

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI, GHANA**

**Estimating the Transaction Cost Indices of Public Private Partnership
Infrastructure in Ghana
(Case Study of Kumasi Metropolitan Assembly)**

By

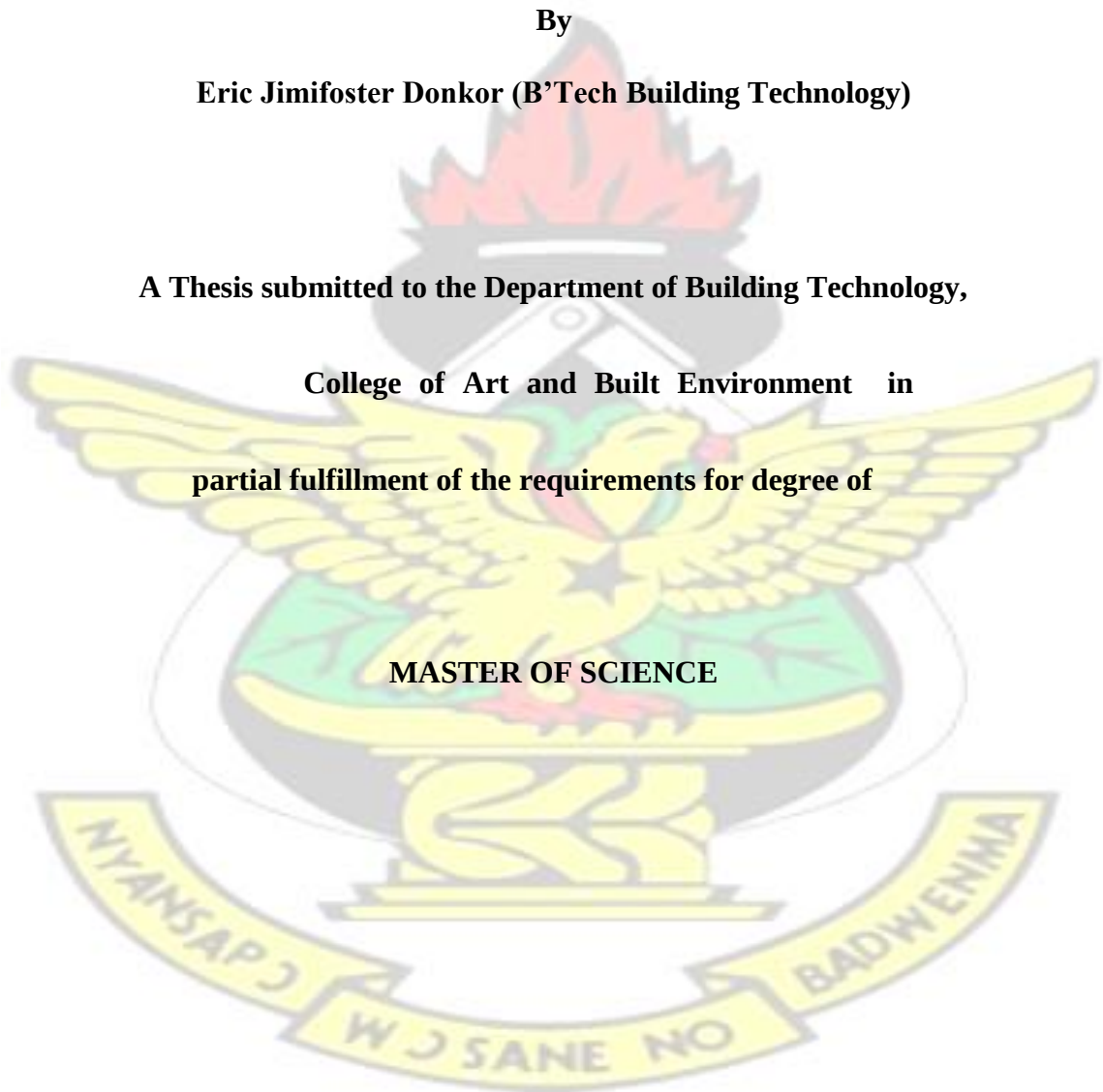
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A Thesis submitted to the Department of Building Technology,

College of Art and Built Environment in

partial fulfillment of the requirements for degree of

MASTER OF SCIENCE



NOVEMBER, 2016

DECLARATION

I hereby declare that this submission is my own work towards the MSc Construction Management and that, to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text

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ABSTRACT

Public Private Partnership infrastructure projects have existed in the field of procurement for some time now however, its implementation in Ghana is at its early stages implying that transaction cost estimation of PPP projects are yet to be explored. The study focused on estimating Transaction Cost Indices for PPP projects undertaken in the Kumasi Metropolitan Assembly which happens to be the first of its kind in the Ashanti Region. Two supporting objectives were set to address the aim of the study, they are: firstly, identify areas that substantially contribute to transaction cost of PPP projects and secondly, estimation of transaction cost indices of PPP infrastructure projects. The study relied on data from the works department of the Kumasi Metropolitan Assembly on PPP projects concurrently on-going in four of their Sub Metropolitan Assemblies namely Subin, Tafo, Bantama and Kwadaso. They are five (5) projects in all, with most of them being shopping facilities and complexity of the projects varies. Feasibility studies cost tend to be the cost area that substantially contribute higher quota to the Transaction cost of PPP projects in the KMA. Furthermore, the study was able to come out with cost index for all the five (5) projects studied, therefore future projects can rely on the cost index as a guide on transaction cost expenses. Finally, transaction cost threshold was estimated in order to provide a ceiling of estimating the transaction cost index for projects. Therefore, it is recommended that, though private investors pay for the actual cost of the projects MMDAs can also reduce the transaction costs which are incurred during the initial stages of the project. It is recommended that further studies will consider all the Metropolitan, Municipal and District Assembly separately to come out with a transaction cost indices for the respective types of Assemblies.

TABLE OF CONTENT

DECLARATION	ii
ABSTRACT	iii
LIST OF TABLES	vi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background	1
1.2 Statement of Problem	2
1.3 Research Questions	3
1.4 Aim and Objectives	3
1.4.1 Aim	3
1.4.2 Objectives of the Study	3
1.5 Scope of Study	3
1.6 Significance of Study	4
1.7 Methodology of the Study	4
1.8 Organization of the Study	5
CHAPTER TWO	5
LITERATURE REVIEW	5
2.1 Introduction	5
2.2 Public Private Partnerships Concept	7
2.2.1 Definition	7
2.2.2 Characteristics of PPPs	9
2.2.3 Success factors in PPPs	10
2.3 Transaction Cost in Public Private Partnerships	11
2.3.1 Overview on Transaction Cost Economics (TCE)	11

2.3.2 Transaction Cost definition.....	13
2.3.3 Measuring Transaction Costs.....	15
2.4 Measuring Transactions Costs in PPPs.....	17
2.4.1 Introduction.....	17
2.4.2 Theoretical works	18
2.4.3 Empirical works	19
2.4.4 Important Factors Affecting Transaction Costs of PPPs	21
2.5 Literature Review Discussion.....	25
CHAPTER THREE	26
RESEARCH METHODOLOGY	26
3.1Introduction.....	26
3.2 Research Strategy	27
3.3 Research Design	27
3.3.1 PPP Transaction Process in Ghana	28
3.3.2 Cost Breakdown Structure and Transaction Cost Mapping.....	31
3.3.4 Study Area	34
3.3.5 Study Population.....	34
3.3.6 Sampling Technique and Sample Size determination	35
3.3.7 Questionnaire Development	35
3.3.8 Sources of data.....	35
3.3.9 Data Collections Techniques	35
3.3.10 Method of Data Analysis	36
CHAPTER FOUR.....	36
ANALYSIS AND DISCUSSION OF RESULTS	36
4.1 Introduction.....	36

4.2 Information on PPP projects	36
4.2.1 Project A	37
4.2.2 Project B	37
4.2.3 Project C	37
4.2.4 Project D	37
4.2.5 Project E.....	38
4.3 Factors contributing to Transaction Cost estimation of PPP projects	38
4.6 Transaction Cost Indices of PPP projects	46
CHAPTER FIVE	50
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION	50
5.1 Introduction.....	50
5.2 Summary of findings	50
5.2.1 To identify areas that substantially contribute transaction cost of PPP projects	50
5.2.2 To estimate transaction cost indices of PPP infrastructure projects	51
5.3 Conclusion	51
5.4 Recommendations.....	52
5.4.1 Recommendation to KMA and MMDAs.....	52
5.4.2 Recommendation for further studies.....	53
REFERENCES.....	54
APPENDIX.....	58

LIST OF FIGURES

Figure 2.1: Categorizing Transactions cost in Public-Private-Partnerships.....	18
Figure 2.2: Transaction Cost in PPP Projects in EU Countries.....	21
Figure 2.3: Procurement phase transaction cost based on capital value of the Project.....	23

Figure 2.4: Procurement phase transaction cost based on number of bidders.....	23
Figure 3.1: Transaction Cost Accounting System Development.....	29
Figure 3.2: PPP Process transaction activities flowchart in the Ghana.....	31
Figure 3.3 Transaction Cost Breakdown Structure.....	34

LIST OF TABLES

Table 2.1: Cost and Time Overruns in PPPs Vs Traditional Procurement.....	9
Table 4.1: Other In-house cost.....	41
Table 4.2: Internal In-house costs.....	42
Table 4.3: Transaction cost distribution of each projects in percentage terms	44
Table 4.4: Ratio of Total Transaction Cost (TTC) to Project Cost (PC).....	47
Table 4.5: Average Transaction Cost Index for PPP projects	48



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DEDICATION

I dedicate this work to the Almighty God as a gratitude for the wisdom and strength he has granted me throughout my work. I also appreciate the opportunity of attending such a great university and successfully completing my Master of Science in Construction Management.

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God richly bless you.



CHAPTER ONE

INTRODUCTION

1.1 Background

The Construction industry, globally, is fundamental to the development of any economy. One of the means of assessing economic growth is through the progress of physical infrastructure, for example buildings, roads and bridges (Takim and Akintoye, 2000).

With continuous development of the world's economy, the demand for basic infrastructure services has increased considerably in recent years.

Ghana faces a huge sum of \$1.1 billion efficiency gap yearly, even though the country spends \$1.2billion annually on infrastructure, which represents 7.5% of Gross Domestic Product (GDP) in 2009. As a result, more infrastructure services are required to meet the needs from the general public. However, due to restricted public budgets, the infrastructure services delivered by the public are constrained. There is an immediate need for government and public agencies to explore new funding sources. Public Private Partnership (PPP) has emerged as an important way of providing infrastructural facility, as a result of limited financial resources of governments (Africa Infrastructure Country Diagnostic, 2010 Report).

PPP involves a contractual arrangement between public and private sector. The services and assets of each and every sector are mutually shared in providing a service or facility for the usage of the general public. Use of public private partnerships is widely acclaimed in some parts of the world such like Netherlands, United Kingdom, Spain, Australia and South Africa. In the United States of America, the importance of private partnership was understood in the second half of the twentieth Century.

For these special characteristics, and also special uncertainties linked with PPP agreements, many transactions and dealings happen during the life cycle of PPP projects which are not easily predictable and measurable. Therefore, the “transaction cost” of Public Private Partnership is generally higher than that of other methods such as the traditional “design-bid-build” approach (Ho and Tsui, 2009).

In economics, Transaction costs are the costs linked with implementing construction projects from searching, negotiating, contracting to enforcing. Transaction costs in other industries is noted to be worthy according to previous studies. For example 77% of the total incomes of the U.S. banking industry, or 13% of the total cost of Clean Development Projects are transaction costs (Farajian, 2010). However, transaction costs in PPP’s in Ghana have not been explored well. Therefore it is necessary to identify areas that substantially contribute to transaction cost of PPP infrastructural projects up to the point of award.

1.2 Statement of Problem

Research studies on transaction cost of PPPs have focused on the theoretical aspect (Ho and Tsui, 2009). There has however been few research, mostly in Europe, trying to measure transaction costs of PPPs. These research give report on the complete transaction cost (Soliño and Santos, 2009) or separate them into winner bidder, loser bidder and public agency transaction costs (Dudkin and Välilä, 2005). It should be noted that the PPP program in Ghana is very different from PPP programs in other parts of the world such as the European Countries. There are many reasons behind this difference, for instance guidelines issued by Ministry of Finance, lack of experience in the execution of PPP projects, to mention a few.

These differences can be appreciated in terms of the quality and quantity of PPP literature in research level. Therefore, the mentioned studies are mainly based on data from projects in European countries, and the output of those studies may not be fully adaptive to the PPP program in Ghana. Therefore, there is a need to conduct some research to estimate the transaction cost indices of PPP infrastructure projects in Ghana in order to include it in the total cost of the project for value for money (VFM) analysis.

1.3 Research Questions

- What are areas that contribute to transaction cost?
- How to estimates transaction cost indices of PPP project?

