave comments that were constructive and encouraging in general. The was a general expression of the practicability of the BAPM in the road sector. There was an awareness that the adoption and utilisation of the BAPM will provide the private sector, particularly prospective bidders the transparency needed. It enlightened the criteria for which bids will be evaluated and their respective stages. The comments were however straight to the point and some have been listed below:

> *I think this tool is very good and should be adopted in the ministry. This will help private sector bidders to especially understand what is required from them in the preferred bidders' criteria. They will understand the factors involved and what they need to do or how they need to present them in their documents.*

> *I may not have the any experience at all in PPPs but with the knowledge I have on procurement especially in the road sector, I can say that this is simple and*

easy to follow. It captures all the necessary stages and details and this tool hasn't been considered like this here.

It looks good to be honest. It is very simple, and I am happy with it. Well done

6.6 Chapter Summary

This chapter presented the development of distinct stages of bidding in road PPP in Ghana as well as the evaluation criteria for each respective stage for the establishing of the process and evaluation of road PPP projects in Ghana. In the evaluation of bid documents of road PPP projects in Ghana, there was no single fixed evaluation method but a combination of factors across all stages of the process which were presented in this chapter. The EOI stage required general compliance of bid documents for the process and an initial investigation of the capability of the bidder to embark on the project. Next, the RFQ stage requires a technical and financial evaluation of the proposals. This is to ensure that the bidders have the technical know-how to develop such projects and the financial capacity respectively. At this stage, it necessary to consider factors such as the compatibility between the contractor and the sub-contractor, quality record, technical and managerial competence, as well as health and safety records of the contractor. Another factor is how well versed the bidder/contractor is, with regards to the local culture and weather conditions. It characterises an in-depth evaluation of the evaluation performed at the EOI stage. The RFP stage mainly requires the evaluation of bids against the preferred bidders' criteria: VFM, Affordability and Risk Transfer. The stage initiates a dialogue and final amendments and review of proposals before the final stage where contracts are signed. The BAPM was developed based on findings and a validation of this was presented in this chapter subsequently. The validation process involved eight experts from the public and private sectors who were engaged via questionnaires. The next chapter presents the overall conclusions and recommendations of the entire thesis.

Chapter 7 Conclusions and Recommendations

7.1 Chapter Introduction

In the previous chapter, the BAPM was developed according to findings from an engagement with strategic players of PPP adoption (T1), respondents of pilot road PPP projects (T4), the approval committee (T3) and professionals responsible for bidding in the Ministry of Roads and Highways (T2). These engagements labelled distinct stages of bidding processes and respective criteria for qualification. This chapter summarises the entire thesis and presents the findings according to the stated aim and objectives of this study. It examines the extent to which the objectives were reached and presents recommendations for this study. It also comprises contribution to knowledge and implications from the development of this study. This chapter is structured as follows:

- Conclusion;
- Reflections of the Research Objectives;
- Recommendations;
- Contribution to knowledge;
- Implications.

7.2 Conclusion

This research was based on developing distinct stages of bidding process and its respective evaluation criteria. The lack of a standardised bidding process for competitive procurement has a negative impact on the successful implementation of road PPP projects in Ghana. The lack of a structured bidding process that is transparent and fair becomes a major disincentive to prospective bidders especially as the bidding costs associated with PPP are high and requires a lot of time to materialise. Although there is little or no studies on bidding and award processes for road PPP projects, developed countries around the world like the UK have put in place a standardised bidding process for PPP projects. However, such a model is context specific and will not take into consideration the specific underlying factors of other jurisdictions or factors akin to a developing country such as Ghana. The stakeholder theory was engaged in this research which presented a set of interviews from identified stakeholders. The government and policy makers who recognise the need for PPP in the delivery of infrastructure were engaged (T1). Subsequently, the civil service who are responsible for the implementation of this specific

policy with regards to bidding and procurement were also engaged to mainly identify challenges of the system (T2). It was necessary to identify these challenges for purposes of understanding factors that could limit the adoption or effective utilisation of the BAPM. The approval committee for appraising PPP bids was also engaged (T3). This was necessary to mainly identify parameters of the preferred bidder's criteria and the development of stages of the BAPM. Subsequently, private consultants, consisting of Transaction Advisors and Legal experts including Investments Bankers were also engaged via semi-structured interviews. This was instrumental since the politicians and the civil service relied on them for support for adoption and advisory services respectively in the implementation of PPPs. Also, two road projects which have been identified as pilot RPPPs were engaged (T4). These road contractors were instrumental stakeholders as they were primary beneficiaries of the BAPM. These stakeholders were important in investigating and establishing criteria at all stages of the BAPM. The BAPM therefore establishes stages of the bidding process from the official notice of the identified road project considered to be procured under the PPP procurement method, to the award of the contract. It identifies key criteria that are evaluated at the EOI stage, the technical and financial parameters of the RFQ stage and the preferred bidders' criteria at the RFP stage before the selection and award of the contract. This research therefore engaged four objectives that met the aim of the study.

7.3 Reflections of the Research Objectives

The aim of this study is to develop a Bidding and Award Process Map (BAPM) for ensuring competitive procurement of road infrastructure PPP projects in Ghana.

1. To critically review literature on global PPP implementation to evaluate the extent of PPP as a financial model for road infrastructure delivery;

2. To review literature on bid processes/criteria and investigate challenges to the road PPP procurement process in Ghana;

3. To establish Value for Money, Affordability and Risk Transfer parameters for preferred bidder's appraisal at the Approval IIIB stage of PPP procurement in Ghana;

4. To establish stages of bidding processes and descriptive evaluation criteria for road PPP projects in the Ghanaian context.

In the build-up of the objectives to meet the aim, there was the need to consider the status quo of PPP in Ghana. As a result of the fact that PPP is a relatively new financial model in Ghana, there was the need to identify best practices around the world with regards to global PPP implementation to draw practical lessons and challenges to firstly investigate the extent to which the PPP/PFI model can ensure public infrastructure delivery, taking into consideration the financial constraints of the country. Similarly, there was also the need to review literature on challenges or barriers to RPPP bidding and parameters of VFM, affordability and Risk Transfer and Allocation. The challenges of bidding in the road sector and key parameters of the concepts of preferred bidders' criteria were established in the context of Ghana. Finally, there was the need to identify and develop stages of the bidding process and respective evaluation criteria.

7.3.1 PPP as a Financial Model for Road Infrastructure Delivery

This research fundamentally ascertained that PPP/PFI has been adopted and implemented around the world as a means to not only involve private sector expertise and efficiency in providing profit-based organisations but also to commit private sector financial resources in a mutually beneficial arrangement. One of the potential benefits of PPP projects is the earlier delivery of a planned capital investment programme, as PPPs can provide an important additional source of funding to complement traditional budgetary envelopes. The macro-economic conditions in Ghana which have occasioned fiscal constraints of the government restricts financial resources in the delivery of public infrastructure. Although paradoxically, it is necessary for the growth of the economy and stabilisation of the economy. Undoubtedly, developing countries and indeed developed countries have financial constraints even though the former is in a worse situation. However, PPP does not only command an additional source of funding or capital. Undeniably, extra funds will not necessarily guarantee a solution or a curtailment of infrastructure gaps in the countries. Therefore, It is necessary for prudent actions and efficient contributions to be considered in private sector participation of infrastructure delivery.

The PPP method of procurement is being effectively adapted as a means to meet the infrastructure gap as a result of inter alia respective growing populations and technology

demand. Advanced countries in respect of infrastructure and the economy are transforming their approach to procurement and setting towards this model. It is inherent on developing or middle-income economies to cogitate about the significance of private sector participation in this regard and the imminence of the subject matter. It is however with no question that the above basis is well recognised and acknowledged by eminent personalities in Ghana recognising the constraints of fiscal benefits where the country is unable to borrow because of debt to GDP ratio, the unavailability of grants and certain loans because of the unstable macro-economic conditions as well as the growing populations and increasing critical infrastructure demand. PPPs have received much attention in the development and financing of public infrastructure facilities and services around the world which have delivered inherent benefits. PPP arrangements have met the gap between the supply and demand of infrastructure and have served as financial tools that have been utilised by governments especially in developed countries, in meeting constraints of financial resources and budgetary allocations. The development of PPPs in many countries have increased the efficiency and sustainability of the public services in many sectors of the economy as well as the road sector. As a result, there have been thousands of projects procured under PPPs totalling trillions of US dollars around the world despite various implementation challenges that have caused major controversies, failures, delays and revocation of concession agreements.

This objective involved a critical analysis of PPP implementation among matured PPP economies identified along the Deloitte PPP Maturity curve. The extensive literature reviewed global implementation of PPP/PFI in road infrastructure delivery among India, China, USA, Canada, Australia, South-Africa, Nigeria and European countries as well as the UK. These countries were identified as more matured in the adoption and development of PPP relative to Ghana and most of these countries were on level 2 and 3 of the maturity curve. The United Kingdom being the most mature in PPP, in terms of sophistication and value of PPP projects undertaken was given a critical focus of its evolution of PPP. A more critical review of the adoption and revolution of PFI/PF2 in the UK was therefore prudent. It revealed that the economic phase that the country was going through at the time of introducing PFI is similar to the economic dispensation that led to advocacy of PPP in Ghana. For instance, Public Sector Borrowing Requirement (PSBR) was exacerbated by the capital expenditure of nationalised industries and public corporations which resulted in the focus on the External Financing Limit (EFL) as a means to borrow to cover the revenue shortfalls. There was eventually a need to establish criteria under which the private sector could be involved in nationalised industries.

PPP/PFI/PF2 became a financial tool to bridge the gap between the demand and supply of infrastructure. Similar issues gave rise to the importance of PPPs in Ghana as there was a collective compromise on its adoption at all fronts in the country as its benefits and criticality are incontestable. Another critical outcome was the indication of the effectiveness of the PPP model in road infrastructure delivery. The theoretical objective therefore investigated PPP projects implemented in the identified countries and the extent to which it provided road infrastructure. There was also the evidence of periodic reforms of the model that consistently improved the operation and implementation of the partnership. This was identified as critical to not only effective implementation but sustainability of the model. Most countries also had either a legal and regulatory framework, a central PPP unit or both that guided the PPP process.

7.3.2 Challenges to road PPP Bidding in Ghana

In the development of a BAPM for road PPP projects in Ghana, there was the need to identify challenges of procurement in the road sector. T2 involved the engagement of semi-structured interviews among professionals of the MRH who are responsible for the bidding of road projects in Ghana. Although the process of bidding may be as simple as advertising and receiving proposals, there are a lot of organisational coordination of multi-functional departments which most often presents several challenges. This objective was critical to the development and introduction of the BAPM in the sector. Respondents advocated for standardised processes to cut cost and reduce manipulation of political influences. The over-emphasis of the price criteria in traditional procurement was also found to be a major factor that resulted in poor project implementation in many cases. It also allowed bias and influences for politicians to bidders who were favoured by them. An effective communication was also crucial in not only the advertisement of projects but information on the number of bidders and reasons for disqualification among others. All these principles espoused were investigated and subsequently incorporated in the development of the BAPM. For instance, a more elaborate technical and financial criteria were developed rather than the over-dependence on the price criteria. Also, negotiation with bidders became a major exercise at the RFP stage of the BAPM which is supposed to give more information on bidders as well as enhance further negotiation. Again, authorities are supposed to develop and submit a close out report after the bidding process which will provide further information.

The context of the Ghanaian civil service, as reviewed with regards to its underlying features accentuated the operational capacity of the public sector and the effectiveness of the reforms that have been introduced for purposes of enhancing operations and streamlining processes. As

a result of this, T1 revealed challenging factors that were inhibiting effectiveness of the PPP policy and by extension factors that will not allow effective utilisation of the BAPM. The factors that were developed as a result of T2 were:

- Political influences;
- Inadequate budgetary allocation;
- Lack of capacity building;
- Non-compliance with policies and regulations;
- Incomplete bids;
- Incorrect bidding procedure;
- Lack of standardisation;
- Over-emphasis of price criteria;
- Lack of effective and open communication.

For instance, in the civil service, procurement are largely influenced by politicians which may result in serious implementation challenges and the loss of resources. There is therefore the need to enhance transparency and non-discriminatory measures to ensure fairness in the system. The identification of barriers or challenges in the bidding process inherently provides solutions or mitigation measures to avoid such challenges. The regulation of public sector bidding processes or procurement systems are often relatively complicated and hard to navigate as a result of the bureaucracy associated with the system. This also allows politicians and other influential figures to exploit the system to their advantage without accountability. Corruption and bribery are common among some public officials who collude with prospective contractors which results in bidding malpractices. Again, there is a perception that the public sector in Ghana is slow and inefficient, so it is important that these measures are carefully implemented. Capacity building should be continuous and should trickle down to the people in the districts and smaller municipalities rather than just stay at the helm.

It was also necessary to identify external factors which challenge the overall implementation of the process. In investigating the constraints and barriers that are attributable to the implementation of road PPP in Ghana, there were several points raised among interviewees especially as the procurement method is new and requires careful implementation in various stages to gain the requisite experience in fully rolling out the model on a larger scale. The lack of a central PPP unit was a major factor that was stressed to undermine any strides PPP may

make in the delivery of road infrastructure. Again, the lack of political will damages any form of development in this regard as there will be no consistency and sustainability thereof.

7.3.3 The Establishment of Preferred Bidders' Criteria

The importance of PPP in the road sector in Ghana could not be overemphasised as elucidated, hence any attempt to enhance that approach is critical. This objective provided an insight into criteria that were considered at the Approval IIIB stage of the PPP process on government originated projects as stipulated in Section D (I) Paragraph 43. According to the National PPP Policy, this stage is the penultimate stage before the final approval stage where contracts are agreed, and concessions are signed. The qualification of an award to a bidder is crucial in the development of PPP road projects, hence the success of the project and PPP implementation as a whole. The concepts of the preferred bidder's criteria: VFM, Affordability and Risk transfer were investigated for purposes of developing respective parameters considered for appraisal.

The VFM assessment revolves round the common objective of the UK PSC which is comparing the model to how it would have been done under the traditional procurement. However, a qualitative and quantitative assessment of VFM is carried out in the evaluation of PPP projects in Ghana. The qualitative assessment majorly involves ensuring the project is being procured according to set principles of PPP including affordability considerations, whilst the quantitative assessment involves the cost of procuring the project under a PPP arrangement minus the WLCC of the project when procured traditionally. The affordability concept is considered as part of the criteria in the assessment of the qualitative aspect VFM in the Ghanaian context. Three approaches were identified for assessing affordability. The first approach required the affordability ceiling set up by the ministry which was compared to the figures set by bidders in their proposals. The second approach involved the adjustments of toll rates to make projects affordable. Although otherwise complicated, it was a developed approach that was necessary to meet private sector investments with regards to revenue as the third option required government making some periodic payments or providing guarantees to meet the shortfalls. This approach however applies to road projects which could not necessarily be tolled. It is worthy of note that VFM to a large extent depends on RM since the effectiveness of managing risks determines to what extent VFM is attained. VFM is practically accomplished by combining a competitive tendering process with an appropriate risk transfer (Grimsey & Lewis, 2005).