1.4 Aim and Objectives

1.4.1 Aim

To estimate transaction cost indices of PPP infrastructural projects in Ghana.

1.4.2 Objectives of the Study

To attain the above stated aim, the following objectives will be advanced for the conduct of the study:

1. To identify areas that substantially contribute to transaction cost of PPP infrastructural projects
2. To estimate transaction cost indices of PPP projects

1.5 Scope of Study

This study will be conducted in the Kumasi Metropolitan Assembly with reference to its PPP projects being executed. The content of the study will be confined to exploring the estimate of the transaction cost of PPP infrastructure projects in order to incorporate it in the total cost of the project for value for money (VFM) analysis.

1.6 Significance of Study

Results from the research will be beneficial in the following areas:

PPPs can bring efficiency and cost savings to projects.

One can measure the transaction cost of PPPs in order to compare with the benefits of PPPs to make sure that doing a project using PPP is financially feasible.

One can estimate and track transaction cost in PPP infrastructural projects up to the award of contract.

1.7 Methodology of the Study

This thesis sets the needs for research centered on a literature review which studies the PPP as a modern innovative approach to financing infrastructure projects, and applied the concepts of transaction cost economics (TCE) of PPPs. In doing so, the application of TCE in KMA was reviewed, followed by a literature review of the transaction cost in PPPs in other areas of the world. A PPP process flowchart is centered on the PPP practices in Ghana. This flowchart will be the source of future developments in this research.

A cost breakdown structure will be developed for different activities in a PPP transaction.

-This information will enable the accounting system to have a better cost breakdown structure, and will give the managers and cost estimators to retrieve reports with useful data in a more consistent way.

A case study is conducted on the current practice of transaction cost in PPP infrastructure projects in Ghana through Kumasi Metropolitan assembly. The data for this case study is received from a public institution with the information about PPP projects; phone

interviews with project Engineers, Finance Officer, Planning Officer and the Coordinating Director. The collected data is then analyzed.

1.8 Organization of the Study

This study is organised into five main chapters. Chapter one focuses on the introduction, background to the study, statement of the problem, research questions, aim and objectives, scope of the study, significance and organization of the study. A review of literature on the research topic, conceptual framework and the theoretical review have been presented in Chapter two of the study. It reviews various works conducted by other researchers and institutions in relation to the topic and discusses various criticisms from them. Chapter three also focuses on the research methodology adopted by the researcher whilst chapter four details the analysis of data obtained and the discussion of these findings within the scope of the research objectives. It also as details the interpretation of results whilst the chapter five covers the conclusions and recommendations drawn from the findings of the study

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Delivery of public goods by “private for-profit” firms over the last few years has witnessed an increase in many countries. PPP arrangements varies from country in terms of designing physical infrastructure such as sanitation facilities, hospitals, schools, roads, water infrastructure, or arranging their funding to include construction, management,

operation, ownership and maintenance. In the 1990s, World Bank reports that the private sector alone financed up to 20 percent of infrastructure investments totaling about US\$ 850 billion within developing countries. Quite a few industrial countries such as Australia, UK and Canada have embraced PPP arrangements to provide facilities stated above and also other infrastructural development (Farajian, 2010).

This portion of the thesis reviews the literature, and provides a general understanding of PPPs, benefits they bring and their financial tools. One should have fair understanding of different aspects of PPPs before one can meaningfully analyze their performance. This model of PPP method of delivery will be developed based on the review of what other researchers' findings. Mainly, the literature review on PPPs in this work is emphasized on PPP flowchart, PPP characteristics and performance measurement. There are certain benefits and costs in relation to a PPP transaction similar to any new technique. It is very important to know about the extra costs that a PPP transaction has because in the cost estimation and value for money (VFM) analysis of a PPP project, one needs to account for such costs. Therefore, there is a need to study the transaction cost economics, and the way that people have measured such costs in other industries in order to have a better understanding of how those concepts can be applied in a PPP infrastructure project. Studying the effect of TCE in PPPs is essential to track the special characteristics associated with them. PPPs have a high uncertainty, bounded rationality, and opportunism behavior as a result of the lengthy life cycle of the project, complex contracting mechanisms, a complex pool of finances, and multiple entities with different interests in a project. The effect of asset specificity due to the special characteristics of highway projects in comparison to other construction projects should also be noted. Thus, it can be

concluded that PPPs are highly exposed to transaction cost factors that need to be carefully studied, determined, and tracked with TCE (Farajian, 2010).

2.2 Public Private Partnerships Concept

2.2.1 Definition

The Public Private Partnership concept has gained worldwide attention and attained new character in the context of developing nations. Public Private Partnerships is progressively seen as innovative policy tool in mitigating lack of enthusiasm in already existing public service delivery (Jamali, 2004). The definition of PPP remains critical and relevant to the success of any PPP venture as objectives of PPP differ from country to country. For example, the Canadian Council for Public-Private Partnerships defines PPP as a cooperative undertaking among the public and private sectors which relies on the expertise of each party that best fits the predefined public needs using the suitable distribution of resources, risks and rewards. Wendell C. Lawther's (2002) report also defined the term as relationships built between government agencies and private or nonprofit contractors that are formed when handling services and/or products of very complex nature. Contrary to the traditional design-bid-built approach, PPPs require fundamental modifications in the defined roles played by each of the partners" (NASCIO, 2006).

Though PPPs have been exercised in many countries over the years, there are still disagreements in how a PPP should be defined. The Office of Public Sector Information in the United Kingdom refers to PPPs as provisions typified by mutual arrangements between the public and private sectors.

PPPs are widespread across a variety of business entities, and as such, HM Treasury (2008) adds that in a wider spectrum, PPPs may encompass various aspects of

collaborations across the public-private sector interface involving collaboratively joining forces and risk-sharing to implement policies and deliver sustainable services and infrastructure. Other definitions also emphasize the importance of the long-term nature of contracts in PPPs, where government accepts to, and pays the private sector to deliver infrastructure and associated services on its behalf, or in support of its service responsibilities. The responsibility for the performance of conditions on a whole-of-life basis is placed on the private sector parties by PPP arrangements (Infrastructure Australia, 2008).

Although PPPs have been in practice for many years in the world, in Ghana, PPP dates back to the 1990s as a way of consolidating and expediting the developmental plans of the government. Large up-front investments are needed to finance PPP projects such as highways, water and sewerage, bridges, seaports and airports, hospitals, markets and schools. PPP's have also proven to cut down costs and time it takes to deliver projects as shown in Table 2.1 below. Showing UK's Audit Office recordings of cost overruns for public sector using PPP procurement as only 22% compared to 73% in the case of conventional procurement. Furthermore, the delay in project delivery using PPP procurement is only 24% compare to 70% in conventional procurement.

Table 2.1: Cost and Time Overruns in PPPs Vs Traditional Procurement

Source: UK's National Audit Office

	CONVENTIONAL PROCUREMENT	PPP PROCUREMENT
Cost Overruns for the Public Sector	73%	22%
Delay in Project Delivery	70%	24%

On the other hand, some consider PPPs as a way for privatization, and argue that public services should be done by non-profit public agencies that are not running for profit.

PPPs can assist governments to bridge the gap between availability public funds and resources needed and also increases the cost of procuring, monitoring and enforcing contracts especially when it's related to traditional procurement of government projects. Ownership and financing arrangements, long term and risk sharing features are the key causes of higher procurement costs in PPPs (Dudkin & valila, 2005).

With these reasons, in addition to contractual complexity in PPPs, attempts to reach agreements results in high PPP transaction cost. As a result, tendering, contracting and monitoring procedures turn out to be higher resource consuming in terms of budget and time than in traditional methods of procuring projects. Negotiating the contract is especially costly mainly because the level of uncertainty in PPPs is high and risky and rewards remain unclear. Although there is a considerable amount of transaction costs associated with PPPs, there is still not enough information about how to define, track, and quantify this cost. In evaluating PPP proposals, it is very imperative to estimate the transaction costs of the contract to ensure that the higher transaction costs do not eat away the cost savings realized through a PPP arrangement.

2.2.2 Characteristics of PPPs

The characteristics of PPP arrangements are significantly dissimilar from traditional procurement. PPP approach can be used by government as a new system to construct public facilities and supply services. Many researchers and international organizations mention the characteristics of PPP scheme differently. Generally, PPP model has four main characters as mentioned below:

Firstly, there is a mutual relationship between public and private institutions for provision of public infrastructure and its related services. Many governments through PPP arrangements have sanctioned and emphasized the fundamental roles of private sector in traditional grounds of public sector, mainly financial investments of private partners (IMF Report, 2004,).

Secondly, every PPP project is normally concretized by a long term agreement between public and private sectors (Alfen, etal, 2009). It is the only agreement in which a government allows management and control of public properties for private sector. But these assets however, do not belong to private sector for life. Once a PPP contract ends, the assets goes back to government (IMF Report, 2004,). This affirms that PPP arrangement is not a privatization of government facilities.

Thirdly, before PPP project starts, all innovative steps which includes output specification, service levels and payment mechanisms are enshrined in the contract. Meaning, PPP model concentrates on quality of public assets and its related services.

Finally, PPP model effectiveness starts from sharing responsibilities and risks among public and private agencies (IMF Report, 2004). Government normally transfers a significant amount of risk to private partners, normally financial risks. This means that, private sector has a duty of supplying financial capital for PPP projects which contributes to the reduction in public debt. Additionally, PPP model requires private sector assurance.

2.2.3 Success factors in PPPs

In order to better understand the key success factors in PPPs, one should understand the definition of a success factor first. In a study published by Hong Kong University, the critical success factors (CSF) in PPPs are defined and discussed (Hardcastle *et.al*, 2010).

It should be mentioned that the CSF methodology attempts to identify key areas that dictate managerial success. This method is widely used as a management measure in financial services, information systems and the manufacturing industry.

Hardcastel et.al (2010) studied other factors such as good governance, support for government, a stable macroeconomic environment, and an appropriate legal and administrative structure. They concluded that a comprehensive economic policy, in addition to the available funding market, a firm private confederation, good feasibility study/cost-benefit analysis and effective allocation of risk with other critical factors, such as social support, commitment of different entities and mutual benefit are all critical factors for the success of PPP procurement projects. A quick look at the above key success factors reveals that most of them are related to activities of a PPP transaction such as feasibility studies, negotiations, and risk and reward sharing mechanisms during procurement, or partnership mutuality and enforcement after procurement. The way PPP transaction is managed plays an essential role within the overall project success or otherwise. It should be emphasized that a PPP transaction, like any other transaction, is associated with some transaction activities, and some transaction costs which will be further discussed in the next section of this chapter.

2.3 Transaction Cost in Public Private Partnerships

2.3.1 Overview on Transaction Cost Economics (TCE)

Neoclassical Economic Theory is based on the assumption of an “ideal world” in which the price mechanism exists and the trading value is determined based solely on the supply and demand factors. In this “ideal world”, the supplier and the buyer meet in a free market and reach an agreement without any negotiations because the price is already determined by the free market. In this “ideal world,” the exchange cost is just the cost of the item itself

(Farajian, 2010). The decision to make the trade or not is based on how much an individual or organization should spend to produce the same good or service in house. If the good can be produced at price lower than market price, it is better to produce it in house; otherwise it will be purchased from the market. In the “real world” however, exchange of goods and services is not that simple (Farajian, 2010).

In the “real economy”, once the suitable price is fixed, buyers usually face price differences for the similar goods even in a competitive market. These variations in prices are likely to influence what is produced and the exchanges that take place in the market (Benham & Benhal, 2001). Economies of scale or scope which are technological factors, determine firm’s vertical boundary decisions as suggested by Neoclassical Economics. Transaction Cost Theory (TCT) distinguishes these decisions to have the possibility of being manipulated by features linked with the effectiveness of the selected form of organization. In other words, TCT explains what Neoclassical Economics failed to consider: bounded rationality, uncertainty, asset specificity and opportunism behaviour in the “real world”. Contrary to the proposition in Neoclassical Economics that the vertical boundary decisions of a firm are influenced by technological factors such as economies of scale or scope, the TCT believes that such decisions may also be informed by factors associated related to the efficiency of the chosen organization. In other words, TCT explains what classic economics ignored: bounded rationality, uncertainty, asset specificity and opportunism behavior in the “real world” (Farajian, 2010).

Transaction Cost Theories of Exchange in recent years have been the subject of interest. Transaction Cost Theories (TCE) is presently used to study numerous economic phenomena stretching between lateral and vertical integration to transmit corporate finance, pricing, the organization of work, marketing, long term commercial contracting, Multinational Corporation, regulation, franchising, the company towns, and other formal

and informal contractual relationships (Xue, 2007). The underlying theory surrounding Transaction Cost Economics is that transactions should be designed, carried out and managed, and that some institutional arrangements influence this management better than others which are now recognised (Shelanski & Klein, 1995). Although transaction cost theory was first introduced about 80 years ago, and since then, many scholars have done extensive amounts of research in this field which has a few direct empirical estimates of transaction costs. One major challenge is that there is no standard terminology (Benham & Benhal, 2001). Among the various definitions of transaction costs in literature, they usually serve as investigative tools, not actually measuring transaction costs. These definitions provide strong conceptual understanding yet they have not been converted into generally acknowledge operational standards.