Risk factors were investigated via T3 and T4 according to the risk categories stipulated in the national PPP policy for assessment purposes: Technical, Operational and Financial risks. A total of 11 risks were identified in the technical risk category, 15 in the operational risk category and 8 in the financial risk category. Further analysis was engaged to assess the level of impact should the risks occur and its allocation to the public and private sector parties. These were illustrated into a scale of low, medium and high to represent green, yellow and red respectively. Remaining risks, which represent the allocation criteria of these risk factors after occurrence were also investigated. The parameters of how these risks are allocated and transferred were developed according to T4 and T3 which involved semi-structured interviews being engaged among the identified road projects and the approval committee respectively. The evaluation of the preferred bidders' criteria is however assessed at the RFP stage of the bidding process.

7.3.4 Establishing stages of Bidding Processes and Evaluation Criteria

This objective sought to seek a foundation to which bidders will operate in terms of establishing the stages or processes of bidding and respective evaluation criteria for all stages. Semi-structured interviews were engaged among the approval committee; respondents of the road projects; the professionals involved with the bidding in the road sector and; the strategic players. These formed the sources of data for the development of the BAPM. It was necessary to confirm processes and triangulate them to establish a standardised procedure. For instance, the data was verified by the participants both in the approval committee and road projects to increase the validity and findings from the research. The main stages of the BAPM were: The Expression of Interest (EOI) stage, Request for Qualification (RFQ) Stage, and the Request for Proposal (RFP) stage. The typical stages developed from literature (figure 3.1) however identified a pre-qualification stage. Similarly, there is the absence of a distinct pre-qualification stage in Australian transport PPP projects but an EOI phase. However, all the other stages of figure 3.1 were incorporated in the BAPM with distinct criteria for progression. There was also the development of a data management room after the EOI stage which is distinct to the developed BAPM. The data management room enables a transparent procurement process and enhances communication among all parties. Similarly, the BAPM standardised and accentuated specific criteria in the evaluation of bids. The BAPM established the processes and stages of bidding as well as its respective requirement for qualification.

This objective involved establishing the set of criteria for the evaluation of road PPP projects which linked to the overall aim of this project. Bid price is an important factor in awarding a contract, however, other major factors greatly influence the success of a project, hence such

additional factors should be considered in evaluating and awarding a contract. The chosen contractor should have the specific capability to meet the unique project conditions and requirements, which should not be generalised and quantified in the bid price only. This study, among others ascertained that there are some factors besides the cost that are considered. This research established parameters that needed to be considered by the private sector and were expected by the granting authority or the public sector. These were categorised under technical and financial parameters. This research revealed technical and management ability, performance of contractors, experiences of contractors, health and safety concerns, quality of work, and availability of financial resources as part of the evaluation criteria for contractors. It was also important to assess the ability of contractors to work in same climatic conditions. Origin and cultural background became an important factor especially as private contractors could be a foreign one. Although a foreign company may have the technical knowhow for a given project, lack of knowledge of the local culture could result in serious developmental issues.

7.4 Recommendations

Based on the objectives of this research, the following recommendations are proposed according to findings of the study:

7.4.1 Recommendations to Practice

There is an urgent need for the development of PPP in Ghana and the findings of objective one clearly defines the extent to which PPP is being utilised as a financial model among governments across the world especially in the delivery of road infrastructure. The factors elucidated as common trends among these countries should guide best practice as to what needs to be done and when it should be done. The implementation of PPP in meeting the demand of road infrastructure is feasible and solutions for the challenges associated with implementation of road PPPs can be drawn from the experienced jurisdictions. As a relatively new procurement route with a few projects being piloted, the critical factors identified should serve as a guide in establishing a benchmark to develop a maturity process in PPP implementation.

It is evident that the bidding challenges identified in this research should be taken seriously and measures meted out to ensure an effective procurement system. The government should allocate enough budgetary resources to bidding and procurement for capacity building. An independent body is also critical for the success of PPPs in Ghana taking into consideration the

political climate and economic factors of the country. The influences of politicians in contract awards will be reduced drastically, corruption in the procurement system will also be exposed and discouraged when the officials of the independent body are not appointed by influences of the politicians. Compliance with policy regulations will also be heightened and processes followed to avoid loss of limited resources. For instance, the lack of a central PPP unit identified as one of the critical barriers should be taken into serious consideration if indeed PPP is going to be well established. This is critical because of the long-term nature of PPP. Beyond challenges of the bidding processes, it is established in this research that many barriers are influencing PPP project implementation in Ghana. It is therefore recommended that all the stakeholders recognise the identified barriers in this research and develop strategies to eliminate them. This will allow the partnerships to function effectively and ensure successful implementation. It is also necessary for the government to improve systems in dealing with the private sector to realise the efficiency gains associated with PPPs.

7.4.2 Recommendation to Policy

Bankability of road PPP projects in Ghana has been a contentious issue which tends to be a major barrier for drawing private capital as receiving a percentage or all of road tolls will not be enough for the private sector to recover its investments over the concession period. The government and policy makers should assess the viability of increasing concession periods in a bid to evaluate the private sector's ROI. This should be done in consultation with all stakeholders including end users. Government making a fixed payment yearly towards the construction of the road to support the private sector investment is complicated as the financial engineering that will go into exactly how much the government needs to pay, the percentage of the cost it is bearing and the impact of the value of the road to end users makes the public sector evade it bearing in mind the financial constraints of the government. As a result, it is important that the government considers increasing toll charges that will enable the private sector deliver road construction via PPP arrangements to salvage the bad effects of the bad road networks in the country. The fixing of toll charges could also be decentralised from government operations and allowed to be set by and regulated by an independent body as done for utilities and fuel prices in Ghana. Road tolls are extremely low compared to countries in the West African sub-region and others with similar economic conditions. In the West African sub-region, Ghana has the lowest toll charges which also serves as a disincentive for private sector investment. For instance, toll for cars in Ghana is currently GHS 0.5 which is £ 0.08, less and 10 pence when converted to the British pound. However, current tolls for motorways

in the United Kingdom is about £6.00 for cars. Given the current low toll rates in Ghana, a Willingness-to-Pay ("WTP") survey however needs to be conducted to investigate how much more road users are willing to pay for a higher level of service and better roads. This survey analysis required will be based on estimated traffic volume, project costs, financing costs and expected investor return to determine appropriate toll charges or economic toll rates.

An infrastructure concession, with long term stable/ contracted cash flows should be able to access long term project finance, although the pricing and terms will be driven by risks in the project. However, the macro-economic conditions in Ghana makes it is relatively difficult for some organisations to raise long term debt without substantial securitisation. It is important for the private sector to access sources of financing available in the market for businesses in order to outline possible sources of funding to address their funding requirements. The government should therefore provide the enabling environments for the private sector to thrive and expand to drive growth in the economy. Tax incentives, reductions and exemptions, when introduced will facilitate growth, hence build capacity in the local contractors' involvement of PPP arrangements in Ghana. This can also be achieved by instituting guidelines that compel international private partners to partner with local investors or private sector players in PPP arrangements.

It is acknowledged that PPP requires the building of teams across organisational boundaries of different collaborating parties and opens new ways of working; and a successful procurement. It therefore requires an effective project procurement structure providing clear chain of reporting, defined areas of responsibility, defined levels of decision making and authority. These sorts of interactions add up to the inherent complexity of the implementation process. There is the need for further consultations that will enhance a strategic implementation process within the body of management, policy, and implementation research. This will make possible the proper evaluation of the implementation process for the PPP policy. Such inadequate evaluative exercises have contributed to the paucity of data as it concerns the various instances and allegations of implementation deficit contrary to the desire to improve the infrastructure issues via PPPs.

7.5 Contribution to Knowledge

The significance of the Ghana Construction Industry (GCI) like other countries, is such that an investment in the industry by way of capital expenditure or a disinvestment affects not only

other sectors of the economy but the entire citizenry. Any research or contribution as a result is very crucial to the wellbeing of the country. As a commonly well discussed subject in Ghana, there is some scepticism of the effectiveness of PPP in road infrastructure delivery. This study first and foremost reviewed literature on global PPP implementation to investigate the viability of PPP critical infrastructure delivery with a focus on road infrastructure. This study also highlighted factors of a context driven transformation and best practice around the world for PPP implementation in Ghana.

The knowledge gap was understood to be the lack of a standardised bidding process for road PPP projects in Ghana which among other factors restricted private sector players to participate in the delivery of road PPPs. Selective tendering has been the norm with two pilot projects and the reason has been the lack of interested bidders. Local contractors have been discouraged by the lack of fairness and competition in the procurement process. This research therefore developed a BAPM for road infrastructure delivery in Ghana that will enhance transparency in the system. The BAPM considers social context of Ghana for ensuring successful and competitive procurement of road PPP projects. This will furnish interested contractors or bidders with knowledge on meeting requirements in getting approved and aligning project objectives with government expectations. Further, it was necessary to investigate preferred bidder criteria as well as evaluation criteria for appraising bids. This thesis therefore contributed a comprehensive process of road PPP bidding and accentuated necessary criteria for evaluation of the bids. There has been some research on 'bid or no bid' decision models and criteria for contractors but a dearth in this subject area where bidding processes and evaluation criteria are developed. The research highlighted and investigated the necessities at every stage of the bidding process determined from major stakeholders and decision-making teams. The BAPM is comprehensive and a reference to decision makers, policymakers and contractors to be more percipient of and have a better understanding of the bidding process of road PPPs in Ghana. This new understanding will assist decision makers to make more efficacious decisions in selecting preferred bidders for purposes of road infrastructure delivery. It will enhance transparency in the bidding process and allow a clear definition of requirements for interested bidders of the private sector both locally and internationally before being assessed by stakeholders for approval purposes.

A major criticism of the stakeholder theory has been the fact that the theory seeks perspectives on various groups or individuals who are affected by decisions (stakeholders), however very little is done about the consideration of the environment. From the theoretical perspective, the

study relied on the Social Technical Systems theory in the justification of contextualising factors of an environment in the development or introduction of processes. The underlying factors and inefficiencies of the administration of the civil service were then made evident with the application of: Contingency theory; Stakeholder Theory; Legitimacy Theory; Public Choice Theory and; X-efficiency Theory. The inefficiencies of the administration could restrict the adoption and utilisation of the BAPM, which were corroborated to a large extent by the findings of T3. The perceived barriers therefore coincided with the theoretical perspectives engaged. Institutional theory for instance is underpinned by the assumption that institutional environment exerts great influence on the development or adoption of formal structures deemed socially acceptable in the organisation than the market pressure in most cases, a careful consideration for this study which is understood by political influences in the civil service. However, the stakeholder theory holds the view that failure to identify and manage key stakeholders may impact on performance or productivity. The stakeholder theory was the main theory of this research and it formed the basis of this research where key stakeholders were identified and engaged via semi-structured interviews to meet the aim of this study. This study highlighted the mutual interdependence of the STS theory and the stakeholder theory. Stakeholder theory depends on the considerations of stakeholders in a socio-technical system (environment) and Socio-technical Systems theory depends on the application and effectiveness of a stakeholder approach in a system to solve an identified problem.

Bidding processes and evaluation criteria of PPP projects are context specific. This is underpinned by specific factors within the context of development and application. For example, the UK follows certain processes and engage certain criteria in the evaluation of PPPs based on the EU regulations. The advertisement of PPP projects in the Official Journal of the European Union (OJEU) for instance is a legal requirement which must be adhered to and was enforced by the European Court of Justice. This is therefore a legal factor which is specific to a particular political context. In the event of the UK not being part of the EU, this might change. Hence, the process of advertisement and in effect bidding might differ. However, it was realised that there are specific stages of the bidding process which are typical to any PPP procurement process. The Advertisement, Pre-qualification, EOI, RFQ and RFP stages are procedures that are generally followed although the semantics of this could be different.

The procedures followed at these particular stages are also context specific and may differ even though the specific stage is the same. In Ghana, a data management room is developed after the qualification of the EOI stage. Bidders will also be given only one opportunity to correct

or amend submitted documents to meet criteria at the EOI stage and are disqualified if they do not meet the criteria. This is the only stage that will allow this reconsideration. At the RFQ stage, disqualified bidders will not even be notified of their disqualification. However, the RFP stage requires an official notice to disqualified bidders which could be as a result of the dialogue process that is established at this stage to engage all bidders who have qualified to this stage. It is mandatory that a bid process report is produced at this stage. It is also important because the second-best bidder is identified and engaged, in the event that negotiations do not go well with the preferred bidder.

Similarly, the process of bidding may be similar or akin to other jurisdictions but the requirements at the specific stages will differ. The financial and technical criteria for evaluation at the RFQ stage for instance will be different from country to country and from sector to sector. Evidently, the engineering requirement that will be evaluated for a road project will be different for same requirements for a housing project and so on. Even in the case of the similar criteria, the weighting methodology may not be the same. Also, some conditions precedent that need to be met before contracts are signed may be similar for all sectors especially for the financial parameters. However, they are different from project to project even if they are same sector. These conditions are set from the beginning of the project and depends on the conditions of the specific project and the deliverables of same. Not only is the culture of the civil service context specific, but the organisational culture of the contractors may differ hence the culture of the contractor is evaluated as part of the technical criteria at the RFQ stage. Although, the financial eligibility of the contractor is the major justification of PPP in Ghana, the technical parameters are more important and the criteria for evaluation is more stringent. For instance, the financial aspect majorly requires that the contractor has the availability of the funds and will be able to operate and maintain the facility, but the technical aspect have several requirements. Sub-contractor relationships with the bidder (main contractor) is also evaluated as part of the technical parameters at the RFQ stage.

7.6 Implications

It is increasingly becoming the norm in contemporary research for studies to hold certain implications for the research community and the conduct of future research. Such implications which are often premised on any or a combination of the study's findings, methodology or limitations usually provide a platform for the conduct of future research or the validation of the

current study's findings. This research therefore holds the following implications on research and practice.

7.6.1 Implications for Research

1. As a PhD study, this research applied the stakeholder theory and the Socio - Technical Systems Theory (STST) in the development of the BAPM. However, approach did not focus on the interdependencies of both theories although the STS theory should be applied with a comprehensive regard to stakeholders and stakeholder management as the stakeholder theory similarly requires context of the STST.

2. The research strategy was designed to provide a contextual generalisation within which the BAPM will be operationalised. The cultural underpinning of the Ghanaian public sector which was accentuated by the theories engaged in the research provided a context with which the BAPM was developed. The tenets of the research could be applied or explored within similar regions and contexts.

7.6.2 Implications for Practice

The justification for this study, the BAPM and findings emanating from the study are wholly embedded within the context of practice (policy implementation). Hence, the study does possess certain implications for practice. Such implications include the following, namely;

3. The BAPM should be utilised by authorities of the public and private sector contractors in identifying criteria for evaluation of their bids and the stages of the bidding process to enhance interest and competition in bidding. This will to a large extent provide the much-needed road PPPs for social and economic development of not only Ghana but other developing countries with similar socio-economic factors.

4. The development of the key parameters of the preferred bidders' criteria identifies specific risks for instance under the risk category that provides a comprehensive account of what needs to be critically considered, developed and mitigated to meet the criteria. The risk factors could however be developed into a risk allocation model in making informed decisions on the nature of the project and the best mitigation factors provided. Analytical tools like the Analytic Hierarchy Process (AHP) is a multi-

criteria decision-making tool could be used in ranking tangible and intangible factors against each other.

5. The evaluation criteria of the stages of bidding identified in this research did not provide specific weightings to the criteria. A financial model could be developed to conduct sensitivity of project's financial viability with respect to changes in various factors such as (i) Capital Cost; (ii) Base Traffic; (iii) Traffic growth rate; (iv) Operating cost; (v) toll rates; and (vi) Availability payment performance. The model should be made flexible to incorporate changes in the assumption parameters and standardise the evaluation of financial capability of prospective PPP road bidders. The financial model should be dynamic and developed to calculate the expected return as well as payback period for each of the various private and public investor types. The model will therefore be used to analyse how to optimise the return to all parties. The analysis will include projection of revenues, profits as well as cash-flow and calculate various metrics used for assessment of feasibility including:
    - Net Present Value (NPV);
    - Internal Rate of Return (IRR);
    - Running IRR Graph;
    - Cash-break even and discounted break-even;
    - Financial Ratios;
    - Debt Service Coverage Ratio (DSCR).

6. There is also the need for policy makers and implementing agencies in Ghana to rely upon the tenets of this research when formulating new regulations in policies and developing policy implementation procedures/strategies to ensure successful road PPP implementation.

7.7 Researcher's Reflections

Looking back at the research, its approach, methodology and findings, the researcher has attempted to reduce personal bias as much as possible and ensure that the research process was rigorous and valid, and that evidence was analysed independently of any influencers. However, before and during carrying out this research the researcher could not shy away from personal interest in PPP implementation in general but especially in road infrastructure delivery to

alleviate the hardships associated with bad road networks including deaths. Whilst the interpretative and value-laden nature of this study allows for some bias on the part of the researcher, the researcher is expected to carry out the research in such a manner that his values does not affect the validity of the study's findings. Hence, a principle in reaching the outcome of this research.

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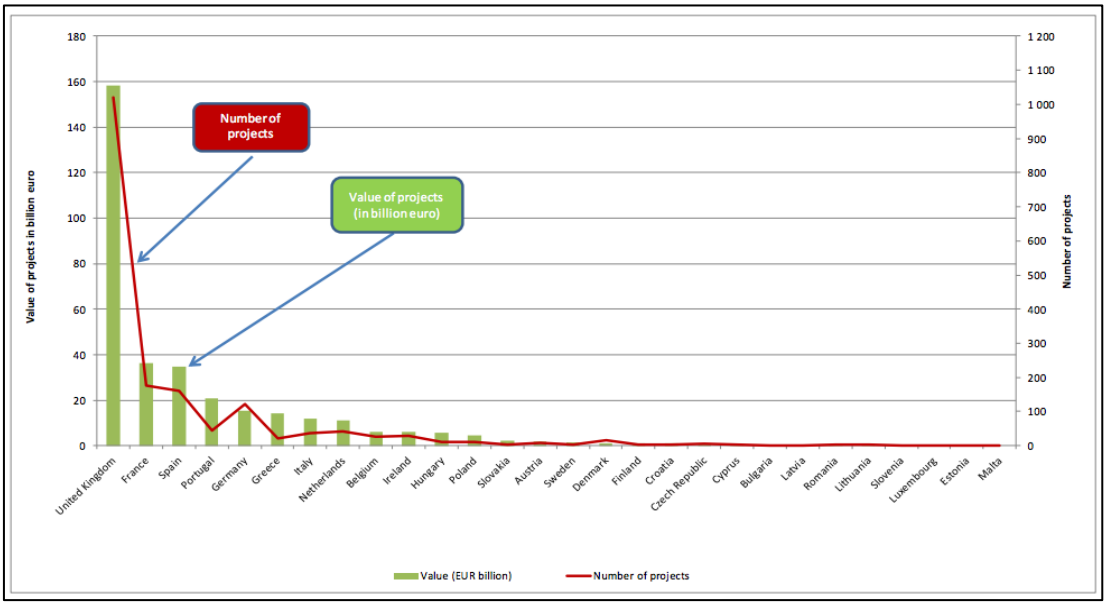
Appendix

7.8 Appendix A – Descriptive analysis of Global PPP Implementation

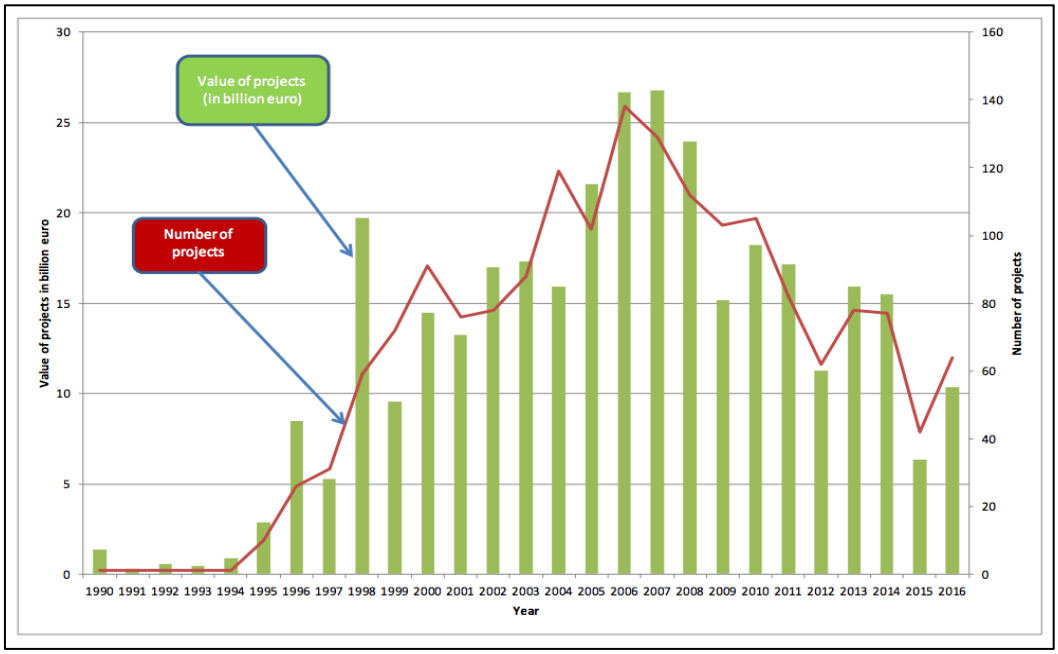
Europe

As the world's largest and most experienced PPP jurisdiction, the European Union (EU) provides an interesting study in the way PPP has been integrated into mainstream procurement practices and the perceived relationships between overarching directives and national legislation (World Bank, 2018). The International Institute for Sustainable Development (IISD), states that the EU is significant as a metaphor for individual nations and the lessons learned from how the Union relates to PPP within its member states are meaningful for other governments wishing to establish a successful PPP environment (Thieriot & Dominguez, 2015).

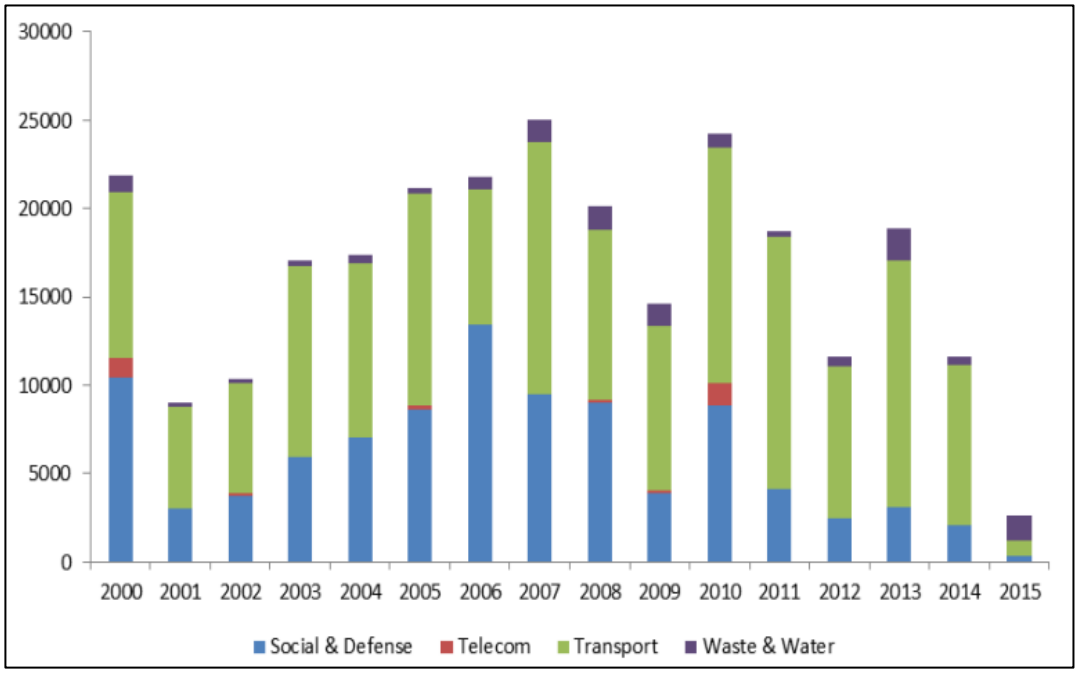
In 2017, the total value of PPP projects which successfully reached financial close in the European market was €336 billion (ECA, 2018). According to the European Court of Auditors (ECA) (2018), since the 1990s to 2018, 1 749 PPPs have been implemented and most of these have been in the field of transport, which in 2016 accounted for one third of the entire year's investment, ahead of healthcare and education. The United Kingdom is still the largest PPP market in Europe both in terms of value and number of deals as over 715 projects have reached financial close, securing private sector investment reaching billions of pounds (HM Treasury, 2017). Thus, for purposes of the underlying motive of this thesis, PPP in the UK will be discussed independent of Europe to accentuate its evolution etcetera. Figure 2.4 shows European countries and the number of PPP deals undertaken from 1990 to 2016 and figure 2.5 shows EU PPP market from 1990-2016. Figure 2.6 illustrates number of projects in respective sectors from 2000-2015 in the EU.



EU Market for Member states from 1990-2016
(Source: ECA, 2018)



EU PPP market from 1990-2016 (Value and Number of Projects)
(Source: ECA, 2018)



Number of projects in respective sectors from 2000-2015 (EU) (Source: Tomasi, 2016)

France

There have been concession agreements in this country dating back as far as the 18th century where drinking water was supplied to Paris and then subsequently extended to other sectors such as waste management, user-paid toll roads etcetera (Piper, 2007). The domestic economic legislature did not allow the effective adoption and implementation of PPPs until 2004 where new laws were enacted to allow private sector participation in infrastructural development (Eaton & Sundaraj, 2013). The European PPP report (2009) state that the lack of participation of the private sector led the government to introduce certain measures which include:

- The introduction of an efficiency criterion in addition to the complexity and urgency criteria;
- The introduction of value for money as a tool in assessing bids;
- The ability for state entities to finance projects jointly with private project operators;
- Subsidies for PPP project operators; and
- The ability for a private sector partner to collect debts owed to state entities.

The government also seeks to harmonise the processes of PPP and other private sector participation projects to organise different project rules into one system (DLA Piper, 2009). The new reforms have enhanced French PPP systems and has being a way to mitigate the government's economic downturn which has made available huge investments for the

financing of such projects (ECA, 2018). Again, in January 2006, a law considered to be one of the most important laws was put in place to allow the state-owned rail enterprise *Réseau Ferrré de France* (RFF) to engage payment structures in infrastructure delivery under the *Contrat de Partenariat* formula which has now adopted some effective PPP projects in the rail sector. France has developed to possess one of the most dynamic PPP markets in Europe which as a combination of the Italian (market led) and the UK (government led) models (EIB, 2015).

The main PPP unit was established under the Ministry of Finance to assess prospective projects legally and financially to enable it move to tender. There are ongoing projects in the roads, rail, health care, defence and prisons sectors and some of the projects completed include the *Caen* and *Centre Hositalier Sud Francilien (CHSF),* the A19 and A41 toll road concessions and the Tranches I and II of the prisons sector (IJ Global, 2015). Other sectors like the waste management and education have few projects undertaken like the 10 year €14 million DBFM school project which was locally initiated (EPEC, 2009; Deloitte 2013). Local governments in the country have serious budgetary constraints which has made these organisations lean towards PPP models as a form of procurement route to meet the country's demands as consumers are not willing to pay for projects that cannot be funded under a concession (World Bank, 2018).

Germany

The coalition government headed by Angela Merkel as new Chancellor in 2005 had a core election manifesto to restore the country's depleted public resources (EPEC, 2009). Although there has been a major improvement in the economy, there are still structural underfunding of social and transport infrastructure (IJ Global, 2015). The infrastructure funding gap is estimated to be about €70m annually which is making the full and effective implementation of PPP more crucial (Deloitte, 2017; World Bank, 2018). The country enacted a law or the 'Acceleration Act' which is to accelerate the use of public-private partnerships on 1 September 2005 (Transposition of EU Directive 2004/18/EC) and has strengthened the role of negotiation in the German procurement processes (Piper, 2007). According to the DLA Piper European PPP Reports (2009), the Acceleration Act however:

- Permits the main private sector contract party to sub-contract delivery of some of the services required by the main contract;
- Permits sale and leaseback structures for federal assets (it is assumed that the state legislature will shortly follow to replicate this for *Länder* assets as well; and

- Has provided relief from tax on the acquisition and ownership of the asset reverts automatically at the end of the contract.

Although the credit crunch adversely affected PPP in the country as bank lending plummeted whilst funding by the federal and municipal increased, PPP has undergone several reforms that has stabilised the economy (EPEC, 2009). On the 8th of April 2009 for instance, the Rescue Act was published which promoted nationalisation of shares in financial institutions (EIB, 2015). The Act on the Modernisation of the Procurement Law also came into being that same year to enhance PPP dealings (ibid). A significant PPP development is the Proton Therapy Centre at the Essen University which is a cancer treatment centre and the first health related PPP project. The capital city, Berlin's €2.4 billion Brandenburg International Airport was closed in 2009 with a funding of €1.4 billion from the European Investment Bank (EIB) as the anchor lender and seven other German banks. Another project involving the expansion of Berlin's two other airports have also been closed successfully (Deloitte, 2013; IJ Global, 2015). In May 2015, Germany announced plans to develop ten road PPP projects which was meant to repair and extend around 600 km of motorway as well as maintain and operate existing roads costing about €100 billion (US$112 billion) (ECA, 2018). Although the government's incentives for investment in domestic infrastructure might lessen the need for regional governments and municipalities to rely on the conventional procurement rather than PPP, the government also seeks to involve more incentives and funding to encourage the participation of the private sector parties especially in the operational phase of PPPs (EIB, 2015).