2.3.2 Transaction Cost definition

Transaction costs is defined as “costs using price mechanisms associated with identifying, negotiating, and enforcing contracts.” If transacting in the market is known to be too expensive, transactions will take place within the boundaries of the firm (Coase, 1937). He further provided examples of what he meant by the price mechanism costs, how to discover what makes up the prices and the best ways to negotiate and close a contract. Wallis and North (1986) threw more light on the differences between transformation and transaction activities. To them, transaction costs comprises resource costs that are spent for a transaction function than a transformation function. They define transaction costs to include processing costs, cost of conveying information, marketing, coordinating, advertising, selling, purchasing, and shipping of goods, handling legal matters, management and supervision.

The term “transactions costs” or “transfer costs” is recommended for use for costs connected with the transference of rightful possession from one individual to the other. It is a universal term for a rather heterogeneous variety of costs. Within the processes of the contract, there is the need for parties to communicate, exchange information, draw up contracts, inspect, weigh and measure the goods, and keep accounts for transactions made. To some extent, additional transportation is sometimes required in transactions, in space beyond what is required to transfer goods from the producer to the consumer “(Niehans, 1969).

Two major themes are noteworthy in the above passage. Transaction cost is defined broadly on one hand and on the other hand, transaction and transport costs are referred to with no distinction (Klaes, 2000). This strategy, within the perspective of economic modeling, has facilitated the accommodation of the new cost category within the prevailing analytical framework.

Unlike the previous approaches where transaction costs have an exact value, this approach provides the notion that transaction costs have relative values and can be different from one market to another or from one organization to another.

In other spheres, Transaction costs are linked with "greasing markets", which involve the costs of finding information, monitoring the behaviour of parties, arranging for compensations to intermediaries, and enforcement of contracts (Davis, 1986). To North (1990), it comprises the costs involved in determining the valuable traits of what is being exchanged, and the costs accrued from defending rights, regulating and administering agreements. By comparing all definitions, the transaction cost in this report is assumed to be the sum of all the costs related to searching for a contract, finding a partner, and engaging in contracting and exchange activities, which are separated from the direct costs of production.

2.3.3 Measuring Transaction Costs

A variety of econometric and historical methods are used in empirical studies in TCE.

These studies are classified into either one of the following three categories being: qualitative case studies, quantitative case studies and cross-sectional econometric analyses.

Masten's (1984) enquiry into contracting practices employed in a large aerospace corporation is a befitting example of the second. An example of the third category is Levy's (1985) research on the vertical integration across industries. Most of the empirical literature in TCE consists of various kinds of case analyses. The primary reason to this is because computing the main variables is of interest to transaction cost economists. These variables such as the specificity of the asset, frequency and uncertainty are demanding to consistently measure them across firms and industries. Such characteristics are estimated using information collected from surveys or interviews. For instance, a manager may be required of, to rate on a Likert scale of 1 to 7, the extent to which an investment has significance in external uses. Data of this kind are absolutely subject to the specified limits of the survey data. They are also based on the stated beliefs of the respondents rather than on their views or assessments as shown through the choices made. More importantly, as these findings are based on ordinal rankings, comparison between industries becomes difficult. This is because an asset which has been ranked as a relatively specialized in a particular firm or industry may be differently rated in another. Similarly, a firm may consider a production process to be comparatively uncertain whilst it may be reported in another firm as the standard operating environment. Hence, studies across industries may contain variables that have the same labeled but are incommensurable or, on the other hand, may contain identical variables that have different labels.

Besides these measurement difficulties, empirical studies in TCE are often hampered by confusion about definitions, which also leads to questioning the empirical parameterizations of key variables. The primary conceptual problem that we have found lies in the treatment of uncertainty as a factor that raises transaction costs and increases the probability of integration. This confusion may explain some seemingly contradictory results on the effects of sales volume uncertainty on the vertical integration decision.

At a broader economic level, Wallis and North (1986) have estimated that transaction costs (or sector of the economy that represents transactions) represented about 40-80% of America's Gross National Product in 1970. Their separation of costs into transaction and transformation costs, however seems unlikely to be adaptable into corporate decisionmaking. Davis (1986, p. 149), in an insightful observation on the Wallis and North article, adds a highly relevant comment to our current endeavor. He refers to Charles Plott by adding that transaction cost is a useful concept whose usefulness declines proportionally with the precision of the definitions.

Figure 2.1 below shows how different people have tried to measure transaction costs in different industries. Noi (2002) attempts to estimate the Aid Transaction Costs in Vietnam and categorizes transaction costs into three main categories: project identification and appraisal, negotiations and contracting, and finally project implementation, monitoring and evaluation. In Antinori and Sathaye's (2007) study regarding assessing transaction costs of project-based greenhouse gas emissions trading, they develop the model based on search cost, feasibility studies cost, negotiations, monitoring and control, obtaining approvals, and insurance cost.

The United Nations Development Program costs in the Clean Development Mechanism (CDM) Projects are some examples of attempts that have been done to assess transaction

costs in different industries categorizing them into design costs, other CDM costs including registration, other potential costs, opportunity costs and also self-insurance costs.

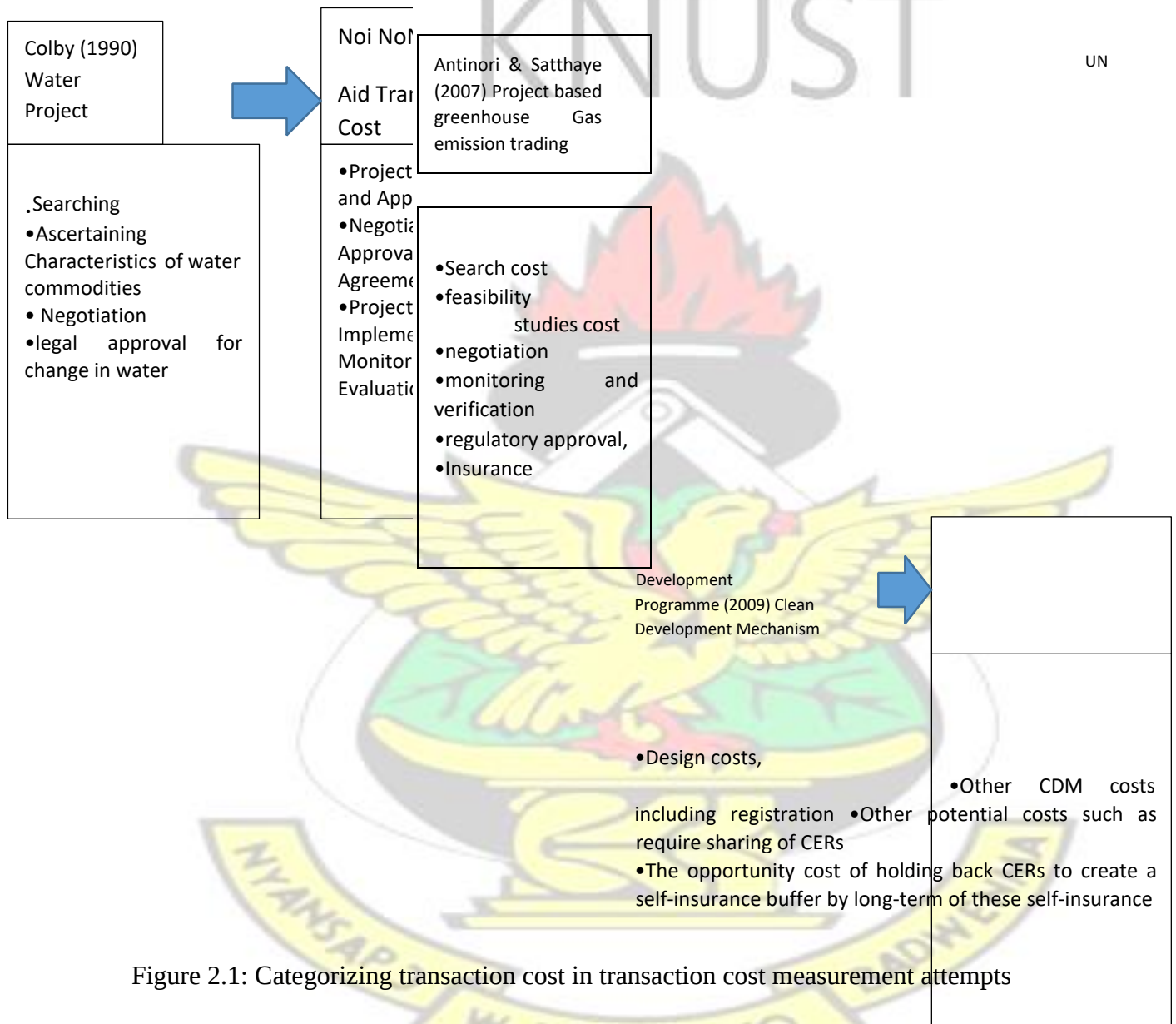


Figure 2.1: Categorizing transaction cost in transaction cost measurement attempts

2.4 Measuring Transactions Costs in PPPs

2.4.1 Introduction

Transaction costs in PPPs are compared to already existing procurement for several reasons. These are mainly the characteristics of PPPs such as their ownership and

financing arrangements and risk sharing characters. These reasons, contribute to the high contractual incompleteness of PPPs. Transaction costs of PPPs are also high because there is a need for an extensive attempt to deal with uncertainties and reduce the contractual incompleteness as well as contract enforcement and conflict resolution. Therefore, tendering, contracting, and monitoring procedures result in more resource consuming than existing short term contracting, which is intended to supplying facilities instead of services rendered to public sector. Negotiation of contract is also expensive. As a result of high uncertainty and complexity of PPPs, there is a need for advisory and consulting services. Such costs are not restricted to preliminary phase, as renegotiation is a must in contracts that goes beyond decades. Also, PPP is established to provide services by using private owned facilities while different entities with conflicts in their interest might require higher monitoring costs compare to in-house delivery of the similar service.

(1990)

2.4.2 Theoretical works

There have also been some attempts to estimate transaction costs in PPP projects. Ho and Tsui (2009) tried to identify some major variables such as principal-principal and renegotiation problems as well as soft budget constraints and their effects on transaction costs in PPPs. They suggest that some sensitive variables in transaction cost such as specific features of the project and certain circumstances depicting institutional environments can have a substantial effect on transaction costs. Although they explain the effect of some variables on transaction costs in a PPP model, their study does not reflect the situation in the US. For instance, due to the public procurement procedure, transparency rules, and regulations in the United States, it is almost impossible to face principal-principal problems in which “the controlling principal who appoints the major

directors of its board and top managers of the firm might exploit private information and dominant positions to appropriate from minority shareholders” (Ho & Tsui, 2009).

2.4.3 Empirical works

Soliño & Santos (2009) distinguish at every stage, between external costs (comprising technical, legal and financial advice costs) and in-house costs such as project preparation costs. These costs considered include the feasibility studies, Environmental Impact Assessment, preliminary design costs, and bidding costs (which is made up of tender documentation preparation and costs for negotiation). Their study is based on data collected from different infrastructure projects in the European Union (EU) that suggests a model to estimate the transaction cost of PPPs based on some variables (i.e. type of project, capital cost of project, procurement duration, location, and number of bidders). Their study cannot be fully implemented as an estimating model in the United States mainly because their data is based on projects in the EU.

In addition to this issue, the PPP model in the EU is better developed and more mature than the PPP model in the United States. Therefore, there is a higher amount uncertainty associated with the PPP model in the United States that may result in higher transaction costs when compared to the EU model. It should also be noted that Soliño & Santos (2009) categorize transaction costs only into two main categories: external and internal. Their research does not consider a cost breakdown structure with different levels of cost items to better track and record transaction costs in PPP agreements.

Another step to identify and measure transaction costs has been taken by (Dudkin & Vålilä, 2005). According to the data collected from projects funded by the European Investment Bank, they have resolved that on the average, about 10 percent of the capital value of the project goes into the procurement phase of infrastructure projects. They have

divided these transaction costs into three categories consisting of public sector, winning bidders, and losing bidders as depicted in Figure 2 below. Based on their research, the overall transaction cost of the project for the public sector, is about 2-3% of the capital value of the project., the winning bidder 4-5%, and the losing bidders is about 2-5%.

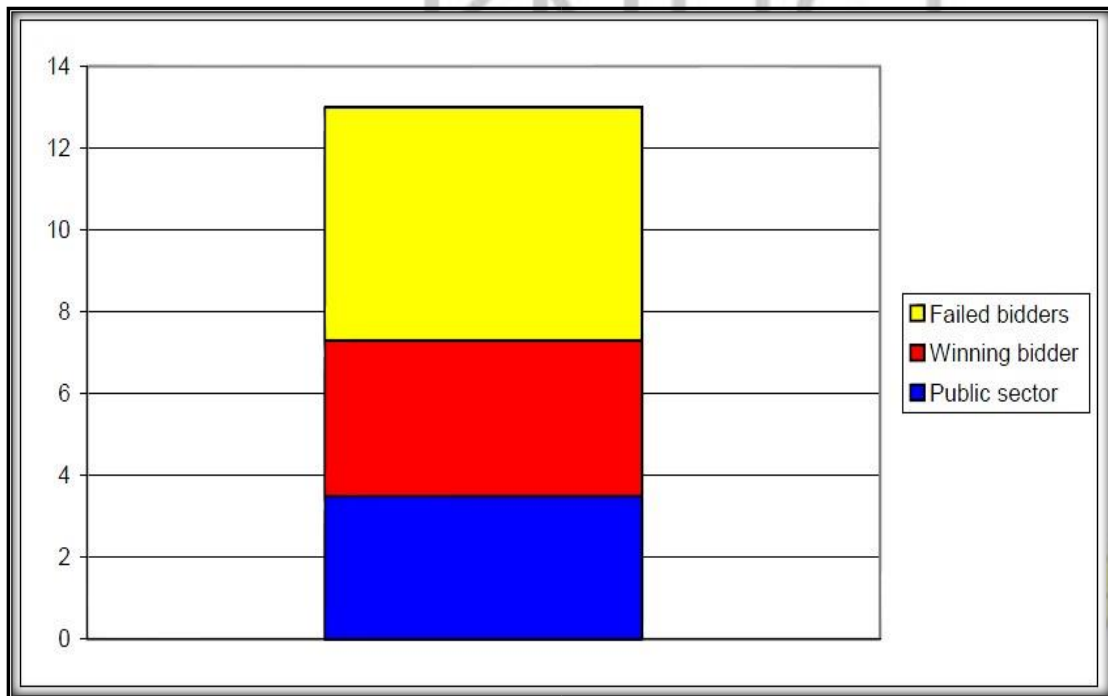


Figure 2.2: Transaction cost in PPP projects in EU countries (Dudkin & Vålilä, 2005)

Transaction costs to the public sector and the winning bidder vary between countries (legal systems) and sectors, and are considerably higher in small projects (below £25 million) and in projects that have an extended procurement time (over 50 months). Contrary to this, the costs to the public sector and the winning bidder are neither affected by the skill in setting up partnerships nor the number of bidders. This is in contrast with findings of Ho & Tsui (2009).

2.4.4 Important Factors Affecting Transaction Costs of PPPs

There are many factors that can affect the percentage of transaction costs in PPPs and these include size of the project, number of bidders, complexity of the project, market value of the project and location of the project.

2.4.4.1 Size of the Project

One of the most important factors in estimating transaction costs of PPP infrastructure projects is the size of the project. Usually, a transaction cost is reported as a percentage of the total capital cost of the project, however, when the size of project increases, this percentage changes. In terms of the fraction of the total capital cost of the project, the transaction cost incurred for smaller projects is usually higher than that of larger projects. This is because, irrespective of the size of the project, most transaction activities remain the same. However, since larger projects are usually more complex than smaller projects, transaction activities may be more expensive; but this increase in the cost is not proportional to the increase in capital cost of the project. Figure 3 depicts projects costs with respect to transaction costs during the procurement phase of a project.

2.4.4.2 Number of bidders

Number of bidders is the next contributing factor to the percentage increase of transaction cost. When there is less competition for the project, transaction costs incurred at the project initiation and procurement phases is relatively low. However, total project costs are likely to be higher due to the milder competition in the procurement process. There is expectation in the public-sector cost of bidding to increase with the number of bidders. This is due to more work for the public agency in terms of prescreening, and proposal evaluations, and also due to the increase in the transaction cost of losing bidders. On the

other hand, transaction costs during the project initiation and procurement phases will be relatively lower, and there is the likelihood that the total project cost will be higher due to less competitive procurement process. Figure 4 outlines transaction costs as a percentage of capital cost with respect to the number of bidders in the procurement phase.

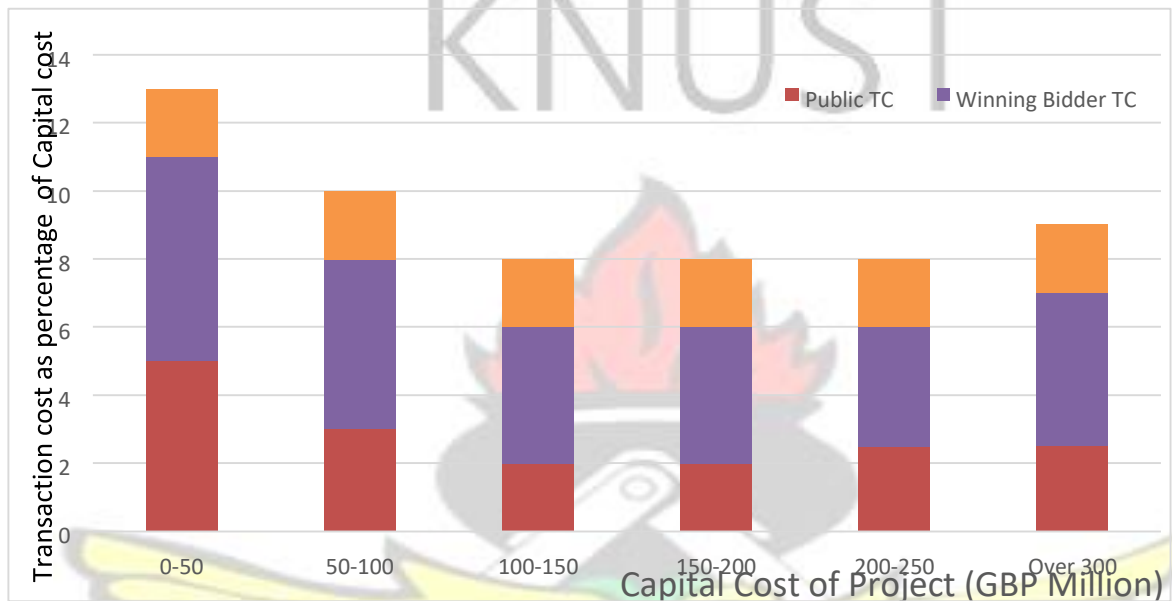


Figure 2.3: Procurement phase transaction cost based on capital value of the project. (Source: EIB, NAO, PAC)

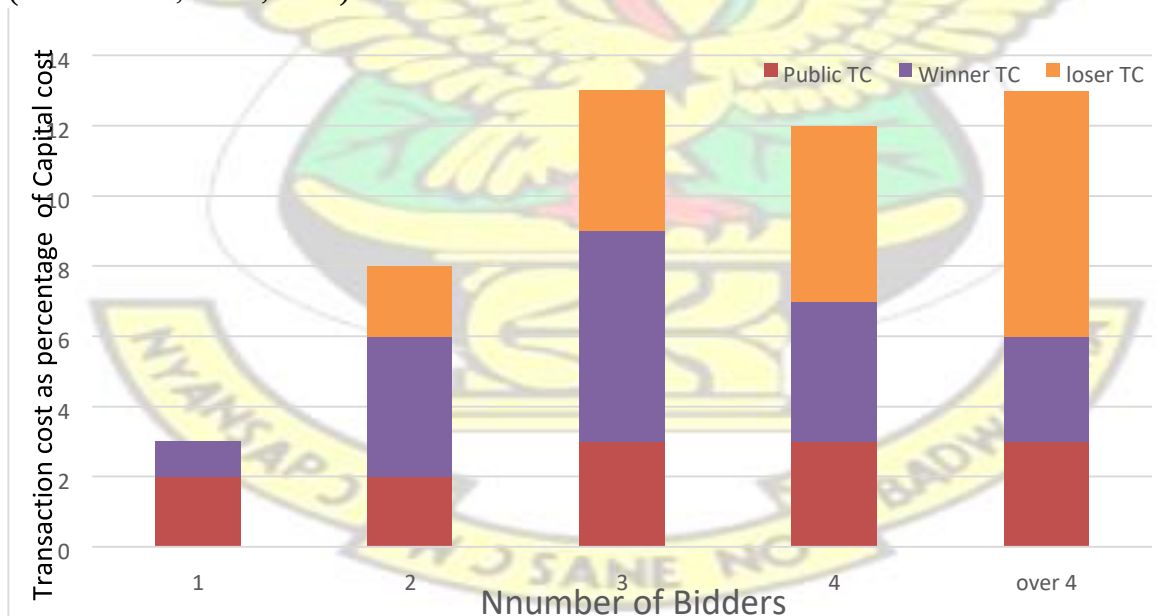


Figure 2.4: Procurement phase transaction cost based on number of bidders. (Source: (Dudkin & Vålilä, 2005))

2.4.4.3 Location of PPP Project

Another factor that affects transaction costs is the location of the project. The meaning of location in this context is not the actually geographic location of the project, but the country or state in which the project will be constructed. In another perspective, the location can be defined as the maturity level of the PPP program in the region in which a PPP project is going to be procured. This maturity level can be defined as having enough legal supports for PPPs, having enough resources for PPPs both in terms of manpower and knowledge, and also having enough previous experience with other projects using PPP as the delivery method. Some countries like the United Kingdom (UK) have a tremendous amount of experience and resources for PPPs. Some other countries are new in this field and the PPP program in those countries is not as mature as the PPP program in UK. Because of the experience effect, they incur more transaction costs. There are many factors that determine whether the country is advanced in terms of PPPs or if the PPP program in that country is still under development. Having a good legislator base, having enough experience in terms of previous PPP contracts, having enough resources in-house in terms of experienced staff and consultants and having good partners who have already worked with them on other projects can all be determinant factors in this case.

2.4.4.4 Complexity

Another issue that can increase the transaction cost in PPP projects is the level of complexity of the project. Complexity increases uncertainty or risk and, will increase the likelihood of having higher transaction costs. The specific responses that different parties in PPPs manifest depend on the certainty of the environment. Due to the mentioned characteristics of PPPs, such as the rare occurrence of contracts, the long life cycle of the agreement, and complex revenue streams and traffic volume studies, environments associated with PPPs are relatively more unstable than environments associated with

traditional delivery methods. This environmental instability increases the procurement cost.

A PPP model is a mixture of an economic model and a political model, thus, the PPP model is greater in complexity than the two models discussed. In a PPP model, different entities have different goals; the public agency tries to maximize the social benefits and minimize the political costs. The private agency tries to maximize the Rate of Return (ROR) on their investment and minimize the capital cost. Therefore, high opportunism from both sides is encountered in PPPs, making the negotiations more expensive for both sides. PPPs are also associated with high levels of behavioral uncertainty and environmental uncertainty. As a result, transaction costs associated with procurement of PPPs is higher in terms of feasibility studies and negotiations.

It should be noted that aside from negotiating transaction costs (during initiation and procurement phases of the project), any PPP will have monitoring and enforcement costs over the life cycle of the project (after procurement during the contract management phase). To better understand the effect of environmental uncertainty on monitoring and enforcement costs in PPPs, the results of Ryu's (2006) analysis can be used to better explain the relationship between environmental uncertainty and interdependence magnitude with transaction costs. If a PPP contract is negotiated professionally, the risks and rewards in the PPP agreement are fairly shared between the two parties, and the interdependence magnitude of the transaction is high. In other words, a concrete PPP agreement should be negotiated in a way that if the project is successful, both parties can reap the benefits; if the project fails, both parties bear the losses. In this case according to Ryu's analysis, the monitoring cost will be lower or there will be a high-monitoring cost based on the level of uncertainty.

2.5 Literature Review Discussion

The literature review of this study covers a broad review on PPPs and transaction cost economics, and uses the concepts of transaction cost economics in the PPPs. Based on the Literature Review, it is known that transaction cost is an important factor in PPPs, and many scholars and experts have emphasized the importance of this topic.

There are also some theoretical studies (Ho, 2009) which cover the importance of different factors associated with transaction costs in PPPs. The literature review, also reveals some empirical studies about transaction cost measurement in some PPP projects in European countries, and reports the results of those studies.

Although there have been some attempts to measure the transaction costs in PPP projects, those projects are either theoretical discussions, or based on data from PPP projects in other parts of the world such as EU. The concern here is that, PPP program in Ghana is very different from the PPP program in EU. For instance the PPP program is still at early stage in Ghana, and there are not enough guidelines and standards available to practice PPP. Also, the legal system in Ghana is different which makes the PPP process flowchart in Ghana different from the one in EU. We can also add the effect of different financial structure, procurement legislations and also the effect of bureaucracy to the mentioned list.