Spain

Spain is deemed a pioneer of concession agreements where in 1953 there was an agreement on the tunnel of Guadarrama (IJ Global, 2015). There had been a fundamental problem with funding which was holding back the full implementation of PPP models especially after the credit crunch, but the government in 2009 started discussions on approaches such as state guarantees to lessen the effect of the financial constraints (EIB, 2015). These guarantees made available to PPPs places strains on the debt/equity structure but is argued that the difference is insignificant as banks are demanding higher equity participation (World Bank, 2018). The Governor of the Bank of Spain stated the need to put structures in place to decrease the public deficit and create employment opportunities (Deloitte, 2017). The government announced in April 2009 an infrastructure spend of €15.5 billion annually between 2005 and 2020 but there was a review of this as a result of the economic credit crunch (IJ Global, 2015).

Nonetheless there have been successful PPP implementations in the country and in 2007 it was one of biggest PPP countries in Europe with a total value of €9.7 billion projects going into tender. Most PPP programmes are tendered in the road sector, in 2009, an approval by the central government enabled the implementation of the M-61 project valued at €2.3 billion by the regional government (IJ Global, 2009; Deloitte, 2017). However, it is argued that existing concessionaires are undergoing certain financial concerns that puts on hold many projects, so the government is proceeding cautiously in PPP undertakings (ECA, 2018).

Italy

The elected government in 2008 expressed their support for PPPs in the country and pushed for convenient government policies and legislations to provide an enabling environment for the use of PPPs (World Bank, 2018). The procurement processes have been modernised to enhance new tendering procedures in this regard. In that same year, the government passed proposals of PPP projects valued at €46.3 billion to be implemented during a period of a 10-year infrastructure plan. Projects prioritised from the period of 2009-2011 included (EU, 2018):

- Three high speed train projects: including €5.1 billion for Milan/Genoa, €5.6 billion for Milan/Verona and €3.3 billion for Verona/Padova;
- Other state rail projects amounting to €10 billion;
- Messina straits bridge amounting to €6.1 billion;
- €4.2 billion for projects in water, urban transport systems and port services.

Despite the political drive for PPPs, there have been immense constraints amongst stakeholders on the inability to progress in PPP implementation (EPEC, 2009). The SDA Bocconi School of Management reports that 88 per cent of projects that have reached financial close have failed or have been cancelled (ibid). The implementation of PPP projects in this country is predominant in the roads, rail/light rail and the healthcare sectors (ECA, 2018). Over 60 percent PPPs in Italy are in the roads sector and the *Pedemontana Veneta* toll road for instance was valued at €2.1 billion (Piper, 2007). There has been little activity in other sectors like Information Technology (IT) where €1.47 billion PPP project was structured in June 2009 to develop a nationwide high-speed internet network (EPEC, 2009; Deloitte, 2017).

United Kingdom

Background

It has been argued that James I was amongst the first to award a concession agreement in 1602 with a private company to supply water from a nearby spring to London (Li, 2003). The

involvement of the private sector in the delivery of public sector infrastructure dates back as far back as the 1980's in the UK where there was a corresponding growth in the interests of privatisation and the early success of Build Operate Transfer (BOT) in other countries (Pretorius et al., 2008). When the Conservative Party came to power in the UK in 1979, the then Prime Minister Margaret Thatcher stated that a primary aim of her government was to roll back the frontiers of the public sector and to allow the private sector to take over many services (Birnie, 1999). According to Mumford (1998), from 1979 onward, successive Conservative governments in the UK introduced privatisation and compulsory competitive tendering for local authorities. The John Major administration of 1992 continued the policies of downsizing the public sector, deregulating and introducing market principles into public services, reorganising government functions into agencies, introducing the Citizen's Charter and promoting market testing in which the private sector competes with public services (Shinohara, 1998). The underlying objective of these policies was to shift the paradigm of government from public administration to public management. PFI is an extension of this policy and its real aim is administrative reform as originally, PPP is the means to transfer much of the public sector's role to the private sector (HM Treasury, 2000). The brief description of the political framework that led to the emergence of PFI is followed by a chronological development of major PFI events in subsequent paragraphs.

1977: Prior to 1977, all the capital expenditure of nationalised industries and public corporations was accounted and recorded within the public expenditure and thus contributed towards the Public Sector Borrowing Requirement (PSBR) – the amount of money the government needs to borrow to meet its spending plans, even when wholly financed from internal resources derived from user charges (Heald, 1997). The 1977 redefinition of public expenditure and the 1978 White Paper on nationalised industries switched the focus of the public administration of the External Financing Limit (EFL) – the cash limit of external financing (HM Treasury, 1989).

1979: The Conservative Party came to power in the UK and a strict policy of reducing public expenditure was put in place.

1981: During the recession of the early 1980's, there was much public debate as to whether restrictive EFLs designed to hold down the PSBR as a means of controlling monetary supply growth were frustrating profitable nationalised industry investment and thus needlessly exacerbating the recession (Heald, 1997). In a review of the extensive debate on EFL, The

National Economic Development Council (NEDC) formulated the Ryrie rules, named after Sir William Ryrie under his chairmanship as the senior Treasury official responsible for domestic matters. The Rules sought to establish criteria under which private finance could be introduced into the nationalised industries (Allen, 2003). The Ryrie Rules said that (HM Treasury, 1989):

1. Decisions to provide funds for investment should be taken under conditions of fair competition with private sector borrowers; any links with the rest of the public sector, Government guarantees of commitment or monopoly power should not result in the schemes offering investors a degree of security significantly greater than available on private sector projects; and
2. Such projects should yield benefits in terms of improved efficiency and profit from the additional investment to commensurate with the cost of raising risk capital from financial markets.

As noted by Allen (2001), the Ryrie Rules were revised in February 1988 to take into account the privatisation of the previously nationalised industries and the introduction of schemes such as contracting out, mixed funding and partnership scheme. The two fundamental principles of the guidelines were (HM Treasury, 1992):

1. Private finance could only be introduced where it offered cost effectiveness (projects must be tested against the equivalent competitive price market);
2. Privately financed projects for public sector programmes had to be taken into account by the Government in its public expenditure planning.

1989: In a speech to the Institute of Directors in May 1989, John Major, the then Chief Secretary to the Treasury formally retired the Ryrie Rules on the grounds that they had outlived their usefulness (HM Treasury, 1989 cited in Allen, 2003). The retirement was intended to further encourage 'the private sector to bring forward schemes for privately financed projects, which offer value for money for the user and the taxpayer'. In his speech, John Major stated:

> *"…the view often prevails that 'the Ryrie Rules' are a huge stumbling block to greater private sector participation in the infrastructure. The Ryrie Rules are thought to be incomprehensible and hamper private finance by setting impossible hurdles…" (Major, 1989 in Heald, 1997).*

The Ryrie Rules were abolished in 1989 and was superseded in 1992 by the launch of PFI. The Ryrie Rules have been generally held to have provided little incentive to seek private funding (HM Treasury Committee, 1996; HM Treasury Taskforce, 2000).

7.8.1.1 The Launch of PFI

The underlying PFI concept of BOT was first coined in present times by *Turgut Özal* in 1984, then the Prime Minister of Turkey within the framework of privatising Turkey's public projects which is a form of PPP (Tiong, et al, 1992). There is some confusion between PPP and PFI. PFI is a public service delivery type of PPP where responsibility for providing public services like transportation, sanitation, etc. is transferred from the public to the private sector for a considerable period of time (Akintoye et al. 2001). PFI is therefore a generic classifier for all types of "construction" PPP. The whole concept of PFI is a government policy to tackle financial problems in facility provision, and integrate private management skills to increase efficiency, effectiveness and quality (HM Treasury, 2000).

The level of private sector involvement might range from a service provision, without recourse to public facilities usage, up to public facilities ownership. Covering the above issues De Lemos et al. (2003) gave a concise definition of PFI as:

> *"PFI is an integrative, holistic, social and economic development policy of the UK Government. It integrates a hierarchy of four levels of concepts: Government Ideology, Principles, Practices and Tools. In its essence, it is a public-private partnership with the specific purpose to deliver a service of publicly managed assets using private capital."*

1992: A significant transformation however occurred in 1992 where the conservative government formally launched the PFI. PFI was formally launched under then Prime Minister John Major's Conservative Government by the then Chancellor of the Exchequer, Norman Lamont in his Autumn Statement designed to incorporate the private sector into the finance and management of projects generically developed by the public sector (Broadbent & Laughlin, 1999). In this Statement Lamont superseded the Ryrie Rules (Allen, 2001; Allen, 2003):

> *"[…] in future, any privately financed project, which can be operated profitably, will be allowed to proceed. {…}.*

> *Secondly, the Government has too often in the past treated proposed projects as either wholly private or wholly public. In the future, the Government will actively encourage joint ventures with the private sector, where these involve a sensible transfer of risk to the private sector. […].*

> *Thirdly, we will allow greater use of leasing where it offers good value for money. As long as it can be shown that the risk stays with the private sector, public organisations will be able to enter into operating lease agreements, with only the lease payments counting as expenditure and without their capital budgets being cut."*

Owen and Merna (1997) argue that the reintroduction of the PFI policy was conceived out of privately financed endeavours such as the Channel Tunnel in 1987 and subsequent projects such as the London City Airport and the Manchester Metrolink. The aim of introducing the PFI was to achieve closer partnering between the public and private sectors at both central government and local authority levels. The intention was to increase the flow of capital to projects against a background of restraint on public expenditure by utilising private sector money and management skills (Allen, 2001). As noted by De Lemos et al. (2000), it is not expected that the public sector will be the sole beneficiary, but rather that the PFI is supposed to offer real benefits to the private sector in the form of increased business profit. The guiding principles of the PFI are similar to those underlying the Ryrie rules ventures established under the PFI need to achieve a genuine transfer of risk to the private sector and value for money in use of public resources (Allen, 2003).

The philosophy behind the PFI is that it is intended to transform government departments from being owners and operators of assets into the purchasers of services from the private sector (HM Treasury Taskforce, 1997). In PFI, the public sector specifies its services by way of an output specification covering the objectives, purpose, scope and performance requirements for the contract with the emphasis being on the 'what' and not the 'how' in relation to the service provision (Private Finance Panel, 1996).

The Chancellor used the occasion of his 1992 Autumn Statement to announce 'important changes' in the rules governing the use of private finance by public sector organisations (HM Treasury, 1992). Heald (1997) postulates that these main changes were:

1. The Value for Money (VFM) criterion had been modified, by the delineation of a category of privately financed projects which will no longer be tested against hypothetical public sector alternatives and by restricting its application only to the public sector contribution to privately led projects;
2. There seems to have been a substantial relaxation of the Treasury's stance on additionality, from the 'normal presumption of a one-for-one reduction in public expenditure allocations to the post 1992 situation in which only the public sector contribution is scored against the public allocation;
3. The Treasury no longer volunteers the argument that the private sector will be tapping virtually the same pool of finance as itself, albeit more expensively, in order to undertake privately financed public projects;
4. The Treasury continues to insist that there must be a genuine and significant transfer of risk from the public sector to the private sector.

In short, the issues identified as fundamental to policy evaluation were: modifications to the VFM criterion; additionality; measurement of efficiency gains and additional costs; and determining whether risk has been transferred (Allen, 2001). It is noted in HM Treasury (1993) that

> *"The PFI, unlike the earlier policies of privatisation and contracting out, is based on an enterprise and discipline that can bring gains in efficiency and reduction in costs and is stimulated by the Government keeping inflation down and getting public finances back on the right track."*

Within this statement, the Treasury admitted the following main issues:

- PFI can bring gains in efficiency;
- PFI can bring inflation down;
- PFI can limit Public Sector Spending;
- The Public Sector's need for capital expenditure (private financing of public projects).

There are therefore two fundamental characteristics of any form of PFI project:

- There must be a genuine risk transfer to the private sector; and
- The project must provide value for money to the taxpayer.

The premise is that the transfer of risk to the private sector, coupled with the efficiencies in management skills will outweigh the higher costs of private funding resulting in greater value to the taxpayers (Private Finance Panel, 1995). From the perspective of risk allocation, the PFI projects are classified into three types (ibid):

1. The financially free-standing type where risk is fully transferred to the private sector (for example toll bridges);
2. The joint venture type where risk is fully transferred from the public sector with some public sector cash contribution (for example urban regeneration schemes); and
3. The type of services sold to the public sector where risk is shared rather than fully transferred (for example DBFO road projects).

7.8.1.2 The Evolution of PFI, Changes introduced under the Conservative Government

1993: The private sector showed little interest in the 1992 Autumn Statement. The subsequent Chancellor of the Exchequer Kenneth Clark, in his 1993 Autumn Statement gave PFI a greater impulse by announcing that a new Private Finance Panel would be created, and its role would be (Private Finance Panel, 1995):

- To encourage greater participation in the initiative by both the public and private sectors;
- To stimulate new ideas;
- To identify new areas of public sector activity where the private sector could become involved;
- To seek solutions to any problems that might impede progress.

1994: In the Autumn Statement the then Chancellor Kenneth Clark ensured engagement with the private sector by making plain that the Treasury would not approve any capital projects unless options to secure private finance had been explored. It became mandatory that all capital projects in the public sector that required Treasury approval explored private finance options (Allen, 2003). In 1994, a 'universal testing rule' necessitated private finance consideration in all public sector projects in the UK (HM Treasury, 1996).

1996: The 4Ps (Public Private Partnerships Programme) was established in April by the Local Authority Association of England and Wales to promote PFI in the Local Authority Sector (HM Treasury, 1997). 4Ps was established with the express aim of bringing about increased investment in local services through PFI and other public/private sector partnerships (ibid).

7.8.1.3 Changes introduced under the Labour Government

1997: PFI was the Conservative Party's approach to financing and managing an upgrade of British social infrastructure. Tony Blair's Labour Party was elected in 1997 and his government continued to back the concept under the PPP banner and had gone further than the Conservative Party ever anticipated (Sharman, 2002 cited in Kee & Forrer, 2002).

June 1997: In May 1997, Geoffrey Robinson, then Paymaster General, announced that Sir Malcolm Bates would conduct a speedy review of the PFI process (House of Commons, 2003). Mr Robinson also announced an end to universal testing – the rule that capital projects had to be tested for private finance potential (HM Treasury, 1997). The First Bates Review reported on 26th June 1997, made twenty-seven recommendations to streamline and improve delivery of PFI projects (Allen, 2001). One outcome was the creation of a PFI Taskforce in the Treasury to help foster PFI expertise within the government (ibid).

September 1997: The Treasury Taskforce was established as the focal point for PFI activity across government. The Taskforce concentrated on a number of significant projects, helping departments to set priorities while trying to ease negotiations and gain VFM (HM Treasury, 2000). The Taskforce published a series of guidance documents, policy statements, technical notes and case studies (ibid).

1999: The Second Review of the PFI by Malcolm Bates was published in July 1999. The Second Review examined the progress made by government in the delivery of PFI and PPPs and recommended changes to existing arrangements to improve further the government's approach (HM Treasury, 1999). Bates' recommendations concentrated on: Institutional change and government's plans for taking the recommendations forward. In his Second Review, Bates points to the following areas of weakness (ibid):

- Strategic planning;
- Project management;
- Negotiation skills;
- Financial disciplines;
- Management of long-term contracts.

Due to the listed shortage of essential skills required to serve up effective partnering with the private sector, Bates identified three alternative institutional arrangements following the expiry of the Taskforce (HM Treasury, 1999):

- Extend the life of the Taskforce;

- Create a public sector, fee-earning agency;
- Set up a new Public Private Partnership.

Bates recommended that a permanent organisation, Partnerships in the UK be formed to replace the Taskforce.

July 1999: Peter Gershon, Managing Director of Marconi, was invited to review civil procurement in central government in the light of the government's objectives on efficiency, modernisation and competitiveness in the short and medium term (HM Treasury, 1999). Gershon examined the whole process of acquisition from third parties by government. The acquisition process spanned the whole lifecycle from initial conception through to the end of the useful life of the asset or the completion of the contract (Allen, 2003). In his review Gershon identified a number of weaknesses in Government procurement which cover (HM Treasury, 1999):

- Organisation;
- Process;
- People and skills;
- Measurement;
- Contribution of the centre of Government.

Gershon's proposal for dealing with these weaknesses led to the creation of a central organisation called Office of Government Commerce (OGC) (HM Treasury, 2000).

July 1999: The first edition of Standardisation of PFI Contracts produced (SOPC, 1999). The aim was to (ibid):

- Provide guidance on the key issues that arise in PFI projects in order to promote achievement of commercially balanced Contracts;
- Enable public sector procurers to meet their requirements and deliver best value for money.

The three main objectives for the First edition were (SOPC, 1999):

- To promote a common understanding of the main risks encountered in a standard PFI project;
- To allow a consistency of approach in pricing across a range of similar projects;
- To reduce the time and costs of negotiation by enabling all parties concerned to agree a range of areas that can follow a standard approach without expanded negotiations.

2000: The OGC was established in April 2000 replacing the policy arm of the Treasury Taskforce (Allen 2003). Its stated aim was to modernise procurement throughout government, and it reported to the Chief Secretary of the Treasury (ibid). Gershon's aim was to provide a greater sense of direction in procurement and promote best practice in the public sector. In his proposal, departments would need to work more closely with the OGC and in some cases, accept some loss of sovereignty in procurement matters to deliver better VFM for Government (HM Treasury, 2000). Partnerships UK was launched in June and replaced the projects arm of the Treasury Taskforce (Allen, 2001). Partnerships UK work with both public and private bodies on specific PPP transactions to improve the process planning, negotiation and completion of PPPs. Its board comprises members of both the private and public sectors and the aim of Partnerships UK is (HM Treasury, 2000):

> *"to deliver better value for money by working on the side of the public sector".*

For a particular project, it will align itself with the public sector procuring authority and inject more detailed examination of practical considerations into the decision-making process and drive forward the conclusion of deals. By this way, it will help departments and other public sector organisations make a better job of procuring PFI deals (HM Treasury, 2000). The strategic objective of Partnerships UK is to create a catalyst to: achieve quicker and better VFM PFI deals: mobilising private sector skills in service of the public interest; and easing the financial constraints on public sector procurers which can enhance the flow of investment in the nation's infrastructure (HM Treasury, 1999). The mission of Partnerships UK is to work by partnering with the public sector procuring authorities to get the best out of their privately financed investment programmes (ibid). Partnerships UK works in close conjunction with the OGC (Partnerships UK, 2001). Alan Milburn, then Chief Secretary to the Treasury, said (ibid):

> *'This would provide the public sector with the key commercial skills to forge increased and better partnerships with the private sector on equal terms.'*

2001: In March 2001, Partnerships UK became a PPP in its own right following the sale to private investors of a 51% stake, the 49% (46% HM Treasury and 4.4% the Scottish Ministers) being retained by the public (Allen, 2003).

July 2002: The Second edition of SOPC was produced as OGC Guidance. The revised second edition sought to clarify, enhance and re-balance the guidance in the light of the public and

private sectors' experience of the guidance over the past three years. The most critical changes were: refinancing, compensation on termination and insurance issues (SOPC, 2002).

2003: Until April 2003, the Private Finance Unit (PFU) within the OGC had responsibility for developing and promoting PFI policy for public bodies (OGC, 2003). In March 2003, Justin Slater, Head of Private Finance Policy and Practice at the OGC announced that (ibid).

> *"An expanded HM Treasury PFU under the leadership of Geoffrey Spence will now carry all the responsibilities presently carried out by the OGC PFU".*

The responsibilities transferred were (Allen, 2003):

- Ministerial and parliamentary business on generic PFI policy matters;
- Ownership of standardisation of PFI contracts-written guidance for authorities on how to agree PFI contacts;
- PFI statistics disclosed to Parliament;
- Ownership of the Project Review Group (PRG) Secretariat-the process by which projects are reviewed. A project goes to PRG when there is a full Business Case and is reviewed;
- Single point responsibility for managing the Government's framework agreement with Partnerships UK.

In line with policy changes, Gus O'Donnell replaced Peter Gershon as the officer in charge of PFI policy (OGC, 2003).

April 2004: The SOPC – Version 3 was produced by HM Treasury (SOPC, 2003). The following assumptions are implicit within the guidance:

- The party contracting with the public sector is a SPV with sub-contractors providing the actual performance on its behalf;
- The project involves some development or a construction phase, followed by an operational phase during which the full service is provided;
- The project is wholly or partly financed by limited recourse debt.

July 2004: Local Government Supplement to SOPC Version 3 was produced by 4Ps as Guidance to aid Local Authorities (SOPC, 2004).

2005: Just under one half of PFI projects were estimated to be off the Government's balance sheet and therefore did not count as public-sector debt in the national accounts HM Treasury, 2009).

2008-2009: HM Treasury worked with Partnerships UK (PUK), individual authorities and the European Investment Bank (EIB) to develop a range of solutions to help PFI schemes reach financial close (EIB, 2015). The initial approach was to consider a series of different but traditional measures including making larger public capital contributions, guaranteeing bank lending and increasing EIB funding (HM Treasury, 2009). 2008 and 2009 were challenging years to raise finance for PPP and PFI schemes in the UK (ibid). The number of active lenders in the market was significantly reduced (HM Treasury, 2012). HM Treasury's response in March 2009 was the establishment of The Infrastructure Finance Unit (TIFU) whose objective was to lend to PFI projects that could not raise sufficient debt finance on acceptable terms HM Treasury, 2009). TIFU was to lend alongside commercial banks and the EIB (World Bank, 2015).

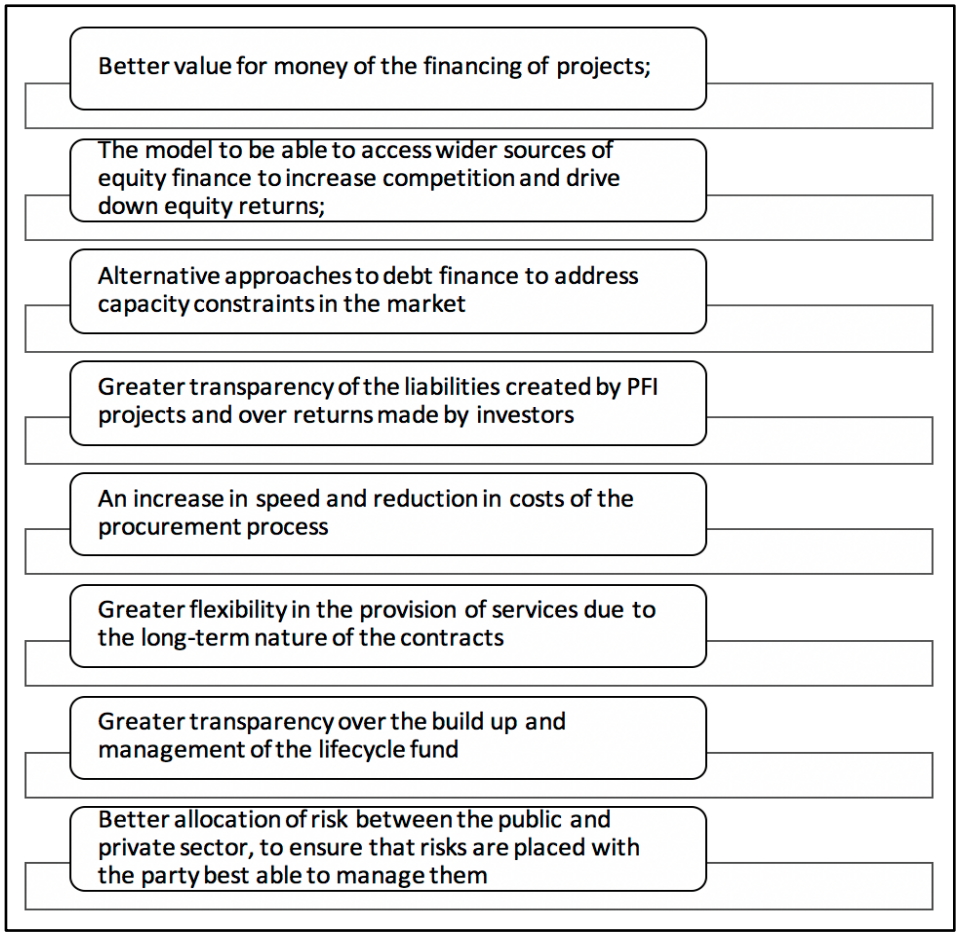
December 2009: The Chancellor of the Exchequer announced in the pre-budget report that a new entity, Infrastructure UK (IUK), would take on the role to advise the Government on strategic long-term infrastructure planning, prioritisation, financing and delivery across sectors from energy and waste, to water, telecommunications and transport (Deloitte, 2013). IUK's focus was therefore on economic as well as social infrastructure (ibid). The Chancellor gave IUK a number of immediate objectives, including (HM Treasury, 2012):

- Developing a strategy for the UK's infrastructure over the next 5 to 50 years;
- Identifying and attracting new sources of private sector investment;
- Managing the UK's investment in the EIB's Marguerite climate change infrastructure fund; and
- Providing support to HM Treasury and Department for Energy and Climate Change with their work to determine how the UK electricity market framework can most effectively deliver the low-carbon investment needed in the long-term.

2009/10: There was a change brought about by the adoption of International Financial Reporting Standards (IFRS) (IJ Global, 2015). This resulted in almost all PFI debt being included in the financial accounts of public-sector authorities for financial reporting purposes (ibid)

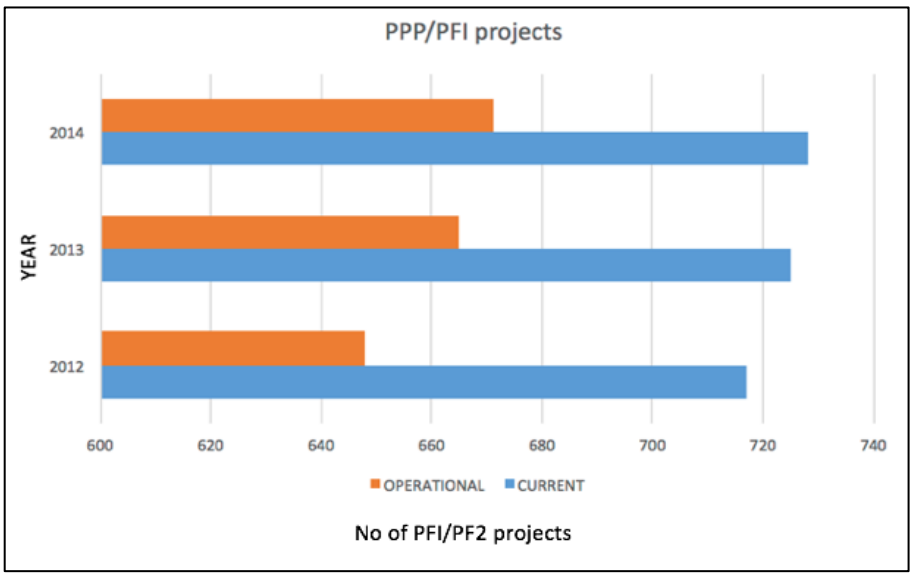
2010/11: The value of future PFI obligations including service charges stood at £144.6 billion. The Public Sector Net Investment (PSNI) gross spending on investment less depreciation was £26.7 billion in 2011/12 (HM Treasury, 2012).

2011/12: In this financial year, the capital cost of these PFI projects that reached a financial close was £2.1 billion (HM Treasury, 2012) whilst a total of £1.4 billion comprising nine projects had reached financial close in 2013/14 (HM Treasury, 2014). As part of government reforms to the PFI model, PF2 was developed to address the inefficiencies of the past projects procured under the PFI procurement method and to curtail the unpredictable nature of the economic environment (HM Treasury, 2012). This new scheme still allows the design, building, financing and maintaining of public infrastructure by the private sector for a defined period and work reforms (HM Treasury, 2014). Figure 2.7 illustrates factors of the PFI procurement route that was addressed in PF2 (HM Treasury, 2014). The UK guarantees programme, launched in July 2012 was also a response to the dynamics of the economy which was set up to accelerate nationally significant infrastructure projects. A total of £40 billion in guarantees to support the development of important projects that needed funding as a result of the challenging credit market conditions (HM Treasury, 2012). PFI had been a small but very important aspect of the UK government's total investment in public infrastructure and services (HM Treasury, 2012).