It should be also mentioned that those studies cover transaction costs in a very broad way, and report only the overall transaction cost of the project for the private section, winning bidder and loser bidders. Although those numbers are very important, but if one want to have a more accurate estimation about transaction cost during different phases of the project and for different transaction activities, there is a need for a better accounting system that can track and record transaction cost items and give a more useful reports based on different filtering

options. The next chapter of this study focuses on developing such accounting system in order to increase the accuracy of cost accounting system for PPP infrastructure projects, and so the accuracy of transaction cost estimation models.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Towards the achievement of the aim and objectives of the study, this chapter discusses suitable research methods and the selection of the best methodology to answer the research questions raised. Emphasis is put on the research strategy, research design as well as

methods and procedures used in the collection of data, presentation of results, analysis and discussion of findings.

3.2 Research Strategy

Research strategy is defined as the enquiry of research objectives. The main types of research strategies are quantitative

However, the choice to adapt any particular strategy depends on the purpose of the study, the type, as well as availability of information for the research (Naoum, 2003).

3.3 Research Design

A research design is a collection of guides or rules or data collection. It has been suggested from literature that the structure for the collection of data and its analysis influences the method to be adopted for collection and analysis of data. It also provides the connection between empirical data and its conclusions in a logical sequence to the initial research questions of the study (Yin, 2009).

As literature review suggests, there are many inconsistencies in the definition of transaction costs and so many difficulties in measuring and recording such costs.

Usually, it is very difficult to find data about transaction costs of PPP infrastructure projects in Ghana. This issue will be further discussed in the following chapter by comparing PPP projects executed by Kumasi Metropolitan Assembly. These projects will emphasize the need for a better accounting system by estimating transaction costs of PPP infrastructure projects in Ghana.

A PPP project accounting system is not very different from a normal construction projects. However, since the PPP process is more complex than normal construction projects,

understanding the whole process of the project is the first step in developing a cost accounting system. It is very important to lay different tasks during the life cycle of the project, and evaluate the main important factors that restore the cost accounting indices. After developing the project transaction activities, there is a need to do a cost breakdown structure to evaluate the cost items associated with different tasks. Figure 5 shows different steps used in developing the cost accounting model for PPP infrastructure projects in Ghana.

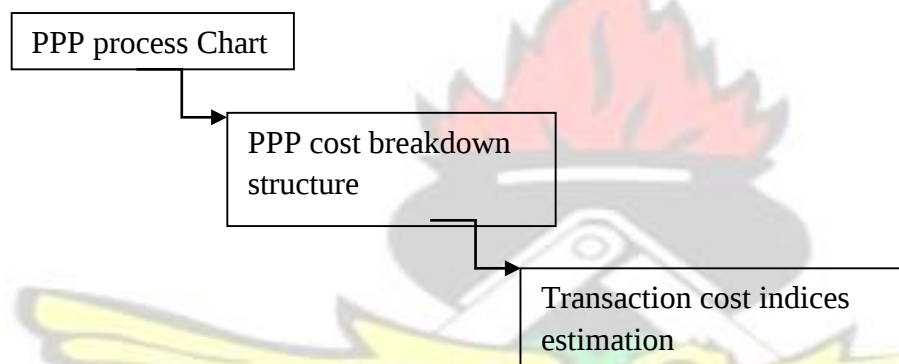
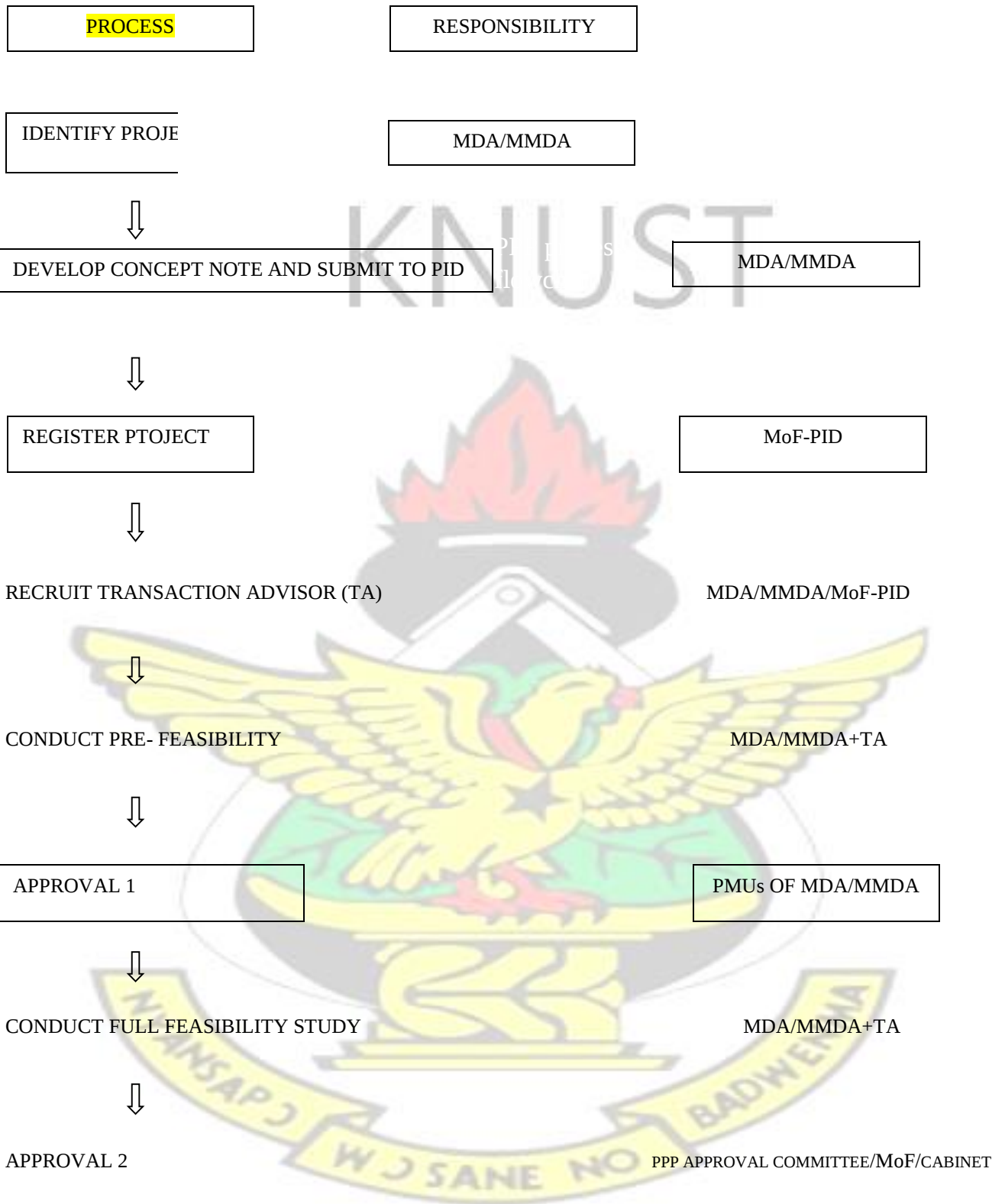


Figure 3.1: Transaction Cost Accounting System Development

A platform will be developed to identify the main factors that affect transaction costs of PPPs in Ghana, and estimating transaction costs indices with PPP's in Ghana. A PPP process flowchart in Ghana will be developed based on the availability of PPP infrastructure projects in Ghana and procurement legislation. The main factors that affect PPPs in Ghana in each stage of the PPP process flowchart will be identified and discussed. A cost breakdown structure (CBS) for different transaction cost activities in PPP projects will be presented.

3.3.1 PPP Transaction Process in Ghana

Before developing a Cost Breakdown Structure, it is necessary to have a PPP process flowchart based on PPP legislations which in a draft state, national policy and interviews.



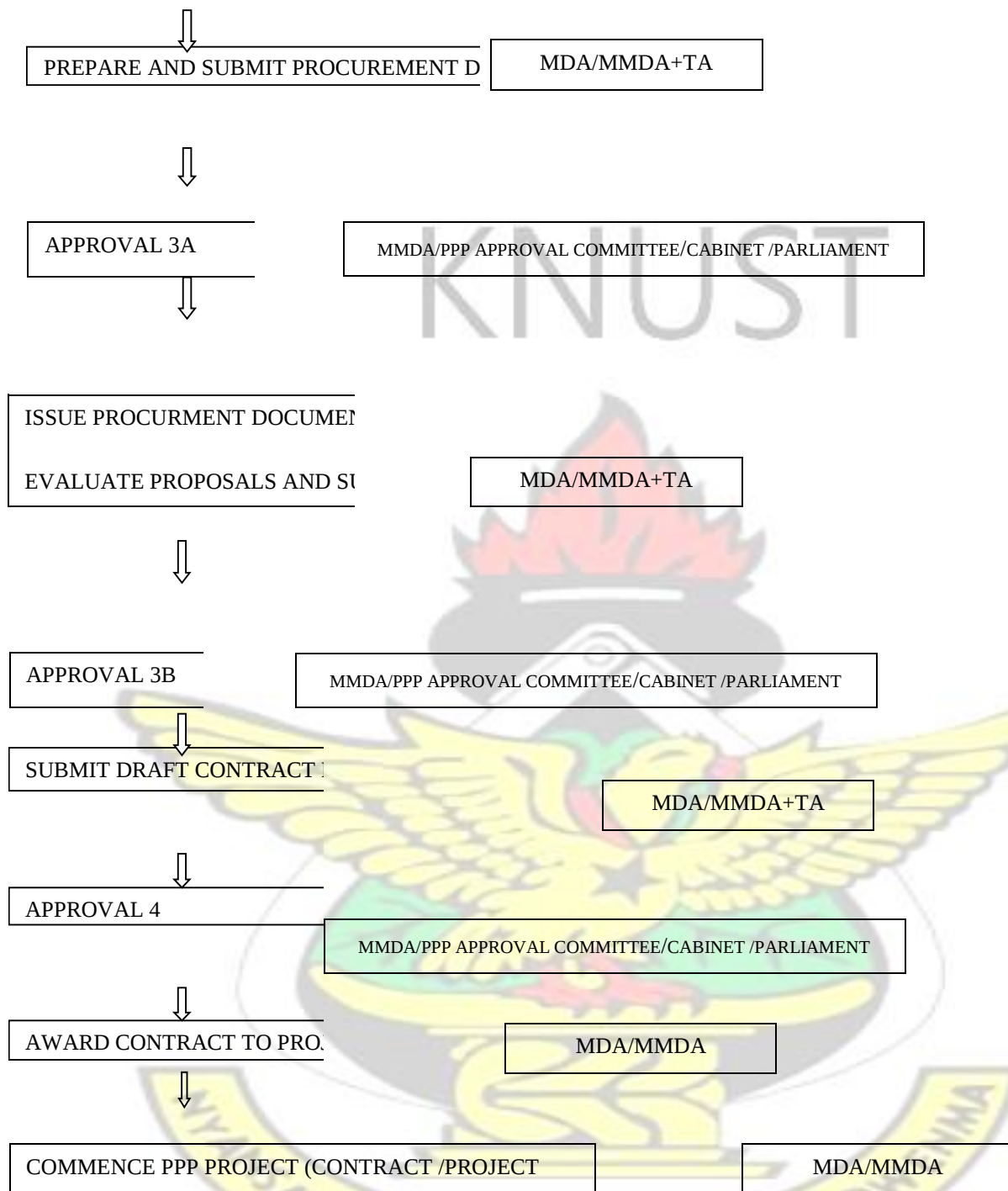


Figure3.2: PPP Process transaction activities flowchart in the Ghana

In any PPP project, there are some stages that occur through the life cycle of the project: project Identification, develop concept note and submit to PID, register project, recruit transaction advisor (TA), conduct pre-feasibility studies, approval 1, conduct full feasibility, approval 2, prepare and submit procurement documentation, approval 3A,

issue procurement documentation, approval 3B, draft contract, approval 4, award contract to project sponsor, commence PPP project. But for the sake of this thesis, all the processes will be grouped under three stages that occur through the life cycle of the project: project initiation, project procurement and contract management. Some people may combine project initiation and procurement together, but in this section, they are discussed separately to emphasize the difference between PPP lifecycle and traditional delivery lifecycle. It should also be noted that figure 6 was developed based on the PPP procurement of Ghana.

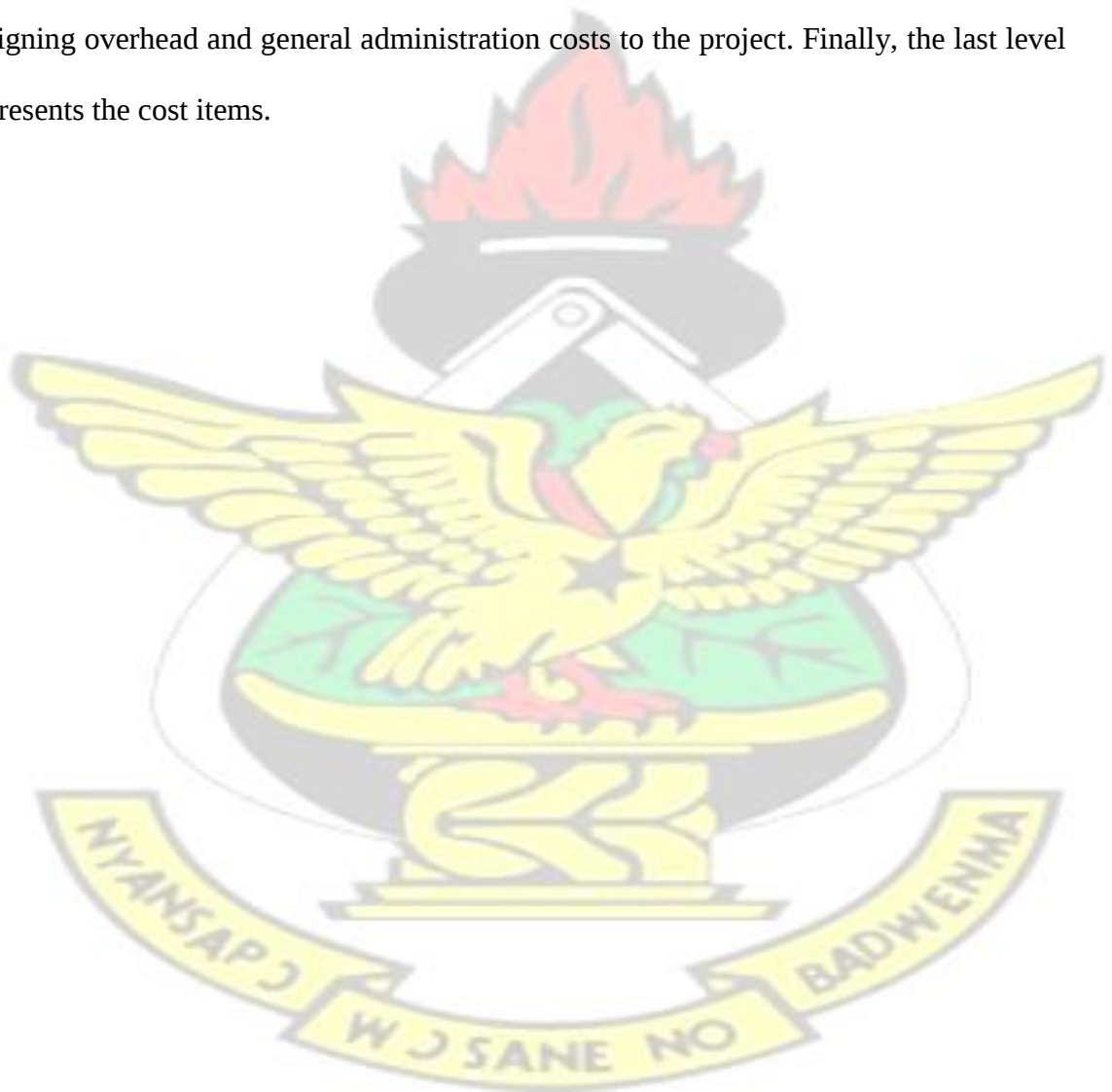
3.3.2 Cost Breakdown Structure and Transaction Cost Mapping

The next step after developing and identifying the main factors that affect transaction costs in different stages of PPP represented by a process flowchart, is developing a cost breakdown structure in order to map different cost accounts with every process activity. Figure 7 illustrates a CBS from a public agency point of view where transaction costs are separated into two main factors being the initiation/procurement costs and contract management costs. The Initiation and procurement costs are related to the first two phases of the PPP process flowchart and are mainly related to the activities prior to signing the contract. Contract management costs are mainly related to the activities that occur after closing out procurement of the contract (after signing the contract) such as O&M quality controls, contract enforcement, and dispute resolutions. However, contract management does not form part of the main work and was not considered.

Level 3 of the CBS represents whether the cost has been incurred internally or externally due to having consultants or advisors. It should be noted that the term external refers to payments to professionals who are not on the payroll system of Assemblies (Government).

In other words, the Assemblies receive bills for such services and pays. This is different from government paid salary employees.

Level 4 represents different activities that can result in transaction costs. Level 5 divides the costs associated with those activities into two categories: direct costs which can be directly calculated based on resources (in terms of labor hour, equipment or material spent to accomplish those activities) or indirect costs which can be calculated based on assigning overhead and general administration costs to the project. Finally, the last level represents the cost items.



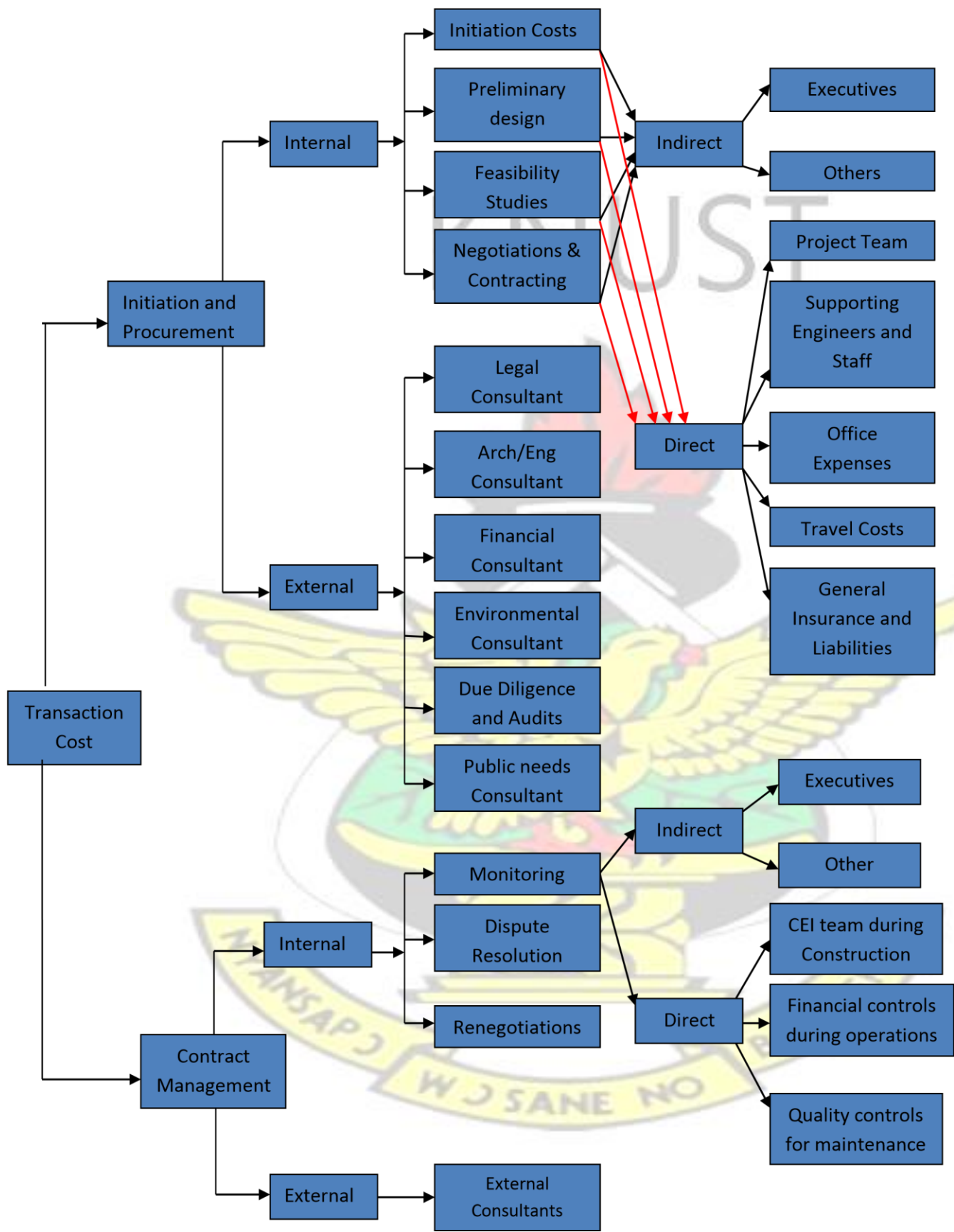


Figure 3.3: Transaction Cost Breakdown Structure The external transaction costs associated with PPP projects are easy to obtain since most of these costs are recorded as separate bills in the accounting system of projects. However, it is very difficult to obtain detailed data about the internal transaction costs because the Assembly has a different accounting system and usually do not record this level of detail.

The second level of CBS developed in this study can be used as a tracking model by MDA/MMDA to record and track the transaction costs associated with PPP infrastructure development projects. This model is essential for the Government Institutions (MDA/MMDAs) because it can help in calculating the transaction cost that is incurred by Government Institutions (MDA/MMDAs) while delivering a project using PPPs and add it to the total cost of the project in order to come out with the overall costs. This model will be greater in detail and helps Government Institutions (MDA/MMDAs) to track and record transaction costs in different levels of a CBS.

3.3.4 Study Area

This research focused on Transaction cost of PPP infrastructure in the Kumasi Metropolitan Assembly. This choice of location is due to its proximity and convenience for the researcher. This study comprehensively dealt with PPP Projects.

3.3.5 Study Population

The research was conducted within the limit of Works Department of Kumasi Metropolitan Assembly. It will be necessary that the relevant population for this research work is defined and identified. The population to be considered will be restricted to only Core Management of Kumasi Metropolitan Assembly especially the Works Department

3.3.6 Sampling Technique and Sample Size determination

The term “sample” means a part of a whole (population) drawn to reflect the remaining (Naoum, 2003). Thus, sampling refers to the process of selecting a quota of the population to characterize the entire population. A sample, then, consists of a subject of the units that constitute the population and normally used.

Purposive Sampling Technique was used to select the PPP Project Engineer of KMA. This is because he is in charge of PPP Projects and so he had access to all the transaction data of PPP Projects within the Metropolis.

3.3.7 Questionnaire Development

A questionnaire was developed and designed to collect information on five on-going PPP Projects in KMA. The questionnaire was divided into two sections. The first section considered background information of the various projects and the second section considered estimation of transaction costs of PPP projects.

3.3.8 Sources of data

Data gathering is crucial in research, as the data contributes to a better understanding of a theoretical background. The researcher obtained secondary source of data for the investigation. Questionnaires was the instrument employed in the collection of the data for the research work.

3.3.9 Data Collections Techniques

The validity of the data to be collected will depend much on the structure and the format of questions to be administered. As previously mentioned, data to be collected was done solely by the use of self-administered questionnaire. The questionnaire was targeting core

management of the Assembly. For ease of understanding, the questionnaire was phrased to be self-explanatory and structured to elicit the needed information.

3.3.10 Method of Data Analysis

The researcher obtained data from secondary source and comparative analysis was used on the data for the five projects. Simple Arithmetic was used to arrive at the cost index

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter discusses the results of the study. The information received from the responding firm were processed and analyzed on this chapter. This chapter is into two sections: the first section addresses objective one of the study and the second section addresses objective two of the study. Each section integrates the results and discussions of the study.

4.2 Information on PPP projects

Five infrastructure projects being constructed by the Kumasi Metropolitan Assembly (KMA) through Public-Private partnership comprised the scope of study. All the projects are on the Build Operate Transfer (BOT) arrangement of Public Private Partnership. This arrangement is made by KMA to provide infrastructure development in the metropolis through the involvement of the private sector. The projects are undertaken under four (4) Sub – Metro of the KMA, these are Subin Sub-Metro, Suame Sub-Metro, Tafo Sub-Metro and Bantama Sub-Metro. For the purposes of the study, the projects are named with

alphabets. Moreover, these projects are pioneering projects as far as PPP implementation in the Kumasi Metropolis is concerned.

4.2.1 Project A

Project A is the construction of a proposed eight (8) storey shopping block at Asafo Market. It is being constructed within the Subin Sub-Metro and it took four (4) months to develop the project from inception to the awarding stage of the project. Notwithstanding that, the construction of the project is for duration of two (2) years.

4.2.2 Project B

Project B is the construction of a proposed three (3) storey shopping block at Tafo Pankrono near Tafo basic school site within the Tafo Sub-Metro and it took four (4) months to develop the project from inception to the awarding stage of the project. Notwithstanding that, the construction of the project is also for duration of two (2) years

4.2.3 Project C

Project C is the construction of a proposed three (3) storey market stores, stalls and sanitary facility at Ampabame within the Bantama Sub-Metro and it took three (3) months to develop the project from inception to the awarding stage of the project. Notwithstanding that, the construction of the project is for duration of one (1) year and three (3) months

4.2.4 Project D

Project D is the construction of a proposed three (3) storey market stores and conference block at Amakom within the Subin Sub-Metro and it took two (2) months to develop the

project from inception to the awarding stage of the project. Notwithstanding that, the construction of the project is for duration of one (1) year.

4.2.5 Project E

Project E is the construction of a proposed 40 seater water closets toilet facility at Tanoso within the Kwadaso Sub-Metro and it took one and half months to develop the project from inception to the awarding stage of the project. Notwithstanding that, the construction of the project is for duration of seven (7) months.