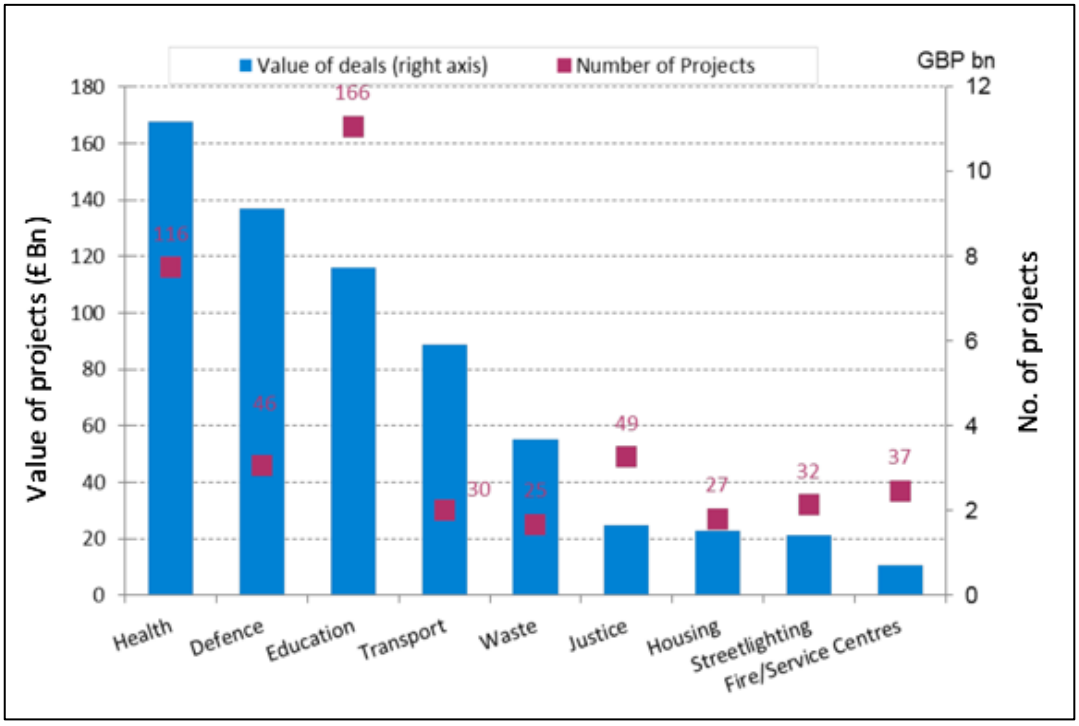


Factors Addressed in PF2 model
(Source: HM Treasury, 2014)

2014-2016: In the 2014/15 financial year, £2 billion has been projected as capital spending on PF2 projects by the private sector whilst the projected spending for 2015-16 onwards stood at £2.9 billion (HM Treasury, 2014). Again, PPP/PFI unitary charge payments were expected to total £10.3 billion and £10.5 billion in 2014-15 and 2015-16 respectively (HM Treasury, 2018). Figure 2.8 illustrates the number of PFI/PF2 projects that were operational and ongoing from 2012-2014 and figure 2.9 shows the number of projects and value of deals in various sectors in 2014.



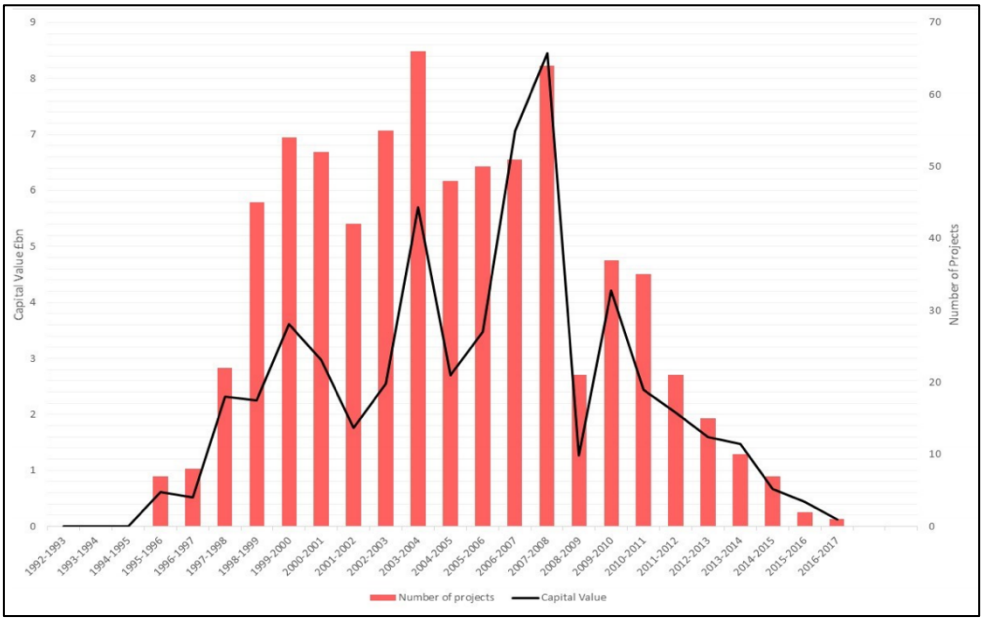
PFI/PF2 operational and current projects in the UK (2012 – 2014)
(Adapted from: HM Treasury, 2014)



Number of PFI/PF2 projects and value (£bn) in sectors (2014)
(Source: HM Treasury, 2014)

2017: As at 31 March 2017, there were 715 current PFI and PF2 projects. 699 projects were Operational and 16 were in construction (HM Treasury, 2018). The total capital value of projects was £59.1 billion, compared to £59.4 billion as at 31 March 2016 (ibid). Out of these projects, 631 were signed before May 2010 and have a capital value of £50.6 billion (86% of

the total) (World Bank, 2018). Figure 2.10 shows the number of PFI and PF2 projects that were signed (reached financial close) in each financial year since the inception of PFI in 1992. This represents the point at which contracts are signed and construction begins (HM Treasury, 2018). It also shows the corresponding capital values for the signed projects.

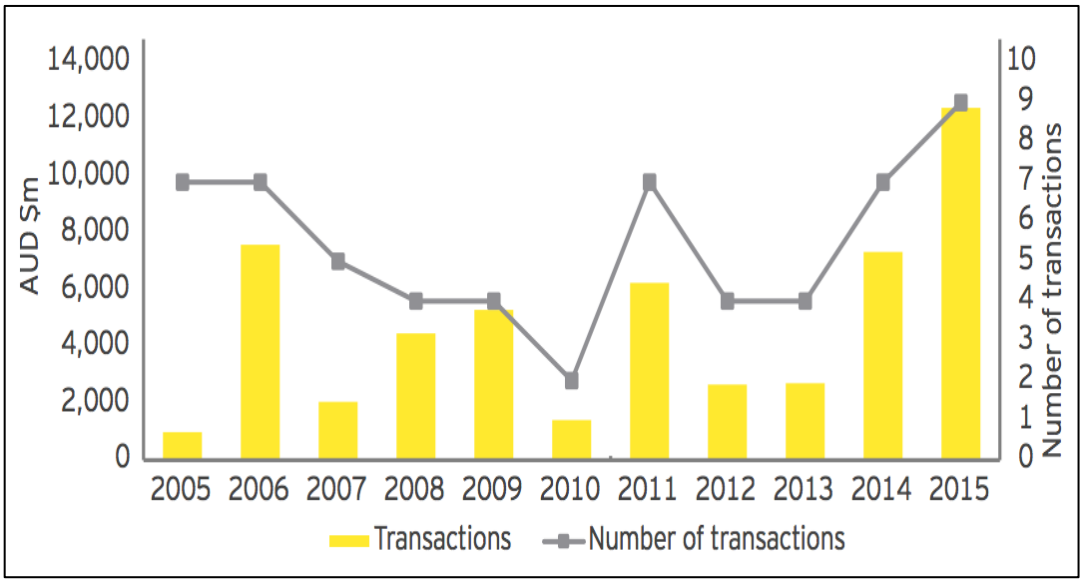


Number of PFI/PF2 projects and value (£bn) in sectors (1992-2017) (Source: HM Treasury, 2018)

Australia

Infrastructure is one of the prominent asset categories representing $616 billion and about 22.8 per cent of the country's GDP (EY, 2016). Despite Australia's sustained economic growth in recent times, there has been a great deal in meeting the existing infrastructure demand in relation to its capacity and condition (IPA, 2015). The Organisation of Economic Co-operation and Development (OECD) as a result raised several concerns about the shortfall in the government's infrastructure delivery (ibid). There was a decline in public investment infrastructure from about 6 per cent in the 1980's to 3.8 percent in 2007 (Regan, 2008) and Malone (2005) attributes the inadequacy of the government's infrastructure to this reason. The government has therefore embarked on several interventions or programmes to diminish this gap, one of which is the introduction of the Infrastructure Australia Act, 2008 which yielded Infrastructure Australia, set up to advise all levels of government with regards to the infrastructure deficit and factors that hinder economic growth and prosperity (Deloitte, 2013).

The Australian PPP market is considered one of the most mature PPP markets amongst the UK and Canada even though their first PPP model in 2000 is said to have been built similar to the UK's PFI model (RICS, 2012). The country's transport sector was amongst the first sectors to go through procurement under partnerships which saw Victoria and New South Wales cities adopting a PPP model in a bid to develop the road infrastructure network. According to the PPP model, core public services are delivered by government agencies and associated ancillary services where the government assumes certain risks, guarantees a minimum revenue stream and pays directly for service provision (IPA, 2015). The next PPP model involved toll roads and utilities which is distinct in its structure and arrangement as revenue risks are transferred to the consortium with no direct government revenue guarantee (RICS, 2012). Projects procured under this form of arrangement are touted as Privately Funded Projects (PFPs) as providers face market risks (ibid). However, the government agrees on a real rate of return on investments through lengthy terms and other arrangements which ensures that levies cover the cost of the asset, financing and maintenance (IPA, 2015). The policy environment has been vital for PPP implementation where PPPs have been a major development tool used in delivering major infrastructure such as tolls roads, hospitals and utilities (EY, 2016). From 2005-2015, a total of fifty-five deals with a capital value of AUS$28.1 billion (Australian Dollars) achieved financial close which is illustrated in figure 2.11.



PPP Projects and its value (AUS $bn) from 2005-2010 in Australia (Source EY, 2016)

Australia's largest infrastructure project is identified as the national broadband network company which will own, build and operate a $43 billion network on an eight-year PPP

scheme, with an initial capital investment of $4.7 billion by the government (RICS, 2012). This is expected to boost the long-term economic growth in the country with the private sector providing technical expertise and resources (Deloitte, 2013). In the year 2014, Australia's $3.9 billion phase 1 road project, which will connect eastern freeway at Hoddle Street to City Link in Parkville was amongst the biggest PPP deals signed that year (IPA, 2015). A fundamental issue with projects procured under PPP has however been that they are leveraged with debt through the issue of bonds (Deloitte 2013). Despite challenges with raising finance, the implementation of PPP in Australia remains sanguine as projects remain fundamentally a good credit risk hence attracting lending and investment prospects (World Bank, 2018). Nevertheless, a project exceeding $800 million now requires a mandatory upfront-subsidy payment or an alternative support from the government to proceed (EY, 2016).

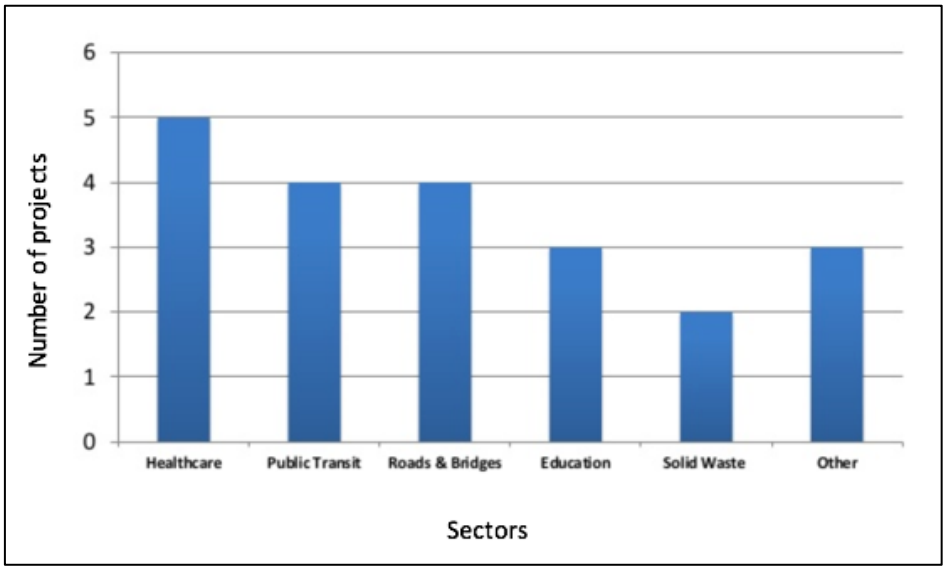
Canada

There have been several attempts at assessing the extent of the infrastructure gap in the country which has demanded ad hoc arrangements within federal, municipal and territorial government (RICS, 2011). The habitual funding deficits and the ever-increasing population growth resulted in a major infrastructure gap in major municipalities across Canada (EY, 2016). After about 25 years of under-investment, public infrastructure in the country required serious repair, redevelopment and upgrading (IJ Global, 2015). Peculiar challenges of globalisation, immigration and urbanisation crisis continue to widen this gap and escalates deferral of public infrastructure maintenance in the country (PWC, 2015). The Federation of Canadian Municipalities (FCM) state that the country needs $115 billion of capital injection to meet the funding gap which stands at $123 billion to boost the current system of public infrastructure and if not curtailed urgently, the gap will reach $1 trillion in the next 60 years (PEI, 2010).

Infrastructure procurement through PPP in Canada began relatively later in the 1990's where the twenty distinct projects were undertaken across all tiers of government (FCM, 2007; PEI, 2010). At the federal level, a design, build, operate and transfer deal worth $739 million was made between the Strait Crossing Development Inc. (SCDI) and the government which developed the confederation bridge linking Prince Edward Island with mainland Canada (RICS, 2011). This model was to operate and maintain the bridge for a thirty-five-year period during where the company was entitled to collect all toll revenue proceedings before transferring it to the federal government (ibid).

The federal government published a long-term economic plan which had a definite objective to promote application of PPPs in November 2006 and in 2009 a federal agency-PPP Canada was established out of this economic plan (RICS, 2011). PPP Canada was tasked to support best practice and enhance project activity through transparency of PPP markets (Deloitte, 2013). A $3.3 billion bridge over the St. Lawrence river in Montreal closed June 2015 and the Eglington light-rail transit (LRT) project in Toronto closed July 2015 with a staggering C$5.5 billion (Canadian Dollars) about $4.4 billion, which is the biggest PPP deals thus far (IJ Global, 2015). Presently, all projects above $50 million and above are required to compel assess and seek the possibility of a PPP approach (PWC, 2015).

There was a high number of projects procured under PPP between 2005-2010 which reflects the robustness of the PPP market in Canada (RICS, 2011). In 2007 for instance, 15 deals requiring US$3.22 billion achieved financial close as represented in the (ibid). Again, between 2008 and 2010 a total of 28 deals reached financial close necessitating US$10.34 billion (IJ Global, 2015). An important factor of the development of PPP market in Canada has been the ability to reduce risk and deliver projects so as to provide value for money to the taxpayer (Deloitte, 2013). Similarly, it has worked towards reducing the lead time from about 16 months to 14 months averagely as compared to 17 months and 34 months for Australia and the United Kingdom respectively (World Bank, 2018). By the end of 2017, there were 267 active PPP projects in Canada that had reached financial close and are valued at nearly C$ 123 billion (US $95.4 billion) (World bank, 2018). Canadian PPP portfolio has saved governments as much as C$27billion (US$20.9) and added 115,000 jobs and C$5 billion (US $3.9 billion) in additional wages on average per year and these projects are delivered 13% faster than those procured in the traditional way (ibid). Figure 2. 12 illustrates number of PPP closing by sector in 2016.