4.3 Factors contributing to Transaction Cost estimation of PPP projects

Transaction costs can be considered from two perspective either the initial and procurement perspective and contract management perspective. The study considered the former because it is assumed that, there are no contractual issues on the project.

According to KMA, all initial and procurement transaction costs were incurred within the Assembly; implying external services of consultants were not procured on the project. The initial and procurement transaction costs are broken down into two section internal inhouse costs (4.2) and internal other costs (Table 4.1). Table 4.1 shows the actual cost incurred on each item classified under the internal other costs.

Furthermore, it shows the ratio of each cost item to the overall cost of the internal other costs. In a similar vein, Table 4.2 shows the internal in-costs of the project and the ratio of each item to the overall in-house cost of the respective five projects. Averagely, the five (5) projects have duration of one year and seven months.

Table 4.1: Other In-house cost

Items	Project A		Project B		Project C		Project D		Project E	
	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total
Office expenses and supplies	1240	4.25%	610	4.70%	651	3.99%	425	4.00%	280	6.02%
Permits	-	-	-	-	-	-	-	-	-	-
Proposal evaluation	2800	9.61%	1020	7.85%	1480	9.06%	1210	11.38%	320	6.87%
Estimation expenses	4100	14.07%	1620	12.47%	2400	14.70%	1480	13.92%	725	15.57%
Accounting services	3500	12.01%	1430	11.00%	1850	11.33%	1250	11.75%	385	8.27%
Legal services	6800	23.33%	3650	28.10%	3950	24.19%	2670	25.11%	1050	22.56%
Advertising expenses	-	-	-	-	-	-	-	-	-	-
Public relations	2150	7.38%	1210	9.31%	1215	7.44%	810	7.62%	510	10.96%
office assistance (payroll)	1810	6.21%	610	4.70%	750	4.59%	520	4.89%	280	6.02%
Insurance	4550	15.61%	1965	15.13%	2400	14.70%	1410	13.26%	720	15.47%
Audit fees	2200	7.55%	875	6.74%	1635	10.01%	860	8.09%	385	8.27%
Employee benefits	-	-	-	-	-	-	-	-	-	-
Total Cost (TC)	29,150	100%	12,990	100%	16,331	100%	10,635	100%	4,655	100%

SOURCE OF DATA: KUMASI METROPOLITAN ASSEMBLY

Table 4.2: Internal In-house costs

Items	Project A		Project B		Project C		Project D		Project E	
	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total	Amount (Gh¢)	% of Total
1) Search Costs										
a) Identifying the project	1080	1.3%	610	1.22%	700	1.16%	520	1.22%	300	1.86%
b) Prescreening the project	1240	1.5%	530	1.06%	650	1.08%	750	1.77%	240	1.49%
c) selecting project team	2350	2.9%	978	1.96%	1550	2.57%	680	1.60%	460	2.85%
d) Selecting project consultants	2480	3.0%	755	1.51%	1200	1.99%	920	2.17%	350	2.17%
2) Feasibility Studies cost										
a) Engineering and technical	55800	67.7%	38450	76.89%	42000	69.63%	32000	75.35%	11340	70.30%
b) Market	-	-	-	-	-	-	-	-	-	-
c) environmental studies	5200	6.3%	1965	3.93%	2800	4.64%	1840	4.33%	900	5.58%
d) Public opinion/legislature/political	2240	2.7%	1100	2.20%	1400	2.32%	1150	2.71%	380	2.36%
3) Negotiation										
a) the costs of obtaining necessary permits and approvals	6200	7.5%	2950	5.90%	4000	6.63%	2300	5.42%	1150	7.13%
b) preparing bidding documents	980	1.2%	475	0.95%	740	1.23%	460	1.08%	320	1.98%
c) negotiating contract/Bidding	1800	2.2%	1220	2.44%	1680	2.79%	870	2.05%	250	1.55%
d) marketing and advertising	-	-	-	-	-	-	-	-	-	-
4) Evaluation	3000	3.6%	975	1.95%	3600	5.97%	980	2.31%	520	3.22%
Total Cost (TC)	82,370	100%	50,008	100%	60,320	100%	42,470	100%	16,130	100%

SOURCE OF DATA: KUMASI METROPOLITAN ASSEMBLY

KNUST

42



Referring from Table 4.1, irrespective of the complexity of the projects involved in the study, it could be realized that Project A has higher other in-house cost (GHC 29,150.00), followed by Project C (GHC 16,331.00), then Project B (GHC 12,990.00), followed by Project D (GHC 10,635.00) and finally Project E (GHC 4,655.00). Moreover, costs estimated from Table 4.2 also followed the same pattern as indicated above. With the exception of Project E which has a distinct scope of project from the others, the others have similar project scope however; the complexity differs from one to the other. The figures further indicated that, transaction cost is higher for projects with higher scope of work as compared to projects with lower scope of work.

Cost for legal services is higher throughout all the five (5) projects in Table 4.1. Meanwhile, Engineering and technical was the item with the higher cost of transaction also shown in Table 4.2. Probably, the KMA might have been engaged in legal tussle with other private sectors over the years and want to present a project free of legal tussles. Actually, the project is engineering and technical intensive therefore it is not surprising that, it has higher cost allocation for all the five projects under study.

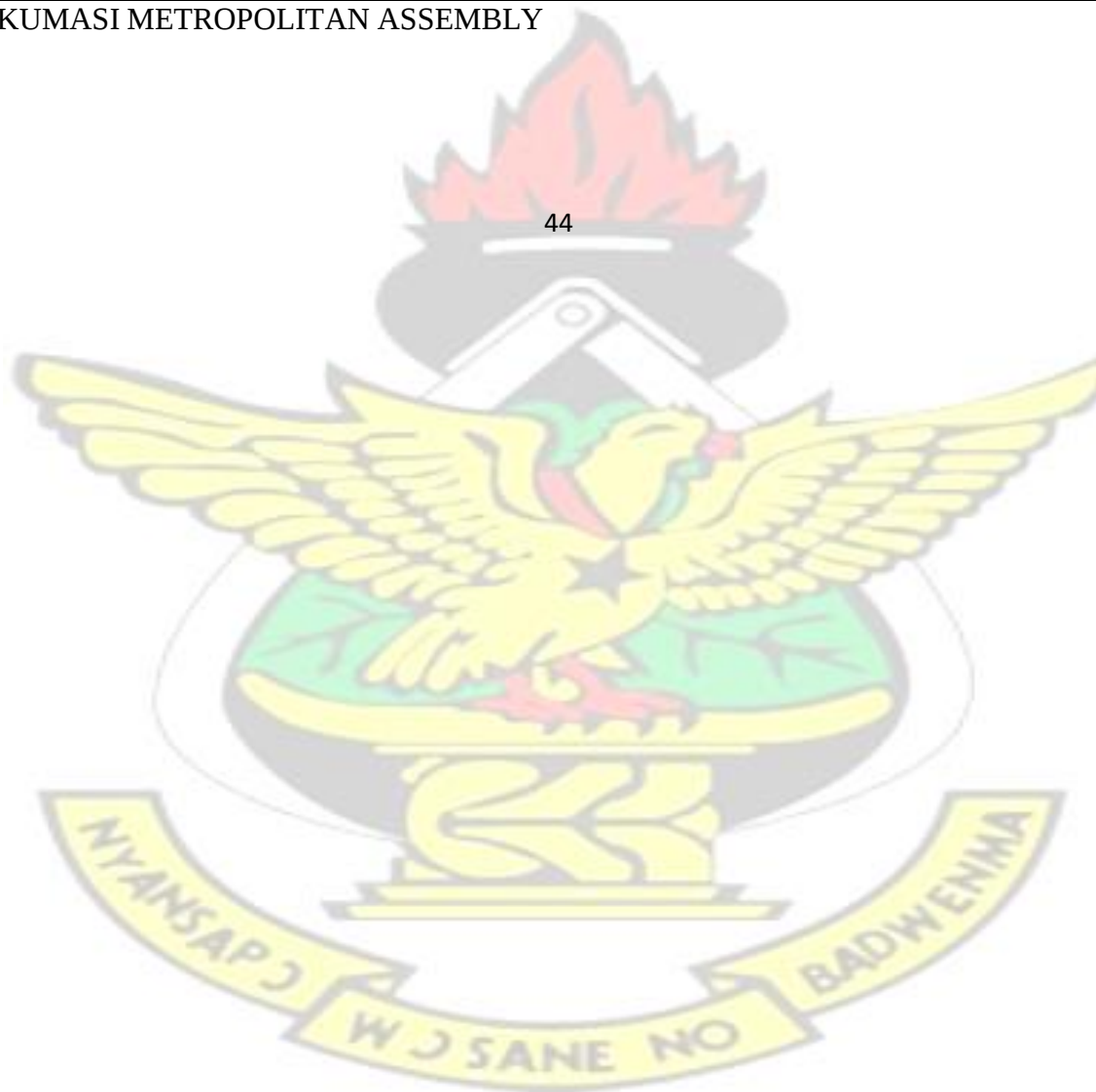
Apparently, the ratios estimated from the cost items in Table 4.1 and 4.2 were merged together to form Table 4.3 which became the basis of analysis. The cost items were further categorized under five (5) main headings, these are search costs, feasibility studies cost, negotiation, evaluation and other expenses.

4.3 Transaction cost distribution of each projects in percentage terms

		<u>Project A</u> % of Total	<u>Project B</u> % of Total	<u>Project C</u> % of Total	<u>Project D</u> % of Total	<u>Project E</u> % of Total	Average %	Cumulative %	Ranking
Internal Transaction cost	1) Search Costs							5.64	4 th
	a) Identifying the project	0.97%	0.97%	0.91%	0.98%	1.44%	1.05		
	b) Prescreening the project	1.11%	0.84%	0.85%	1.41%	1.15%	1.07		
	c) selecting project team	2.11%	1.55%	2.02%	1.28%	2.20%	1.83		
	d) Selecting project consultants	2.22%	1.20%	1.57%	1.73%	1.68%	1.68		
	2) Feasibility Studies cost							61.85	1 st
	a) Engineering and technical	50.04%	61.03%	54.79%	60.26%	54.35%	56.09		
	b) Market								
	c) environmental studies	4.66%	3.12%	3.65%	3.46%	4.31%	3.84		
	d) Public opinion/legislature/political	2.01%	1.75%	1.83%	2.17%	1.82%	1.91		
	3) Negotiation							7.78%	3 rd
	a) the costs of obtaining necessary permits and approvals	5.56%	4.68%	5.22%	4.33%	5.51%	5.06		
	b) preparing bidding documents	0.88%	0.75%	0.97%	0.87%	1.53%	1.00		
	c) negotiating contract/Bidding	1.61%	1.94%	2.19%	1.64%	1.20%	1.72		
	d) marketing and advertising								
	4) Evaluation	2.69%	1.55%	4.70%	1.85%	2.49%	2.65	2.65%	5 th
Other Internal Cost	5) Other Expenses							22.08%	2 nd
	a)Office expenses and supplies	1.11%	0.97%	0.85%	0.80%	1.34%	1.01		
	b)Permits								
	c)Proposal evaluation	2.51%	1.62%	1.93%	2.28%	1.53%	1.97		
	d)Estimation expenses	3.68%	2.57%	3.13%	2.79%	3.47%	3.13		
	e)Accounting services	3.14%	2.27%	2.41%	2.35%	1.85%	2.40		
	f)Legal services	6.10%	5.79%	5.15%	5.03%	5.03%	5.42		
	g)Advertising expenses								
	h)Public relations	1.93%	1.92%	1.59%	1.53%	2.44%	1.88		
	j)office assistance (payroll)	1.62%	0.97%	0.98%	0.98%	1.34%	1.18		

k)Insurance	4.08%	3.12%	3.13%	2.66%	3.45%	3.29		
l)Audit fees	1.97%	1.39%	2.13%	1.62%	1.85%	1.79		
m)Employee benefits								
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00		

SOURCE OF DATA: KUMASI METROPOLITAN ASSEMBLY



It could be realized from Table 4.3 that, feasibility studies cost contribute 61.85% of the overall transaction costs associated with the five (5) projects under study. Whilst other expenses (22.08%) became the second cost demanding category towards the transaction followed by negotiation (7.78%), then search costs (5.64%) and the least contributing factor is evaluation which contributes 2.65% to the overall transaction cost.

4.4 Feasibility studies cost

Construction is very complex and sophisticated in the sense that, it requires the involvement and consultation of many stakeholders especially when the project in question is for government. It is actually in order for KMA to incur much cost on the feasibility section of the transaction cost because the successfulness of the project is based on this area. Furthermore, the outlook also suggests that an exhaustive planning was undertaken by the KMA together with the investors involved in the project. Moreover, an essential contributor to the feasibility section is the environmental studies. The concept of sustainability has made it the priority of stakeholders to consider the impact of a project to its environment whether it accommodates the core principles of sustainability. That might have contributed to the high contribution of environmental studies to feasibility studies.

It could be also realized that, the major cost item is the engineering and technical. The major hub about all the construction projects is the technical and engineering components of it. All construction projects should have a solid and sound engineering analysis and design at the pre-construction stage of the project. This might have probably contributed to the high cost incurred by this item on the transaction cost estimation of the five projects.

4.5 Other expenses cost

Other expenses are the second highest ranked transaction cost determining factors as shown on Table 4.3. The construction environment is identified with legal tussles among its stakeholders which are mostly between the clients and the contractors. The legal issues when probably address will prevent the Assembly from any contractual issues. And the researcher believes that it is worth it to invest on a good in terms of legalism than spend more on future legal issues on the same projects.

4.6 Transaction Cost Indices of PPP projects

According to Table 4.3, the total cost of project A according to KMA was GH¢6,210,150.00. Based on this data, the reported transaction costs index of project A was only 1.80% of the capital cost of the project. The total cost of project B was GH¢2,612,295.00. Based on this data, the reported transaction costs of project B is only 2.41% of the capital cost of the project. The total cost of project C was GH¢3,556,320.00. Based on this data, the reported transaction costs of project C is only 2.16% of the capital cost of the project. The total cost of project D was GH¢952,360.00. Based on this data, the reported transaction costs of project D is only 5.58% of the capital cost of the project. The total cost of project E was GH¢422,684.00. Based on this data, the reported transaction costs of project E is only 4.92% of the capital cost of the project.

Table 4.3 Ratio of Total Transaction Cost (TTC) to Project Cost (PC)

Cost Areas	Project A GHC	Project B GHC	Project C GHC	Project D GHC	Project E GHC
In-house cost (Table 4.2)	29,150.00	12,990.00	16,331.00	10,635.00	4,655.00

In-house cost (Table 4.3)	82,370.00	50,008.00	60,320.00	42,470.00	16,130.00
Total Transaction Cost (TTC)		62,998.00	76,651.00	53,105.00	20,785.00
Project Cost (PC)		2,612,295.00	3,556,320.00	952,360.00	422,684.00
(TTC/PC)*100	1.80	2.41	2.16	5.58	4.92

A comparison between these data and estimates in other PPP projects revealed that the transaction cost reported by KMA was significantly higher than transaction costs in other PPP projects for instance Project D, Project E, Project B and C are within the domain whilst project A is below the estimated percentage by European Investment Bank (2009). European Investment Bank indicated that for PPP projects with one bidder, the percentage of the Total Transaction Cost (TTC) to the Project Cost (PC) should be 2.1%. Since the projects also have just a bidder, it would have been welcoming to fall within the ceiling index opined by European Investment Bank (EIB). The index for Project A is the only project within EIB standard; it might probably be so because of the value of the estimated construction cost of the projects A is higher.

Using that as a benchmark, there is a trend realized from Table 4.3 that, lower transaction costs index are ascribed to projects with higher projects cost, for instance in ascending order Project A has an index of 1.80% with a project cost of GHC 6,210,150.00, Project C has an index of 2.16% with a project cost of GHC 3,556,320.00, Project B has an index of 2.41% with a project cost of GHC 2,612,295.00. However the outlier with this trend is the indices recorded by project D and Project E. Using the simple logic understood from the trend it suggests that, much cost was incurred on the transaction cost of Project D.

It should also be noted that KMA had not reported all the probable transaction costs of these projects. The reported transaction costs were only related to the procurement phase of the project, however, there were more transaction activities during the project's life cycle which have not been addressed.

Another reason that the reported transaction costs of these projects were greater than expected may be due to lack of competition. It should be noted that the reported transaction costs were the transaction costs during searching and negotiation phases. There were also some provisions in the contract that created obligations to KMA which resulted in higher transaction costs in the future. For instance, back office operations related to the collection of taxes on the shopping blocks, market stores, school blocks and toilet facilities as well as establishing a management committee to coordinate operations on the above projects.

Table 4.4: Average Transaction Cost Index for PPP projects

Projects	Transaction Cost Index (TCI)
Project A	1.80
Project B	2.41
Project C	2.16
Project D	5.58
Project E	4.92
Average TCI	3.37

Furthermore, knowing the index for each of the projects can become the basis of getting a threshold for transaction cost index for PPP projects undertaken by the KMA in the future. Therefore, an average index was estimated using the Transaction Cost Index of all the five projects. Table 4.4 reveals the average Transaction Cost Index of the projects understudy.

The average Transaction Cost Index estimated is above the threshold of 2.1 as opined by the European Investment Bank (2009). But considering the reasons given earlier, the threshold of TCI for future PPP projects can be 3.37% to accommodate for all unforeseen transaction costs.

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter concludes the study by summarizing the findings of the study, drawing conclusions and making recommendations to authorities involved in Public – Private Partnership of infrastructure projects in the Kumasi Metropolitan Assembly. The study focused on estimating Transaction Cost Indices for PPP projects undertaken in the Kumasi Metropolitan Assembly which happens to be the first of its kind in the Ashanti Region. Two supporting objectives were set to address the aim of the study, they are : to identify areas that substantially contribute to transaction cost of PPP projects and finally estimation of transaction cost indices of PPP infrastructure projects. The study relied on secondary data from the works department of the Kumasi Metropolitan Assembly on PPP projects concurrently on-going in four of their Sub Metropolitan Assemblies namely Subin, Tafo, Bantama and Kwadaso. They are five (5) projects in all, with most of them being shopping facilities and complexity of the projects varies.

5.2 Summary of findings

5.2.1 To identify areas that substantially contribute transaction cost of PPP projects

In addressing this objective, factors contributing to the transaction cost of projects from the initiation and procurement options were identified from literature and costs associated with them were collected from the Works Department of the Kumasi Metropolitan Assembly on five (5) PPP projects currently on-going in four (4) of its Sub Metropolitan

Assemblies. The ratios of the costs of the identified factors to the overall transaction costs for each projects became the basis for arriving at a conclusion as far as this objective this concerned.

Five (5) main category of areas contributing to transaction cost estimation were identified namely search costs, feasibility studies cost, negotiations, evaluations and other expenses. Based on the analysis used, feasibility studies cost became the areas which substantially contribute to transaction cost, followed by other expenses, then negotiations, search costs and finally evaluations.

5.2.2 To estimate transaction cost indices of PPP infrastructure projects.

In achieving the stated objective, the transactional cost of each project was compared to the overall project cost of each project. It was realized that, projects with lesser complexity recorded higher Transaction Cost Index whilst those with higher scope recorded lesser Transaction Cost Index (TCI). The TCIs recorded on four projects exceeded one proposed by European Investment Bank however, accommodating all changes that might happen during the initial and procurement stage an average TCI was estimated which is 3.37%.

5.3 Conclusion

PPP infrastructure projects has existed in the field of procurement for some time now however, it implementation in Ghana is at its early stages implying that transaction cost estimation of PPP projects are yet to be explored. Based on that, this study sought to estimate a transaction cost index for on-going PPP projects in four Sub Metropolitan Assemblies in the Kumasi Metropolitan Assembly. The study relied on secondary data

from the Works Department of KMA; data received from the KMA were then used to estimate the transaction costs of the various projects. Moreover, data was used to identify the major costs areas of transaction costs estimation of PPP projects in the Metropolis. Furthermore, the study was able to come out with cost index for all the five (5) projects studied, therefore future projects can rely on the cost index as a guide on transaction cost expenses. Finally transaction cost threshold was estimated to provide a ceiling of estimating the transaction cost index for projects.

5.4 Recommendations

The study has addressed its stated aim and objectives. The recommendations are therefore made based on the findings of the study.

5.4.1 Recommendation to KMA and MMDAs

PPP arrangement is an avenue of reducing the budget constraints experienced by government. Therefore, it is recommended that, though private investors pay for the actual cost of the projects MMDAs can also reduce the transaction costs which are incurred during the initial stages of the project.

It is also recommended that, value for money audit on the initial and procurement stage of the projects should be conducted to reduce the transaction costs incurred by MMDAs to an acceptable level.

Finally, the threshold estimated from the study should be a guide to MMDAs in allocating funds to the various cost areas of the transaction costs of PPP projects.

5.4.2 Recommendation for further studies

The study focused on one Metropolitan Assembly, therefore it is recommended that further studies will consider all the Metropolitan, Municipal and District Assembly separately to come out with a transaction cost indices for the respective types of Assemblies.



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APPENDIX
QUESTIONNAIRE

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI
Department of Building Technology
RESEARCH QUESTIONNAIRES
ON**

**ESTIMATING TRANSACTION COST INDICES OF PUBLIC – PRIVATE –
PARTNERSHIP INFRASTRUCTURE PROJECTS IN GHANA
(A CASE STUDY OF KUMASI METROPOLITAN ASSEMBLY)**

The main objective of this study are:

3. To identify areas that substantially contribute to transaction cost of PPP infrastructural projects
4. To estimate transaction cost indices of projects

Please respond to the following questions by either ticking appropriate box or by writing your answer in the space provided. Please Note: This is purely an academic exercise and therefore information provided will be strictly confidential

This questionnaire is structured in Three (3) sections. Namely:

- Background information of the PPP Projects
- Estimation of transaction costs of PPP projects assessed

For any further information or clarification please contact me on

Tel: 0244972513 / 0204016298 – Email: ericjdonkor@yahoo.com

Kindly respond to the questions by ticking (✓) the appropriate response.

SECTION 1: Background information of the Project

1. What is the scope of each of the Five Projects Below?

Project A.....

Project B.....

Project C.....

Project D.....

Project E.....

2. What are the locations of the mentioned projects and their Sub Metros?

Project A.....

Project B.....

Project C.....

Project D.....

Project E.....

3. What is the Total Estimated Cost of each of the five projects?

Project A.....

Project B.....

Project C.....

Project D.....

Project E.....

4. How long did it take to develop all the five projects from inception to award?

Project A.....

Project B.....

Project C.....

Project D.....

Project E.....

5. What is the duration of each of the projects?

Project A.....

Project B.....

Project C.....

Project D.....

Project E.....

SECTIONB: Estimation of transaction costs of PPP projects assessed

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5. How much were the in-house (Officers in KMA) costs for the 5 projects?

Part A

Items	Project 1	Project 2	Project 3	Project 4	Project 5
Office expenses and supplies					
Permits					
Proposal evaluation					
Estimation expenses					
Accounting services					
Legal services					
Advertising expenses					
Public relations					
office assistance (payroll)					
Insurance					
Audit fees					
Employee benefits					

Part B

PROJECT 1

Items	Total Costs
1) Search Costs	
a) Identifying the project	
b) Prescreening the project	
c) selecting project team	
d) Selecting project consultants	
2) Feasibility Studies cost	
a) Engineering and technical	
b) Market	
c) environmental studies	
d) Public opinion/legislature/political	
3) Negotiation	
a) the costs of obtaining necessary permits and approvals	
b) preparing bidding documents	
c) negotiating contract/Bidding	
d) marketing and advertising	

4) Evaluation	
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PROJECT 2

Items	Total Costs
1) Search Costs	
a) Identifying the project	
b) Prescreening the project	
c) selecting project team	
d) Selecting project consultants	
2) Feasibility Studies cost	
a) Engineering and technical	
b) Market	
c) environmental studies	
d) Public opinion/legislature/political	
3) Negotiation	
a) the costs of obtaining necessary permits and approvals	
b) preparing bidding documents	
c) negotiating contract/Bidding	
d) marketing and advertising	

4) Evaluation	
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PROJECT 3

Items	Total Costs
1) Search Costs	
a) Identifying the project	
b) Prescreening the project	
c) selecting project team	
d) Selecting project consultants	
2) Feasibility Studies cost	
a) Engineering and technical	
b) Market	
c) environmental studies	
d) Public opinion/legislature/political	
3) Negotiation	
a) the costs of obtaining necessary permits and approvals	
b) preparing bidding documents	
c) negotiating contract/Bidding	
d) marketing and advertising	

4) Evaluation	
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PROJECT 4

Items	Total Costs
1) Search Costs	
a) Identifying the project	
b) Prescreening the project	
c) selecting project team	
d) Selecting project consultants	
2) Feasibility Studies cost	
a) Engineering and technical	
b) Market	
c) environmental studies	
d) Public opinion/legislature/political	
3) Negotiation	
a) the costs of obtaining necessary permits and approvals	
b) preparing bidding documents	
c) negotiating contract/Bidding	
d) marketing and advertising	

4) Evaluation	
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PROJECT 5

Items	Total Costs
1) Search Costs	
a) Identifying the project	
b) Prescreening the project	
c) selecting project team	
d) Selecting project consultants	
2) Feasibility Studies cost	
a) Engineering and technical	
b) Market	
c) environmental studies	
d) Public opinion/legislature/political	
3) Negotiation	
a) the costs of obtaining necessary permits and approvals	
b) preparing bidding documents	
c) negotiating contract/Bidding	
d) marketing and advertising	

4) Evaluation	
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