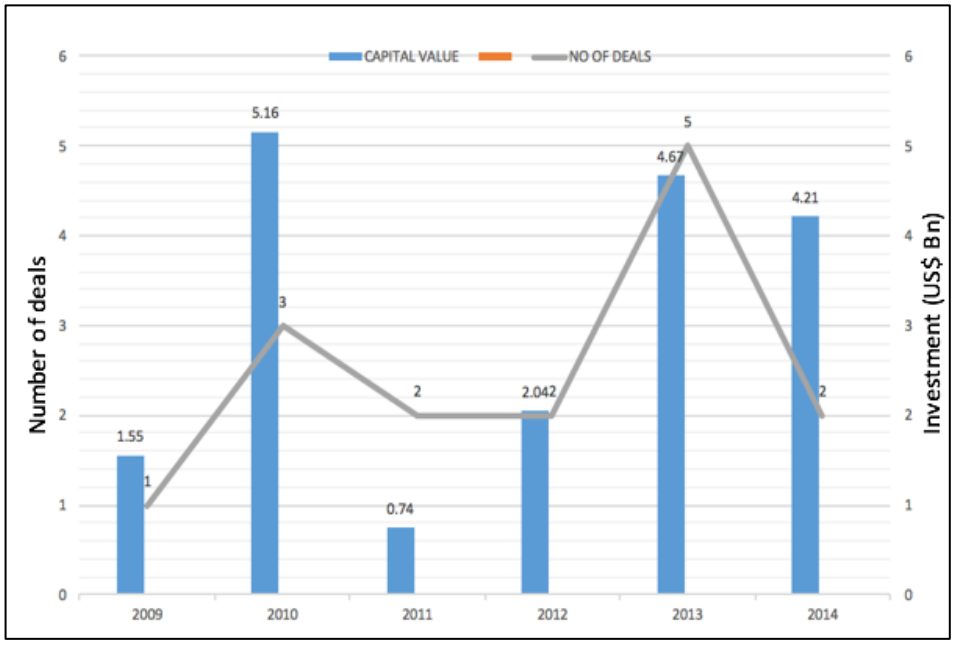
Number of PPP projects closed in 2016 by sector (Source: World Bank, 2018)

USA

The gap between the demand and supply of public services of infrastructure in the United States of America had been a chronic issue for decades albeit the massive investment in this sector (Wirtz, 2009). This is a result of *inter alia* the inadequacies and inefficiencies of how public infrastructure systems have been managed over the years which has not been able to meet demand (RICS, 2012). For instance, in 2010, the Environmental Protection Agency (EPA) maintained that an amount of $334 billion should be invested in drinking water utilities over a period of twenty years to be able to ensure sustainability in the public health and economic well-being of communities (PWC, 2010). There were however tremendous interests in PPP as a public approach to infrastructural development in the US which has been because of factors including attaining VFM with conventional procurement methods, population growth amongst others (Deloitte; 2007; RICS, 2012). A key enabler for the adoption and implementation of PPP had however been the gap between financial capacity and the demand for infrastructure (World Bank, 2011). At the end of 2011, more than half of all states in the country had authorised PPP legislation (Deloitte, 2013). Noteworthy, the biggest PPP deal in 2014 was the Cameron LNG development located in Hackberry, Louisiana, United States with a total cost of $10.9 billion which is supposed to increase the country's LNG export capacity (IJ Global, 2015). In January 2015, the government introduced the Qualified Public Infrastructure Bond (QPIB) that was developed to extend the benefits of tax-exempt private activity bonds to

privately-operated solid waste disposal, sewer and water facilities (IJ Global, 2015). A total of 15 PPP deals reached financial close between 2005 and 2010 where 5 projects valued at $4.67 billion were concluded in 2009 (Infrastructure Journal, 2015). Additionally, the height of this period was 2006 where 3 deals were closed culminating $5.16 billion as shown in the figure 2.13.

The average deal size for the US however has been relatively higher compared to the UK and Australia during this period. From 2006-2010, the US had an average of $1.2 billion for 15 projects compared to $0.22bn (334 projects) and $0.51 billion (55 projects) for the UK and Australia respectively (RICS, 2012). However, certain constraints like liquidity in the banking sector which has been a traditional source of PPP funding has stalled the implementation of certain major PPP undertakings even though it is indicative that several projects are being closed and successfully implemented (IJ Global, 2015). For instance, in 2009, a $2.5 billion deal for the midway airport in Chicago froze as investors had major issues in raising the required debt funding for the project.



PPP projects and its value ($bn) from 2005-2010 in USA (Adapted from: RICS, 2012; Infrastructure Journal, 2015)

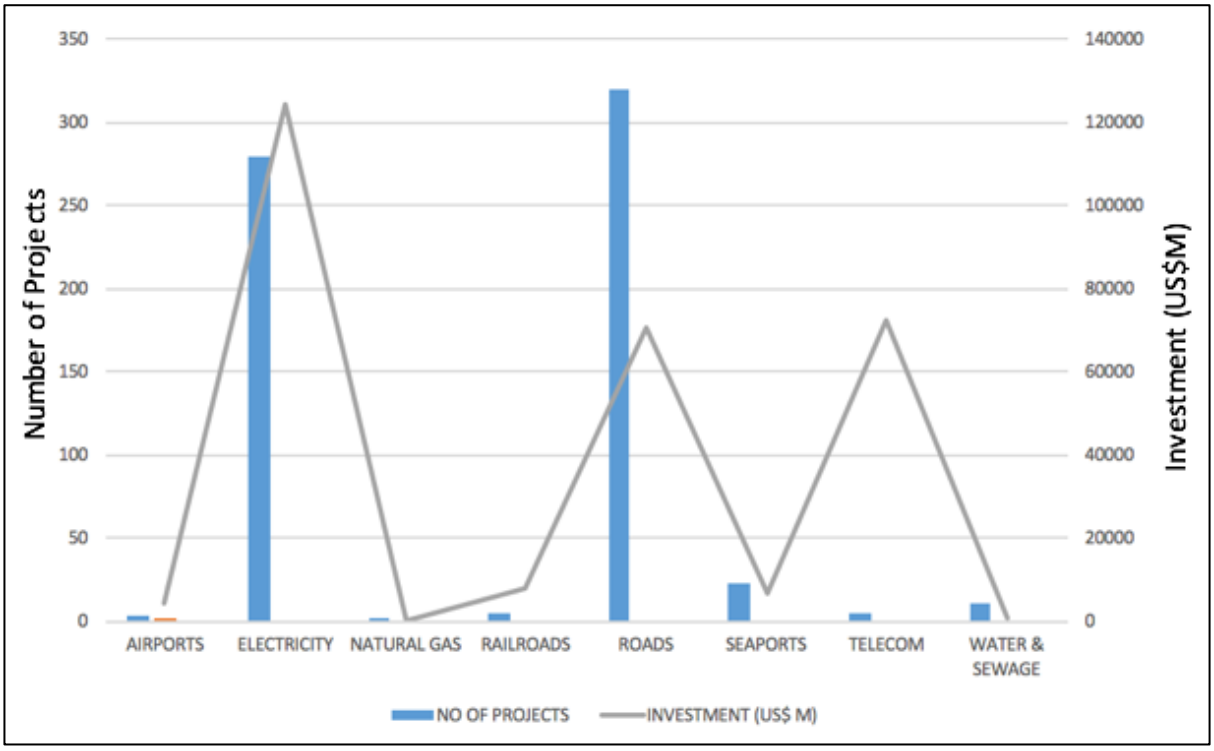
Asia

India

There was a major infrastructure void because of the rate of inadequacy of public infrastructure is great although its GDP has been growing steadily with an average of 8 per cent in the last decade (IJ Global, 2015). Sectors of the infrastructure industry contributes an average of 5.75 percent to the GDP but is expected to grow to about 9 percent given the investments being done in the sector although it is envisaged that a third of this will come from the private sector (DEA, 2015). Additionally, the government in its periodic development plan budgeted £199.6 billion into its infrastructure industry between 2007-2011 to mitigate the effects of the infrastructure gap. PPP for infrastructure development in India dates back about 20 years ago and has been gaining immense support from the government (RICS, 2012). A total of 412 projects culminating a capital investment of $81.9 billion have been completed by PPPs (Gustafsson-Wright et al., 2017) The government formed a 10-member PPP unit headed by the former finance secretary to enhance PPP procurement in the country which is mandated with the primary task of improving capacity and risk allocation between the public and private sector in 2014 (IJ Global, 2015). The National Highway Authority of India (NHAI) established standardised bidding and contractual documents such as the RFQ and RFP model as a means to enhance procurement between the public authority and the private sector (DEA, 2015). There are however major challenges in the PPP implementation in India that deters a holistic approach to sustainability in meeting the infrastructure demand. For instance, land acquisition issues have been of major concern to the government where PPP projects are delayed due to resistance of the local communities (EY, 2014). Similarly, financing of PPP projects has become more difficult as large infrastructure companies are being highly leveraged in these projects. This is because bank lending in India is short term usually between 3-7years although debt raised through bond markets is still in the process of development (PWC, 2015).

The road sector is the major sector to receive capital investment under the PPP procurement method with BOT as the predominant model used (DEA, 2015; EY, 2016). The Department of Economic Affairs of the Ministry of Finance (MoF)-India stated that investments from 2015 - 2020 will be worth USD $31 billion in the national highways. In water supply, the private sector is responsible for the operation and maintenance of the water distribution network in the country (EY, 2014). For instance, the Karnataka Urban Water Supply Improvement was financed by the government and the World Bank but is privately operated to improve water facilities in the cities of Hubli, Dharwad, Belgium and Gulbarga (Gustafsson-Wright et al.

(2017). Additionally, in the case of solid waste management, private sector capital injection is usually in the form of vehicles and equipment needed for the mobilisation of waste (ibid). Figure 2.14 represents the number of projects reaching financial close and its culminating capital investment in India between 2010 and 2016 (World Bank, 2018).



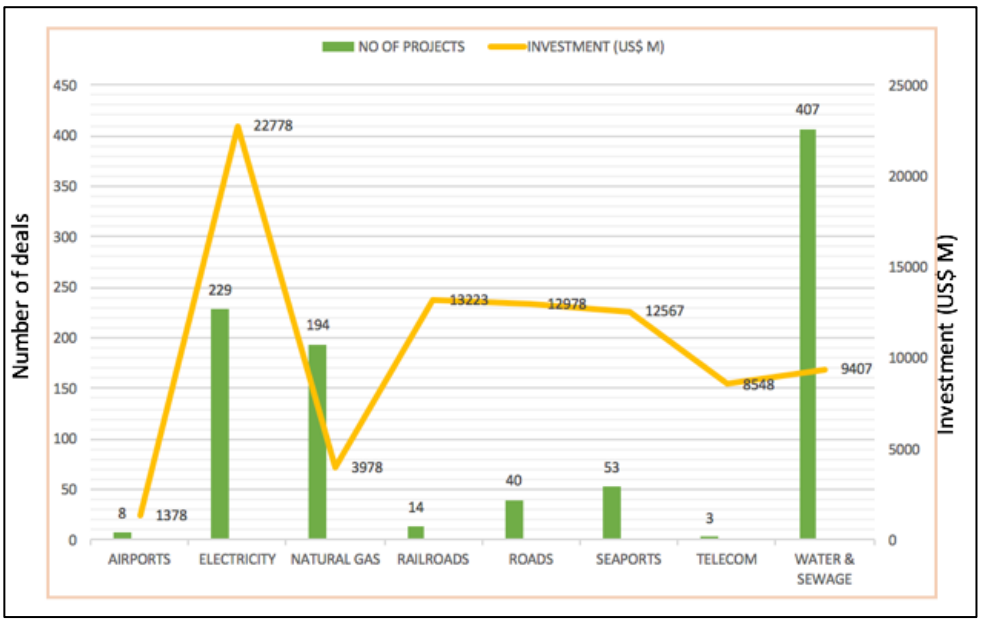
PPP projects and value ($bn) by sector in India
(Adapted from: DEA MOF, 2015; World Bank, 2015)

China

Over the past few decades, China has been the world's largest infrastructure market and investment destination as a result of economic reforms engaged to meet population growth and its related demands (World Bank, 2015). There has been the need to adopt contemporary infrastructure planning approaches to face the overcapacity challenges in the country. One such approach is the encouragement of the private sector in public service delivery since the government led infrastructure development has resulted in an unsustainable dependence on the single source of financing of local governments (AIIB, 2015). Hence, the central government made it significant to engage banks to reduce the quantum of loans given to the local government and to enhance the level of accountability and transparency of local government accounts (Gustafsson-Wright et al., 2017). The MOF envisages to build complementary and mutually beneficial relations between the private sector and fostering PPP implementation by restructuring risk allocation amongst others (World bank, 2018). China's Asian Development

Bank (ADB) projects an amount of $8 trillion pumped into infrastructure development between 2010 and 2020 where 51 per cent will go into the electricity sector, 29 per cent and 13 per cent allocated to the roads and telecommunications sector respectively to be able to meet the infrastructure gap (AIIB, 2015).

Two major factors that drives the Chinese government towards PPPs have been the level of local government debt and the significant investments they require to meet infrastructure needs (Thieriot & Dominguez, 2015). The National Development and Reform Commission (NDRC) in May 2015 released a list of 1043 PPP projects necessitating 1.97 trillion yuan ($317.75 billion) which is keen on attracting the private sector to be involved in financing, building and operating (EY, 2016). Sectors benefitting from this investment include the transport, water conservancy and public services. An example is a project of two subway lines in Hangzhou costing 51.9 billion yuan ($8.4 billion) and a 6.4 billion ($1.04 billion) yuan hospital in the capital of Xinjiang. China is rapidly utilizing PPP models as its economy's growth reduces gradually (World Bank, 2016). In May 2015, policymakers urged banks to keep lending to government agencies so as to avoid the decrease in ongoing government projects and is driving the launch of the Asian Infrastructure Investment Bank (AIIB) (Gustafsson-Wright et al., 2017). Again, the cabinet in September 2015 stated that PPPs in public services will enjoy tax breaks and other financial rewards to boost PPP implementation in the country (ibid). From figure 2.15, China's investments into the various sectors juxtaposed to the number of projects reaching financial close between 2010 and 2016 has been illustrated (World Bank, 2018). Capital injection into the electricity sector been highest during this period with a value of about $22.7 billion and a total of 229 projects. Contrarily, the highest number of projects has been in the water and sewage sector with 407 projects reaching financial close necessitating an investment of $9.4 billion.



PPP projects and value ($bn) by sector in China (Adapted from: KPMG, 2014; World Bank, 2015)

Sub-Saharan Africa

Africa is recognised as having most countries with high economic growth rates in the world and is expected to grow at an average rate of 6 per cent between 2013 and 2023 (World Bank, 2015; EY, 2016). However, an imminent factor hindering this growth is the absence of infrastructure which is predicted to cost growing economies 2 percent off their respective GDPs each year (EY, 2016). Africa's economic growth has occurred despite the challenging infrastructure issues; however, the significance of infrastructure is not disputed (World Bank, 2018). The population growth factor coupled with widening economies, urbanisation and expanding trade levels have intensified the demand for infrastructure development (PWC, 2015). In the case of power and energy production for instance, 48 countries of Sub Saharan Africa with a total population of 800 million produce as much energy/power as Spain with a population of 45 million (World Bank, 2015).

The cost of tackling the infrastructure deficit in Africa was valued at a spend of US$90 billion annually for the next decade which will be factored into expenditure on new builds and the operation and maintenance of existing infrastructure (EY, 2014). The respective governments of Sub-Saharan African states do not possess the needed capacity to fund these projects as a result of *inter alia* the mismanagement of limited resources and serious macro-economic constraints which include high inflation rates and currency depreciation (World Bank, 2015). However, governments need to consider current approaches of financing solutions in

infrastructure development that will be economically feasible (EY, 2015). As a result, the continent is appreciating the significance of PPP as an effective and sustainable solution to the deficiency in delivery of infrastructure (IJ Global, 2015). Africa is the second most preferred investment destination in the world where the private sector invested $12.8 billion into expanded infrastructure development in 2014 (EY, 2016). There has been a significant increase in the investments between African countries which demonstrates an advancement in regional integration on the continent and gradually certain countries are engaging the PPP method of procurement as a development tool (World Bank, 2018).

South-Africa

A relatively young democratic system where the first democratic elections were held in 1994, the adoption of PPP has proven successful over the years. South-Africa is the African country with the most developed PPP machinery (EY, 2014). In 1997, a task committee was set up to assess PPP and the institutional reforms required to effectively adopt the procurement method (IJ Global, 2015). Following a strategic framework submitted in 1997, the Government Technical Advisory Center (GTAC) was established as an agency of the National Treasury to enhance public sector finance management and foster public sector capacity building through partnerships and a primary objective of ensuring quality of projects according to its expectations (GTAC, 2015). The Transaction Advisory Service Unit (TASU) is however mandated to support the government in the planning, procurement and implementation of such large-scale infrastructure projects as well as being the advisory body between the government and the private sector (IJ Global, 2015). The country has successfully completed 28 projects with diverse sectorial and municipal allocations with 72 signed and closed projects going through their PPP project cycle (GTAC, 2015).

Nigeria

Nigeria is a West-African country with the biggest economy in Africa culminating $405.1 billion of GDP in 2016 (World Bank, 2018) yet, its infrastructure gap stands at $200 billion with an annual spend of $15 billion to meet it (ICRC, 2015). It is argued that the government needs current and stringent economic reforms to be able to meet this gap however there has been concerted efforts by the government to privatise certain public assets and involve the private sector in operation and maintenance (World Bank, 2015). A major reason identified through a report by the Presidential Projects Assessment Committee revealed that a total number of 11 886 were abandoned that will require N7.78 trillion to complete which is as a

result of the lack of funding allocations even though contracts are still being awarded on a weekly basis (EY, 2014). In 2015, the budget for road projects could only suffice 33 out of 210 projects leaving the rest without funding (ICRC, 2018). The need for private sector participation in terms of financing and maintenance etcetera is therefore incontestable appearing to be a valid approach in the supply of public services through infrastructure development (EY, 2016). Therefore, an Infrastructure Concession Regulatory Commission (ICRC) was set up as a body to accelerate investment in national infrastructure through private sector funding by assisting the Federal Government of Nigeria and its Ministries, Departments, and Agencies (MDA) to implement and establish effective Public Private Partnership (PPP) procurement (ICRC, 2018).

7.9 Appendix B – Research Output – Journal Papers

BARRIERS AND ENABLERS TO EFFECTIVE IMPLEMENTATION OF CRITICAL INFRASTRUCTURE PPP PROJECTS IN GHANA

Abstract: Owing to the growing demand on critical infrastructure in Ghana and a decrease in public sector investment as a result of serious fiscal constraints, it has become necessary to encourage private sector revenue generation through participation in critical infrastructure delivery in order to offset public cost. The continuous call by the government to create an enabling environment for private capital in critical infrastructure delivery and the need to not only introduce but successfully implement the PPP model cannot be overemphasised taking into consideration other differing approaches. Despite the attraction to the PPP model around the world, its implementation has not been void of difficulties. The paucity of knowledge of PPP in Ghana as a result of its novelty requires the identification of context-specific critical factors for successful delivery. Factors of enablers and barriers that enhance and challenge effective PPP implementation respectively were identified from literature and investigated via 30 questionnaires among stakeholders both in the public and private sector. Appropriate risk sharing and allocation was ranked the most critical enabler whilst accusations of corruption and corrupt tendencies emerged as the most critical barrier that impede PPP development in Ghana. Factor analysis was employed to analyse the enablers and to provide further discussions.

2.

EXPERTS' PERSPECTIVES ON DEVELOPING PUBLIC-PRIVATE PARTNERSHIPS IN THE GHANAIAN ROAD SECTOR - A QUALITATIVE STUDY

Abstract:

The importance of the road sector in Ghana is immense to the socio-economic development of the country. However, the fiscal constraints of the government coupled with other factors make the development of this critical infrastructure difficult which has spurred the need to involve the private sector in meeting the gap between demand and supply. However, since the inception of the formulation of policy guidelines, the country has seen no or little road PPPs. This paper involves the engagement of semi-structured interviews among 16 experts of the public and private sector to investigate barriers to this and identify enablers for not only successful but effective implementation in this context. Bankability and the lack of a PPP bill emerged as major barriers to road PPP implementation in Ghana. The lack of a central PPP unit which is neutral, and void of government machinations and political influences was recorded as critical to effective implementation of the PPP model as the absence of it acts as a disincentive to investment. This is mainly because of the associated political and social risk. These factors among others constituted major findings of this research.

3.

AN ASSESSMENT OF PREFERRED BIDDERS' CRITERIA FOR SUCCESSFUL CONTRACTOR SELECTION OF GHANAIAN PPP PROJECTS – A PUBLIC SECTOR PERSPECTIVE

Abstract: Public Private Partnerships (PPPs) have increasingly become a major procurement route in the delivery of public services especially among governments of developed countries. As a rather emerging model in Ghana, the investigation of preferred bidders' criteria necessary for bid appraisals is critical in the successful implementation of PPPs in the country. This paper focused on identifying concepts that ensure successful approval of PPPs through literature and the Ghanaian national PPP policy. Parameters that are critical to successful implementation were investigated from the public sector perspective. Semi-structured interviews were thus engaged among key stakeholders responsible for the bidding and approval of PPP projects in Ghana to investigate the significance and practicality of these concepts: Affordability; Value for Money (VFM); and Risk Management to enhance transparency for private sector participation PPP bidding. The findings accentuated parameters under these concepts and the interrelation of these concepts in the development of effective PPPs. This brings an understanding to interested contractors or bidders with knowledge on meeting requirements in getting approved and better aligning project objectives with government expectations.

7.10 Appendix C – Ethical Approval

Academic Audit and Governance Committee

Science and Technology Research Ethics Panel (CST)

University of Salford MANCHESTER

MEMORANDUM

To Jarvis Tornam Tchorly (and Dr Anthony Higham)

cc: Professor Hisham Elkadi, Head of School of SOBE

From Nathalie Audren Howarth, Research Support Officer

Date 4/09/2015

Subject: Approval of your Project by CST

Project Title: THE IMPLEMENTATION OF PUBLIC-PRIVATE PARTNERSHIPS (PPP) AS A SUSTAINABLE SOLUTION FOR DEVELOPMENT IN GHANA

REP Reference: CST 15/21

Following your responses to the Panel's queries, based on the information you provided, I can confirm that they have no objections on ethical grounds to your project.

If there are any changes to the project and/or its methodology, please inform the Panel as soon as possible.

Regards,

[redacted]

Nathalie Audren Howarth
Research Support Officer

For enquiries please contact:
College of Science and Technology
College Research Support Officer
The University of Salford
Maxwell building, (7th floor, room 721)
Telephone: 0161 295 5278
Email: n.audren@salford.ac.uk

7.11 Appendix D – Semi-Structured Interview Format

Challenges of PPP Implementation

University of Salford MANCHESTER

BACKGROUND: **INSTITUTION NAME:**	
TYPE	
INTERVIEWEE	
NAME	
JOB TITLE/POSITION	
YEARS OF EXPERIENCE	

- **Introduction of researcher**
- **Purpose of study, recording.**
- **Recap of earlier emails sent**

1. **What is your understanding of Affordability?**
   The relevance and recognition of Affordability in road PPP implementation or projects. To what extent is this taken seriously? Processes, Procedures etc. Template?
2. **What is Value for Money (VFM)?**
   The relevance and recognition of Value for Money (VFM) in road PPP implementation or projects. To what extent is this taken seriously? Processes, Procedures etc. Template?
3. **What is Risk management (RM)?**
   The relevance and recognition of Risk Management (RM) in road PPP implementation or projects. To what extent is this taken seriously? Processes, Procedures etc. Template?

Added Information. Discussions

University of Salford MANCHESTER

BACKGROUND: **INSTITUTION NAME:**	
TYPE	
INTERVIEWEE	
NAME	
JOB TITLE/POSITION	
YEARS OF EXPERIENCE	

- **Introduction of researcher**
- **Purpose of study, recording.**
- **Recap of earlier emails sent**

1. **What are some of the challenges, barriers, constraints of PPP implementation?**
   - Lack of skilled personnel?
   - Resistance to change or reluctant to initiate new workflow? (Cultural barriers)
   - Perception that PPP is complex and complicated so takes too much time.?
   - Lack of central PPP unit?
   - Corruption in construction industry?

2. **In your opinion what could be done differently to ensure better and effective implementation? (Enablers)**

   Discuss Factors involved.

   Relate other responses given.

Challenges of PPP Bidding Processes

University of Salford MANCHESTER

BACKGROUND: **INSTITUTION NAME:**	
TYPE	
INTERVIEWEE	
NAME	
JOB TITLE/POSITION	
YEARS OF EXPERIENCE	

- **Introduction of researcher**
- **Purpose of study, recording.**
- **Recap of earlier emails sent**

1. **What are some of the constraints or challenges/barriers in the ministry when it comes to bidding?**

2. **Upon earlier secondary research that I did, some of the challenging factors enumerated by the private sector include…**

3. **In your opinion what could be done differently to ensure better and effective PPP bidding?**

Thank you very much for your time and support

Review?

How did the interview go? Anything I could have change

Semi-Structured Interview Format - BAPM

University of Salford MANCHESTER

BACKGROUND: **INSTITUTION NAME:**	
TYPE	
INTERVIEWEE	
NAME	
JOB TITLE/POSITION	
YEARS OF EXPERIENCE	

- **Introduction of researcher**
- **Purpose of study**
- **Recap of earlier emails sent**

1. **According to research, some of the typical stages of PPP bidding include: XXXXX**
2. **What stages are critical for road PPPs?**
3. **What are some of the preliminary stages that are important for this exercise?**
4. **Please explain some of the criteria needed for evaluation at XXX stage?**
5. **How important is the XXX stage?**
6. **Can this XXX criteria be evaluated?**
7. **How will this XXX criteria be evaluated?**
8. **What will you say is the best way of bidders showcasing the XXX criteria?**
9. **According to this response, XXX stage/Criteria is critical, to what extent do you agree? Should this be amended? Reasons please?**

Thank you for your time

Validation Instrument

University of Salford MANCHESTER

1.

BACKGROUND: **INSTITUTION NAME:**	
TYPE	
INTERVIEWEE	
NAME	
JOB TITLE/POSITION	
YEARS OF EXPERIENCE	

- **Introduction of researcher**
- **Purpose of the validation exercise**
- **Summary of developed BAPM.**

2. Can you please rate the BAPM on a scale of 1-5 according to the criteria below.

Comprehensiveness

Excellent	Above Average	Average	Below Average	Poor
1	2	3	4	5

Objectivity

Excellent	Above Average	Average	Below Average	Poor
1	2	3	4	5

Practicability

Excellent	Above Average	Average	Below Average	Poor
1	2	3	4	5

Replicability

Excellent	Above Average	Average	Below Average	Poor
1	2	3	4	5

Reliability

Excellent	Above Average	Average	Below Average	Poor
1	2	3	4	5

Suitability

Excellent	Above Average	Average	Below Average	Poor
1	2	3	4	5

3. General comments? How this could be improved

Thank you very much for your time and support

7.12 Appendix E - Risk Allocation Results

RISK CATEGORY/ RISK FACTORS	PUBLIC	PRIVATE	SHARED
TECHNICAL			
Inadequate designs	7.7%	73.1%	26.9%
Poor quality of construction	26.3%	52.6%	21.1%
Equipment and material unavailability	8.3%	68.4%	22.2%
Construction accidents	27.3%	59.1%	13.6%
Construction force majeure events	25.0%	58.3%	16.7%
Relocation of utilities infrastructure	5.1%	80.2%	9.7%
Unforeseen site conditions	16%	23%	61%
Failure to meet agreed milestones	22.6%	54.8%	22.6%
Third party objections	4.0%	28.0%	68.0%
Completion risk	7.7%	73.1%	19.2%
Project Delays	24.1%	10.3%	65.5%
OPERATIONAL			
Revenue/Demand risk	21.4%	65.3%	13.3%
Maintenance cost overrun	12.4%	72.1%	15.5%
Breach of contract or expropriation	2.0%	25.6%	74.4%
Operator performance issues	18.4%	77.3%	4.3%
Operational force majeure	3.2%	34.4%	37.6%
Residual value risk	34.5%	58.2%	7.3%
Wage Inflation	17.5%	74.2%	8.3%
Accident risk	24.1%	61.2%	14.7%
Labour issues	15.4%	11.3%	73.3%
Customs risk	34.5%	54.2%	11.0%
Environmental and social impact risk	27.7%	47.8%	24.5%
Concession risk	9.3%	81.4%	9.3%
Government withdrawing from PPP	13.7%	67.9%	18.4%
Future laws and directives	9.4%	24.4%	66.2%

Government changing terms of the contract or not fulfilling their contractual obligations	12.7%	76.4%	10.9%
FINANCIAL			
Interest rate risk	13.9%	65.2%	20.9%
Inflation risk	5.8%	59.7%	34.5%
Exchange rate risk	8.9%	75.4%	15.7%
Lack of equity and debt funding for the project	10.3%	12.3%	77.4%
High finance costs	7.3%	85.1%	7.6%
Project cost overruns	10.4%	78.3%	11.3%
Government's failure to implement tariff increases	76.2%	19.6%	4.2%
Viability gap risk	69.4%	13.0%	17.6%